GUIDANCE FOR AFTER ACTION REVIEW (AAR)

World Health Organization

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ABBREVIATIONS

AAR	AFTER ACTION REVIEW
EOC	EMERGENCY OPERATIONS CENTRE
EWARS	EARLY WARNING, ALERT AND RESPONSE SYSTEM
GOARN	GLOBAL OUTBREAK ALERT AND RESPONSE NETWORK
IGO	INTERGOVERNMENTAL ORGANIZATION
IHR	INTERNATIONAL HEALTH REGULATIONS
IMT	INCIDENT MANAGEMENT TEAM
NGO	NONGOVERNMENTAL ORGANIZATION
OCHA	OFFICE FOR THE COORDINATION OF HUMANITARIAN AFFAIRS
SPAR	STATE PARTY SELF-ASSESSMENT ANNUAL REPORTING
WHO	WORLD HEALTH ORGANIZATION

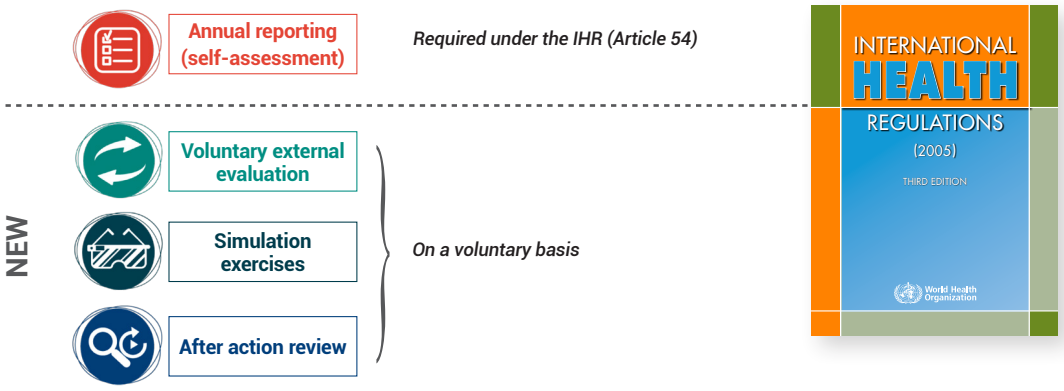
1. INTRODUCTION TO THE GUIDANCE FOR AFTER ACTION REVIEW (AAR) AND AAR TOOLKITS

1.1 PURPOSE OF THE GUIDANCE FOR AAR AND AAR TOOLKITS

The World Health Organization (WHO) developed this guidance document and the accompanying toolkits to assist Member States in planning, preparing and conducting after action reviews (AARs) for collective learning and operational improvement after a public health response.

The AAR is one component of the International Health Regulations (IHR) (2005) Monitoring and Evaluation Framework, as shown in Figure 1.1.

Figure 1.1 IHR Monitoring and Evaluation Framework



IHR Monitoring and Evaluation Framework post-2016:
- follows resolution WHA68.5 of the Sixty-eighth World Health Assembly
- noted by Sixty-ninth World Health Assembly
- endorsed by WHO Global Policy Group.

The four components of the IHR Monitoring and Evaluation Framework are explained in detail elsewhere (section 2.2) in this document.

It is critical to review and assess any actions taken as part of a public health response in order to capitalize on best practices, identify areas and actions for improvement, and promote individual and collective learning.

An AAR provides an opportunity to review the functional capacity of public health and emergency response systems and to identify practical areas for continued improvement. It can be implemented as part of the preparedness and response cycle illustrated in Figure 1.2.

Figure 1.2 After action reviews in the preparedness and response cycle

1.2 AUDIENCE FOR THE GUIDANCE FOR AAR AND AAR TOOLKITS

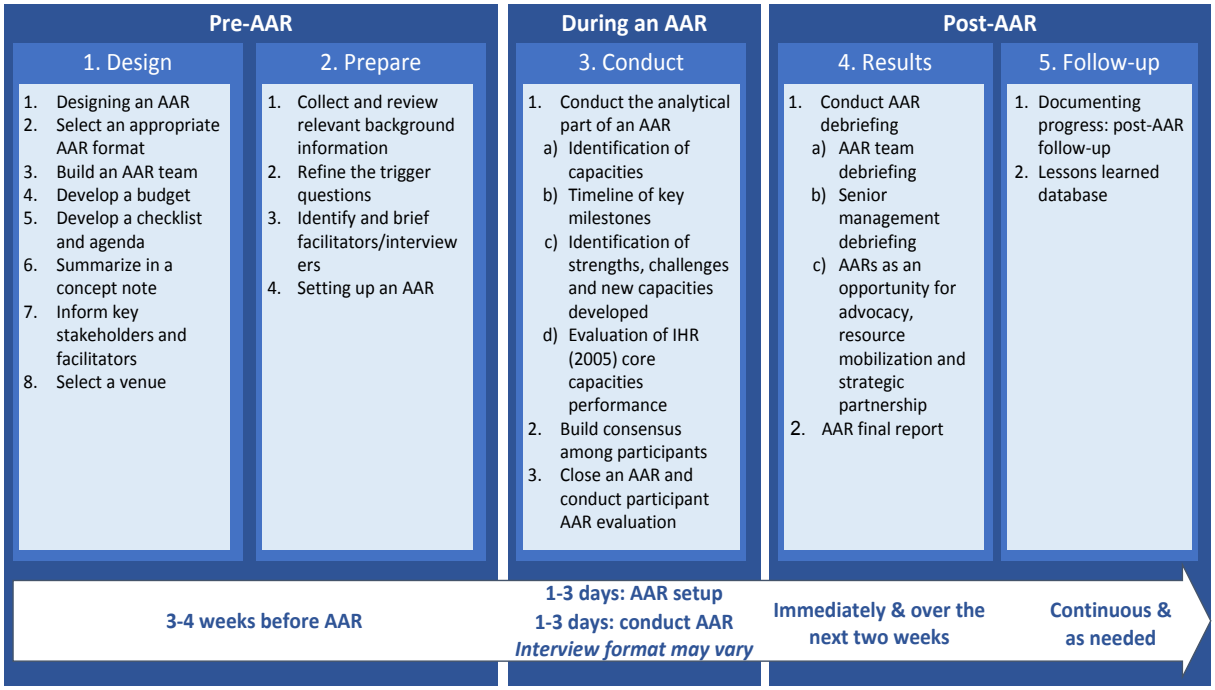
The guidance for after action review (AAR) and AAR toolkits are meant for public health practitioners who are planning for an AAR to review actions taken in response to an event of public health concern. These practitioners may include staff of ministries of health, government officials from other sectors, and staff of nongovernmental organizations (NGOs), international organizations, and WHO partner agencies.

Planners of AARs should bear in mind that each ministry, agency or organization is different. The principles presented in this guide should be adapted to the institutional culture, practice and needs around which the review is taking place.

1.3 STRUCTURE OF THE GUIDANCE FOR AAR AND AAR TOOLKITS

This guide provides a roadmap for AAR implementation (Figure 1.3). It is structured to follow the steps needed for a successful AAR, including designing, preparing, conducting, and following up on an AAR.

Figure 1.3 AAR planning roadmap



Accompanying this guide are several toolkits containing materials to support the planning of each step of an AAR. The detailed contents of all the toolkits are provided in Annex 2 of this document. The toolkits comprise the following:

- templates for developing, conducting and following up on an AAR;
- a checklist to support the step-by-step planning and implementation of an AAR;
- tailored guidance for facilitators;
- sample PowerPoint presentations to be used when conducting an AAR;
- a database of trigger questions.

2. INTRODUCTION TO AN AAR

2.1 WHAT IS AN AAR?

An AAR is a qualitative review of actions taken in response to an event of public health concern. An AAR is a means of identifying and documenting best practices and challenges demonstrated by the response to the event. An AAR seeks to identify:

- actions that need to be implemented immediately, to ensure better preparation for the next event;
- medium- and long-term actions needed to strengthen and institutionalize the necessary capabilities of the public health system.

An AAR is designed to be flexible. It can be adapted to fit the event under review, and the organization and systems involved. Its success hinges on the ability to bring relevant response stakeholders together in an environment where they can analyse actions taken during the response in a critical and systematic fashion, and identify areas for improvement.

Stakeholders involved in preparedness activities relevant to the event under review can also be invited to an AAR to assess the impact of preparedness on the response.

AARs are not intended to assess individual performances or competences, but rather to identify functional challenges that must be addressed, and best practices to be maintained.

An AAR offers participants an opportunity to translate their experiences from the response into actionable roadmaps or plans, which should then be incorporated into national planning cycles (for example, the health sector plan, the humanitarian response plan, or the national action plan for health security).

AARs can vary in scope and format, but all AARs should involve:

- a structured review of response activities;
- an exchange of ideas and an in-depth analysis of what happened;
- identification of what can be addressed immediately;
- identification of what can be done in the longer term to improve responses to the next event.

While various quantitative and qualitative evaluation methods can be used after a response, the added value of an AAR is its focus on collective learning and experience sharing, with emphasis on the knowledge of stakeholders. One way in which an AAR can add value is by turning tacit knowledge into learning, and building trust and confidence among team members. In this way, AARs can become a key aspect of an organization's internal system of learning and quality improvement, and can contribute to strengthening the capacity at the organization and country levels.

Furthermore, under the IHR (2005), the sharing of AAR results can reassure other countries' stakeholders, citizens and the global public health community that commitments to IHR are strong, and that measures are being taken to address any identified gaps.

The systematic implementation of activities or recommendations identified through an AAR across a ministry, or between sectors, communities, partners and other stakeholders, can help drive improvement.

AARs should ideally be conducted as soon as possible after an event or outbreak is declared over by the ministry of health or other authorized entity (or within three months). For protracted crises, multiple AARs can be conducted after each major phase or intervention. Similarly, for large-scale emergencies that involve many different capacities, separate AARs can be conducted for each major component of the response.

Generally, an AAR can be conducted following a response to any type of hazard, as described in the WHO Emergency Response Framework *(1)* (see Annex 3 on classification of hazards).

Whilst the AAR methodology described in this document can be used for any response, a specific guidance to conduct an AAR following the response to emergencies that were not caused by biological hazards can be found in Annex 4. This guidance can help the health sector to conduct an AAR to review its specific contribution to the multisectoral response and coordination.

2.2 AAR AND IHR MONITORING AND EVALUATION FRAMEWORK

The World Health Organization uses AARs as part of the IHR Monitoring and Evaluation Framework. This framework was developed in 2016 following the recommendation of the Review Committee on Second Extensions for Establishing National Public Health Capacities and on IHR Implementation *(2)*. The committee recommended that:

> States Parties should urgently … implement in-depth reviews of significant disease outbreaks and public health events. This should promote a more science- or evidence-based approach to assessing effective core capacities under "real-life" situations.

AARs focus on analysing a real-life event, providing a realistic assessment of the ability to implement IHR core capacities.

The IHR Monitoring and Evaluation Framework comprises a mixed approach of qualitative and quantitative data collection and analysis, as well as desk reviews and functional assessments of capacities for prevention, preparedness, detection and response. It has four components, one of which – State Party self-assessment annual reporting (SPAR) – is obligatory. The other three components – the voluntary external evaluation, the AAR, and the simulation exercises – are voluntary (see Figures 1.1 and 2.1).

The voluntary instruments complement the mandatory SPAR in that they provide a more detailed, comprehensive picture of Member State capacity under the IHR (2005). The SPAR and the voluntary external evaluation are based on quantitative metrics and are aimed at evaluating core capacities. AARs and simulation exercises are aimed at gauging the functional status of those core capacities. All four can inform monitoring and evaluation of the implementation, preparedness, and operational readiness of the national action plan for health security, and can guide for corrective actions (testing and strengthening).

The SPAR can serve to measure the current status of IHR capacities development, provide annual monitoring of progress in implementing the national action plan for health security, and can also inform and provide context while developing an AAR or a simulation exercise.

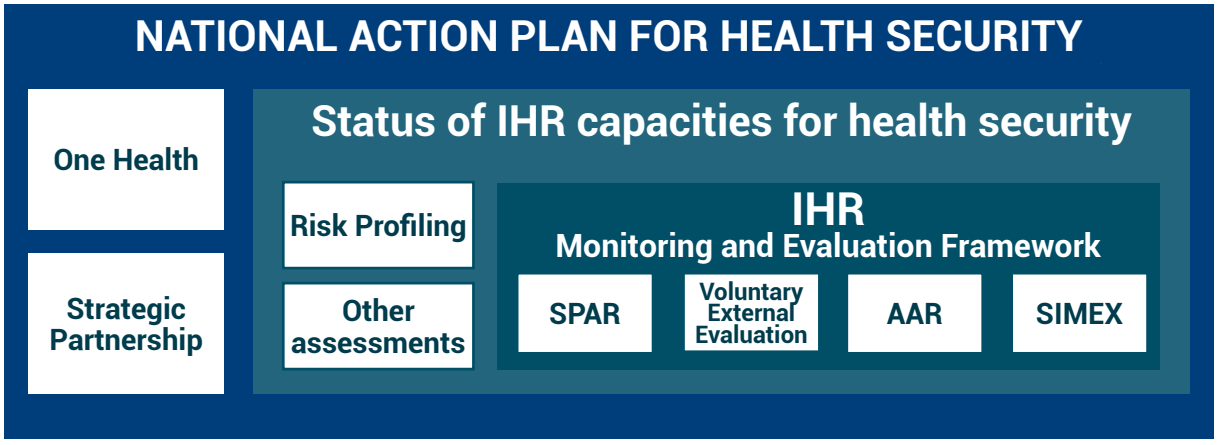
The voluntary external evaluation can measure the current status of IHR capacities for health security, and guide – with the support of external expertise – the priority actions required to strengthen capacities. The voluntary external evaluation can also inform an AAR and a simulation exercise if conducted before.

Combining the results of each assessment provides a detailed, comprehensive reflection of the status and functionality of a country's capacity to prepare, prevent, detect and respond to public health emergencies.

These findings can also be combined with the results of other assessments and risk profiling exercises to provide an even more detailed evaluation of the functional status of IHR capacities.

The evaluation findings of one or all components can serve as part of the basis for countries to develop and implement national multisectoral action plans using a "One Health" approach. These plans translate the priority recommendations of the various evaluations into actions for capacity-building to strengthen preparedness and response systems and to ensure that countries are operationally ready for public health risks and events.

Figure 2.1 Links to the IHR Monitoring and Evaluation Framework



The country implementation guidance on AARs and simulation exercises under the IHR (2005) Monitoring and Evaluation Framework, published by WHO, provides strategic and specific information on the criteria for initiating an AAR; guidance for developing recommendations and following up on implementation of activities proposed by participants; and guidance on sharing outputs through a reporting template *(3)*.

2.3 WHAT IS THE DIFFERENCE BETWEEN AN AAR AND A JOINT OPERATIONAL REVIEW?

The WHO Health Emergencies Programme supports the use of different types of reviews to assess the capacities and performance of WHO, Member States, and international partners to respond to health emergencies. Some of these reviews take place during an emergency to inform course correction or delivery against agreed response plans.

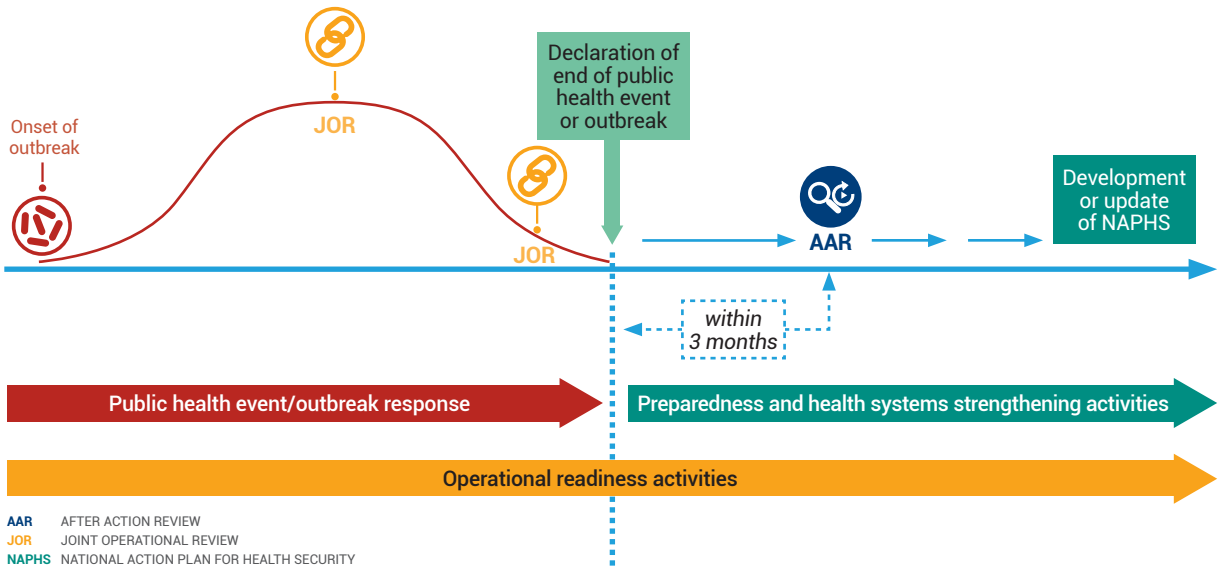
An AAR is a component of the IHR Monitoring and Evaluation Framework and is driven by Member States. In contrast, a joint operational review is a WHO-led process that focuses on international efforts by WHO and its partners to support ministries of health in responding to public health events or outbreaks.

The overall objective of a joint operational review is to ensure that the efforts and resources of WHO and its partners are aligned with the health emergency response plan. This involves reviewing the response against the strategic objectives within the response plan.

The joint operational review enables the integration of learning and corrective measures for current responses and where applicable future responses.

As indicated in Figure 2.2, joint operational reviews are conducted during the response to public health events or outbreaks, or at the end of the response. The AAR is conducted immediately after the public health event or outbreak is officially declared over by the ministry of health or other relevant authority.

Figure 2.2 Timeline for conducting joint operational reviews and AAR



2.4 WHAT ARE THE OBJECTIVES OF AN AAR?

An AAR is a review of all actions taken during the response to an event. The review aims to identify capacities in place before the response, any challenges that came to light during it, the lessons identified, and any best practices observed during the response, including the development of new capacities.

AARs generally focus on contrasting the actions undertaken as part of the response with the strategies, plans and procedures describing how action should have been taken. It assesses whether there was any difference between these, and seeks to assess the impact (positive or negative) of any deviation from planned actions.

There are three phases common to all AARs:

1. **Objective observation**: establish how actions were actually implemented, rather than how they would ideally have happened according to existing plans and procedures.
2. **Analysis of gaps/best practices and contributing factors**: identify gaps between planning and practice; analyse what worked and what did not work, and why.
3. **Identification of areas for improvement**: identify actions to strengthen or improve performance, and determine how to follow up on them.

2.5 WHAT ARE THE BENEFITS OF CONDUCTING AN AAR?

The benefits of conducting an AAR are as follows.

- **Ensures critical thinking around the event.** AARs use root cause analysis (Box 5.1) to assess the underlying factors that led to any failures and successes encountered during the response.
- **Builds consensus on issues for follow-up.** Because team members work together during an AAR to identify challenges and best practices, the review creates consensus around actions necessary to prevent the next event and improve the next response.
- **Allows documentation of lessons learned.** AARs enable quick identification and documentation of lessons that can be applied to future events. This means team members can apply those lessons straight away.
- **Allows cross-sectoral learning.** As responses to many complex events (for example, outbreaks of cholera or viral haemorrhagic fever, earthquakes) involve more stakeholders than just those in the health sector, participants in the AAR can come from multiple sectors involved in the response. These might include animal health departments, hospital management boards, security authorities, and representatives of civil society. This can result in additional lessons being identified across sectors, bringing together new perspectives and strengthening relationships and coordination across sectors.
- **Allows advocacy for support.** An AAR report can be used as an advocacy tool for domestic financing for public health systems, or for financial or technical support from partners.
- **Builds capacity for preparedness and response.** Gaps and best practices identified in the AAR can be respectively addressed for improvement, and documented and institutionalized.

2.6 WHEN SHOULD AN AAR BE CARRIED OUT?

AARs should be considered after a response to any event with public health significance.

The ideal timing for an AAR is **within three months** of the official declaration of the end of the event by the ministry of health in collaboration with WHO, when response stakeholders are still present and have clear memories of what happened (see Figure 2.2).

However, the same methodology can be applied while an event is still continuing; for example, during protracted responses as a form of real-time analysis, or to cover a specific period or phase of the response.

3. BEFORE AN AAR

3.1 DESIGNING AN AAR

The first phase of implementing an AAR is to establish its objectives and scope. These elements determine most of the other preparations, such as who should participate and what is needed in terms of facilitation, budget and format for the review.

3.1.1 Select the response to review

Conducting an AAR should be considered part of routine emergency management procedures. While it is useful to review all emergency responses, the ability to do so may be limited by time and resource constraints. When this is the case, some characteristics of particular emergency responses should be considered as the basis for triggering an AAR. Box 3.1 gives examples of possible characteristics to consider.

Box 3.1 Examples of characteristics for selecting an event for an AAR

- At least one of the 13 core capacities as defined under the SPAR was tested by the event.
- The event was declared as a public health emergency of international concern.
- The event was notified to WHO under IHR (2005) Annex 2.
- The event was a graded emergency under the WHO Emergency Response Framework (level 2 or 3).
- The public health emergency operations centre was activated (due to the occurrence of the event or an increased risk of its occurrence).
- The event involved coordination and collaboration with sectors that do not routinely collaborate (for example, a chemical or radiological event, a food safety event or a natural disaster).
- The AAR was recommended by WHO following an event that constituted an opportunity for collective learning and performance improvement.

3.1.2 Define the specific objectives of an AAR

The objectives of an AAR may differ between countries and reviews. An early agreement on objectives should be one of the first steps of planning an AAR. Common objectives for AARs include:

- assessing the functional capacity of existing systems to prepare, prevent, detect and respond to a public health event;
- identifying challenges and best practices encountered during the response;
- documenting and sharing experiences of response stakeholders;
- identifying practical actions for improving existing capacities and capitalizing on best practices;
- improving preparedness, readiness and response plans.

It will also be important to agree on how widely the results of an AAR will be shared. It is recommended that they are shared as widely as possible, including between countries without compromising the usefulness of the review. This is in order to:

- share lessons, experiences, examples and models;
- advocate for support for preparedness and readiness actions.

3.1.3 Define the scope of an AAR

The scope of an AAR will inform the profile of participants, the AAR format and trigger questions, and the duration of the review.

Most AARs use a format with a small number of "pillars" (five or six). These pillars are broad technical categories that combine several specific technical areas or functions and are used to structure the review. Typical pillars include surveillance; laboratories; coordination and emergency response; communication and community engagement; and case management and countermeasures. Pillars might also be chosen in order to highlight specific technical areas (for example, vector control or safe burials), depending on the types and magnitude of the challenges faced during the outbreak.

Table 3.1 provides examples of pillars and the associated key functions or technical areas to be considered when defining the scope of the AAR. Given the wide range of events that can be reviewed by an AAR and the specific context of any given response, AAR planners can consider additional technical areas or functions that are not included in the table.

Table 3.1 Examples of pillars to structure the scope of an AAR

PILLAR EXAMPLE	TECHNICAL AREAS/FUNCTIONS
Surveillance	• Surveillance and early warning • Alerts management • Surveillance information management • Contact tracing
Laboratories	• Laboratory capacity for testing • Specimen transportation and referral • Specimen management • Laboratory information management
Coordination and emergency response	• Coordination of the response at all levels (i.e. in communities, within the health sector, with other sectors and partners, and internationally) • Logistics • Preparedness plans • Incident management system • Emergency response operations • Rapid response teams • Surge capacity • Resource mobilization • Emergency financing mechanisms
Communication and community engagement	• Public communication • Risk communication • Community engagement
Case management and countermeasures	• Case management • Infection prevention and control • Medical countermeasures • Quarantine • Immunization • Safe burials • Vector control and reservoir management

The following parameters are examples of technical areas that could be used to define the focus of the AAR:

- technical areas in which challenges were encountered during the response;
- technical areas that do not regularly benefit from performance analysis;

- technical areas that require frequent and deliberate improvement during "peacetime" because of their importance to the overall success of any response;
- technical areas that have been identified as requiring additional assessment by other monitoring and evaluation activities (for example, simulation exercises).

The structure of the incident management system can also be used to define the scope of the AAR, if an incident management system was used for the response.

The scope should also define the period of the emergency under review. For longer events (those lasting more than one year) the AAR should cover the most acute period of the event.

Senior management should be part of the planning. Their firm agreement on the scope and objectives is needed in order to ensure commitment to active and accountable follow-up of the recommendations resulting from the AAR. Box 3.2 presents an example scope for a Lassa fever outbreak.

Box 3.2 Example scope for a Lassa fever outbreak

> The AAR of the Lassa fever outbreak in [country, region] will analyse the following pillars of the response undertaken by the ministry of health and health partners: surveillance and early warning; laboratory systems; case management and infection prevention and control; risk communication and community engagement; and operations coordination. The review will cover the period from the detection of the first case until the declaration of the end of the outbreak.

3.1.4 Identify stakeholders

A diversity of opinions is key to the success of an AAR; this can be achieved by ensuring the participation of a wide range of stakeholders. Once the scope has been defined, the AAR planner should identify appropriate stakeholders involved in the technical areas or functions of the response covered by the review. Contributions should be invited from stakeholders within the ministry of health, partner organizations and agencies that were involved in those technical areas.

For example, if the review is focused primarily on operational or field-level implementation, participants should include practitioners or technical staff who implemented response measures during the event, including those at local or community and regional levels. In contrast, if the review is focused on policy- or decision-making, it may be more relevant to involve policy- or decision-makers, and other senior management officials or stakeholders from the health sector and other sectors, ensuring that there is representation from different administrative levels (local to national).

Depending on the scope of the review and the magnitude of the event, gathering a wide participation of stakeholders from both technical and managerial roles should always be considered.

If an incident management system was set up for the response, it is crucial that the team gathered for the incident management system participates in the AAR.

In addition to actors from within the health sector at all levels, AAR planners should consider inviting other stakeholders. Some might be asked to participate in the discussion, whilst others might prefer to come as observers. These could include:

- municipality or local government authorities;
- community groups or other beneficiaries;
- representatives of academia;
- national and international partners who took part in the response (such as NGOs, United Nations agencies, or Global Outbreak Alert and Response Network (GOARN) partners);
- representatives of the private sector, including private hospitals or clinics, private laboratories, pharmaceutical companies and logistics providers;
- representatives of other sectors, such as the ministry of environment, the ministry of agriculture and civil protection;
- parliamentary health committees.

In addition, it is strongly advised that financial partners (both local and international) be involved in the AAR process. These partners can be engaged in two ways.

- Through participation in the AAR itself and taking part in discussions and group work in the "coordination" pillar, as resource mobilization will be one of the topics addressed in this pillar.
- By inviting them to an advocacy and resources mobilization meeting that can be held on the last day of the AAR or immediately after. During such a meeting, the ministry of health will present the key findings from the AAR and highlight funding gaps to the financial partners.

3.2 SELECT THE APPROPRIATE AAR FORMAT

WHO can provide tools and resources to conduct four formats of an AAR:

- debrief;
- working group;
- key informant interview;
- mixed-method.

Factors affecting format selection include location and number of participants, cultural context, the complexity of the health event, and the resources required to conduct the AAR.

The rest of this section discusses the four different formats of an AAR and outlines the guidance and tools available to assist those planning and implementing the AAR (see also Annex 5).

3.2.1 Debrief AAR

The debrief AAR is the simplest type of AAR. It is a facilitator-led discussion held over less than half a day, involving a small group and a plenary review of a limited number of functions. A debrief AAR tends to be fairly informal and focuses on the specific operations of a single team. The scope is generally narrow, allowing for focused learning outcomes. The debrief AAR is summarized in Table 3.2.

Table 3.2 Summary of the debrief AAR

WHEN TO USE	PLANNING CONSIDERATIONS	OUTCOMES
• Appropriate for smaller responses, or where there is a limited number of functions to review	• No more than 20 people • No more than three functions for review • Takes less than half a day • Generally informal in nature • Easy to organize • Does not require large amounts of resources	• Focused on learning within a team • Produces a brief report, including a plan of action identified during the sessions
RELEVANT TOOLS IN THE TOOLKIT		
Planning	**Conducting**	**Results and follow-up**
• Planning checklist • Concept note template • Budget template • Generic agenda • Debrief facilitators' manual	• Debrief presentation template • Note-taking template • Activity sheet template • Data base of trigger questions	• Final report template • AAR evaluation form

3.2.2 Working group AAR

A working group AAR is an interactive, structured methodology based on group exercises, plenary discussions and interactive facilitation techniques. It blends group work (in groups of 6–12 people) and plenary sessions. Each working group corresponds to a particular pillar of the response (for example, surveillance, case management).

Regular plenary sessions allow shared learning, consensus building and validation of recommendations between technical working groups. These sessions also lead to greater understanding of the interdependency between disciplines and response stakeholders. The working group format can involve a large, diverse group of participants (more than 20). This format is summarized in Table 3.3.

Table 3.3 Summary of a working group AAR

WHEN TO USE	PLANNING CONSIDERATIONS	OUTCOMES
• With larger groups of diverse stakeholders where there are more than three pillars to review • When those involved in the response can be brought together for a face-to-face meeting • When participants are willing to speak freely and honestly about their experiences in a group setting and share their experience for collective learning	• More than three pillars for review • Can involve up to 50 individuals • Preparations should begin 4–6 weeks prior • Takes 2–3 days to conduct • For each working group, one facilitator and note taker proficient in the functions assigned to the group • Requires more resources than a debrief	• Shared learning between pillars and between stakeholders participating in the review • Shared experience and space for discussion • Report drafted that will include the findings from the review
RELEVANT TOOLS IN THE TOOLKIT		
Planning	**Conducting**	**Results and follow-up**
• Planning checklist • Concept note template • Budget template • Generic agenda • Working group facilitators' and participants' manuals	• Facilitators' briefing presentation • Generic working group format presentation • Note-taking template • Activity sheet template • Database of trigger questions	• Final report template • AAR evaluation form • Advocacy and planning materials for resource mobilization meeting (concept note, agenda, invitation letter templates)

3.2.3 Key informant interview AAR

A key informant interview AAR consists of a longer, more in-depth review of an event. It includes research into background materials, such as peer-reviewed literature, media reports and grey literature. The research is followed by semistructured interviews and short focus group discussions in which key informants are encouraged to provide honest feedback on their experiences. Feedback can also be gathered through surveys sent to those involved in the response.

The survey results can be used to triangulate the common points of information gathered in the interviews and focus groups. Findings are analysed and synthesized into a succinct report that includes key recommendations. This report is then shared with those involved in the process for validation.

The AAR lead and interviewers should analyse, contrast and consolidate the results of individual interviews and build consensus among AAR participants about the findings and recommendations. This can be done at a final meeting where the results are shared and discussed.

The key informant interview AAR includes a commitment to confidentiality and non-attribution. This format is summarized in Table 3.4.

Table 3.4 Summary of a key informant interview AAR

WHEN TO USE	PLANNING CONSIDERATIONS	OUTCOMES
• For complex and larger responses where those involved can no longer be brought together, or where a working group format will not elicit honest and open feedback	• Longer, more in-depth process • Takes up to 6 weeks • Requires two or more dedicated people who were not involved in the response to undertake the interviews • Must be confidential and information cannot be attributable	• A report drafted and validated
RELEVANT TOOLS IN THE TOOLKIT		
Planning	**Conducting**	**Results and follow-up**
• Planning checklist • Concept note template • Introductory email • Team leader terms of reference • Introductory PowerPoint presentation • Key informant interview facilitators' manual	• Interview tracking sheet • Sample interview questions • Recommendations feedback form	• Final report template • Advocacy and resources mobilisation meeting planning materials (concept note, agenda, invitation letter templates)

3.2.4 Mixed-method AAR

A mixed-method AAR approach blends the formats of the debrief, working group and key informant interview AARs. This approach can be used to review the response to emergencies for which it might not be possible to bring responders together for a working group format.

Key informant interviews should be undertaken before the group work. The results of these interviews can then be used to inform group discussions. Finally, results from both processes are synthesized into a report for validation. This format is summarized in Table 3.5.

Table 3.5 Summary of a mixed-method AAR

WHEN TO USE	PLANNING CONSIDERATIONS	OUTCOMES
• When it is not possible to bring all participants together due to geographical or time constraints • Where most participants can come together to give honest and open feedback • For the review of the response to emergencies with a wide scope	• Includes a working group AAR, with content supplemented by interviews with key informants • Information elicited from key informant interviews should be included for discussion in the working group format • Should involve review of emergency documents	• A report is drafted, based on consensus reached during the working group
RELEVANT TOOLS IN TOOLKIT		
• Tools from the debrief, working group and key informant interview AARs can be used to plan, conduct and follow up on a mixed-method AAR		

It is important to note that AAR formats are not set in stone, and they may need to be refined to fit the culture and practice of the institution, organization or agency undertaking the review.

Box 3.3 gives examples of questions that can be applied when deciding which format of AAR to use.

Box 3.3 Examples of questions to determine which format of AAR is most appropriate

AAR planners can ask the following questions to help determine the appropriate format for AAR:

- Is it practical to bring response stakeholders to one place to conduct the AAR?
- How can their contribution be harnessed?
- Have critical response stakeholders left the country?
- Is the culture of the organization or country organizing the AAR conducive to the collective critical review?
- Will the review be narrowly focused on just a few technical areas of the response, or will it be more comprehensive?
- Have multiple technical areas of the response (three to six areas) been identified for the scope of the review?
- Was the response being reviewed a significant emergency that deployed a great deal of staff, time and resources?
- Are resources (staff and financial) available to undertake this review?
- What is the specific objective of the AAR?

3.3 BUILD AN AAR TEAM

The size and roles of the team will depend on the AAR format adopted, and may include the following.

- **Overall AAR lead.** The lead initiates the AAR and is responsible for planning and conducting it. The AAR lead should liaise with senior management, WHO and partners as needed on the planning and reporting of the AAR, and should compile the final AAR action plan.
- **Lead facilitator or lead interviewer.** This person leads the overall facilitation of a working group AAR, or plans the interview schedule for a key informant interview AAR. It is important that the lead facilitator or lead interviewer is impartial and was not involved directly in the response (for example, they could be an international expert, or a member of WHO regional or headquarters staff).
- **Facilitators and interviewers.** These people support the lead facilitator or lead interviewer, guiding the discussion around key themes, and preventing deviation beyond the planned scope and objectives. If necessary, a further role is to manage interpersonal conflicts by ensuring that discussions remain focused on underlying issues.
- **Note takers.** Note takers ensure that comments and discussions are captured and documented. All AAR formats require note takers. In a working group format, each pillar (working group) should have its own note taker. The note takers should have some familiarity with the topic and the country's organizational structures, but will not necessarily be technical experts.
- **Report writer.** The writer consolidates inputs from note takers and interviewers to produce a final AAR report for review by the overall AAR lead.

In some cases, one person can cover several roles. Annex 6 provides example terms of reference for each AAR team member.

3.4 DEVELOP A BUDGET

Once the AAR format has been chosen and participants have been identified, it is important to build a budget for the AAR at an early stage, so that senior management can make the necessary funds available. Budget templates are included in the AAR toolkits.

3.5 DEVELOP A CHECKLIST AND AGENDA

Depending on the format selected, the preparation phase can be demanding in terms of time and resources. Checklists have been designed to help the AAR team prepare for the AAR. After choosing the most appropriate format for the AAR, it is recommended that the team prepares a draft agenda. Examples of draft agendas for the debrief and working group AARs are available in the AAR toolkits.

3.6 SUMMARIZE IN A CONCEPT NOTE

A concept note summarizes the key information agreed in the design phase. Developing a concept note will enable information to be shared with senior management in order to gain support for and commitment to the AAR and its follow-up. The concept note can also be shared with partners to encourage their participation and contribution. A concept note template is provided in the AAR toolkits.

3.7 INFORM STAKEHOLDERS (PARTICIPANTS) AND FACILITATORS

Once a concept note has been finalized, a message to initiate the AAR should be sent to participants and facilitators to introduce them to the format and objectives of the process and their roles in it. Examples of an email template to initiate an AAR can be found in the AAR toolkits.

3.8 VENUE

The AAR lead should ensure a venue is identified to host the AAR. Depending on the AAR format, the specifications for the venue will vary.

For the working group format, a room should be able to accommodate a world café session, plenaries, and facilitated group discussions. There should be enough wall space for posting AAR results.

4. PREPARING FOR THE CONDUCT OF AN AAR

In preparing for an AAR, a number of key actions should be carried out. The main steps that are common across all formats are outlined below. This preparation should be led by the AAR lead, in consultation with the lead facilitator.

4.1 COLLECT AND REVIEW RELEVANT BACKGROUND INFORMATION

For all AAR formats, facilitators and interviewers should have a sound understanding of the event under review. The AAR team should collect and review the background information necessary to gain a thorough understanding of the response actions that have been implemented. This will provide a common operating picture for discussion and for the preparation of facilitation tools. This background information can include the national emergency response plan, contingency plans, and the incident management structure.

It can also include documents that were developed during the response, such as:

- strategic response plans for the event;
- situational reports;
- operational reviews and response evaluations;
- outbreak reports;
- media reports.

For more details on the background information that can be collected, see Annex 7.

4.2 REFINE THE TRIGGER QUESTIONS

Trigger questions are used to guide discussions with a group or with individuals, and are organized according to the pillars being reviewed. Questions should be open because they are used primarily to generate discussion and to frame the scope of the analysis. They should be adapted to the context and expected outcomes for each function.

A series of trigger questions for an AAR should be based on the three phases described in section 2.4: objective observation; analysis of gaps/best practices and contributing factors; analysis of best practices and enabling factors and identification of areas for improvement.

To ensure a holistic review of any given pillar, trigger questions should address the following three thematic elements (where relevant to the event).

Coordination:

- **coordination within the health sector** – roles and responsibilities and coordination at administrative levels (local, regional and national);
- **coordination across sectors** – with partners and, where relevant, with the international community.

Resources:

- **human resources capacity** – availability of qualified and trained human resources;
- **relevance of plans and procedures** – clarity in roles and responsibilities and planned actions;
- **financial and material resource requirements** – availability of equipment, logistics and funds.

Technical aspects:

- specific technical aspects related to the pillar under review.

The development or adaptation of trigger questions should be led by the main facilitator and should be agreed with the AAR lead. Box 4.1 provides examples of questions for intersectoral and stakeholder coordination.

Box 4.1 Example of coordination pillar trigger questions

Objective observation

- What are the existing mechanisms for multisectoral coordination? How should these mechanisms be activated?
- What are the existing mechanisms for coordinating international and national partners, such as the United Nations, NGOs, intergovernmental organizations (IGOs), GOARN, and emergency medical teams?

Analysis of gaps/best practices and contributing factors

- How did multisectoral coordination, decision-making and information and resource sharing take place during the event? Was it effective? Did it enable the health sector to have an effective role?
- How did the coordination of international and national partners, such as the United Nations NGOs, IGOs, GOARN, and emergency medical teams, take place? Was it effective?
- Was a joint interagency or multisectoral response plan developed? If so, did this enhance the response?
- Were interagency clusters activated and operational? If so, were such clusters effective for coordinating roles and responsibilities, and for ensuring complementarity between partners?
- Were sufficient resources (human, material and financial) available for multisectoral coordination?

Identify areas for improvement

- What can be done to improve coordination next time?
- What can be done to improve preparedness and the response process next time?

Annex 8 gives further examples of trigger questions for various pillars of a response to a public health event.

4.3 IDENTIFY AND BRIEF FACILITATORS AND INTERVIEWERS

The selection of the facilitators and interviewers is largely dependent on the objectives assigned to the AAR and the organizational culture in which the review is taking place. For key informant interview AARs, interviewers should not have been involved in the response, to ensure candid feedback and confidentiality. For debrief or working group AARs, the lead facilitator should be external to the response, whereas the working group facilitators can be drawn from both internal and external sources. Facilitators can come from within the health sector or elsewhere, including academia, humanitarian organizations or civil society.

Facilitators and interviewers should be briefed on their roles. It is important to select facilitators and interviewers who will remain impartial and not influence group or individual feedback. Using a senior manager as a facilitator is not recommended because it could make participants reluctant to make critical remarks; but the facilitator should have some authority among participants and should have the ability to drive critical discussion.

A facilitator or interviewer should have excellent interpersonal and communication skills, and be familiar with root cause analysis (see Box 5.1). The person should also have a sound knowledge of the technical areas being reviewed. In addition, a facilitator or interviewer should be fluent in the language used by participants; be able to listen more than speak; be able to clarify and summarize key points; and be able to guide participants through the discussions or the interviews.

4.4 SETTING UP AN AAR

For debrief or working group formats, several days before an AAR (ideally between two and five days before it starts), the AAR lead and the lead facilitator should hold a coordination meeting with the AAR team, including facilitators, note takers and other team members. Background material and guidance material (for example, facilitators' manuals) should be distributed in advance of this preparatory meeting.

This meeting should familiarize the AAR team with the objectives, agenda, roles and responsibilities, and trigger questions selected for the AAR. One facilitator and one note taker should be assigned to each pillar. This pre-meeting is vital to ensure that working group facilitators are aware of and comfortable with their roles and what is expected of them.

For key informant interview AARs, the lead should hold a preliminary meeting with all interviewers. This meeting should introduce the scope and objectives of the review, as well as the interview approach, to ensure that there is consistency in the conduct of interviews and the capture of all information during the interviews.

5. DURING AN AAR

The opening session of an AAR workshop following the debrief or working group formats aims to give participants a common operational and contextual picture of the event. It should include a brief overview of the IHR (2005), countries' obligations under the IHR (for example, travel and trade measures), and the benefits of capacity-building and reporting. The lead facilitator should introduce the agenda, objectives, scope, methodology and expected outputs of the AAR.

The AAR toolkits contains generic PowerPoint presentations to support this stage.

For a key informant interview AAR, advance email communication from the AAR lead should introduce the scope, objectives and processes of the review. This communication should also be used to schedule or confirm interviews.

5.1 CONDUCT THE ANALYTICAL PART OF AN AAR

This part of an AAR, in which participants work to identify and agree on the challenges and best practices apparent during the response and develop measures to strengthen capacity in the future, is the most substantive part of an AAR.

The analysis should follow the principal logic of objective observation, gap analysis and identification of areas for improvement, using the trigger questions that were selected for the AAR. For the working group or debrief formats, facilitation should encourage interaction and active participation around the following areas or sessions.

5.1.1 Identification of capacities

The inventory of the capacities that existed prior to the event declaration, and which could have been used to support the response, should be established. The capacities are grouped in the following categories:

- plans and policies;
- resources;
- coordination mechanisms;
- preparedness activities (including prevention measures such as immunization);
- others.

5.1.2 Timeline of key milestones

The timeline – created by establishing a chronology of activities – is meant to develop a common understanding of what actually happened during the response. It should be as comprehensive as possible in order to establish whether actions were timely, appropriate and adequately resourced. At minimum, the following key timeline indicators should be highlighted and discussed:

- date of start of outbreak or event;
- date of detection of outbreak or event;
- date of notification of outbreak or event;
- date of verification of outbreak event;
- date of laboratory confirmation;
- date of outbreak or event intervention;
- date of public communication;
- date outbreak or event declared over;
- AAR timeline start (often the beginning of the response);
- AAR timeline end (often the end of the response).

For disease outbreaks, the specific definitions given in Table 5.1 can help participants identify the key milestone dates.

Table 5.1 Definitions of key outbreak milestone dates

OUTBREAK MILESTONES	DEFINITION
Date of outbreak start	Date of the symptom onset in the primary case or earliest epidemiologically linked case
Date of outbreak detection	Date that the outbreak or disease-related event is first recorded by any source or in any system
Date of outbreak notification	Date that the outbreak is first reported to a public health authority
Date of outbreak verification	Earliest date of outbreak verification through a reliable verification mechanism
Date of laboratory confirmation	Earliest date of laboratory confirmation in an epidemiologically linked case
Date of outbreak intervention	Earliest date of any public health intervention to control the outbreak
Date of public communication	Date of first official release of information to the public from the responsible authority
Date of outbreak end	Date that the outbreak is declared over by responsible authorities

Note: Definitions revised during the Salzburg Global Seminar, session 613: Finding outbreaks faster: how do we measure progress? (4–8 November 2018).

From these dates, at least four timeliness metrics, measured as the time interval between two relevant outbreak milestones can be evaluated to assess the speed of the outbreak recognition and response:

- time interval to detection (between outbreak start and outbreak detection);
- time interval to laboratory confirmation (between outbreak detection and laboratory confirmation);
- time interval to public communication (between outbreak detection/laboratory confirmation and public communication);
- time interval to response (between outbreak detection and outbreak intervention).

For disease-specific AARs, participants are required to interpret the timeline of activities against the epi curve for the disease, and discuss the impacts of their interventions on outbreak control.

For AARs conducted for other public health events, this session allows participants to provide an elaborate list of all critical activities undertaken during the response, and discuss their impacts in the next session.

5.1.3 Identification of strengths and challenges, and new capacities developed

During this session, and while referring to the other sessions of an AAR, participants will identify all the strengths and challenges identifiable in the response.
By the end of the AAR, regardless of the format, the same outputs are expected:

- clear articulation of best practices and their impacts on the response, and use of root cause analysis (Box 5.1) to identify the factors that enabled the best practices *(4)*;
- clear articulation of challenges faced during the response and their impacts, and use of root cause analysis to identify the limiting factors that contributed to the challenges;
- given the understanding of best practices and challenges, identification of clear actions required to embed the best practices, address the challenges, and strengthen preparedness for future responses;
- use of the actions described above to elaborate clear activities, responsible focal points, the resources needed, and timelines for implementation.

Box 5.1 Root cause analysis

Root cause analysis is a method used to identify the factors that led or contributed to success or failure in relation to a specific issue or problem identified.

The root cause is a factor that leads directly to a particular outcome (good or bad). The removal of this factor will prevent the outcome from occurring.

The purpose of conducting such analysis during an AAR is to identify and eventually address root causes, if necessary, in order to prevent negative outcomes. The purpose of the analysis is to focus on interventions that have a long-term impact rather than relying on quick fixes.

Root cause analysis should be used when a problem is identified that clearly requires deep examination, or for which the cause of a challenge is not yet fully understood.

The "five whys" method is the simplest and most frequently used approach to root cause analysis. In essence, the facilitator repeatedly asks "why?" in order progressively to unpack causative factors, thus eventually getting to the root cause of a particular issue. This technique is most appropriate in the framework of an AAR group discussion.

Key informant interviews employ a similar set of questions and analytical techniques (for example, root cause analysis as shown in Box 5.1), although in an interview format this should be interwoven through one-on-one discussions. As much as possible, interviewers should use a similar set of questions when interviewing different people for the same response pillar, so that answers can be compared.

The AAR toolkits include facilitators' manuals that provide detailed guidance on running AARs in the debrief, working group and key informant interview formats.

For disease-specific AARs, the review of limiting and enabling factors for challenges and best practices identified during the response should take into consideration both the timeline and the standards for prevention and control peculiar to each disease. The facilitator or some group members for each pillar will be expected to have good knowledge and understanding of the event under review. All reference documentation, including the latest publications about the disease, should be provided to participants to enable informed discussions.

Also during this session, highlights of new capacities developed during the response will be presented for each pillar.

5.1.4 Evaluation of IHR (2005) core capacities performance during an AAR

Immediately after identifying the best practices and challenges of the response under review, participants may be invited to review the extent to which selected IHR core capacities were used during the response, using an objective-based evaluation with specific qualitative ratings*(5)*. These ratings are as follows:

P = performed without challenges;

S = performed with some challenges;

M = performed with major challenges;

U = unable to be performed.

To guide participants, definitions of the different ratings are provided in Annex 9.

Table 5.2 presents IHR (2005) capacities and examples of evaluation tasks/objectives that can be used to identify the extent to which selected capacities performed during the response.

Table 5.2 IHR (2005) core capacities performance evaluation form used during an AAR

IHR capacities and indicators		Examples of evaluation tasks/objectives	Evaluation ratings			
			P	S	M	U
C1: Legislation and financing						
C1.1	Legislation, laws, regulations, policies, administrative requirements or other government instruments to implement the IHR	*Appropriate legislation, laws, and policies were in place and could be effectively used*				
C1.2	Financing for the implementation of IHR capacities	*A budget was available for the implementation of IHR capacities*				
C1.3	Financing mechanism and funds for timely response to public health emergencies	*A financing mechanism was in place that allowed for the timely flow of funds at all necessary levels*				
C2: IHR coordination and national IHR focal point functions						
C2.1	National IHR focal point functions under IHR	*The IHR national focal point was accessible when needed and could carry out IHR functions*				
C2.2	Multisectoral IHR coordination mechanisms	*A multisectoral IHR coordination mechanism was in place and effective*				
C3: Zoonotic events and the human-animal interface						
C3.1	Collaborative effort on activities to address zoonoses	*Animal and public health sectors were able to work effectively together at all necessary levels*				
C4: Food safety						
C4.1	Multisectoral collaboration mechanism for food safety events	*A coordination mechanism was in place between the International Food Safety Authorities Network (INFOSAN) focal point and the national IHR focal point, and was effective for multi-sectoral coordination*				
C5: Laboratory						
C5.1	Specimen referral and transport system	*Specimens collected from any level (health facilities, hospitals, etc.) reached the appropriate testing laboratory in a timely fashion*				
C5.2	Implementation of a laboratory biosafety and biosecurity regime	*The capacity was in place to identify, hold, secure and monitor dangerous pathogens in appropriate facilities*				
C5.3	Access to laboratory testing capacity for priority diseases	*Specimens from all levels were tested appropriately and results were available in a timely fashion*				

IHR capacities and indicators		Examples of evaluation tasks/objectives	Evaluation ratings			
			P	S	M	U
C6: Surveillance						
C6.1	Early warning function: indicator- and event-based surveillance	*Surveillance data was collected at all levels and compiled, analyzed, and interpreted to guide the response*				
C6.2	Mechanism for event management (verification, risk assessment, analysis investigation)	*An effective system was in place to verify, assess, and investigate events*				
C7: Human resources						
C7.1	Human resources for the implementation of IHR core capacities	*An effective workforce was in place to prepare for, prevent, detect and respond to all hazards at all necessary levels*				
C8: National health emergency framework						
C8.1	Planning for emergency preparedness and response mechanism	*The multi-hazard preparedness plan was tested and effective during the response or exercise*				
C8.2	Management of health emergency response operations	*The emergency operations centre was activated quickly, using effective protocols*				
C8.3	Emergency resource mobilization	*Necessary supplies, including personal protective equipment, medications, vaccines, etc., could be mobilized to the necessary levels in a timely way*				
C9: Health service provision						
C9.1	Case management capacity for all hazards	*Sufficient numbers of trained healthcare workers and adequate medical supplies were in place to manage patients safely*				
C9.2	Capacity for infection prevention and control and radiation decontamination	*Healthcare workers were trained in infection prevention and control and radiation decontamination at the necessary levels and had the necessary protective equipment*				
C9.3	Access to essential health services	*Suspected case patients at all levels could access and utilize the required outpatient and inpatient services*				

IHR capacities and indicators		Examples of evaluation tasks/objectives	Evaluation ratings			
			P	S	M	U
C10: Risk communication						
C10.1	Capacity for emergency risk communication	*Information to address community concerns, rumours and appropriate public health practices was effectively communicated to the public, and a feedback mechanism was in place to understand and address rumours, perceptions and misconceptions*				
C11: Points of entry						
C11.1	Core capacity requirements at all times for designated airports, ports and ground crossings	*Points of entry were appropriately designated and had the capacity to provide medical services and diagnostics with adequate staff and resources*				
C11.2	Effective public health response at points of entry	*Existing contingency plans for public health emergencies at points of entry were effectively used to respond to the event*				
C12: Chemical events						
C12.1	Resources for detection and alert	*The poison information service effectively detected the event, and laboratory capacity to confirm the chemical event was in place*				
C13: Radiation emergencies						
C13.1	Capacity and resources	*Surveillance to detect potential radiation emergencies was in place, as were the needed coordination mechanisms and resources (including human resources) to respond*				

Note: Participants may decide through consensus to add and review a capacity that is not listed in the table above.

5.2 BUILD CONSENSUS AMONG PARTICIPANTS

Building consensus consists of a final summary of best practices, challenges, new capacities developed and AAR indicators evaluated during the AAR discussions. In the debrief and working group AARs, this consensus can be achieved through plenary or group discussions. Such discussions should be held to validate results and create a sense of ownership to help ensure that corrective actions are taken. Before closing, a final working group session should be carried out to integrate any additions or comments from the debriefing session.

For AARs in the key informant interview format or the mixed-method format, draft findings should be shared with all those involved for feedback and validation. Ideally, findings should be validated during a group debrief session, although this may not be possible in all contexts.

5.3 CLOSE AN AAR AND CONDUCT AN AAR EVALUATION BY PARTICIPANTS

For AARs in the working group and debrief formats, an evaluation of the AAR workshop and its methodology should be conducted before closing in order to make any necessary improvements to the format or methodology used. The toolkits provide an AAR evaluation form template.

6. PRESENTING AAR RESULTS AND FOLLOW-UP ACTIONS

This chapter will provide guidance on how to conduct AAR debriefings, how to present the final report of an AAR, how to document the progress made following the implementation of recommendations from an AAR and how to capitalize on lessons learned.

6.1 CONDUCT AAR DEBRIEFINGS

6.1.1 AAR team debriefing

The purpose of the AAR team debriefing is to reflect on the overall planning, preparation and conduct of the AAR. The debriefing can also establish the roles, responsibilities and timelines for completion of the AAR reports and other deliverables. This should occur within one week of completing the AAR.

For AARs in the debrief and working group formats, this informal discussion is often led by the AAR lead or by the main facilitator, and aims to identify lessons and opportunities for similar future projects. For the key informant interview format, this can be done through a group teleconference or online meeting with all interviewers, led by the AAR lead.

The AAR team debriefing can be used to discuss how to improve the AAR process for the next event, considering that flexibility in the process of undertaking an AAR allows planners to adjust and find the best model for the culture and system being reviewed.

This is also an opportunity for the AAR team to discuss and finalize the executive summary to present to the senior management.

6.1.2 Senior management debriefing

Senior management should be briefed on the outcomes of an AAR, including the best practices and challenges identified, and the agreed follow-up actions.

The purpose of this debriefing is to gain support from the necessary authorities to mobilize the resources required to implement the identified actions. Having senior management endorsement of the outcomes also increases the likelihood and impact of learning at a wider institutional level, and contributes to a culture of continuous improvement and critical analysis through AARs. Senior management can also endorse the findings and give authorization for wider circulation of the results.

6.1.3 AAR as an opportunity for advocacy, resource mobilization and strategic partnership

To build on the momentum created by an AAR, other types of debriefing can be organized, such as advocacy and resource mobilization meetings, where key findings and ways forward are shared. The highest level of advocacy is encouraged, including participation of the most senior government officials and those from other ministries and sectors (such as the media, technical and financial partners, and embassies).

These debriefings will also help the ministry of health build strategic partnerships with stakeholders to improve preparations for the next public health event and strengthen collaboration for future responses.

They also present opportunities for direct engagement of partners and donors to secure their commitment to institutionalize and build longer-term capacities for prevention, detection and response.

6.2 AAR FINAL REPORT

The report writer should receive the notes from the note takers and begin to integrate them into a comprehensive final report. A generic report template is available in Annex 10 as well as in the AAR toolkits. It comprises the following key sections:

1. Executive summary;
2. Background on emergency under review;
3. Scope and objective of review;
4. Methods;
5. Findings;
6. Key activities;
7. Next steps;
8. Conclusions.

Most importantly, the report should include an action plan for following up actions identified during the AAR.

WHO stands by to support the drafting and implementation of the report.

After initial drafting, the report writer should consult with the AAR lead and other facilitators and interviewers to ensure that all relevant discussions are accurately captured. The report should also be shared with AAR participants and interviewees for comment, and shared with senior management for formal validation before wider circulation.

The fundamental output of the AAR is an action plan for key activities and recommendations, with responsibilities and timelines assigned, and its implementation should be closely monitored. It should identify:

- activities (with costs, timelines and responsible authorities) for immediate action that can be taken to improve preparedness with few resources ("quick wins");
- activities that require more resources or longer-term implementation, and which should be incorporated into other planning processes and budget cycles.

One example of a relevant planning process into which such activities can be incorporated is the national action plan for health security, a comprehensive, multisectoral and collaborative plan to increase preparedness for public health threats.

Activities will also be prioritized and categorized in terms of whether they are short-, medium- or long-term activities, based on the urgency with which they should be implemented to improve preparedness and response capacities. The highest priority will be given to activities that address imminent risks.

The AAR lead must ensure that activities are assigned to a specific person or authority (for accountability); and that activities are costed and sequenced; and can be monitored. Activities should be presented in a format conducive to planning and implementation (for example, a planning matrix or Gantt chart). A focal person should be selected to shepherd the AAR action plan and identify the human and financial resources required.

The plans for disseminating the final AAR report should be agreed during the AAR planning process. Sharing the findings can be helpful for other countries and contexts with similar challenges and risks. The decision on whether to publish the final AAR report resides with health authority's senior management. In some situations, it may be advisable to prepare an additional report with sensitivities removed to be shared with a broader audience.

6.3 DOCUMENTING PROGRESS: POST-AAR FOLLOW-UP

While the Member State is the owner and custodian of the action plan and its activities, WHO can play a role in following up on its implementation, especially for action plans resulting from AARs conducted under the IHR Monitoring and Evaluation Framework.

Three months after an AAR (or earlier if required and agreed), and then regularly on a quarterly basis, WHO may provide assistance and work with the country health authorities to monitor the implementation of the AAR action plan and identify any challenges.

This will help also to monitor how the implementation of the AAR recommendations contributes to improvements in the overall preparedness and response capacities for health emergencies.

Documentation of progress will be based on evidence of the status and impact of the activities implemented, including any relevant changes in behaviour and the development of new capacities for preparedness and response to health emergencies.

Both qualitative and quantitative information may be collected through the review of relevant information sources, including concept notes, reports and media releases, and through interviews with and field visits to government officials and key stakeholders.

Equally, the post-AAR follow-up will be an opportunity to see and document how the implementation of the AAR action plan contributes to the improvement of voluntary external evaluation scores (if a voluntary external evaluation has been done in the country), or to the development of the IHR core capacities in general.

6.4 LESSONS LEARNED DATABASE

Countries should consider creating a repository of key challenges, best practices and recommendations resulting from AARs, which can be easily accessed at all times during the preparedness for and response to an emergency. Such a repository can help build institutional memory for lessons learned, and provides a resource for emergency preparedness and response stakeholders. The lessons learned database can be used by the country that experienced the outbreak or event whose response was reviewed through an AAR, and also by other countries that may be facing similar events or that are interested in strengthening their preparedness capacities by institutionalizing best practices and anticipating potential challenges should a similar event occur. The objective of the database is to facilitate and share learning between emergencies, and to apply findings to other contexts and events. Recording lessons in a central location also ensures that the same mistakes do not recur.

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1. Emergency Response Framework (ERF). Geneva: World Health Organization; 2017 (https://www.who.int/hac/about/erf/en/, accessed 8 February 2019).
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ANNEX 1. GLOSSARY

After action review (AAR). Qualitative review of actions taken to respond to an emergency as a means of identifying best practices, gaps and lessons learned. The AAR is an opportunity for collective learning by bringing together the relevant stakeholders involved in the preparedness for and the response to the public health event under review. The process involves a structured facilitated discussion or experience sharing to critically and systematically review what was in place before the response, what happened during the response, what went well, what went less well, why events occurred as they did, and how to improve.

Action plan. A document that lists what steps must be taken in order to achieve a goal.

Capacity. Combination of all the strengths, attributes and resources available within an organization, community or society to manage and reduce disaster risks and strengthen resilience. Capacity may include infrastructure, institutions, human knowledge and skills, and collective attributes such as social relationships, leadership and management *(1)*.

Capability. Possession of the demonstrable ability to perform a particular task *(2)*.

Capacity assessment. The process by which the capacity of a group, organization or society is reviewed against desired goals, where existing capacities are identified for maintenance or strengthening and capacity gaps are identified for further action *(1)*.

Capacity development. The process by which people, organizations and society systematically stimulate and develop their capacities over time to achieve social and economic goals, including through improvement of knowledge, skills, systems and institutions.
The concept extends the term "capacity-building" to encompass all aspects of creating and sustaining capacity growth over time. It involves learning and various types of training, but also continuous efforts to develop institutions, political awareness, financial resources, technology systems and the wider enabling environment *(1)*.

Control. The application of authority, combined with the capability to manage resources, in order to achieve defined objectives. Control refers to the overall direction of the activities, agencies or individuals concerned and operates horizontally across all agencies, organizations, functions and individuals *(2)*.

Coordination. (a) A management processes to ensure integration (unity) of effort. Coordination relates primarily to resources, and operates vertically (within an organization) as a function of the authority to command, and horizontally (across organizations) as a function of the authority to control *(2)*. (b) The way in which different organizations (public or private) or parts of the same organization work or act together in order to achieve a common objective *(3, 4)*.

Debrief. A critical examination of a completed operation or exercise in order to evaluate actions *(2)*.

Emergency. The term "emergency" is sometimes used interchangeably with the term "disaster" (for example, in the context of biological and technological hazards or health emergencies), but can also relate to hazardous events that do not result in the serious disruption of the functioning of a community or society (see Annex 3).
Emergencies have effects that may be considered on a continuum from local emergencies with limited consequences to wide area disasters with catastrophic consequences. "Incidents" or "events" are often referred to as "emergencies", with the terms used interchangeably, but not all incidents or events are emergencies *(1)*.
See also "health emergency".

Emergency coordination centre. A type of emergency operations centre (see below) that has no direct tactical or operational function, but which serves as a point of control and coordination for the strategic allocation of resources and management of policy issues *(2)*.

Emergency operations centre. The facility from which a jurisdiction or agency coordinates its response to major emergencies or disasters *(5)*.

Emergency response plan. A document that describes how an agency or organization will manage its responses to emergencies of various types, by providing a description of the objectives, policy and concept of operations for the response to an emergency; and the structure, authorities and responsibilities for a systematic, coordinated and effective response. In this context, emergency plans are agency or jurisdiction specific, and detail the resources, capacities and capabilities that the agency or organization will employ in its response *(6)*.

Hazardous event. (a) The manifestation of a hazard in a particular place during a particular period of time. Severe hazardous events can lead to a disaster as a result of the combination of hazard occurrence and other risk factors *(1)*. (b) A manifestation of disease or an occurrence that creates a potential for disease *(7)*.

Health. A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity *(8)*.

Health emergency. A type of event or imminent threat that produces or has the potential to produce a range of health consequences, and which requires coordinated action, usually urgent and often non-routine. A health emergency may pose a substantial risk of significant morbidity or mortality in a community *(2)*.

Health system. The people, institutions and resources, arranged together in accordance with established policies to improve the health of the population they serve, while responding to people's legitimate expectations and protecting them against the cost of ill-health through a variety of activities, the primary intent of which is to improve health *(9)*.

Impact. Evaluated consequence of a particular outcome *(3)*.

Incident. (a) An action, event or phenomenon which may cause loss of life or injury, property damage, social and economic disruption, or environmental degradation *(5)*. (b) A situation that can be, or could lead to, a disruption, loss, emergency or crisis *(3)*.

International Health Regulations (IHR) (2005). Regulations designed to prevent the international spread of disease, adopted by the Fifty-eighth World Health Assembly on 23 May 2005, which entered into force on 15 June 2007. The purpose and scope of the IHR (2005) are "to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks and which avoid unnecessary interference with international traffic and trade" *(7)*.

Joint operational review. An operational assessment led by WHO to ensure that the efforts and resources of both WHO and partners are aligned with the health emergency response plan. The purpose is to review a current response, against the strategic objectives within the response plan. This allows for course correction and strengthening during a response and the integration of learning and improvement of future response operations.

Lessons learned. Identified issues for which remedial actions may be implemented in order to improve performance *(2)*.

Natural hazard. Hazard that is predominantly associated with natural processes and phenomena *(1)*.

Notification. (a) The processes by which cases or outbreaks are brought to the knowledge of health authorities *(10)*. (b) Part of public warning that provides essential information to people at risk regarding the decisions and actions necessary to cope with an emergency situation *(3)*.

Outbreak. Often used synonymously with "epidemic", usually to indicate a localized as opposed to a generalized epidemic. Typically defined as two or more people with the same health condition, at the same time and in the same place *(5)*.

Preparedness. The knowledge and capacities developed by governments, response and recovery organizations, communities and individuals to anticipate, respond to and recover from the impacts of likely, imminent or current disasters.

Preparedness action is carried out within the context of disaster risk management and aims to build the capacities needed efficiently to manage all types of emergencies and achieve orderly transitions from response to sustained recovery. Preparedness is based on a sound analysis of disaster risks and

good linkages with early warning systems, and includes such activities as contingency planning, the stockpiling of equipment and supplies, the development of arrangements for coordination, evacuation and public information, and associated training and field exercises. These must be supported by formal institutional, legal and budgetary capacities. The related term "readiness" describes the ability to respond quickly and appropriately when required *(1)*.

Preparedness plan. A plan that establishes arrangements in advance to enable timely, effective and appropriate responses to specific potential hazardous events or emerging disaster situations that might threaten society or the environment *(1)*.

Prevention. Activities and measures to avoid existing and new risks.

"Disaster prevention" expresses the concept of and intention to completely avoid potential adverse impacts of hazardous events. While certain disaster risks cannot be eliminated, prevention aims at reducing vulnerability and exposure in such contexts, where, as a result, the risk of disaster is removed. Examples include dams or embankments that eliminate flood risks; land-use regulations that do not permit settlement in high-risk zones; seismic engineering designs that ensure the survival and function of a critical building in any likely earthquake; and immunization against vaccine-preventable diseases. Prevention measures can also be taken during or after a hazardous event or disaster to prevent secondary hazards or their consequences, such as measures to prevent the contamination of water *(1)*.

Public awareness. The extent of common knowledge about disaster risks, the factors that lead to disasters and the actions that can be taken individually and collectively to reduce exposure and vulnerability to hazards. Community engagement is critical in order to raise public awareness and work for social mobilization, health promotion and risk communication *(2)*.

Public communication. The discipline and process of providing public audiences with information that creates awareness and knowledge so that people can adjust their personal understanding of risks, and their reactions, decisions and responses to threats and crisis situations *(2)*.

Public health emergency of international concern. An extraordinary event that is determined, as provided in the International Health Regulations, (a) to constitute a public health risk to other States through the international spread of disease; and (b) to potentially require a coordinated international response *(7)*.

Public health event. Any event that may have negative consequences for human health. The term includes events that have not yet led to disease in humans but that have the potential to cause human disease through exposure to infected or contaminated food, water, animals, manufactured products or environments *(6)*.

Response plan. A documented collection of procedures and information that is developed, compiled and maintained in readiness for use in an incident *(3)*.

Surveillance. The systematic, continuing collection, collation and analysis of data for public health purposes, and the timely dissemination of public health information for assessment and public health response as necessary *(7)*.

Annex 1 references

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ANNEX 2. COMPOSITION OF THE TOOLKITS FOR THE DIFFERENT AAR FORMATS

The table below presents the composition of the toolkits for the debrief, working group and key informant interview AARs. Those undertaking a mixed-method AAR should select the tools from within the toolkits that support the combined format chosen.

DEBRIEF AAR		
PLANNING	CONDUCTING	RESULTS AND FOLLOW-UP
• Planning checklist • Concept note template • Budget template • Generic agenda • Debrief facilitators' manual	• Debrief presentation template • Note-taking template • Activity sheet template • Data base of trigger questions	• Final report template • AAR evaluation form
WORKING GROUP AAR		
PLANNING	CONDUCTING	RESULTS AND FOLLOW-UP
• Planning checklist • Concept note template • Budget template • Generic agenda • Working group facilitators' and participants' manuals	• Facilitators' briefing presentation • Generic working group format presentation • Note-taking template • Activity sheet template • Database of trigger questions	• Final report template • AAR evaluation form • Advocacy and resources mobilization meeting planning materials (concept note, agenda, invitation letter templates)
KEY INFORMANT INTERVIEW AAR		
PLANNING	CONDUCTING	RESULTS AND FOLLOW-UP
• Planning checklist • Concept note template • Introductory email • Team leader terms of reference • Introductory PowerPoint presentation • Key informant interview facilitators' manual	• Interview tracking sheet • Sample interview questions • Recommendations feedback form	• Final report template • Advocacy and resources mobilization meeting planning materials (concept note, agenda, invitation letter templates)

ANNEX 3. CLASSIFICATION OF HAZARDS ACCORDING TO THE WHO EMERGENCY RESPONSE FRAMEWORK

Classification of hazards								
Generic group	**1. Natural hazards**						**2. Human-induced**	
Groups	**1.1 Geological**	**1.2 Hydro-meteorological**			**1.3 Biological**	**1.4 Extraterrestrial**	**2.1 Technological**	**2.2 Societal**
Subgroups		**1.2.1 Hydrological**	**1.2.2 Meteorological**	**1.2.3 Climatological**				
Main types subtypes [sub-subtypes]	**Earthquake (G1):** Ground shaking Tsunami **Mass movement (G2)** **Liquefaction (G3)** **Volcanic activity (G4):** Ash fall Lahar Pyroclastic flow Lava flow	**Flood (H1):** Riverine flood Rash flood Coastal flood Ice jam flood **Landslide (H2):** Avalanche [snow, mud flow debris, rockfall] **Wave action (H3):** Rogue wave Seiche	**Storm (M1):** Extra-tropical storm Tropical storm Convective storm [e.g. storm/ surge, tornado, wind, rain, winter storm/blizzard, derecho, lightning, thunderstorm, hail, sand/dust storm] **Extreme temperature (M2):** Heat wave Cold wave Severe winter condition [e.g. snow/ice, frost/ freeze] **Fog (M3)**	**Drought (C1)** **Wild fire (C2):** Land fire [e.g. brush, bush, pasture] Forest fire **Glacial lake outburst (C3)**	**Emerging disease (B1)** **Epidemics and pandemics (B2)** **Insect infestation (B3):** Grasshoppers Locusts **Foodborne outbreaks (B4)**	**Impact (E1):** Airburst **Space weather (E2):** Energetic particles Geomagnetic storm Shockwave	**Industrial hazards (T1):** Chemical spill, gas leak, collapse, explosion, fire, radiation **Structural collapse (T2):** Building collapse, dam/bridge failure **Transportation (T3):** Air, road, rail, water **Explosions/fire (T4)** **Air pollution (T5):** Haze **Power outage (T6)** **Hazardous materials in air, soil, water (T7):** Biological, chemical, Radionuclear **Food contamination (T8)**	**Armed conflict (S1):** International Non-international **Civil unrest (S2)** **Terrorism (S3):** Chemical, biological, radiological, nuclear, and explosive weapons (CBRNE) **(S4)** Conventional weapons Unconventional weapons **Financial crisis (S5):** Hyperinflation Currency crisis

ANNEX 4. AARS FOR EMERGENCIES CAUSED BY NATURAL AND HUMAN-INDUCED HAZARDS

The guidance for after action review focuses on AARs following public health events. The process for planning and conducting AARs described in the guide can however be adapted to AARs for emergencies caused by natural and human-induced hazards (see Annex 3 for classification of hazards). This annex seeks to provide guidance to those planning an AAR in such settings and outlines the key elements of the process that should be adapted.

Emergencies and disasters that result from those hazards may cause ill-health directly or through the disruption of health systems, facilities and services, leaving many without access to health care in times of emergency. Such events can affect basic infrastructure such as water, food, power supplies and communication *(1)*. The management of such emergencies will require a multisectoral approach where the health sector may not have the lead. In this case, with regard to natural hazards (except biological hazards) and human-induced hazards, the end of the event will probably be declared by the government or other competent authority (for example, the emergency response coordinator for L2 or L3 responses under the Inter-Agency Standing Committee system) rather than by the health sector. Nevertheless, an AAR can be performed within the health sector after such events and will be conducted by the government in collaboration with all stakeholders involved.

Select the response to review using this annex

Examples of characteristics that can be considered for an AAR following an emergency caused by natural and human-induced hazards are as follows.

EXAMPLES OF CHARACTERISTICS FOR SELECTING AN EVENT FOR AN AAR
The event triggered the activation of the emergency operations centre (EOC) and the establishment of an incident management system to manage a coordinated response.
The event merited an L2 or L3 response under the Inter-Agency Standing Committee system or a G2 or G3 under the WHO Emergency Response Framework.
The event required health sector coordination or the activation of the health cluster system.
Ungraded or WHO Grade 1 event requiring the government, WHO and partners to activate all or some of their emergency management system.
The AAR was recommended following an event that constituted an opportunity for collective learning and performance improvement.

Define the scope of an AAR

The table A4.1 below provides examples of pillars according to an incident management system in the government department of health and the associated key functions or technical areas of the emergency operations centre to be considered when defining the scope of an AAR following an emergency caused by natural disasters or a human-induced hazards. The proposed list of questions is not exhaustive and can be reviewed depending on the event and the context.

Table A4.1 Incident management system: pillars, technical areas and example trigger questions

PILLAR EXAMPLE	TECHNICAL AREAS/FUNCTIONS	EXAMPLE TRIGGER QUESTIONS
Leadership	• Overall management of the incident management team (IMT) • Management of core actions under each functional area • Coordination and collaboration with coordination structures, e.g. Ministry of Health, Department in charge of disaster management, health cluster, Office for the Coordination of Humanitarian Affairs (OCHA), etc. • Staff well-being and security • Public communication • External relations • EOC management • Oversight on core response performance indicators	• How was the incident management system organized for the response? • Was the EOC functional and able to support the IMT? • How did the IMT interact with the humanitarian system, including partners? • Were there enough resources, including qualified and trained staff, for the IMT? • How well did communication to the public function, and what were the main methods of communication? Was a communication strategy developed? • How was staff safety and security managed during the response? • Identify the areas in which preparation for this event was most successful for leadership and management, as well as other incident management system functions. • Were national or international emergency medical teams activated to deliver health services?
Partner coordination	• Coordination of the health sector or cluster • Oversight of key performance standards for coordination • Coordination with other sectors or clusters as relevant • Liaison with partner mechanisms – GOARN, emergency medical teams, Global Health Cluster, etc.	• How was the coordination of response actions at different administrative levels (local, regional and national) undertaken during the event? • How did the coordination of international and national partners (United Nations, NGOs, IGOs) take place? • Was a joint interagency, multisectoral response plan developed? How did this contribute to enhancing the response? • Was the health cluster activated and operational? Was it effective for coordinating roles and responsibilities and for ensuring complementarity between partners? • Were sufficient resources (human, material and financial) available for multisectoral coordination at all levels?
Information management and planning	• Risk and needs assessments • Early warning and surveillance • Information products – situation reports and bulletins • Monitoring and evaluation • Health sector and humanitarian response plans • Health facility and health service assessments	• Was a public health situation analysis developed and how was it used for action? • Was key data to inform the health sector operations available on a regular basis? • How was information managed during the emergency? • What information products were developed and how were they used to improve response operations, including advocacy and fundraising? • How was information shared with partners, decision-makers and communities for action? e.g Data on shelter or wash conditions in temporary settlements • How did the preparedness and response plan help ensure positive health outcomes? • Were existing contingency or response plans for this emergency effective in identifying actions, making decisions and communicating information? • Were sufficient resources (human, material and financial) available for information and planning at all levels?

PILLAR EXAMPLE	TECHNICAL AREAS/FUNCTIONS	EXAMPLE TRIGGER QUESTIONS
Health operations and technical expertise	• Prioritization of health risks (hazard specific, indirect from disrupted services and risk of outbreaks, mental health, malnutrition) • Defining the technical areas needed and assigning appropriate staff • Specific health sector technical areas as appropriate (trauma, rehabilitation, maternal, newborn and child health, noncommunicable diseases, nutrition, mental health, sexual and reproductive health, WASH), including cross-cutting (gender, disability, protection, mental health and psychosocial support in humanitarian emergencies etc.) • Health service delivery mechanism • Risk communication • Community engagement • Training of partners and health staff • Ensuring the continuous delivery of a minimum package of health services • Prevention of communicable diseases attributable to infrastructure disruption and displacement (diarrheal diseases and acute respiratory infections, measles, malaria, leptospirosis, dengue fever, typhoid fever, meningitis, tetanus etc.)	• Were the priority health interventions identified – hazard specific, secondary from disrupted health systems and services, risk of outbreaks, mental health? • Were the appropriate technical staff identified to manage specific technical areas as appropriate? • Were the appropriate technical guidelines and tools shared with partners? • Were core components of health services delivered (maternal, newborn and child health, sexual and reproductive health, noncommunicable diseases, mental health)? • Were health facility and health service assessments conducted? • How were health services delivered? Did they reach all affected populations? • Were any public health interventions activated (such as measles vaccination, water, sanitation and hygiene, vector control)? What was the coverage of these interventions? • Was the Early Warning, Alert and Response System (EWARS) activated? Was it effective in detecting and responding to epidemic-prone diseases? • Was any training delivered? Were the skills used to support the response and improve quality of care? • Were any disease outbreaks detected, with rapid risk assessments and control measures put in place? • Were cross-cutting areas such as gender and disability addressed in the response planning and operations? • Was operation research conducted during the response? Were appropriate resources available for this? • Were sufficient resources (human, material and financial) available to provide technical support during the event? **Risk communications and community engagement** • Did the population that was in greatest need of receiving communication messages effectively receive those messages? If not, why? How do we know? • Were sufficient resources available to conduct risk communication and community mobilization? • How were communication activities and messages coordinated with other sectors and partners? • How was risk communication monitored during the emergency? • How were risk communication activities and messages coordinated between levels of the health system (local, regional and national)? • Were there sufficient resources (human, material and financial) to undertake risk communications and

PILLAR EXAMPLE	TECHNICAL AREAS/FUNCTIONS	EXAMPLE TRIGGER QUESTIONS
Operations support and logistics	• Supply chain management • Field support • Health logistics • Prepositioning, procurement • Organizing warehousing and distribution chains	• How were supply chains managed during this emergency? • Was the prepositioning of essential material effective in enabling a timely and efficient response? • How was fleet management undertaken during the response? • Were there other partners or sectors involved in delivering logistics services? What were their roles and how was it coordinated and managed? • How did the emergency procurement system function? • Were sufficient resources (human, material and financial) available to provide logistics support during the event?
Finance and administration	• Activation of contingency funds • Finance and budget management • Procurement • Human resources and surge capacity • Resource mobilization	• How was finance management undertaken during the event? • Was there a contingency fund used for the response? • Did funds come from the government, donors or partners? • How was coordination with donors managed during the event? • Was resource mobilization effective to provide sufficient funds for the response? • Was the Central Emergency Response Fund utilized and if so what were the key challenges with the process and receiving the funds? • How did the operational procedures function to deploy emergency surge staff to the affected area? • Was the mobilization of resources sufficient to enable the implementation of all key response activities? If yes, what were the key factors that enabled it? If not, what were the key issues and how can we improve?

Collect and review relevant background information

Such information can include all relevant documents that were developed during the response, such as:

- health sector or cluster response plans for the event;
- humanitarian response plans;
- situation reports and health cluster bulletins;
- operational reviews and response evaluations;
- flash appeals and Central Emergency Response Fund proposals;
- media reports.

Timeline of key milestones

The following are examples of dates of key milestones that can be highlighted during the AAR:

- date of event occurrence;
- date of declaration of emergency;
- date of request for international assistance;
- date the department of health incident management system and EOC was activated;
- date of first health cluster meeting;
- date of risk and needs assessment;
- date the health sector response plan was developed and activated;

- date of arrival of surge staff;
- date of WHO's Contingency Fund for Emergencies (CFE) received;
- date of the donor appeal emitted;
- date of arrival of international partners as relevant (GOARN, Global Health Cluster, emergency medical teams);
- date of activation or arrival of key resources (human resources, funding, supplies), as relevant;
- date of field operations and health interventions (specify key interventions according to event or context);
- date event declared over;
- AAR timeline start (often the beginning of the response);
- AAR timeline end (often the end of the event).

Note: Emergency Response Framework (ERF) performance indicators can also be considered for an AAR following an emergency caused by natural disasters or a human-induced hazard.

Annex 4 reference

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ANNEX 5. KEY STEPS AND TIMING FOR AAR FORMATS

DEBRIEF FORMAT		WORKING GROUP FORMAT		KEY INFORMANT INTERVIEW FORMAT	
AAR design 1 week	• Agree on concept note, agenda • Invite participants	**AAR design** 1 week	• Agree on concept note, AAR team and agenda	**AAR design** 1 week	• Agree on concept note, AAR team and agenda • Identify key informants to interview
AAR preparation 1 week	• Gather and review background material • Develop trigger questions • Administrative arrangements (venue, etc.)	**AAR preparation** 1 week	• Gather, review and share background material • Develop working group trigger questions • Invite participants • Administrative arrangements (venue, etc.) • Brief facilitators	**AAR preparation** 1 week	• Introduce process and schedule interview • Gather and review background material • Send survey to recipients • Develop questionnaire
Conduct AAR debriefing 0.5 - 1 day	• Setup • Opening • Analytical session • Consensus building on findings	**Conduct AAR workshop** 2-3 days	• Set-up • Opening • Analytical session • Consensus building on findings • Workshop evaluation	**Conduct interviews and analyse survey results** 1-3 week(s)	• Gather and consolidate survey results • Conduct key informant interviews
				Wrap-up meetings/ interviews 1 week	• Conduct focus group meetings • Conduct final interviews (if necessary)
Report writing 3 days	• Write AAR report • Distribute to participants for feedback	**Report writing** 1 week	• Write AAR report • Distribute to participants for feedback	**Report writing** 1 week	• Write AAR report • Distribute to participants for feedback
Finalize report 1 week	• Integrate feedback and finalize • Disseminate findings	**Finalize report** 1 week	• Integrate feedback and finalize • Disseminate findings	**Finalize report** 1-2 week(s)	• Integrate feedback and finalize • Disseminate findings
Implementation Continuous	• Assign responsibilities, deadlines • Implement recommendations	**Implementation** Continuous	• Assign responsibilities, deadlines • Implement recommendations	**Implementation** Continuous	• Assign responsibilities, deadlines • Implement recommendations

ANNEX 6. TERMS OF REFERENCE OF AAR TEAM

Not all the roles described below will be required. The team will be composed of the people necessary to fulfil the scope, objectives and format of the planned AAR.

Overall AAR lead

The overall AAR lead is a staff member from the ministry of health who seeks to initiate an AAR. This person can be someone who was directly involved in the response, or can be a member of a different department within the ministry of health. The overall AAR lead is responsible for:

- developing the scope and objectives of the review;
- organizing and leading the AAR team (if necessary, for example for larger reviews);
- ensuring that senior management provides coordination and support;
- collecting background materials and disseminating them to AAR participants;
- identifying and inviting participants;
- identifying facilitators and interviewers (ideally a peer or a third party for larger reviews);
- identifying a report writer;
- organizing and supervising the AAR sessions, including the development and adaptation of trigger questions;
- supervising all logistical and administrative arrangements;
- compiling the final AAR action plan;
- sharing the final report with relevant stakeholders, including the International Health Regulations (2005) national focal point, and WHO if appropriate.

Lead facilitator or lead interviewer

This person will lead the overall facilitation of an AAR that follows the working group format, or plan the interview schedule for an interview-based AAR. It is important that the lead facilitator or lead interviewer is impartial (for example, an international expert or a staff member from the WHO regional office or headquarters), and not someone who was involved directly in the response. The lead facilitator or lead interviewer is responsible for:

- supporting the AAR lead to define the AAR objectives, scope, format and participants;
- developing trigger questions;
- briefing other working group facilitators and interviewers;
- supporting facilitators and interviewers and troubleshooting during the AAR;
- ensuring and conducting required debriefings;
- coordinating the final report writing.

Facilitators and interviewers

The role of a facilitator or interviewer is to support the lead facilitator or lead interviewer in guiding the discussion around key themes, and to prevent deviation beyond the scope and objectives. If necessary, they should also assist in managing interpersonal conflicts by maintaining focus on underlying issues.

Additional facilitators and interviewers will be needed for working group AARs and for key informant interview AARs in which many interviews are planned.

An effective facilitator or interviewer has experience facilitating group discussions; has an analytical, systems-focused approach to problem solving; understands the country context; and speaks the main language of the meeting participants. Ideally, a facilitator or interviewer is also neutral to the situation (for example, is not someone who was directly involved in the response). In many cases, a staff member from a related agency (such as animal health or food safety) may serve as a facilitator or interviewer.

Within each pillar, the facilitator is responsible for:

- conducting and closing the AAR;
- maintaining the structure of the discussion;
- facilitating the processes of seeking agreement on the key themes and scope of the review, encouraging contributions across participants, managing time, clarifying and summarizing issues, and clarifying assumptions;
- maintaining an impartial perspective;
- summarizing the discussion points;
- contributing to the writing of the final report.

Note takers

Note takers ensure that comments and discussions are captured and documented. Note takers should have some familiarity with the topic and the country's organizational structures, but will not necessarily be a technical expert.

Note takers are also necessary for the key informant interview format, unless the interviews will be recorded for later transcription by the interviewers.

Report writer

The report writer is responsible for preparing a written report in the language of the meeting for further discussion and dissemination.

ANNEX 7. RELEVANT BACKGROUND INFORMATION

This annex lists the types of background information that may be relevant for review by participants before discussing the event under response.

Details of the event

- date of onset;
- timeline of key events, including response timetable;
- affected locations;
- total number of cases, including severity (for example, hospitalizations and deaths) by key demographic characteristics and epidemic (epi) curve;
- case definition and clinical symptoms;
- summary of laboratory work conducted to detect and confirm the outbreak;
- pre-existing vulnerabilities.

Response structure

- how the event was detected and reported;
- list of departments or other organizations involved in investigation and control, persons involved and their roles (following the "3W" principle: who does what and where);
- decisions of emergency management meetings;
- operational response framework (organigram);
- emergency response plans;
- operational reviews and response evaluations;
- relevant standard operating procedures;
- risk assessments: dates, stakeholders and outcomes;
- notification under the IHR (2005);
- relevant details about equipment, supply and financing;
- partnerships;
- logistics.

Reports and media

- media reports;
- outbreak reports;
- situation reports.

ANNEX 8. EXAMPLE TRIGGER QUESTIONS

This annex provides subsets of example trigger questions that can be used for some of the pillars often considered during an AAR following a public health event. Trigger questions can be used by facilitators and interviewers to help to focus discussions. The list is not exhaustive and will vary depending on the event under review. Zoonotic diseases, chemical events, radionuclear events and natural disasters (see Annex 4) will have different sets of trigger questions as appropriate.

PILLAR	EXAMPLE TRIGGER QUESTIONS
Case management	• How were cases and fatalities managed during the emergency? • How were patients transported and referred between health care facilities? • How was the coordination of case and fatality management undertaken between sectors and partners? • Was the necessary equipment, material and resources available for case management and personal protection? • What was the role of the public sector and other actors in case management? • How was the case management financed? Was it free for patients?
Infection prevention and control	• What infection prevention and control measures were implemented to protect health care workers, patients (inpatients and outpatients) and communities? Were they sufficient? • Were the infection prevention and control measures that were implemented during the emergency effective in preventing infection in a health care setting or in the community? • How was waste managed in health structures and in the community following funerals? • Were sufficient resources available to protect staff from infection (for example, personal protective equipment), for waste disposal, and for decontamination? • How was coordination with other sectors, including the private sector, ensured in the implementation of infection prevention and control measures in health care facilities and communities, and for water, sanitation and hygiene activities?
Coordination	• How was the coordination of response actions at different administrative levels (local, regional and national) undertaken during the event? • Were sufficient resources (human, material and financial) available for multisectoral coordination at all levels? • Were existing contingency or response plans for this emergency effective in identifying actions, making decisions and communicating information? • How was finance management undertaken during the event? • How was coordination with donors managed during the event? • How was information managed during the emergency? What information products were developed? • How did the coordination of international and national partners, such as the United Nations NGOs, IGOs, GOARN and emergency medical teams, take place? Was it effective? • Was a joint interagency, multisectoral response plan developed? How did this contribute to enhancing the response? • Was the health cluster activated and operational? Was it effective for coordinating roles and responsibilities and for ensuring complementarity between partners? (This is particularly relevant in humanitarian emergency settings.) • How did the preparedness and response plan help? • Identify the areas in which preparation for this event was most successful.

PILLAR	EXAMPLE TRIGGER QUESTIONS
Logistics	• How were supply chains managed during this emergency? • Was the prepositioning of essential material effective in enabling a timely and efficient response? • Were sufficient resources (human, material and financial) available to provide logistics support during the event? • How was fleet management undertaken during the response? • Were there other partners or sectors involved in delivering logistics services? What were their roles and how were they coordinated and managed? • How did the emergency procurement system function?
Surveillance	• How did surveillance or alert systems detect the event? • How much time was taken between the onset and the detection of the event? • What helped in early detection or what prevented early detection? • Were there sufficient resources (human, material and financial) to undertake surveillance and early warning activities? • How were epidemiological data analysed and used to enable a response? • How did partners or other sectors contribute to surveillance and early warning? How was information shared? • How were surveillance activities adapted or reinforced through the course of the response? • How did the surveillance system detect the end of the outbreak and the end of the emergency situation? • Did the event identify any weaknesses or gaps in the collection, storage, transmission, or analysis of surveillance data? • How did surveillance for the event or pathogen change during the response (for example, from aggregate reporting to case-based surveillance)? • What were barriers to effective contact tracing (where applicable)? • How was the risk of the event assessed? By who and when? • How was the result of the risk assessment used? Did it have an impact on the management of the response? • How did the assessment findings help to plan for the response effort?
Laboratory	• What is the laboratory turnaround time (how quickly were samples collected and tested and the results reported)? • What was the process for laboratory confirmation? • How was information coming from the laboratories managed? • Were plans and standard operating procedures for laboratory testing adequate to respond to the event? • Were there sufficient resources (human, material and financial) available to provide consistent laboratory support during the outbreak? • Were there any issues involved in the collection, management, and transportation of specimens? • How did coordination and information sharing with other laboratories in the health sector and in other sectors function? • How was the international reference laboratory involved in confirming the event? • Did any accident or other biosafety incident occur? If yes, what was the cause?

PILLAR	EXAMPLE TRIGGER QUESTIONS
Vector surveillance and control	• What vector control measures were implemented during the emergency, and how did this impact the evolution of the outbreak? • How effectively was the integrated vector management plan implemented? • How were communities communicated with during vector control activities? Did communities accept and support the vector control strategy? • How was intersectoral coordination and collaboration managed? How did this contribute to the efficiency of vector control measures? • Were sufficient resources available and accessible for vector control activities? • Were resistance patterns to the chemical products used for vector control detected? How was resistance monitored and managed?
Communication and community engagement	• How were risk communication activities and messages coordinated between levels of the health system (local, regional and national) and partner organisations? Did the messages reach the target groups and were they understood? • Is there a national risk communication strategy? How was public communication conducted during the emergency? Was a specific communication plan developed? Were there any parts of the strategy that were not useful or relevant? • Did risk assessment inform risk communication and vice-versa? Did personnel responsible for risk communication and risk assessment cooperate? • How was risk communication monitored during the emergency? Have there been any changes in what people are saying and doing as a result of the communication efforts? • Did the population that was in greatest need of receiving communication messages effectively receive those messages? If not, why? How do we know? • Were sufficient resources available (including budget) to conduct risk communication and community mobilization? • How were communication activities and messages coordinated with other sectors and partners? • How were rumours and misinformation identified, and what measures were taken to counter them? • How effective was public communication for building trust with the public and managing emerging public concerns? • Were there any mechanisms in place to listen to at-risk communities or for them to contact authorities with questions? Was feedback from communities used to update risk communication messages and tactics?

ANNEX 9. DEFINITIONS OF EVALUATION RATINGS USED DURING AN AAR

EVALUATION RATINGS	DEFINITIONS
Performed without challenges (P)	The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s) and which did not negatively impact the performance of other activities. Performance of this activity did not contribute to additional health and/or safety risks for the public or for emergency workers, and it was conducted in accordance with applicable plans, policies, procedures, regulations, and laws.
Performed with some challenges (S)	The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities. Performance of this activity did not contribute to additional health and/or safety risks for the public or for emergency workers, and it was conducted in accordance with applicable plans, policies, procedures, regulations, and laws. However, opportunities to enhance effectiveness and/or efficiency were identified.
Performed with major challenges (M)	The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s), but some or all of the following were observed: demonstrated performance had a negative impact on the performance of other activities; performance contributed to additional health and/or safety risks for the public or for emergency workers; and/or performance was not conducted in accordance with applicable plans, policies, procedures, regulations, and laws.
Unable to be performed (U)	The targets and critical tasks associated with the core capability were not performed in a manner that achieved the objective(s).

Source: Exercise evaluation guides (EEGs). FEMA preparedness toolkit (https://preptoolkit.fema.gov/web/hseep-resources/eegs).

ANNEX 10. AAR REPORT TEMPLATE

Title:
After Action Review for [NAME OF THE PUBLIC HEALTH EVENT]
[COUNTRY]
Date of After Action Review: [DD/MM/YYYY]

This template should be used by the designated report writer to document and structure discussions during the after action review and highlight the analysis and recommendations arising from the review. This report should be shared with team members for their comments before broader circulation for knowledge-sharing purposes.

1. EXECUTIVE SUMMARY

Briefly summarize the key points of the report in this section, which can be shared as a stand-alone document for interested stakeholders and senior management. Include:

- *brief description of the event;*
- *summary of discussions, including notable best practices and challenges identified;*
- *conclusions and recommendations;*
- *table of timeline of key milestones (see below).*

KEY MILESTONES	DATES
date of start of outbreak or event	
date of detection of outbreak or event	
date of notification of outbreak or event	
date of verification of outbreak or event	
date of laboratory confirmation	
date of outbreak or event intervention	
date of public communication	
date outbreak or event declared over	
AAR timeline start (often the beginning of the response)	
AAR timeline end (often the end of the response)	

2. BACKGROUND ON EMERGENCY

Summarize the key characteristics of the event as well as any contextual details that are relevant to provide an overview of what happened. Include:

- *timeline of the event (date of onset, key milestones, etc.);*
- *number of cases, hospitalizations, deaths;*
- *relevant graphs/illustrations (e.g. epi curve) if necessary;*
- *how the event was detected via existing systems;*
- *summary of the response;*
- *geographical, political, socioeconomic, and environmental factors that played an impact.*

3. SCOPE AND OBJECTIVE OF REVIEW

Describe the rationale for organizing a review of this event. Identify the scope and objectives of the AAR.

Identify the target focus areas of the review, and mention whether this is a subreport of a larger review or a stand-alone report.

4. METHODS

Describe the method and approach behind the review, including:

- *the format of the review (debrief, working group, key informant interview, or mixed-method format);*
- *participating organizations, municipalities, districts;*
- *description of reference materials used (can be attached as an annex).*

5. FINDINGS

This is the key part of the report. Describe the discussions covered in the review, structured according to the response pillars reviewed. Focus on what actually happened, and the deeper systems and issues that explain why it happened (i.e. the root causes). Recommendations should be made both for institutionalizing and maintaining best practices, and for addressing challenges.

5.1 Timeline of outbreak (if applicable)

If the AAR included the development of a timeline, this section should present the timeline and highlight the key milestone dates of the response under review.

5.2 Pillar 1

Description of the response pillar and the major milestones and issues encountered. This pillar can combine several specific technical areas and/or functions.

This description should include a short narrative on the key issues within each function of the pillar in order to frame the findings in tables that lay out the following:

- *observations – best practices, impacts and enabling factors;*
- *observations – challenges, impacts and limiting factors.*

The new capacities developed under this pillar during the response should be highlighted.

5.3 Pillar 2

Description of the response pillar and the major milestones and issues encountered. This pillar can combine several specific technical areas and/or functions.

This description should include a short narrative on the key issues within each function of the pillar in order to frame the findings in tables that lay out the following:

- *observations – best practices, impacts and enabling factors;*
- *observations – challenges, impacts and limiting factors.*

The new capacities developed under this pillar during the response should be highlighted.

5.4 Pillar 3

Description of the response pillar and the major milestones and issues encountered. This pillar can combine several specific technical areas and/or functions.

This description should include a short narrative on the key issues within each function of the pillar in order to frame the findings in tables that lay out the following:

- *observations – best practices, impacts and enabling factors;*
- *observations – challenges, impacts and limiting factors.*

The new capacities developed under this pillar during the response should be highlighted.

5.5 Pillar 4

Description of the response pillar and the major milestones and issues encountered. This pillar can combine several specific technical areas and/or functions.

This description should include a short narrative on the key issues within each function of the pillar in order to frame the findings in tables that lay out the following:

- *observations – best practices, impacts and enabling factors;*
- *observations – challenges, impacts and limiting factors.*

The new capacities developed under this pillar during the response should be highlighted.

5.6 Pillar 5

Description of the response pillar and the major milestones and issues encountered. This pillar can combine several specific technical areas and/or functions.

This description should include a short narrative on the key issues within each function of the pillar in order to frame the findings in tables that lay out the following:

- *observations – best practices, impacts and enabling factors;*
- *observations – challenges, impacts and limiting factors.*

The new capacities developed under this pillar during the response should be highlighted.

5.7 Pillar 6

Description of the response pillar and the major milestones and issues encountered. This pillar can combine several specific technical areas and/or functions.

This description should include a short narrative on the key issues within each function of the pillar in order to frame the findings in tables that lay out the following:

- *observations – best practices, impacts and enabling factors;*
- *observations – challenges, impacts and limiting factors.*

The new capacities developed under this pillar during the response should be highlighted.

6. RESULTS OF THE EVALUATION OF IHR (2005) CORE CAPACITIES PERFORMANCE DURING THE RESPONSE

Immediately after identifying the best practices and challenges of the response under review, the summary of results of the objective-based evaluation of IHR (2005) core capacities performance should be presented in this chapter.

7. KEY ACTIVITIES

Include all key activities and recommendations identified during the AAR.

8. NEXT STEPS

Include a summary of the participants' discussions related to the strategy for implementing the activities identified during the AAR.

9. CONCLUSIONS

Summarize the discussions, key points, and analyses discussed above. Include how recommendations will be implemented and tracked, and specify the accountability for implementation.

Include results of the AAR evaluation and propose any improvement to methodologies for conducting the AAR.

10. ANNEXES

Annex 1: Post-AAR action plan (see AAR toolkits for template)

Annex 2: List of participants and AAR team

Annex 3: Agenda

WHO/WHE/CPI/2019.4

CONTACT

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