



STANDARDS FOR PUBLIC HEALTH INFORMATION SERVICES

in Activated Health Clusters and other Humanitarian
Health Coordination Mechanisms



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The World Health Organization is the
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ACRONYMS

3W	Who, What, Where
ACAPS	The Assessment Capacities Project
CDC	US Centers for Disease Prevention and Control
CDR	Crude Death Rate
DHIS2	District Health Information System 2
EPI	Expanded Programme on Immunization
EWARS	Early Warning Alert and Response System
FTE	Full Time Equivalent
GHC	Global Health Cluster
HC	Health Cluster
HCC	Health Cluster Coordinator
HeRAMS	Health Resource Availability Monitoring System
HESPER	Humanitarian Emergency Settings Perceived Needs Scale
HMIS	Health Management Information System
HNO	Humanitarian Needs Overview
HRP	Humanitarian Response Plan
IMO	Information Management Officer
IPC	Integrated Food Security Phase Classification
MIRA	Multisector Initial Rapid Assessment
MoH	Ministry of Health
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
OIM	Operational Indicators Monitoring
PHIS	Public Health Information Services
PHISO	Public Health Information Services Officer
PHSA	Public Health Situation Analysis
PHO	Public Health Officer
SSA	Surveillance System for Attacks on Health Care
U5DR	Under 5 Death Rate
WHO	World Health Organization

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1. SCOPE OF THIS DOCUMENT

1.1 Background

Since 2005, the humanitarian cluster approach provides a predictable mechanism for coordination of humanitarian actors in most non-refugee crises. The Global Health Cluster (GHC), led by the World Health Organization (WHO), is a partnership of more than 40 agencies that provides a platform for global coordination of the response to crises with public health consequences, and supports activated health clusters on the field with policies and standards, practical tools for day-to-day work, and capacity building and staffing of cluster coordination roles.

A key prerequisite for any effective humanitarian response is the availability of timely, reliable and robust information. In order to take sound decisions in a humanitarian health response, decision-makers need public health information to assess and monitor the health status and risks faced by the affected population, the availability and actual functionality of health resources, and the performance of the health system.

What has to date been referred to as Information Management (IM) is a critical function of humanitarian coordination mechanisms. In this document, we adopt the more accurate designation of **Public Health Information Services (PHIS)**.

Although we refer throughout the document to PHIS in activated health clusters (HCs), these PHIS Standards are by no means restricted to health clusters, and can be applied to support government led emergency coordination or other types of humanitarian sectoral coordination mechanisms.

1.2 Rationale for these global standards

The PHIS function of activated health clusters (HC) has, to date, broadly been understood to encompass a range of activities and products, from simple, administrative information tasks such as maintenance of a list of HC partners, to far more technically complex activities such as the implementation and analysis of field surveys or epidemic surveillance. Information needs arise throughout the six key elements of the [Humanitarian Programme Cycle](#) (emergency response and preparedness, needs assessment and analysis; strategic response planning; resource mobilisation; implementation and monitoring; and operational review and evaluation). As such, the need for a specific cluster coordination role specialised in delivering PHIS, referred to as an Information Management Officer (IMO) or a Public Health Information Services Officer (PHISO), has been increasingly recognised. The term IMO will be used throughout this document.

Despite the above, numerous evaluations and review exercises show that HCs' performance in delivering PHIS has been mixed. More generally, in both acute and protracted crises to date, public health information has often been

fragmentary, and has been generated with timeliness and quality insufficient to fulfil its intended use of informing public health action and advocacy.

On the field, HC coordination staff, including IMOs, have generally been short-staffed (with many clusters not even having an IMO on staff), and their planning and day-to-day work have been dictated by perceived priorities of different stakeholders, rather than objective needs for public health information. There appears to be an increasing emphasis on cumbersome annual or bi-annual data collection rounds (e.g. for multi-sector rapid assessment or health resources availability mapping: see below), rather than ongoing, prospective generation of information for real-time action through lighter systems that involve HC partners in both data collection and interpretation of findings.

The above challenges partly reflect a lack of realistic standards and guidance for PHIS in activated clusters, meaning that each HC works in relative isolation and has to develop priorities and PHIS solutions locally, often from scratch. While top-line processes for public health data collection have been put forward by WHO's Emergency Response Framework and the GHC's own Health Cluster Guide; this document is structured around some of the following areas of PHIS which have not previously been detailed:

- **Which public health information services** (and, consequently, information products) should be expected of an activated HC, and who in the HC should be responsible for different steps in their delivery;
- **Which specific methods, software applications and tools** should be used to deliver these services;
- **How quickly and with what frequency of update** each service should be delivered in different crisis scenarios;
- **What staffing and other resources** should be made available to activated HCs in order to successfully discharge the PHIS function;
- **Which PHIS-related technical competencies** cluster staff should display when deploying into a field HC role, and should therefore be a basis for recruitment, professional development and performance management.

This document seeks to address, and is structured along the above areas, by laying out the first set of globally valid standards, with locally appropriate guidance, for PHIS in activated health clusters and other crisis coordination mechanisms.

1.3 Scope and target audience

This standards and guidance document has been developed by the PHIS Task Team of the GHC. The document should be the basis on which HCs (meaning not just coordination staff, but all partners) resource themselves for, plan, execute and evaluate their public health information work. As such, its intended audience consists of:

- **Health Cluster Coordinators (HCCs) and Public Health Officers (PHOs)**, who have to request appropriate staffing for their teams, instigate data collection, and interpret and act upon findings; note that these standards attribute specific PHIS responsibilities to HCCs and PHOs;

- **IMOs** (as well as **epidemiologists** who may be deployed to HCs for specific stand-alone activities), who bear the main burden of designing and executing data collection, management, analysis and reporting;
- **WHO as the Cluster Lead Agency** at country, regional and headquarters level, responsible for properly resourcing and supporting HC teams, primarily through hiring and developing the competencies of the right people in the right numbers;
- **GHC partners** who may also offer resources or staff to support PHIS in activated HCs;
- **Health Cluster Partners at country or sub-national level**, who should know what to expect from HC teams, and how they are expected to take part in PHIS work.

Note that these standards are also a basis for ongoing activities to fundraise for HC staffing worldwide, design a competency-based capacity development programme for all HC roles, and roll out specific PHIS and applications across activated HCs. The standards are also informing the upcoming version of the Health Cluster Guide (2017), and as such both documents will be consistent.



2. SERVICES EXPECTED OF AN ACTIVATED HEALTH CLUSTER

This chapter outlines and describes the specific PHIS that any activated HC should be expected to deliver. By implication, expectations of HCs should not exceed this list, and their performance should be assessed accordingly.

Conceptually, services are grouped into the following three domains of information:

- **Health Status and Threats for affected populations**, comprising information on the current *health status* of the affected population or specific groups (e.g. mortality, morbidity and their major causes, baseline anthropometric status) and *health threats* in the context of the crisis (e.g. potential epidemic-prone diseases, psychological trauma, threats linked to service or treatment discontinuation, and any other crisis-attributable threats to public health).
- **Health Resources and Services Availability**, namely information on preventive and curative health services, infrastructure, personnel and supplies provided by health authorities or other actors, as well as the degree of access that affected populations actually have to those services.

- **Health System Performance**, namely information on the sheer output, coverage, utilisation and quality (or effectiveness) of health services available to the crisis-affected population.

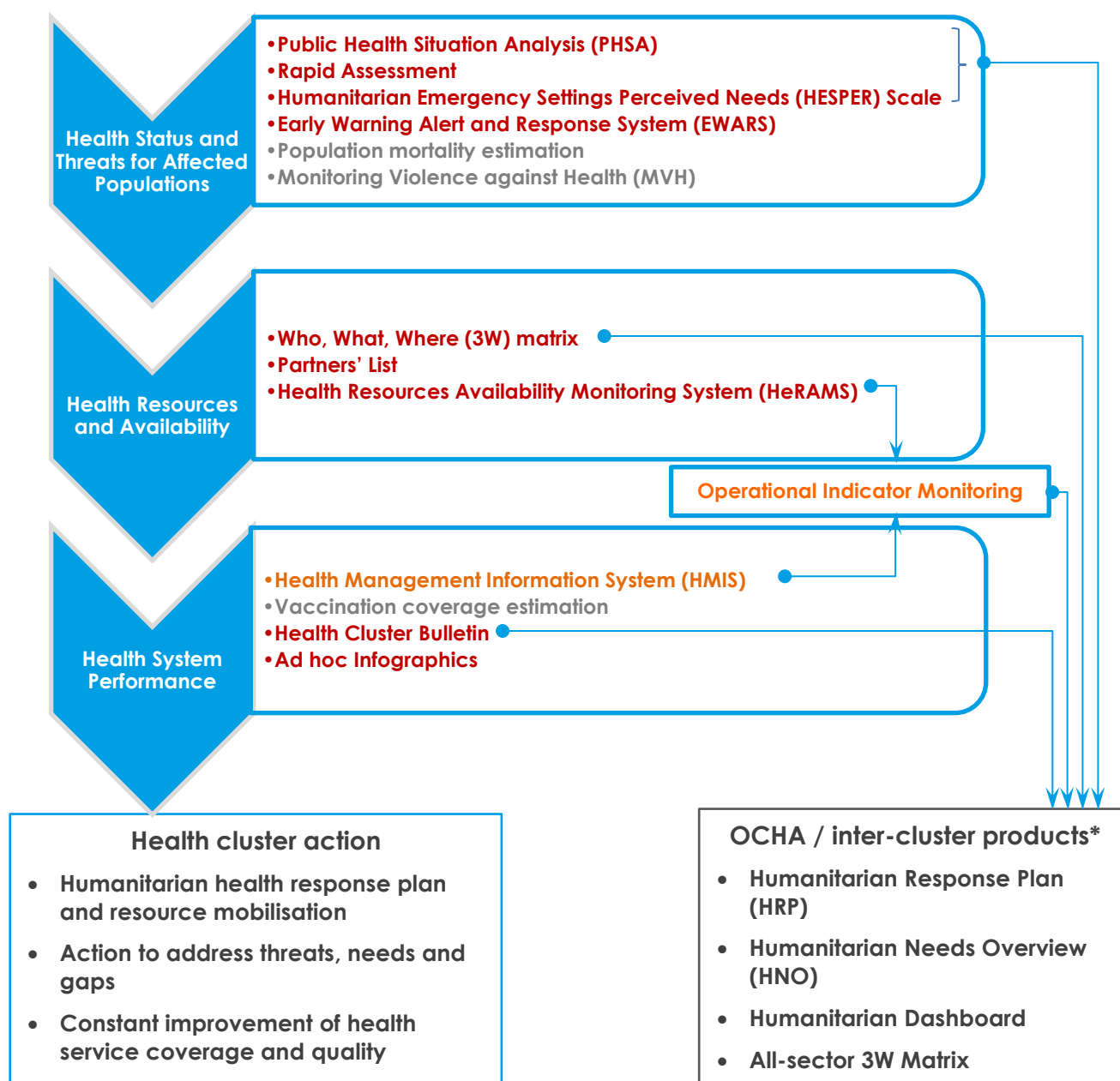
As shown on **Table 1**, services are further broken down into (i) a **“core”** package that all activated HCs, irrespective of context, should deliver; (ii) **“additional”** desirable services that HCs should strive to also deliver, but that may be postponed or deliberately set aside in situations in which HC staffing and resources are insufficient to enable their quality delivery, or where external factors such as extreme insecurity or time pressure curtail the delivery of all but the core package; and (iii) **“context-specific”** services that may or may not be warranted, depending on the scenario: further guidance on these is provided below.

Figure 1 displays a mind map of the services, according to the above domains of information, and showing how some PHIS products are mainly relevant for the HC, while others, including the Public Health Situation Analysis (PHSA), rapid assessment, cluster bulletins and the 3W matrix, feed directly into inter-cluster information management processes established under the wider humanitarian architecture, i.e. the overarching coordination by the Humanitarian Country Team and the Office for the Coordination of Humanitarian Affairs (OCHA)¹.

This also means that HC PHIS activities need at all times to be harmonised with, and not duplicative of, inter-cluster information management activities.

Please find Figure 1 on the following page:

Figure 1: Flow chart of Public Health Information Services†



†Colour code for information services: Red = core services; Amber = additional services; Grey = context-specific services. ; *Information feeding into OCHO/inter-cluster products should be first analysed and interpreted at the health cluster level

Table 1: PHIS services† expected of HCs, and breakdown of responsibilities for service delivery, by stage. Roles accountable for each stage are in bold

	SERVICE	LOCAL ADAPTATION	SETUP	DATA COLLECTION	ANALYSIS	INTERPRETATION	DISSEMINATION	ACTION
HEALTH STATUS AND THREATS FOR AFFECTED POPULATIONS	Public Health Situation Analysis (PHSA)	IMO, HCC	n/a	IMO , GHC Unit, HC Partners	n/a	IMO, HCC , PHO	IMO, HCC , Comms	HCC , PHO
	Rapid Assessment	IMO, HCC , PHO, HC partners	IMO (with OCHA)	HC Partners	IMO	IMO, HCC , PHO, HC partners	IMO, HCC , Comms	HCC , PHO
	Humanitarian Emergency Settings Perceived Needs (HESPER) Scale	IMO, HCC , PHO	IMO	IMO , HC Partners	IMO	IMO, HCC , PHO	IMO, HCC , Comms	HCC , PHO
	Early Warning Alert and Response System (EWARS)	IMO, HCC , PHO	IMO	HC Partners	IMO	IMO, HCC , PHO	IMO, HCC , Comms	HCC , PHO, Epidemiologist
	Population mortality estimation	IMO, HCC , PHO, Epidemiologist	IMO, Epidemiologist	IMO, Epidemiologist	IMO, Epidemiologist	IMO, HCC , PHO	IMO, HCC , Comms	HCC , PHO
	Surveillance System for Attacks on Health Care (SSA)	IMO, HCC , PHO	IMO	HC Partners	IMO	IMO, HCC , PHO	IMO, HCC , Comms	HCC , PHO
HEALTH RESOURCES AND AVAILABILITY	Who, What, Where (3W) matrix	IMO, HCC , PHO	IMO	HC Partners	IMO	IMO, HCC , PHO	IMO, HCC , Comms	HCC , PHO
	Partners' List	n/a	IMO	IMO	n/a	n/a	HCC , Comms	n/a
	Health Resources (or Services) Availability Monitoring System (HeRAMS)	IMO, HCC , PHO	IMO	HC Partners	IMO	IMO, HCC , PHO	IMO, HCC , Comms	HCC , PHO
HEALTH SYSTEM PERFORMANCE	Health Management Information System (HMIS)	IMO, HCC , PHO	IMO	HC Partners	IMO , HC Partners	IMO, HCC , PHO	IMO, HCC , Comms	HCC , PHO
	Vaccination coverage estimation	IMO, HCC , PHO	IMO, Epidemiologist	IMO, Epidemiologist	IMO, Epidemiologist	IMO, HCC , PHO	IMO, HCC , Comms	HCC , PHO
	Operational Indicator Monitoring	IMO, HCC , PHO	IMO	IMO	IMO	IMO, HCC , PHO	IMO, HCC , Comms	HCC , PHO
	Health Cluster Bulletin	IMO, HCC , PHO	n/a	IMO	n/a	n/a	IMO, HCC , Comms	n/a
	Ad hoc Infographics	n/a	n/a	IMO	IMO	n/a	IMO, HCC , Comms	n/a

†Red = core services; Amber = additional services; Grey = context-specific services.

2.1 Description of each service

A brief description of each service is provided below. Extensive guidance on methods and approaches is omitted from this document, and will instead be collected in an openly accessible health cluster PHIS toolkit (see **Section 1.1**) which will be made available on the GHC website, as well as forming part of a competency-based professional development programme for HC PHIS (see **Section 6**)

Public Health Situation Analysis

The Public Health Situation Analysis (PHSA) is a background document, which initially synthesises the already available (i.e. secondary) data from a wide array of sources to characterize epidemiologic conditions, existing health needs and possible health threats faced by the crisis-affected population (including by age, sex and for particular vulnerable groups), and is then continuously updated as more information (including from primary data) is gathered. It identifies the major areas for health action to respond to and recover from the crisis at hand. It is relevant for preparedness as well as response planning.

The PHSA expands upon previous Public Health Risk Assessments issued by WHO, which to date have focussed heavily on infectious diseases. It provides information on the magnitude of expected health problems and threats, disruption to the health system and health system needs, and summarises the main key areas for public health action.

In turn, the PHSA feeds information and recommendations into other synthetic products or processes owned by the HC or OCHA, including the HC Bulletin (see below), the Multi-sector Initial Rapid Assessment (MIRA; see below) or the Humanitarian Needs Overview (HNO).

Rapid Assessment

The Multi-Sector Initial Rapid Assessment (MIRA) is the main inter-cluster approach to joint rapid assessments. It includes options for observations, key informant interviews, focus group discussions, and household surveys to summarize conditions across sectors, including health. The MIRA approach is standardised flexible set of tools, and the contribution of the HC to it may vary depending on the scenario and the availability or feasibility of collecting information. At a minimum, the HC should contribute to MIRA by:

- Synthesising the PHSA to feed key health sector needs into MIRA outputs.
- Supporting MIRA design (e.g. selection of indicators and methods), training for data collection, interpretation and action by HC partners; note that MIRA data collection is usually the responsibility of OCHA teams, not individual clusters.
- Carrying out a HESPER Scale assessment (see below).
- Reviewing the write up.
- The Rapid Assessment activities may also consists of:

- Organising and coordinating more in-depth, health-specific rapid assessments (other than HESPER) covering the entire crisis-affected population or specific locations.
- Supporting individual HC partners with their own local rapid health assessments. Support may include:
 - Technical support, such as advice on methods and indicators, on how to organise data collection, or how to analyse and interpret information; in most situations it does not include actually carrying out local assessments on behalf of these partners, although in some instances the HC may help a partner carrying out such activity.
 - Ensure harmonisation of rapid health assessments conducted by HC partners.
- Supporting specialized surveys in technical health areas including, for example, disability, non-communicable disease care, or mental health.
- **Section 4.1** also provides further guidance.

HESPER Scale

The Humanitarian Emergency Settings Perceived Needs Scale (HESPER) is a method for assessing perceived needs of populations affected by large-scale crises in a valid and reliable manner, including by age, sex, and other sociodemographic to assess and quantify needs by population sub-groups. While the method has been developed recently and not rolled out widely to date, it is preferable to ad hoc rapid assessment tools, as it emphasises beneficiaries' views, and uses a questionnaire that has been scientifically validated. The method, furthermore, is appropriate for inter-cluster coordinated assessments, as it explores beneficiary perceived needs beyond health alone. HESPER information should complement secondary data and other assessment information in order to compose, and update, the Public Health Situation Analysis (see **Section 4.1**).

EWARS

Given the increased risk of epidemics in most crisis scenarios, detecting and responding to outbreaks as soon as they occur is imperative. An Early Warning Alert and Response system (EWARS) aims to reduce the number of cases and deaths that occur during infectious disease outbreaks, and consists of:

- a network of trained health providers and facilities;
- a standard list of diseases and health events under surveillance;
- standard case definitions for these diseases and health events, and data collection instruments;
- an appropriate field-based application, hardware (e.g. phones) and connectivity for immediate data reporting and to communicate feedback on alerts and system performance;
- locally appropriate thresholds for reporting and investigating an alert;

- an alert log, to record all alerts triggered by the system and to document steps of alert verification and, where required, risk assessment and risk characterisation;
- local preparedness and response plans, to describe a set of pre-agreed procedures and responsibilities for confirming and responding to outbreaks. This includes pre-identified staff to conduct alert investigation and initial response activities; standardised operating procedures for specimen collection, storage, transport and laboratory confirmation; and pre-positioned supplies, equipment and essential medicines to launch an initial response;
- frequent epidemic bulletins to describe surveillance trends, alert performance and the status of response actions, with sharing of information across all EWARS participating facilities and partners;
- a framework for ongoing monitoring and supervision of EWARS whilst it is implemented, and for evaluation at the end of the EWARS deployment;
- As a rough guide, an EWARS should collect data on a maximum of 12-14 diseases or health events, and the selection should be determined jointly with the MoH and guided by a number of criteria guided by the following questions including:
 - Does the condition have a high health impact (in terms of morbidity, disability, mortality)?
 - Does it have a significant epidemic potential (e.g. cholera, meningitis, measles)?
 - Is it a specific target of a national, regional or international control programme?
 - Will the information collected lead to significant and cost-effective public health action?

An EWARS can detect epidemics in two ways: (i) through event-based alerts, i.e. immediate communication of an alert by health providers; or (ii) indicator-based alerts, i.e. analysis of regular (typically weekly) data reports. However, an EWARS is not just about data collection, but must include appropriate public health action and response to alerts.

In the event that an outbreak is confirmed, an EWARS needs to have the ability to adapt and respond appropriately; including active surveillance and line-listing of cases, regular outbreak bulletins with an epidemic curve, and monitoring of other key performance indicators.

However, an EWARS is not necessarily sufficient to track the evolution of a confirmed epidemic, or conduct descriptive or analytical epidemiology: specific investigations and surveillance may need to be put in place in such cases.

An HMIS (see later in this chapter) should be used to monitor a more expanded list of causes of morbidity and in-service mortality. Indeed, EWARS should be viewed as a complement to HMIS, with minimal overlap between the two and a different frequency of reporting. The event-based functionality of EWARS is

data-light and can be implemented rapidly even without incidence-based data reporting.

Population Mortality Estimation

Population mortality, i.e. the rate at which people are dying in the affected population, is a key metric of physical health status and helps to benchmark the overall severity of a crisis. The crude death rate (CDR) and the death rate among children under 5y (U5DR) are the most commonly used indicators of population mortality in crises.

Mortality estimation may be performed on:

- a one-off basis, most commonly through a retrospective household sample survey (so-called because information on deaths and other demographic events in households is collected over a period in the past, i.e. the survey always estimates past rather than present mortality); other estimation methods, e.g. relying on predictive statistical modelling, capture-recapture estimation or key informant interviews, have been used or tested, but require in-depth expertise (see guidance in **Section 4.5**);
- an ongoing basis, through a community-based mortality surveillance system that relies on regularly updated collection of data by home visitors, or grave monitors in settings where cemetery burials are ubiquitous. Note that in nearly all crisis settings, merely relying on deaths that occur in health facilities seriously under-estimates total mortality.

Mortality estimates from a survey or other one-off exercise should be presented in a stand-alone report, containing reproducible methods, results stratified appropriately and including survey attrition, and a discussion highlighting possible sources of bias and recommending actions based on the findings. Such a report should annex all data collection instruments. Alternatively, a prospective mortality surveillance system should issue brief bulletins on a regular basis (weekly or monthly – see **Section 4.5**), reporting the population size under surveillance, raw numbers of deaths by age group (and locality: see guidance in **Section 4.5**), and death rates for the period covered by the bulletin, with graphics showing trends over time.

Surveillance System for Attacks on Health Care (SSA)

Surveillance System for Attacks on Health Care (SSA) is a data collection, analysis and reporting system of violence against health facilities, assets, personnel, and patients. It documents the consequences of these attacks on access to, or delivery of, health care services. The HC can use SSA information to generate evidence needed to inform strategic approaches for safe/safer health care delivery and/or to support advocacy at country level on protection of the right of access to care. The SSA service includes (i) an “Alert” process (first record of an attack as reported by any health actor); (ii) “Verification” of the attack in collaboration with protection or human rights actors; and (iii) automated analysis and reporting of results, to be interpreted by an SSA task force and/or other stakeholders.

3W Matrix

The 'Who does What, Where?' (3W) matrix systematically maps HC partner activities across the crisis-affected population, thereby strengthening analysis of response gaps, planning and coordination of actors, including agencies new to the scene, who require guidance about where to position themselves geographically and what the service gaps are. The HC-specific 3W Matrix in turn feeds into the all-sector, OCHA-led 3W Matrix. It is meant to complement HeRAMS (see below). While the 3W Matrix tracks and maps partners and their thematic areas of activity (e.g. reproductive health), and focuses on activities other than direct service delivery (e.g. training, financing), HeRAMS tracks and maps availability of services at the level of each health service delivery point. The 4W matrix adds an additional time dimension to the matrix (Who does What, Where and When), to map when and for how long agencies are conducting their activities in the field.

Partners' List

The Partners' List is a constantly updated database of contact details for HC partners, observer agencies and other important HC stakeholders, including individual focal points for different areas of work, collected to both facilitate communication among agencies the work of the HC coordination team. The list can be composed from contacts provided by the MoH, existing health sector coordination mechanisms, organisations working in the sector for a long time, and the 'grapevine'. If appropriate the list can be shared with OCHA in order to support inter-cluster coordination. The list can include information on operations and capacities, but should not duplicate the 3W Matrix or HeRAMS (see below).

HeRAMS

The Health Services Availability Monitoring System (HeRAMS) is designed to systematically monitor the availability of health services to affected populations. It maps all health delivery points within the crisis-affected area, by level (community to inpatient) and type; human resources staffing these delivery points; HC partners in charge of delivering activities; infrastructure; and provides detail on which services, by thematic area (e.g. integrated management of childhood illness; antenatal and post-natal care; management of trauma injuries; mental health; etc.), are actually offered in each.

The main function of HeRAMS is to monitor the availability and functionality of health services, establish whether packages of health services provided by HC partners or local health authorities are appropriate given public health needs, and identify and react to service gaps as they arise.

Importantly, HeRAMS should not be implemented and treated as a stand-alone, cross-sectional survey of health facilities at a given time, but should instead be conceived as a prospective monitoring system of health service availability.

The burden of data collection, and need for collaborative inputs from all services has often resulted in undue delays in publication, thereby reducing its usefulness for action. However, new technology (see Section 3) now facilitates

the ongoing monitoring, with data on any health delivery points updated in real time, as changes occur, and information constantly available for viewing by all health cluster partners, thereby ensuring timely action.

HMIS

A Health Management Information System (HMIS) collects, analyses and reports data from health providers and facilities on causes of consultation and hospitalisation, services provided (e.g. number of antenatal consultations), and (at least in inpatient facilities) patient clinical outcomes. HMIS data, alone or in combination with catchment population figures, are used to construct a variety of indicators of proportional and absolute morbidity and mortality, service utilisation, and quality of care. These indicators inform planning, management, and decision-making both at the health facility level, and at aggregated levels, such as district-level planning by the Ministry of Health (MoH). A HMIS consists of the people collecting, analysing and acting on data; the standard indicators being monitored; the data collection instruments and procedures; the computing platform and application for data entry, management and analysis; and procedures for data flow, auditing, reporting and action.

Nearly all countries operate a HMIS, though in most crises these become heavily disrupted or non-functional. Agencies (e.g. NGOs) that operate direct health services or support existing MoH services also need to collect data for reporting purposes, to plan pharmaceutical procurement on the basis of morbidity patterns, and to monitor service utilisation and quality. To these ends, they should and often do set up data collection systems that, though with varying complexity and effectiveness, serve some or all of the functions of a HMIS.

The HC HMIS service consists of:

- Supporting any HC partner, including local health authorities, to improve and upgrade any aspect of its HMIS, through training, on-the-job support and introduction of a HC-approved software application (see Section 0);
- Harmonising the different HMIS implemented by HC partners, by introducing a common set of indicators, data collection instruments and procedures, health facility datasets, catchment population assumptions, software application, etc.;
- Issuing regular HC-wide HMIS bulletins containing automated analyses of key indicators;
- Helping to make HC HMIS as inter-operable and consistent as possible with the existing HMIS operated by health authorities, and responsibly handing over the HC HMIS to local health authorities upon cluster deactivation.
- Where no prior HMIS is available, the HC should support local health authorities and HC partners in setting up an HMIS

The HC should also make use of such a system to plan activities, identify and respond to large-scale coverage and/or quality problems, and report key health system performance indicators. Note however that a HMIS is not the appropriate instrument for detecting and/or monitoring epidemics (see EWARS above).

Vaccination Coverage Estimation

Vaccination, preventive or in response to an epidemic, is a mainstay of public health interventions in crisis-affected populations, and can reduce the burden of an increasing range of infectious diseases¹.

Vaccination coverage, i.e. the proportion of the target population group that has received the correct dosage of the vaccine by a defined age (e.g. the proportion of children vaccinated with the third-dose of the diphtheria-tetanus-pertussis vaccine by 12 months of age), is a key indicator to evaluate the performance of vaccination services, assess the risk of epidemics, and establish whether remedial vaccination activities are required and what the most efficient strategies would be for such activities (e.g. targeted geographic approaches or region-wide enhanced vaccination).

If the population is stable and robustly quantified, and provided reliable data are collected on numbers of vaccinated, coverage may be estimated through a simple administrative method, combining programme (numerator) and target population (denominator) data. However, a vaccination coverage survey, consisting of representative sampling of people in the target population, may be required to accurately estimate coverage when either programme or population figures are not deemed robust. Such a survey may also attempt to provide estimates or binary (re-vaccinate; do not re-vaccinate) classification decisions for geographic sub-sections of the population (e.g. by sub-district or camp sector).

Regardless of the method selected, vaccination coverage estimates are usually presented in a brief stand-alone report, containing reproducible methods of the estimation, results stratified appropriately and including survey attrition (non-response), and a discussion that highlights possible sources of bias in the estimates and recommends actions based on the findings.

Operational Indicator Monitoring (OIM)

The Operational Indicator Monitoring (OIM) service aggregates and reports a small set of key performance indicators for the HC response as a whole. These include raw 'output' figures (e.g. number of outpatient consultations, number vaccinated, number of births assisted by a skilled attendant, number of surgical interventions)

OIM does not collect primary data. Rather, it captures data generated by HC partners and other systems, e.g. HMIS (see above). The process for doing so is necessarily different in every HC, depending on available data sources. The purpose of OIM is to supply basic information for higher-level (e.g. OCHA-led) dashboards and humanitarian activity reporting. It is less useful for monitoring the coverage and quality of the response, or the work of individual HC partners.

¹ WHO (2013) Vaccination in acute humanitarian emergencies: a framework for decision making http://apps.who.int/iris/bitstream/10665/92462/1/WHO_IVB_13.07_eng.pdf

Health Cluster Bulletin

The Health Cluster Bulletin is a frequent publication that provides an overview of the main public health needs, key health information including trends, and activities of HC partners. A typical Health Cluster Bulletin should have the following structure:

- cover page with title, crisis name, reporting period, HC partners and observers;
- highlights of the previous time period (since publication of the last bulletin);
- information from health assessments during the time period;
- information from different surveillance / monitoring systems during the time period;
- summary needs and gaps during the time period;
- information about/from coordination meetings during the time period;
- agency activities during the time period;
- capacity building during the time period;
- funds requested and received during the time period;
- useful contact details, including key staff at national and/or at each sub-national level where the humanitarian activities are ongoing;
- The Health Cluster Bulletin's purpose is mainly to keep all HC partners and other stakeholders informed.

Ad hoc Infographics

Infographics refer to any visual representation of information to improve cognition and thus understanding of data patterns and key observations. Infographics for PHIS can include:

- Tables;
- Graphs;
- Diagrams;
- Dashboards;
- Maps, which may feature layers showing data on health risks (e.g. disease cases), resources (e.g. number of pre-positioned drug kits) or services (e.g. health facilities by type).

Infographics are typically commissioned by the HCC or prepared by an IMO to complement and help illustrate documents arising from other public health services, e.g. the PHSA, a HC Bulletin, or a HeRAMS report. Occasionally, they may be presented as a standalone information product, or included in presentations for various audiences.

2.2 Stakeholders and responsibilities for PHIS

Stages of service delivery

For the purposes of planning, defining areas of competency, and attributing responsibilities, delivery of each service is broken down into distinct sequential stages, as shown in Table 1, and defined as follows:

- **Local Adaptation:** this refers to taking the decision to initiate a specific service, particularly if the service is not part of the core PHIS package (e.g. deciding whether conditions are appropriate to initiate a HC-wide HMIS, or whether mortality estimation is warranted); and specifying key parameters of the service that are context-dependent (e.g. the choice of indicators to include in rapid health assessment; defining the epidemic-prone syndromes, alert thresholds and participating facilities for EWARS; specifying which population and period mortality estimates should be computed for; whether administrative vaccination coverage estimation is appropriate, or whether a survey is needed; etc.).
- **Setup:** this mostly includes customisation of any software application and general method that accompanies the service, taking into account any existing PHIS infrastructure. In addition, the setup may include the epidemiological design of any household survey; preparation of questionnaires and procurement of other data collection resources; permission by relevant authorities; and identification and training of data collectors, with field piloting if needed.
- **Data Collection:** this is the process of collecting data, either as a point-in-time exercise or on an ongoing basis; this stage includes auditing and review of data collection, with action to address any issues identified.
- **Analysis:** this refers to the management of paper data, entry and management of electronic records, and analyses (manual or automated) of the data to generate the bulletin, report or other information product expected for each service.
- **Interpretation:** this stage includes critical analysis of findings, with reference to possible sources of bias, and triangulation with other existing information; and identification, on the basis of the findings, of appropriate actions, including public health interventions, advocacy, resource mobilisation, monitoring and other coordination activities.
- **Dissemination:** this refers not only to sharing information products in a timely way with HC and other relevant stakeholders, but also to adapting these products into presentations or other forms of communication.
- **Action:** this final stage entails planning and executing, or overseeing and coordinating the execution of, actions identified above. As examples, these could include responding to an outbreak identified through the EWARS; seeking to fill service gaps identified in a particular location by HeRAMS; or undertaking advocacy to reduce the incidence of attacks against health services.

Responsibility and accountability for service delivery

It is critical that HC staff and partners do not view the IMO role as solely responsible for delivering PHIS. IMOs should have the technical competencies and resources to execute or oversee the setup, data collection and analysis stages, above (see Section 6). They may furthermore support and advise on all other stages. However, local adaptation, interpretation, dissemination and action should mainly be the purview of HCCs, or PHOS for services such as EWARS that require in-depth competencies in disease control (see Table 1). In practice, collaborative work is required among the different HC roles to fulfil the above decision-making stages. However, accountability for their execution generally should lie with the HCC.

If a HC role is not filled (e.g. a PHO or IMO are not deployed), responsibility and accountability by default shift upward to the HCC. However, it is very unlikely that a HC that does not have at least one IMO within its coordination team will be able to deliver any of the services effectively, if at all, with the exception of maintaining a Partners' List and 3W Matrix, and compiling a weekly cluster bulletin (see Section 5.2 for PHIS staffing requirements).

HC partners are also responsible and accountable, particularly for services for which data collection relies on them. Data access and automated analysis by partners is made possible by software applications accompanying the service (see Chapter 0). It is implied throughout this document that HC partners are also responsible and accountable for undertaking actions arising from PHIS outputs.

Occasionally, an experienced **epidemiologist**, with specialised competencies in epidemic investigation and surveillance or conduct of complex field surveys, e.g. for mortality estimation, may be called upon. The epidemiologist's deployment would be for specific services and thus of a time-bound nature.



3. STATE OF DEVELOPMENT OF APPLICATIONS AND GUIDANCE FOR EACH PUBLIC HEALTH INFORMATION SERVICE

This chapter briefly reviews the present availability and/or state of development of GHC-recommended applications for data collection and analysis, as well as guidance for their use, more broadly for the implementation of a given service, or interpretation of information arising from it. As such, this chapter of the standards will evolve substantially in future editions.

Table 2 summarises the current availability of applications and guidance, by PHIS. Additional guidance notes are provided below.

Table 2: Current availability of applications and guidance to support each Public Health Information Service†

	SERVICE	STATUS OF METHOD AND/OR SOFTWARE APPLICATIONS	STATUS OF GUIDANCE	LANGUAGES AVAILABLE
HEALTH STATUS AND THREATS FOR AFFECTED POPULATIONS	Public Health Situation Analysis (PHSA)	Not available. An application is not warranted for this service, however guidance to conduct a PHSA has been developed by the PHIS Task Team	PHSA template has been developed and will be available with the PHIS toolkit on the GHC website	n/a
	Rapid Assessment	Multi-sector Initial Rapid Assessment (not HC-led): MIRA method and templates are available , but there is no software application to support the method. No standardised method for rapid health-focussed assessments. Two applications to facilitate the choice of questions and questionnaire design under development by ACAPS and CDC.	Available for MIRA	English, French, Russian, Spanish.
	Humanitarian Emergency Settings Perceived Needs (HESPER) Scale	HESPER scale method available . A simplified version for acute emergencies (HESPER light) is being developed and planned for use in 2017.	Available	English, French, Arabic, Urdu.
	Early Warning Alert and Response System (EWARS)	WHO EWARS application available .	Generic guidance on EWARS available . Guidance on WHO EWARS application available .	English
	Population mortality estimation	The Standardised Monitoring and Assessment of Relief and Transition (SMART) method ² enables survey-based estimation of anthropometry, mortality and vaccination coverage. It is mainly conceived for fairly simple estimation scenarios. The ENA software ³ supports design, data management and analysis of mortality and anthropometric surveys. There is no consensus about the method prospective surveillance or other approaches most appropriate in crises. The WHO verbal autopsy method and materials are also available , though not simplified for crises. Alternative applications to automatically analyse verbal autopsies are also available here and here .	Available for SMART surveys and ENA software (see links to the left). Also available for the WHO verbal autopsy method (see links to the left).	SMART materials available in English, French, Spanish. Verbal autopsy materials available in English.
	Surveillance System for Attacks on Health Care (SSA)	WHO are currently developing a tool entitled Surveillance System of Attacks on Health Care (SSA), which serves to track attacks on health care and their impact on health service delivery to emergency-affected populations. Initial versions of this tool have been tested and the lessons learned are being incorporated into the	Not available	English

² <http://smartmethodology.org/> (Copy link into browser)

³ <http://smartmethodology.org/survey-planning-tools/smart-emergency-nutrition-assessment/> (Copy link into browser)

	SERVICE	STATUS OF METHOD AND/OR SOFTWARE APPLICATIONS	STATUS OF GUIDANCE	LANGUAGES AVAILABLE
		final tool. WHO, together with partners, aims to apply the SSA in emergency-affected countries during the second half of 2017.		
HEALTH RESOURCES AND AVAILABILITY	Who, What, Where (3W) matrix	No standardised method or application available.	Not available	English
	Partners' List	Can be maintained on PRIME	n/a	n/a
	Health Resources Availability Mapping System (HeRAMS)	The HeRAMS method and standard list of key services are available from WHO, as well as several context-specific forms.	Not available.	English, French, Arabic.
HEALTH SYSTEM PERFORMANCE	Health Management Information System (HMIS)	UNHCR's TWINE is a possible option in the acute phase, however no light HMIS option is currently available The DHIS2 software platform should be considered during the protracted phase. See notes below.	No generic guidance available on setting up HMIS in emergencies. Manuals on DHIS2 and TWINE available (see links to the left).	English, French, Arabic.
	Vaccination coverage estimation	The WHO has a manual for the administrative method, and is updating its reference manuals for vaccination coverage surveys, including an e-course, standard questionnaires and R/Stata analysis scripts. See WHO resources . However, there is no software application for coverage surveys. The above materials are not designed for emergencies and may need extensive adaptation for difficult contexts with limited data for sample selection.	Available (administrative method) or being developed (survey): see link to the left.	English, French.
	Operational Indicator Monitoring	Using standard HC key performance indicators , and can be supported by PRIME	Not available.	English
	Health Cluster Bulletin	A template has been produced and will be available with the PHIS toolkit on the GHC website	n/a	n/a (country-specific).
	Ad hoc Infographics	ArcGIS (proprietary) or QGIS (open-access) are available applications for mapping, and have extensive supportive manuals.	n/a	n/a (country-specific).

†Red = core services; Amber = additional services; Grey = context-specific services.

3.1 Additional note

EWARS

The WHO's Global Early Warning, Alert and Response System (EWARS) project is an initiative to strengthen early warning, alert and response in emergencies. It supports Ministries of Health and health partners through the provision of technical support, training and field-based tools. This includes an **online desktop and mobile application** that can be rapidly configured and deployed within 48 hours of an emergency being declared. It is designed with frontline users in mind, and built to work in difficult and remote operating environments. The application is organised around the core public health functions of:

- **Surveillance:** rapidly configuring and deploying forms to collect data in the field; support for offline data collection in remote field settings; submitting facility or community-based reports, including from informal sources (e.g. media and community); creating customised reports to analyse data using maps, charts and tables; obtaining regular feedback via SMS, email and within the application;
- **Alert:** receiving immediate notification when alert thresholds are exceeded; using an alert log to register and verify each alert; launching case-based investigations to confirm alerts and inform possible outbreak declaration; integrating with laboratory surveillance to ensure test results are updated online and immediately made available to partners;
- **Response:** launching an outbreak response as soon as an alert is confirmed; collecting a full continuum of data during an active outbreak response, from case-based alerts to epidemiological investigation to laboratory confirmation; creating automated person, place, time analysis using maps, charts and tables.

The Global EWARS project also provides direct operational support to establish disease surveillance, alert and response even in the most difficult and remote operating environments. **EWARS in a box** is ruggedized, field-ready equipment kit needed to establish surveillance or response activities in field settings without reliable internet or electricity.

A full monitoring and evaluation framework has been developed, with standards and indicators to monitor EWARS performance.

HMIS

Almost 50 Ministries of Health and several leading humanitarian health agencies (Médecins Sans Frontières, the International Rescue Committee, Save the Children) are increasingly adopting the highly flexible, contextually adaptable District Health Information System (DHIS) 2 open-source application, developed by the University of Oslo specifically to support HMIS. DHIS2 enjoys an extensive community of practice, as well as learning and technical support resources. However, set-up and maintenance of DHIS2 across a HC response would require considerable expertise in the software, agreement and training of HC partners, and carefully managed roll-out of standardised questionnaires, indicators and HMIS standard operating procedures; DHIS2 data also need to be hosted on a secure server, and this may require legal arrangements or memoranda of understanding among HC partners. Once DHIS2 is established,

it can be modified very flexibly to accommodate new health facilities, indicators, etc. Moreover, automated reports whereby individual HC partners or the HC as a whole can instantly satisfy donor reporting requirements or monitor health services performance can be set up: this particular aspect of DHIS2, along with automation in data entry validation, makes this platform a very efficient alternative to adhoc systems (e.g. based on Microsoft Excel or Access), albeit only after an onerous phase of initial set-up.

It is unlikely that in the acute phase, competing priorities would leave enough staff time for the HC to robustly set up DHIS2 as the choice HMIS platform. A lighter version of DHIS2 for emergencies has not yet been developed. The UNHCR's TWINE platform, used for its Health Information System, is a relatively user-friendly option that does not require extensive set-up. The need for a light and agile HMIS application for acute emergencies is nevertheless recognised, however it is not yet available.

PRIME

[PRIME](#) is an open-source software developed by WHO with the aim to provide an umbrella platform through which different services can be accessed. The platform attributes responsibility for data collection to end users of information, i.e. HC partners, allowing data management by HC partners ('data owners') and providing automated analysis.

Applications that have been developed on PRIME include HeRAMS and an application to support the OIM service. A specific application for Surveillance System for Attacks on Health Care has also been developed to support cross-border operations in Syria.

The PHIS Toolkit

The GHC is currently developing an open-access PHIS Toolkit to be hosted on the GHC website. A first version of the Toolkit is expected to be available by Q2 2017. The Toolkit will assemble guidance, templates and best-practice examples for each service. It will complement these standards, as well as other software applications.



4. PRIORITISATION, RECOMMENDED TIMING AND CONTEXT SPECIFIC DECISION MAKING FOR EACH PUBLIC HEALTH INFORMATION SERVICE

This chapter provides guidance on three key parameters:

1. **How quickly** each of the standard PHIS services should become available after the acute crisis event (e.g. natural disaster occurrence; start of mass displacement; onset of major armed conflict or offensive; initial recognition of any other emergency); here, availability refers to data being accessible and any relevant information product published (e.g. the first health cluster bulletin);
2. **How frequently** thereafter each of the services should be updated with a new publication of the information product (e.g. a new EWARS bulletin) ; in practice, services relating to health resources and availability (the 3W Matrix; Partners' List; HeRAMS) should enter new data and generate automated analysis and reports on a real-time basis: therefore, for these services a maximum interval (minimum frequency) between each update is specified. By contrast, some services are stand-alone as they provide point-in-time information at the start of the emergency (rapid assessment), or as needed (vaccination coverage estimation; infographics).
3. **When each service should be discontinued** (not applicable to stand-alone services). The default is that each service remains available until the cluster is de-activated, but some services should in fact be handed over to local health authorities (EWARS, HMIS) even if a cluster is de-activated (see below), and, in general, opportunities should always be sought to preserve HC PHIS in any coordination mechanism that may take over from the cluster system.

The frequency of PHIS update that is required to monitor and respond to changing conditions (e.g. a new health threat; a decreased availability of responders and services; poor service performance), is not the same in all HC responses. Below we distinguish between two broad scenarios:

- The so-called **acute phase** following a *sudden-onset emergency* (sudden unplanned displacement; new or exacerbated and sustained episodes of armed conflict; natural or industrial disaster; sudden breakdown of critical administrative and management functions, as defined in the [SAGE framework for vaccination in acute humanitarian emergencies](#) or the recognition of a *serious epidemic with broader societal effects*, warranting humanitarian sector coordination;

- The **protracted phase** following the acute phase, when the crisis-affected population is recovering from an acute event or, alternatively, continuing to be affected by long-term displacement and/or lower-intensity armed conflict.

For the purposes of this guidance, [Integrated Phase Classification \(IPC\)](#) phases 3, 4 and 5 of a **slow-onset food insecurity crisis** are considered equivalent to the acute phase above; IPC phases 1 and 2 are attributed the same urgency and frequency parameters as in the protracted phase. **Note that the above phase distinctions, while broadly consistent with other existing formulations, are drawn solely for the purpose of this guidance.**

Table 3 summarises standards for each PHIS in both acute and protracted phase scenarios of cluster activation. The table assumes that each service is first made available in the acute phase, as that is when HCs are first activated. Activated HCs, particularly sub-national, may also return to the acute phase frequency of PHIS services if a new emergency is super-imposed onto a protracted crisis (for example, a sudden flood occurring in an armed conflict affected area). HCCs and IMO are responsible for jointly determining which PHIS frequency phase the HC (national or sub-national) is in, and adjusting service delivery accordingly

Please find Table 3 on the following page:

Table 3: Recommended timing, frequency and prioritisation of Public Health Information Services

	SERVICE	ACUTE PHASE (INCLUDING IPC PHASES 3-5)			PROTRACTED PHASE (INCLUDING IPC PHASES 1-2)	
		SHOULD BE AVAILABLE BY	FREQUENCY OF UPDATE	WHEN TO DISCONTINUE†	FREQUENCY OF UPDATE	WHEN TO DISCONTINUE*
HEALTH STATUS AND THREATS FOR AFFECTED POPULATIONS	Public Health Situation Analysis (PHSA)	Pre-emergency 48h (initial analysis) 14d (full analysis)	Monthly at the minimum (or sooner if sudden change)	Never: instead, hand over to MoH	Quarterly (or sooner if sudden change)	Cluster de-activation
	Rapid Assessment	14d	Repeat if a new emergency occurs	n/a (stand-alone)	Repeat if a new emergency or a sudden change occurs	n/a (stand-alone)
	HESPER Scale	14d	Quarterly (or sooner if sudden change)	Cluster de-activation	Quarterly (or sooner if sudden change)	Cluster de-activation
	EWARS	7d (initiation) 14d (first bulletin)	Weekly at the minimum, but could be daily in a rapidly evolving outbreak scenario.	Never: instead, hand over to MoH	Weekly	Never: instead, hand over to MoH
	Population mortality estimation	1mo or later (see guidance)	Weekly or monthly (see guidance)	Cluster de-activation	Quarterly (see guidance)	Cluster de-activation
	Surveillance System for Attacks on Health Care (SSA)	1mo (or sooner if events warrant)	Monthly	Cluster de-activation (sooner if attacks cease)	Quarterly	Cluster de-activation (or sooner if attacks cease)
HEALTH RESOURCES AND AVAILABILITY	3W Matrix	24h	Weekly (or sooner if new information)	At cluster de-activation and handed over to MoH as part of the transition	Monthly	Cluster de-activation
	Partners' List	24h	Weekly (or sooner if new partners added)	At cluster de-activation, handed over to MoH as part of the transition	Monthly (or sooner if new information)	Cluster de-activation
	HeRAMS	1mo (services module) 3mo (all modules)	Monthly (or sooner if new information)	At cluster de-activation, handed over to MoH as part of the transition	Quarterly (or sooner if new information)	Cluster de-activation
HEALTH SYSTEM PERFORMANCE	HMIS	14d (light version) 3-6mo (DHIS-2)	Weekly	Never: instead, hand over to MoH	Monthly	Never: instead, hand over to MoH
	Vaccination coverage estimation	See guidance	As needed (see guidance)	n/a (stand-alone)	As needed (see guidance)	n/a (stand-alone)
	Operational Indicator Monitoring	1mo	Monthly	Cluster de-activation	Weekly	Cluster de-activation
	Health Cluster Bulletin	48h (summary version)	Weekly (full version)	Cluster de-activation	Monthly	Cluster de-activation
	Ad hoc Infographics	7d, and response in 24h after urgent request	Upon request	Cluster de-activation	Upon request	Cluster de-activation

†**Red** = core services; **Amber** = additional services; **Grey** = context-specific service. * Services should, wherever possible, not be discontinued, but rather be handed over to whatever crisis coordination structure remains in place.

As in previous chapters, also delineates a core package of services; a “full” package of predictable services (core plus additional) that, ultimately, every HC should be resourced and competent to deliver; and context-specific services that may or may not be required depending on the situation.

Further specific guidance is provided below for each service. The specific guidance should always be referred to, as a complement to **Table 3**.

Table 4 organises services chronologically, by time since the onset of the emergency by which they should become available, as defined above.

Table 4. Expected time to first availability of PHIS following emergency onset

PRE-EMERGENCY	24H	48H	7D	14D	1MO	3MO	6MO
PHSA(secondary data review)	3W Matrix	PHSA (initial)	EWARS (initiation)	PHSA (full)	HeRAMS (services module)	HeRAMS (all modules)	
	Partners' List	Health Cluster Bulletin	Ad hoc Infographics	Rapid Assessment	Population mortality estimation	HMIS (full version through DHIS2)	
				HESPER Scale	MVH		
				EWARS (first bulletin)	Vaccination coverage estimation		
				HMIS (light version)	Operational Indicator Monitoring		

Red = core services; **Amber** = additional services; **Grey** = context-specific services.

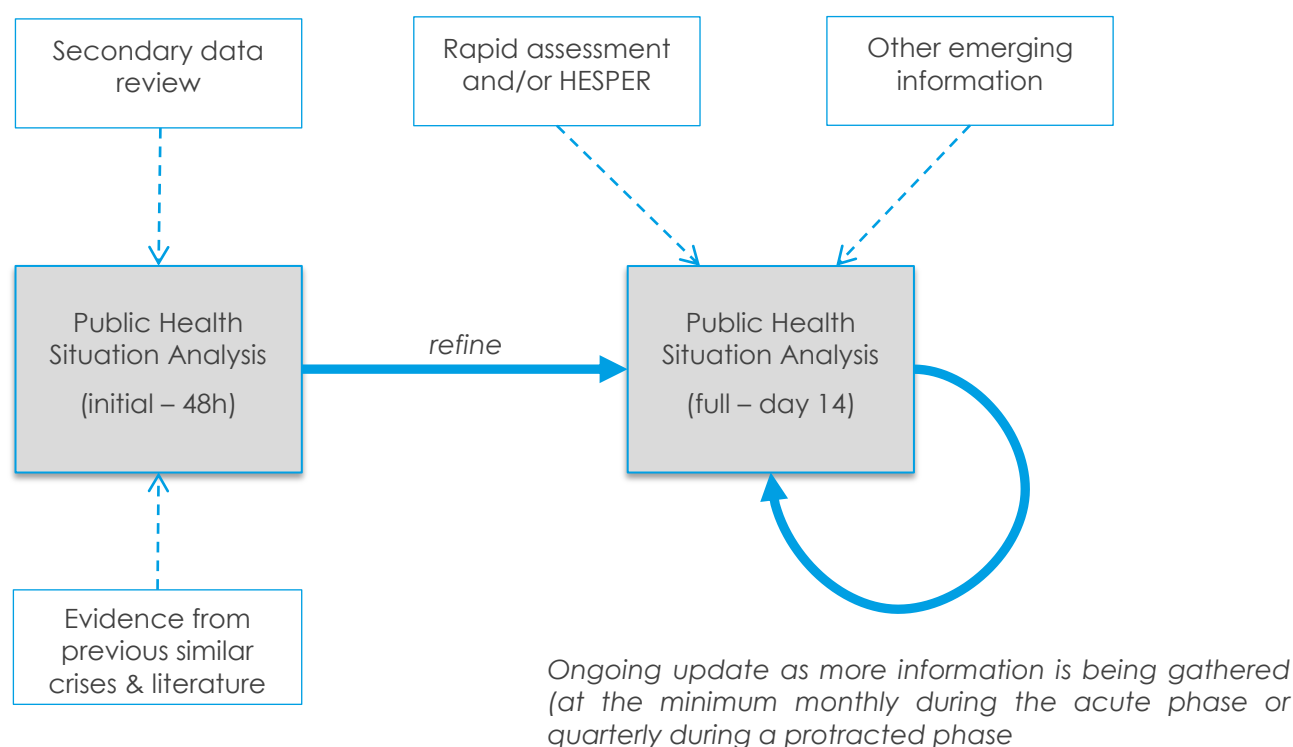
4.1 Public Health Situation Analysis (PHSA)

As shown in **Figure 2**, the Public Health Situation Analysis (PHSA) is a composite information product, resulting from joint interpretation of available information from various sources. An initial, fairly succinct PHSA, presenting basic geographical data on the affected population, a summary of pre-crisis health status, and expected drivers of excess morbidity and mortality, should be published within the first 48h after the emergency's onset, as this is generally when humanitarian partners and donors, both locally and internationally, will take critical early decisions about whether to intervene, with what resources, and with which thematic focus (e.g. trauma surgery, vaccination, mobile clinics, etc.). It is both possible and necessary to issue such an initial PHSA, even in the absence of reliable field information. Rapid review of pre-crisis secondary data on the health status of the affected population, known disease transmission in the area, and information on the functionality of its health system, can be combined with assumptions on the likely main public health threats (e.g. mental health; diarrhoeal disease outbreaks; vaccine-preventable diseases) and the likely elevation in excess mortality resulting from the crisis: these assumptions can be made by considering evidence from previous crises of similar typology (e.g. other instances of mass displacement into crowded camps, within the same geographic region; other earthquakes affecting urban areas).

Many crises (armed conflicts, weather-related natural disasters, food insecurity) can be predicted with some early warning (at least a few days), and several countries are known to be prone to crises. In these situations, secondary data review should imperatively take place as part of emergency preparedness, and at least a preliminary PHSA for a discrete set of crisis scenarios (e.g. pessimistic; most likely; optimistic) should be drawn up, and made available to all stakeholders. This will improve public health resource mobilisation and help to more rapidly and appropriately direct resources.

As more information from the field is generated, particularly through HESPER and/or other rapid assessments, the PHSA should be expanded (at the minimum by day 14 after emergency onset, and re-issued. The PHSA thus becomes the single overarching HC information product summarising information from various sources, and informing the analysis of public health needs and priorities. Updates to the PHSA should thereafter be monthly at the minimum (acute phase) or quarterly at the minimum (protracted phase), and systematically consider information from different PHIS, including HMIS data on proportional morbidity, EWARS data on occurrence of outbreaks, data on attacks against health, etc. Occasionally (e.g. when a serious epidemic is confirmed or there is a sudden population influx or movement), the PHSA will need to be updated on an ad-hoc basis. At deactivation, all products and outputs from the PHSA should be handed over to the MoH as part of the transition. The PHSA will also feed into the update of OCHA-led products such the Humanitarian Needs Overview (HNO).

Figure 2. Schematic of evolution of and sources for the Public Health Situation Analysis



4.2 Rapid Assessment

The HC should start working with other sectors in the first 2-4 days in order to be able to produce an initial MIRA report by about day 14 after onset of the emergency. The PHSA itself, complemented if possible by HESPER or other rapid assessment primary data, could constitute the HC's contribution to the initial MIRA. The timing of MIRA implementation and its publication is mainly driven by OCHA and inter-cluster processes.

In general, an initial rapid assessment should be carried out very soon (days if possible) after the initial emergency starts, or after a new emergency within the crisis occurs. Similarly, report dissemination should take place no more than a few days after fieldwork has been conducted. This will generally require compromising on length, depth and quality of the methods (e.g. inherent selection bias when geographic accessibility is compromised etc.) in exchange for speed and quality of data collection. Rapid assessments that are conducted or published weeks after the emergency lose most usefulness.

4.3 HESPER scale

The HESPER scale is considered superior to existing rapid health assessment methods, as its questionnaire is validated, emphasises beneficiary perceptions, and includes psychosocial functioning. As such, HCs should increasingly adopt it as the default method for rapid assessment, local or crisis-wide, particularly once a lighter version of the method is available. Furthermore, HESPER could be used as the health sector's portion of the MIRA. However, HESPER adoption requires substantial familiarity with the method, and as such constitutes a specific set of competencies (see Section 6) that HC staff are expected to develop with time.

As for any rapid assessment, HESPER information should become available by day 14 after the emergency's onset, thereby contributing to the PHSA (see above) and informing downstream products, like the HC response strategy and inter-cluster planning. Repetition of HESPER on a quarterly basis (or sooner in case of major, sudden changes to the make-up of the affected population or the dynamics of the crisis) is recommended, in order to update beneficiary perceptions and thereby ground-truth the appropriateness and performance of the humanitarian health response, and help evaluate its impact. Trends in HESPER scale indicators should be visualised.

4.4 EWARS

While the threat of epidemics is elevated in most crises throughout their duration, it is typically highest in the first weeks and months, when sanitation, overcrowding and other risk factors are most severe. In situations of sudden mass population movement to camps or other temporary settlements, outbreaks of measles, diarrhoeal diseases or meningitis can occur within days after displacement. Moreover, in emergencies existing national surveillance systems are often disrupted or not suitable to respond to the needs of the situation.

Given the above, EWARS should be established as soon as possible and certainly within the first 7d of an emergency being declared. The first Epidemiological Bulletin should be published within the first 14d and thereafter

should be issued on a weekly basis. Here there is no distinction in frequency between the acute and protracted phase, as the best hope for early containment of infectious disease outbreaks is immediate detection and very rapid sharing of information in order to mount a timely response.

Rapid establishment of EWARS can sometimes be arduous when dealing with large geographical areas and multiple participating health facilities and partners. Limited evidence suggests that the majority of outbreaks are detected through event-based reporting (i.e. direct reports of rumours or unusual clusters of cases by the community) or by immediate notification of alerts from an indicator-based system (i.e. immediate communication by phone or email when single case of an immediately- notifiable disease is reported by a health facility).

These methods do not rely on the systematic aggregation and reporting of weekly numbers of diseases and health events under surveillance, and can often therefore be used to support an early-warning function of EWARS whilst baseline weekly trends are being established for other diseases and health events (e.g. for malaria or acute respiratory infection). Other indicators, such as completeness and timeliness of reporting, are also important data to be collected by the system to monitor the performance of EWARS itself.

EWARS is implemented as a time-bound and geographically-limited system, to support disease surveillance and response in areas of a country affected by the crisis. Most countries operate a national disease surveillance system, though such a system may have low coverage or effectiveness even before the crisis, and/or may be heavily disrupted by the crisis itself. It is essential that the EWARS maintain a close relationship with any pre-existing national disease surveillance system, to ensure the two systems are interoperable and can exchange data. Moreover, EWARS implementation may be an opportunity to strengthen national surveillance even after the crisis is over. For example, Pakistan's national Disease Early Warning System has evolved directly from initial versions put in place during displacement and flooding emergencies. Similar in Fiji in 2016, the WHO EWARS was initially established to respond to Tropical Cyclone Winston but has subsequently been adopted as a national EWARS to support future emergency responses. Therefore, the default expectation should be that the EWARS, or components of it, transition under Ministry of Health or other health authority management, rather than being discontinued.

The implementation of a HMIS does not obviate the need for an EWARS, as the two services are complementary and have limited overlap. Conversely, EWARS is not designed to provide data for monitoring health service utilisation, coverage or quality, for which a HMIS is required.

4.5 Population mortality estimation

Measuring population mortality is always advantageous, as it provides an ultimate metric of physical health and is arguably the single most important measure of health status. As such, mortality estimation should never be set aside by default in a HC response.

However, the considerable effort, cost and technical expertise required to produce robust and interpretably precise mortality estimates means that this service is not doable with core resources available to HCs, and instead requires a supplementary budget (usually at least 25,000 USD, often more), operational

support (for transport, hiring surveyors, security, etc.) and dedicated epidemiological and statistical expertise. For example, carrying out a crisis-wide mortality survey would typically entail about one month of intense activity, hiring dozens of interviewers, office space, vehicle rental, negotiation with communities, and daily field work in remote locations. The harm of conducting an under-resourced and thus sub-optimal estimation exercise can be very substantial, as the resulting inaccurate estimate may influence major donor or agency decisions. In armed conflict settings, mortality estimates have also sometimes attracted controversy and political hostility, either locally or internationally: they therefore require careful and politically savvy management. In light of the above, the decision on whether and when to carry out mortality estimation should be taken carefully. Estimation should be attempted if one or more of the five conditions listed in **Table 5** are met.

Condition 1 is opportunistic, reflecting the relative feasibility of data collection in camp-based or urban populations; conditions 2-5 refer to the main possible uses of mortality information. The table also recommends methods, timing and stratification corresponding to each criterion. If more than one condition is met, the choice of method, timing and stratification should be such as to satisfy as many of the intended uses of the estimates as possible.

Table 5. Summary guidance to determine whether, when and how to estimate population mortality.

CONDITIONS	CHOICE OF METHOD	TIMING AND FREQUENCY	STRATIFICATION
1. The affected population lives in an urban or camp setting, and is easily accessible (irrespective of additional criteria below).	Prospective surveillance, coupled with ongoing rapid population census by home visitors (and, if feasible, anthropometric screening or other household data collection).	First data within 1 mo; weekly reporting in the acute phase, but in small population units (approximately <50,000), chance fluctuation may result in spikes or declines that confound interpretation: in these situations, monthly frequency is best.	By age group (<5y, ≥5y); by neighbourhood or camp sector.
2. The PHSA and other available information do not enable clear benchmarking of the severity of the crisis' effects on public health, such that it is unclear how many health resources to allocate to the crisis, relative to other sectors or crises.	Retrospective survey (approx. 3mo recall period) or prospective surveillance (less feasible outside camps or urban areas). Other methods based on key informants may be appropriate.	As soon as possible once the criterion is met. Survey estimates should be published no later than 7d after the end of data collection. Surveys should be repeated on a quarterly basis, if possible and still deemed useful. If prospective surveillance is done, see above.	By age group (<5y, ≥5y), and large geographic sub-division if relevant (but only if resulting sample sizes are feasible and would not compromise quality).
3. Even though the public health picture is clear, mortality estimates could still improve assistance to beneficiaries, by supporting advocacy for increased funding and support.	Retrospective survey (3-6mo recall period) or prospective surveillance. Alternative methods based on statistical modelling of available data may be possible, but are statistically intensive.	As soon as possible once the criterion is met. Survey estimates should be published no later than 14d after the end of data collection. If prospective surveillance is done, see above.	By age group (<5y, ≥5y), and large geographic sub-division if relevant (but only if resulting sample sizes are feasible and would not compromise quality).

4. Mortality estimates could improve protection of beneficiaries by better characterising the impact and patterns of attacks against civilians.	Retrospective survey (recall back to start of conflict, but no farther than 2-3y), with s focus on violent trauma deaths and their circumstances (e.g. type of weapon, perpetrator). As a complement, prospective registration of reported violent deaths, their circumstances and perpetrators.	As soon as possible once the criterion is met. Repeat estimation once yearly, if warranted.	By gender and age group (including military age cohorts), and large geographic sub-division and/or phase in the crisis if relevant. Generally requires large sample sizes.
5. Mortality estimates are sought for investigation of war crimes and violations of human rights or international humanitarian law, or for the purpose of historical documentation.	Retrospective survey, as above. Alternatively, registration of reported violent deaths as above, with capture-recapture analysis to estimate totals (requires extensive data management and statistical expertise).	At the end of the crisis or conflict, or sooner if an investigation explicitly requests mortality data.	By gender and age group (including military age cohorts), and large geographic sub-division and/or phase in the crisis if relevant. Generally requires large sample sizes.

Before going ahead with mortality estimation, it is imperative that three further conditions are carefully verified, and are *all* met:

6. It is plausible that findings would improve health or protection for beneficiaries.
7. Quality mortality estimation is feasible given local conditions, and resources and expertise have been secured.
8. There is a clear, agreed plan for disseminating and acting upon findings.

Mortality estimation may be combined with anthropometry and vaccination coverage estimation, and an attempt should be made to coordinate these services. By contrast, in most settings, and particularly where people mainly die at home or without a clear medical diagnosis, it is not appropriate to investigate causes of death in mortality surveys or surveillance (other than a simple distinction between violent and non-violent causes), unless the WHO-recommended verbal autopsy method is implemented, which, though automated in analysis, entails much longer questionnaires and considerably more training of interviewers. This method, however, should be considered where feasible, as it enhances the usefulness of mortality findings by informing disease control priorities.

4.6 Surveillance System for Attacks on Health Care (SSA)

A SSA system should be implemented in crises where at least one attack against health workers, assets or infrastructure has been reported. The system should generate data within 1mo of the first reported attack taking place. Earlier implementation may be warranted if attacks are very frequent and suggest a systematic military tactic.

In order to accumulate sufficient information to present trends and patterns of attacks, monthly (acute phase) or quarterly (protracted phase) bulletins are appropriate. However, the HC should immediately disseminate information generated by the system in cases of very alarming attacks or where the

information can potentially safeguard lives or assets. Systematic immediate dissemination of data to interested parties is discouraged, as the system requires careful validation and triangulation of reports, which may take a few days.

As for EWARS, the SSA system heavily relies on reporting by health facilities and partners, and thus requires their buy-in and, if applicable, clear and stringent procedures to safeguard the confidentiality of data or their providers. A SSA system should not be implemented without simultaneously agreeing, as a HC partnership, on a plan for how to disseminate information on attacks, and how to use it for advocacy and improved security provisions for health workers, assets and infrastructure. This will typically require interaction with the Protection Cluster, the humanitarian leadership structure, human rights organisations, and possibly parties to the conflict.

The SSA system should be discontinued if attacks clearly cease, and the external environment suggests a permanent improvement in security (e.g. as a result of a peace accord). However, the decision to discontinue the system should be taken in concert with HC partners and other important stakeholders (e.g. human rights or national medical associations).

4.6 3W Matrix

A 3W Matrix should be established immediately, as the very first PHIS priority after a HC becomes operational. On a weekly (acute phase) or monthly (protracted phase) basis, the 3W Matrix should be updated and published after ensuring data are up to date and error-free. However, 3W data entry is the responsibility of HC partners and should be done as soon as the partner's health activities change. Information from the 3W should be communicated and coordinated with OCHA, as it will feed into the multisector 3W.

While the 3W matrix will typically be discontinued when the HC is deactivated, an opportunity may arise to hand it over to any national coordination structure that replaces the cluster system (e.g. a government emergency management unit).

4.7 Partners' List

The Partners' List should be initiated immediately, as a complement to the 3W Matrix. The list should be updated each time a new partner joins the HC or whenever the agency's designated HC representative's details change. Turnover of people and duties warrants frequent updates, as the Partners' List is the master database to establish mass email lists, phone trees, social media groups, etc. In armed conflict or other politically sensitive situations, the HC may need to provide assurances to partners and/or establish a policy to safeguard personal identifiable information (e.g. names, addresses, contact details).

When a HC is deactivated core coordination functions are generally transferred to the government health sector – or they may be transferred to another body. To ensure an effective emergency coordination structure is left in place after deactivation it is often necessary to share details of operational HC partners in country with the body that takes over responsibility for coordination. The HC should clarify with all partners their intention to remain in

country and get approval in writing that they are happy for their details to be shared with the coordination structure taking over from the HC. Where partners are not happy for some or all personal details to be shared this must be respected- and relevant personal information related to that agency destroyed.

The Partner's list can be managed in PRIME, and individual partners can add/remove contacts of the colleagues they want included in the lists, as well as use the lists as mailing lists.

4.8 HeRAMS

The HeRAMS service should be initiated within the first month after the emergency starts. If the HC's PHIS workload is very high, it is acceptable to focus on the HeRAMS services module first, and add the infrastructure and health staff modules around the 3mo time point.

In order for HeRAMS to be set up, a baseline database of health service delivery points (geo-referenced location wherever possible, type) needs to be established, either based on pre-crisis information (almost always available from local health authorities, though not always geo-referenced), or on systematic assessment by HC partners (e.g. site visits): the burden of collecting and validating this baseline should not be underestimated, and work on assembling it should thus initiate as soon as possible after HC activation. This standard HC database is also necessary for other services (3W, EWARS, MVH, HMIS). However, HeRAMS initiation need not be held up by gaps in the baseline of health service delivery points: the system should be set up and HC partners should enter baseline data on at least the delivery points they either assess or support, or have information on, and update such data.

After baseline data are inputted, changes in service functionality should be updated on the database immediately, and HC IMOs should consolidate these into new updates on a monthly (acute phase) or quarterly (protracted phase) basis. HeRAMS output maps and other information products should become a recurring centrepiece of HC meetings, as the basis for partners to identify and react to geographic and thematic gaps in a coordinated way. Furthermore, HeRAMS information should be the main basis for monitoring the extent to which the HC-recommended package of health services at different levels of the health system, is, in fact, being offered to the population.

4.9 HMIS

A HMIS system, or components of one (e.g. standardised forms and data collection) may or may not be implemented by individual agencies supporting health services. The work burden of helping these agencies to adopt a standardised HMIS, and managing aggregation, validation and analysis of data from multiple agencies on an ongoing basis, is considerable, and entails extensive interaction with HC partners as well as expertise in the main software application used (DHIS2).

In light of the above, the HMIS service should be activated only if the following conditions are met:

- There is willingness and/or demand by more than one operational agency, and/or local health authorities, to receive HC support on and standardise their HMIS; these agencies understand both the work burden and benefits (increased efficiency, improved data for real-time action and accountability) of a standardised HMIS;
- Other core and required context-specific services are established and can be maintained to standard, even if HMIS work gets underway.

Ideally, at least a light, initial version of a HMIS, shared by all HC partners, should be rolled out by day 14 after the emergency's onset. As conditions stabilise (3-6mo into the response), a more complete version of HMIS, using DHIS-2 as the software platform, should be introduced. HMIS could also be introduced later in the response timeline, as conditions allow: however, as agencies become established, they may develop and heavily invest in their own systems, and may thus be less willing and able to shift to a uniform HMIS.

4.10 Vaccination Coverage Estimation

An estimate of vaccination coverage may be needed in a crisis (i) to evaluate a recently conducted mass vaccination campaign (either preventive, or reactive in response to an outbreak), or (ii) to monitor routine vaccination (Expanded Programme on Immunisation, EPI) services. Vaccination coverage is typically not measured ahead of preventive or reactive campaigns, as the decision to conduct these is time-pressured and taken on a no-regrets basis based on available epidemiological and coverage information, including any pre-crisis estimates extracted during secondary data review.

Similarly, the decision to resume or strengthen routine vaccination would be taken based on data on vaccination service functionality (e.g. HeRAMS); an exception to this is when there is insufficient information to decide whether to extend vaccination to older age groups not usually included in the non-crisis EPI schedule, in a catch-up strategy: in such a case, survey-based vaccination coverage estimates in older age groups may be warranted. Administrative estimates may also aid in the design of an EPI support project, by further improving geographic strengthening.

Table 6. Summary of guidance for vaccination coverage estimation.

PARAMETER	PURPOSE OF VACCINATION COVERAGE ESTIMATE	
	Monitor routine vaccination	Evaluate a mass campaign
Timing of estimate	Ideally, an initial estimate should be produced at least 2mo before resumption or reinforcement of routine vaccination, so as to improve geographic targeting of the programme, and/or decide on a catch-up strategy to vaccinate older age cohorts. Thereafter, estimation should be monthly if the administrative method is used; if the survey method is used, a follow-up estimate should be issued 6mo after initiating the programme, after 12mo and thereafter on a yearly basis.	Within 1mo following the end of a preventive mass campaign. Within 7d following the end of a reactive mass campaign.
Method	The administrative method should always be applied for comparison purposes, but should only be used as the main estimation method if the following conditions are met: (i) there is an accurate estimate of the health catchment population, updated to reflect any recent in- or out-migration; (ii) the pre-crisis age structure has not substantially changed; (iii) the reliability of activity data at vaccination points is regularly audited by an independent agency (e.g. the Red Cross, WHO or another party), and is judged to be high. Alternatively, the survey method should be used. A survey should also be conducted if there is a need to establish routine vaccination coverage among older age cohorts (≥ 1 y) prior to EPI programme resumption or reinforcement.	
Geographic stratification	If the administrative method is used (usually utilising HMIS data), it should be possible to track coverage over time for the catchment area of each EPI facility. At a minimum, coverage by district or other relevant health administrative sub-division should be measured.	If a survey is done, the sample size should be calculated so as to generate explicit stratum estimates for all-age population units of <100,000, or other obvious homogeneous units. Small-area samples, however, needn't be very precise and may instead be analysed to provide a binary classification for the population unit ^{4,5} If the survey is done in exceptionally difficult conditions, it may be best to avoid geographic stratification and focus on delivering a high-quality single estimate for the entire target population. Geographic differences may be investigated anecdotally or through campaign data by site.
Antigens to include in estimation	Measles (≥ 1 dose) and pentavalent (HepB-Hib-DPT: ≥ 1 dose as well as full priming dosage of ≥ 3 doses); coverage of these antigens should be taken as a proxy for that of the other EPI vaccines. If the survey is done in exceptionally difficult conditions, measles alone is acceptable, and the coverage for all other antigens should be assumed to be no higher than that estimated for measles.	All antigens offered in the campaign; ask about receipt of ≥ 1 dose as well as full dosage, in the case of a multi-dose/round campaign.

⁴ Minetti A. et al. [Performance of small cluster surveys and the clustered LQAS design to estimate local level vaccination coverage in Mali](#). Emerging Themes in Epidemiology 2012; 9(1):6

⁵ Bilukha OO, Blanton C. [Interpreting results of cluster surveys in emergency settings: is the LQAS test the best option?](#) Emerging themes in Epidemiology 2008; 5: 25

PARAMETER	PURPOSE OF VACCINATION COVERAGE ESTIMATE	
	Monitor routine vaccination	Evaluate a mass campaign
Age range and stratification for estimate	<p>The initial estimate (see above) should be for the age group <1y, as well as for older age cohorts (by year, or at least 1-4y) if there is insufficient information to decide on a strategy to catch up these older age groups.</p> <p>All subsequent estimates should be for the age group <1y; however, if follow-up estimates are obtained through a survey, older age cohorts may also be included (e.g. <1y, 1-4y).</p>	<p>Same age range as targeted in the campaign; if epidemiologically relevant, or there are concerns about age or gender differences in vaccine uptake, sample size should be calculated to explicitly stratify estimate for a few age groups (e.g. <5y, 5-14y, ≥15y), or by gender.</p>

Operational Indicator Monitoring (OIM)

Because OIM relies on data from other sources, it should be put in place after other services are in place. Before committing to implement OIM, the feasibility of extracting the required secondary data (and whether partners are willing to share these) should be established.

OIM is not essential for the public health response and thus should not be so burdensome that it prevents IMOs from focussing on core services. The list of key indicators tracked by OIM should be small. As OIM data are meant for top-line communication and humanitarian dashboard tracking, IMOs should not devote as much time to verifying these data as for services that have a more direct impact on public health action.

4.11 Health Cluster Bulletin

The first issue of the Health Cluster Bulletin should be published within the first 48h, even if in this early phase substantial information gaps remain, and the structure of bulletin itself may be a summary version of a typical Health Cluster Bulletin (see Chapter 2). Initiating a bulletin helps to establish the presence of the HC, and motivates partners to participate actively and share information. Thereafter, a weekly (acute phase) or monthly (protracted phase) update are sufficient, though exceptional events (e.g. a sudden emergency within the crisis) may warrant a special, immediate issue deviating from the usual format.

4.12 Ad hoc Infographics

The capability of the HC to produce on-demand infographics (e.g. special health maps or data dashboards) should ideally be established at the onset of the emergency, and at the latest by day 7 into the emergency, as demand for information and visual aids to coordination will quickly accumulate with the arrival of new partners and the media. Only a few requests should be treated with urgency (24h turnaround); the remainder should be processed within approximately one working week, depending on the type of emergency.

It is imperative that the workload of producing infographics not impede IMOs from setting up and maintaining other core services. IMOs should feel empowered to question either the urgency or relevance of any infographics request, and suggest alternative solutions. Similarly, HCCs should help IMOs to manage and forward-plan such requests, and always consider the urgency and likely usefulness of a desired infographic, in light of other priorities. At all times, the default solution should be to use the automated infographics functionalities of software applications.

5. RESOURCE AND STAFFING REQUIREMENTS

This chapter details resources and staff required by activated HCs to deliver PHIS with the adequate timeliness and quality. It is assumed throughout this chapter that these inputs need to be in place throughout cluster activation (though staffing needs may fluctuate: see below), and thus readily deployable on immediate notice when a new cluster is activated. The chapter should accordingly be the basis for budgeting HC work and for hiring and managing pools of deployable HC coordination staff.

5.1 Resources needed

All activated HCs will require the following physical infrastructure, communications and computing resources in order to successfully deliver all PHIS services:

- A dedicated, quiet office space for IMOs;
- A dedicated HC printer, scanner and photocopier;
- Ready access to stationery, or a stationery kit comprising the following items:
 - Pens – blue, black, red;
 - Highlighter;
 - Plain paper (for printer);
 - Notebooks, ruled paper, binder books;
 - Stapler and staples;
 - Paper clips;
 - Hole punch & equivalent binders;
 - Folder dividers;
 - Filing trays;
 - Post-It notes;
 - Printer toner;
 - Envelopes;
- Batteries (for electronic equipment, for wireless keyboard and mouse);
- Calendar, wall planner;
- Whiteboard / dry erase markers;
- Whiteboard eraser and cleaning fluid;
- USB sticks x 50
- WHO EWARS kits: 1 kit can establish an EWARS coordination hub at a central level, as well as field-based surveillance in 50 health centres covering a population of approximately 500,000 people.
- A stable internet connection at country level, and at least an intermittent or satellite-based connection at field level, with a portable solution (e.g. dongles or tethering from smart phone connections);
- One dedicated laptop computer per IMO (at least 250GB drive and 4GB RAM), pre-loaded with required software (Microsoft Office, Stata, R, ArcGIS, Tableau, Skype, Lync or similar communications application) and encryption-enabled;
- A dedicated vehicle for IMOs may be required

- Note that the above resources are not sufficient to implement mortality estimation or vaccination coverage surveys: these services require separate budgets, resources and staff.

5.2 Staffing requirements

Table 7 quantifies approximately the expected level of effort by HC-dedicated IMOs, as full-time equivalents (FTEs) of an individual, in order to deliver each stage of each service. This is for the general scenario of a large HC response (defined arbitrarily as involving ≥ 20 HC partners). It is expected that FTE requirements for a smaller HC scenario (e.g. < 20 HC partners, including sub-national clusters) would be about half.

The table is intended as a guide for adequate staff resourcing of activated HCs, on the basis of what is required to actually deliver the services expected with acceptable timeliness and quality.

Taken together, these estimates add up to a minimum of 1 IMO during the first 48h since emergency onset, 2 by 7d, and a peak of at least 5 IMOs around the 14d mark (see **Table 8**). In a smaller HC scenario, about half these totals would typically be required.

It is essential that, at any time, IMOs remain entirely dedicated to HC work, and are not asked to also fulfil other functions, e.g. internal WHO information management.

In addition to IMOs, an **epidemiologist** (1 FTE) may need to be deployed to implement population mortality estimation and/or vaccination coverage estimation.

Table 7: Level of effort for IMO's working in a large HC scenario, by service and stage of delivery. Units are Full Time Equivalents (FTEs)

	SERVICE	LOCAL ADAPTATION	SETUP	DATA COLLECTION	ANALYSIS	INTERPRETATION	DISSEMINATION	ACTION
HEALTH STATUS AND THREATS FOR AFFECTED POPULATIONS	Public Health Situation Analysis	n/a	n/a	0.2 (one-off)	n/a	0.05 (one-off)	0.05 (one-off)	0.0
	Rapid Assessment	0.2 (one-off)	0.5 (one-off)	0.0	0.5 (one-off)	0.05 (one-off)	0.05 (one-off)	0.0
	Humanitarian Emergency Settings Perceived Needs (HESPER) Scale	0.1 (one-off)	0.5 (one-off)	1.0 (one-off)	0.5(one-off)	0.05 (one-off)	0.05 (one-off)	0.0
	Early Warning Alert and Response System (EWARS)	0.1 (one-off)	1.0 (one-off)	0.0	0.2 (ongoing)	0.05 (ongoing)	0.05 (ongoing)	0.0
	Population mortality estimation	0.1 (one-off)	0.5 (one-off)	0.5 (one-off)	0.1 (one-off)	0.05 (one-off)	0.05 (one-off)	0.0
	Surveillance System for Attacks on Health Care (SSA)	0.1 (one-off)	0.5 (one-off)	0.0	0.1 ongoing)	0.05 (ongoing)	0.05 (ongoing)	0.0
HEALTH RESOURCES AND AVAILABILITY	Who, What, Where (3W) matrix	0.1 (one-off)	0.3 (one-off)	0.0	0.1 ongoing)	0.05 (ongoing)	0.05 (ongoing)	0.0
	Partners' List	n/a	0.1 (one-off)	0.1 ongoing)	n/a	n/a	0.0	0.0
	Health Resources Availability Mapping System (HeRAMS)	0.1 (one-off)	1.0 (one-off)	0.0	0.4 (ongoing)	0.05 (ongoing)	0.05 (ongoing)	0.0
HEALTH SYSTEM PERFORMANCE	Health Management Information System (HMIS)	0.2 (one-off)	1.0 (one-off)	0.0	0.3 (ongoing)	0.1 (ongoing)	0.1 (ongoing)	0.0
	Vaccination coverage estimation	0.1 (one-off)	0.5 (one-off)	0.5 (one-off)	0.1 (one-off)	0.05 (one-off)	0.05 (one-off)	0.0
	Operational Indicator Monitoring	0.1 (one-off)	0.5 (one-off)	0.2 ongoing)	0.1 ongoing)	0.05 ngoing)	0.05 (one-ff)	0.0
	Health Cluster Bulletin	0.1 (one-off)	n/a	0.2 ongoing)	n/a	n/a	0.05(ongoing)	0.0
	Ad hoc Infographics	n/a	n/a	0.2 (ongoing)	0.1 (ongoing)	n/a	0.05 (ongoing)	0.0

Table 8: IMO staffing requirements for a large HC scenario, by time since emergency onset.

PRE-EMERGENCY	24H	48H	7D	14D	1MO	3MO	6MO
Core	0.5 (one-off)	0.55 (one-off) 0.3 (ongoing)	1.1 (one-off) 0.9 (ongoing)	3.8 (one-off) 1.2 (ongoing)	1.1 (one-off) 1.2 (ongoing)	1.1 (one-off) 1.7 (ongoing)	1.7 (ongoing)
Additional				1.2 (one-off)	0.6 (one-off) 0.5 (ongoing)	1.8 (one-off)* 0.85 (ongoing)	1.8 (one-off) * 0.85 (ongoing)
Context-specific					0.6¶ ± 1.3† ± 1.3‡ (one-off)	1.3† ± 1.3‡ (one-off) 0.2¶ (ongoing)	1.3† ± 1.3‡ (one-off) 0.2¶ (ongoing)
Total IMOs needed (rounded)	1	1	2	5 (min.) 6 (max.)	2 (min.) 7 (max.)	3 (min.) 8 (max.)	2 (min.) 7 (max.)

¶ If Surveillance System for Attacks on Health Care (SSA) is implemented.

† If population mortality estimation is implemented (expected to be some time during the first 6mo).

‡ If vaccination coverage estimation is implemented (expected to be some time during the first 6mo).

* Depending on whether HMIS full version is implemented after 3mo or 6mo.



6. TECHNICAL COMPETENCIES FOR PHIS IN ACTIVATED CLUSTERS

6.1 Scope of this competency framework

This chapter lists technical competencies required of cluster staff to effectively discharge activated health clusters' PHIS function. As such, competencies below apply varyingly to the following roles:

- **Information Management Officer** or IMO;
- **Health Cluster Coordinator** or HCC;
- **Public Health Officer** or PHO;
- **Epidemiologist** or Epid: while this is not a cluster-specific role, deploying this role to health clusters, on a time-bound basis, will occasionally be required to design, implement and/or analyse specific PHIS for which in-depth technical expertise in infectious diseases, study methods and statistical analysis is a prerequisite. Note that one of the possible career progression options for an IMO is to become recognised as an epidemiologist.

The **intended applications** of this competency framework include:

- Recruiting staff into cluster roles on the basis of expected competencies (IMOs and epidemiologists only);
- Defining learning outcomes for any capacity development programme for PHIS, and attributing these outcomes to different learning activities (all cluster roles);
- Appraising and managing cluster staff performance against an agreed set of competencies (all cluster roles);
- Helping IMOs and other current or prospective cluster staff, as well as technical specialists working outside of cluster coordination, to determine steps and identify learning resources for their own professional or career development. The PHIS expected of activated clusters, as outlined in previous chapters of this document, are the building blocks of this competency framework, i.e. competencies listed below reflect requirements for different cluster roles to effectively support and/or deliver each service. Section 2.2 specifies responsibilities of each cluster role within each service, while Section 5.2 provides guidance on staffing requirements.

6.2 Types of competency

Given the above, this competency framework distinguishes among the following types of competency:

- **Baseline technical competencies**, those expected of cluster staff when they are hired into any field cluster role: these may have been acquired

through formal education, private study, professional experience, on-the-job training and coaching / mentoring. Rough equivalencies in terms of educational attainment and professional experience are suggested below; however, some candidates may be able to demonstrate baseline competencies even without meeting these equivalencies – and vice versa. Staff should always be recruited on the basis of competency-based interviews.

- **Common technical competencies**, required for cluster staff to lead or support in the delivery of a variety of PHIS
- **Service-specific technical competencies**, unique to each service, and most proximally mapped to cluster staff's day-to-day responsibilities in respect to PHIS. For IMOs, these are for the most part related to design, implementation and analysis. For HCCs and PHOs, these competencies pertain to the commissioning of specific services, and, critically, to interpreting and acting upon information.

It is expected that staff would map their skills against the competency framework, and identify areas most relevant to their work which that they would need to improve on, or skills they would like to acquire, as part of a professional development pathway.

As such, any capacity development programme for cluster staff should be designed to support staff in acquiring common and service-specific competencies but not baseline competencies.

6.3 Baseline technical competencies

Note: No baseline PHIS-specific technical competencies are expected for HCCs and PHOs.

CODE	BASELINE COMPETENCY	IMO	EPID
B1	<p>Apply strong understanding of database structures to build and maintain high-quality, robust databases, while proficiently using major data management applications, including Microsoft Excel and Microsoft Access.</p> <p>CV evidence:</p> <ul style="list-style-type: none"> ▪ Undergraduate or post-graduate degree in a discipline driven by quantitative data (e.g. statistics, software engineering, geography); or ▪ Previous experience as main developer and manager of at least one large dataset 	Y	Y
B2	<p>Able to produce technical reports or papers using succinct, clear language, with a coherent structure and appropriate use of tables and figures, relying on the appropriate type of infographic.</p> <p>CV evidence:</p> <ul style="list-style-type: none"> ▪ At least 2 peer-reviewed papers or public reports as main author, presenting and discussing quantitative information (assess quality of writing samples) 	Y	Y

CODE	BASELINE COMPETENCY	IMO	EPID
B3	<p>Understand current priorities in global health and articulate how the main causes of burden of disease and mortality differ across age groups and regions of the world.</p> <p>CV evidence:</p> <ul style="list-style-type: none"> ▪ Undergraduate or post-graduate degree in public health or epidemiology, with considerable global health coursework; or ▪ Previous experience of field work in a global health setting (at least 2 years), either research- or service-focussed (e.g. as a health information manager) 	Y	Y
B4	<p>Recognise the different typologies of crisis (armed conflict, displacement, natural disaster, etc.) and the key ways in which humanitarian action differs in these.</p> <p>CV evidence:</p> <ul style="list-style-type: none"> ▪ Previous coursework, including short courses, on humanitarian work; or ▪ Previous experience of field work in at least one crisis-affected setting 	Y	Y
B5	<p>Recognise the following generic features of health systems in resource-constrained settings: (i) different levels of care provision (from community to tertiary) and how they connect in a continuum; (ii) the difference between preventive and curative health services; (iii) typical challenges including skilled health worker shortage, low utilisation and financing problems.</p> <p>CV evidence:</p> <ul style="list-style-type: none"> ▪ Undergraduate or post-graduate degree in public health or epidemiology, with considerable global health coursework; or ▪ Previous experience of work in a health facility or other public health service role, including in high-resource settings 	Y	Y
B6	<p>Able to investigate a suspected epidemic using basic descriptive and analytical epidemiology, applying modern epidemiological methods, and understanding how to connect field data to a transmission dynamic model.</p> <p>CV evidence:</p> <ul style="list-style-type: none"> ▪ Post-graduate degree in public health or epidemiology, with considerable coursework on infectious diseases, epidemiological methods and statistics; and ▪ Evidence (peer-reviewed papers or public reports) of at least two instances of fieldwork to conduct investigation and/or surveillance of an epidemic 		Y

6.4 Common technical competencies

CODE	COMPETENCY	HCC	PHO	IMO	EPID
	Basic				
C1	Understand the humanitarian aid architecture, the cluster approach and inter-cluster coordination of public health information.	Y	Y	Y	
C2	Understand the global standards for public health information services in activated clusters, translating these into concrete work plans and knowing when to commission context-specific services.	Y	Y	Y	
C3	Able to formulate, select, and interpret SMART public health indicators.	Y	Y	Y	Y
C4	Able to identify and triangulate already available sources of population estimates and understand the effect of uncertainty in denominators on interpretation of public health information.			Y	Y
C5	Able to design a survey or assessment questionnaire, applying good practices for question formulation and layout.			Y	Y
C6	Able to implement a questionnaire on the field, by selecting and implementing the appropriate data collection platform (paper-based or electronic) and carrying out steps for validation and field testing.			Y	Y
C7	Able to use available public health information to compose a general picture of risks, gaps and priorities.	Y	Y		
	Advanced				
C8	Able to design, implement and analyse population sample surveys, including with complex sampling designs.			Y	Y
C9	Able to source available geo-referenced data sources and/or set up ad hoc collection of geo-referenced data so as to implement geographic information system (GIS) spatial analyses, using appropriate software.			Y	Y
C10	Able to design, implement and analyse specific field data collection to rapidly estimate population size for planning purposes, when available sources do not appear robust.			Y	Y
C11	Able to use open-access software solutions to develop and manage simple websites in order to enhance use of information by partners.			Y	

6.5 Service-specific technical competencies

SERVICE	CODE	COMPETENCY	HCC	PHO	IMO	EPID
Public Health Situation Analysis	S1.1	Able to use published literature and various online sources to identify relevant public health secondary information on the crisis-affected population, including key pre-crisis health status, disease risk and service availability.	Y	Y	Y	Y
	S1.2	Able to critically review secondary information for robustness and relevance.	Y	Y	Y	Y
	S1.3	Able to use robust and relevant public health information, secondary or primary, to identify key public health risks, gaps and priority public health actions.	Y	Y		
	S1.4	Able to compile the Public Health Situation Analysis into a succinct technical document, making appropriate use of tables and infographics and presenting clear recommendations.	Y	Y	Y	Y
	S1.5	Able to set up and maintain an accessible bank of secondary information and data used for the situation analysis.			Y	
Rapid Assessment	S2.1	Understand the methods for Multi-Sector Initial Rapid Assessment (MIRA).	Y	Y	Y	Y
	S2.2	Able to select appropriate health sector indicators to include in MIRA questionnaire design.	Y	Y	Y	Y
	S2.3	Able to critically review and interpret MIRA results to refine Public Health Situation Analysis.	Y	Y		

SERVICE	CODE	COMPETENCY	HCC	PHO	IMO	EPID
HESPER	S3.1	Understand the HESPER methods and how they may be adapted for a locally appropriate assessment.	Y	Y	Y	Y
	S3.2	Able to execute HESPER assessment, managing data appropriately and producing key analysis outputs.			Y	Y
	S3.3	Interpret HESPER findings so as to refine Public Health Situation Analysis, and identify appropriate actions.	Y	Y		
EWARS	S4.1	Able to identify priority epidemic syndromes, alert thresholds and participating health facilities for the local design of the EWARS.	Y	Y	Y	Y
	S4.2	Able to source and appropriately use the EWARS hardware kit, and configure the EWARS software application to match the local EWARS design.			Y	Y
	S4.3	Able to monitor and evaluate the performance of the EWARS, and identify remedial actions to improve the functionality of the EWARS itself.			Y	Y
	S4.4	Able to interpret EWARS alerts generated through indicator- or event-based triggers, and identify appropriate investigation and response actions, with the requisite timeliness.	Y	Y	Y	Y
	S4.5	Able to publish regular epidemiological bulletins that track old and new alerts and confirmed outbreaks.			Y	Y
	S4.6	Able to integrate EWARS with other Ministry of Health information systems, and hand EWARS over to the Ministry of Health responsibly.			Y	

SERVICE	CODE	COMPETENCY	HCC	PHO	IMO	EPID
Population mortality estimation	S5.1	Understand whether, when and why to undertake or commission estimation of population mortality, appropriately identifying resources and expertise required, and planning for how to use estimates.	Y	Y	Y	Y
	S5.2	Able to design statistically robust prospective surveillance or retrospective surveys for mortality, while controlling for bias and ensuring feasibility of data collection.			Y	Y
	S5.3	Able to analyse mortality data so as to compute statistically robust estimates.			Y	Y
	S5.4	Able to correctly interpret mortality estimates, communicating findings appropriately.	Y	Y		Y
	S5.5	Able to identify appropriate public health actions in response to mortality findings.	Y	Y		
Surveillance System for Attacks on Health Care	S6.1	Understand when a Surveillance System for Attacks on Health Care (SSA) is warranted	Y	Y		
	S6.2	Able to adapt and set-up the SSA application for local use.			Y	
	S6.3	Able to support local users on SSA data collection, transmission, and alert actions.			Y	
	S6.4	Able to verify SSA reports and manage MVH data with consideration of local sensitivities.			Y	
	S6.5	Able to identify appropriate advocacy and public health actions in response to SSA findings.	Y	Y		
Who, What, Where	S7.1	Able to adapt and set up the 3W application for local use, encouraging partners to feed in information.			Y	

SERVICE	CODE	COMPETENCY	HCC	PHO	IMO	EPID
	S7.2	Able to work collaboratively with partners to monitor, interpret and identify appropriate actions based on 3W data.	Y	Y		
Partners' List	S8.1	Able to initiate and maintain partners' contact list using a suitable platform.			Y	
HeRAMS	S9.1	Able to adapt and set up the HeRAMS application for local use, including the design of a locally-appropriate questionnaire.			Y	
	S9.2	Able to support local users on HeRAMS data collection, transmission, and partner-led data management and analysis.			Y	
	S9.3	Able to generate automated HeRAMS reports and summarise key findings using suitable infographics.			Y	
	S9.4	Able to use HeRAMS data to identify and act upon service provision gaps through timely advocacy and resource mobilisation through partners and donors.	Y	Y		
HMIS	S10.1	Understand the contextual need for a cluster-wide HMIS, based on the state of any local Ministry of Health HMIS and partner data needs.	Y		Y	
	S10.2	Able to identify locally appropriate HMIS indicators for different health services, from a global menu.	Y		Y	
	S10.3	Able to configure and set up an emergency generic HMIS application or DHIS-2 (in protracted scenarios) for local use, while specifying a streamlined data flow and attributing HMIS roles and responsibilities.			Y	

SERVICE	CODE	COMPETENCY	HCC	PHO	IMO	EPID
	S10.4	Able to support partners on HMIS data collection and on how to interpret and act upon HMIS data from health facilities they support.			Y	
	S10.5	Able to monitor the timeliness, completeness and quality of HMIS data collection, and identify remedial actions.			Y	
	S10.6	Able to interpret HMIS to update the Public Health Situation Analysis and identify appropriate actions.	Y	Y		
Vaccination coverage estimation	S11.1	Understand the contextual need for vaccination coverage estimation given existing information, including for which antigens and age groups estimates may be needed.	Y	Y		Y
	S11.2	Able to select the appropriate method for vaccination coverage estimation (administrative or survey-based), and identify opportunities to collect vaccination data through surveys planned for other purposes.			Y	Y
	S11.3	Able to implement the administrative method for vaccination coverage estimate, taking into account common pitfalls and sources of bias through appropriate sensitivity analysis.			Y	Y
	S11.4	Able to design a vaccination coverage survey using probability proportional to size, spatial or lot quality assurance sampling methods.			Y	Y
	S11.5	Able to interpret vaccination coverage estimates and identify appropriate actions.	Y	Y		

SERVICE	CODE	COMPETENCY	HCC	PHO	IMO	EPID
Operational Indicator Monitoring	S12.1	Able to select a shortlist of locally relevant key humanitarian health performance indicators, given local sources of secondary data.	Y	Y		
	S12.2	Able to adapt and set up the Operational Indicator Monitoring (OIM) application for local use.			Y	
	S12.3	Able to monitor trends in OIM data and identify appropriate actions.	Y	Y		
Health Cluster Bulletin	S13.1	Able to adapt the Health Cluster Bulletin template to generate a regular bulletin addressing the main components of the health cluster's action.			Y	
	S13.2	Able to compile data from different services and sources, using appropriate infographics, to compose the bulletin.			Y	
Ad Hoc Infographics	S14.1	Understand and apply appropriate data visualisation options to address specific infographics requests.			Y	
	S14.2	Able to produce dashboards for the entire cluster's activity or specific issues using appropriate existing applications.			Y	
	S14.3	Able to generate high-quality, easily interpretable maps that display data on health status and risks, health service availability and/or health system performance, broken down by appropriate administrative level.			Y	