THE GLOBAL PRACTICE OF AFTER ACTION REVIEW
A SYSTEMATIC REVIEW OF LITERATURE
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A SYSTEMATIC REVIEW OF LITERATURE

World Health Organization
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### Abbreviations and Acronyms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>AAR</td>
<td>After action review</td>
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<td>ADB</td>
<td>Asian Development Bank</td>
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<td>BAR</td>
<td>Before action review</td>
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<tr>
<td>ALNAP</td>
<td>Active Learning Network for Accountability and Performance in Humanitarian Action</td>
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<td>CDC</td>
<td>Centers for Disease Control and Prevention (United States)</td>
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<td>CHS</td>
<td>Common Humanitarian Standard</td>
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<td>CLIC</td>
<td>Cumbria Learning and Improvement Collaborative</td>
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<td>CPI</td>
<td>WHO Country Health Emergency Preparedness and International Health Regulations</td>
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<td>DAC</td>
<td>Development Assistance Committee</td>
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<tr>
<td>ECDC</td>
<td>European Centre for Disease Prevention and Control</td>
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<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
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<td>FEMA</td>
<td>Federal Emergency Management Agency (United States)</td>
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<tr>
<td>HSPH</td>
<td>Harvard School of Public Health</td>
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<tr>
<td>ICRC</td>
<td>International Committee of the Red Cross</td>
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<td>IFRC</td>
<td>International Federation of Red Cross and Red Crescent</td>
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<td>IHR</td>
<td>International Health Regulations (2005)</td>
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<td>IHR MEF</td>
<td>International Health Regulations Monitoring and Evaluation Framework</td>
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<td>IOM</td>
<td>International Organization for Migration</td>
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<td>ISO</td>
<td>International Organization for Standardization</td>
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<td>IZA</td>
<td>Institute for the Study of Labour</td>
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<td>JEE</td>
<td>Joint external evaluation</td>
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<td>LLIS</td>
<td>Lessons Learned Information Sharing</td>
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<td>MSF</td>
<td>Médecins Sans Frontières</td>
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<tr>
<td>NASA</td>
<td>National Aeronautics and Space Administration</td>
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<td>NHS</td>
<td>National Health Service (United Kingdom)</td>
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<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
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<td>PHAC</td>
<td>Public Health Agency of Canada</td>
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<td>PHE</td>
<td>Public Health England</td>
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<tr>
<td>RTE</td>
<td>Real-time evaluation</td>
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<td>SSH</td>
<td>Society for Simulation in Healthcare</td>
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<td>UNDP</td>
<td>United Nations Development Programme</td>
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<tr>
<td>UNHCR</td>
<td>United Nations High Commissioner for Refugees</td>
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<tr>
<td>UNICEF</td>
<td>United Nations Children's Fund</td>
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<tr>
<td>UNISDR</td>
<td>United Nations International Strategy for Disaster Risk Reduction</td>
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<td>UNOCHA</td>
<td>United Nations Office for the Coordination of Humanitarian Affairs</td>
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<tr>
<td>UNOPS</td>
<td>United Nations Office for Project Service</td>
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<tr>
<td>US</td>
<td>United States</td>
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<td>USAID</td>
<td>United States Agency for International Development</td>
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<td>WFP</td>
<td>World Food Programme</td>
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<td>WHO</td>
<td>World Health Organization</td>
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Identifying lessons following an emergency response is an important part of any emergency management procedures. The purpose of these exercises is to ensure quality improvement and the strengthening of preparedness and response systems based on learning emerging from previous actions in responding to an emergency or event. Systematic post-event learning will contribute to a culture of continuous improvement and can be a means of sharing innovative solutions on how to tackle emerging public health risks.

There are different forms of evaluation and learning following an emergency, and the World Health Organization (WHO) recommends that Member States conduct after action reviews (AARs) as part of the International Health Regulations (IHR) Monitoring and Evaluation Framework (IHR MEF) in order to assess the functionality of core capacities and to contribute to the development of comprehensive national action plans for health security.

An AAR is a qualitative review of actions taken in response to an emergency as a means of identifying best practices, gaps and lessons learned. The AAR offers a structured approach for individuals and partners to reflect on their experiences and perceptions of the response, in order to systematically and collectively identify what worked and what did not, why and how to improve. AAR can range from quick informal debriefing sessions with team members to larger workshops with broad, multisectoral participation led by facilitators. Importantly, AARs are not external evaluations of an individual’s or a team’s performance. They do not seek to measure performance against benchmarks or key performance standards but are a constructive, collective learning opportunity, where the relevant stakeholders involved in the preparedness for, and response to, the public health event under review can find common ground on how to improve preparedness and response capability.

This literature review was undertaken to identify and build understanding around principle characteristics of AARs, including their methodologies, formats, planning and roles. It also sought to look at AARs in relation to forms of evaluation and different types of learning. The findings of this review ultimately aimed to understand the current methodologies for conducting AAR and contribute to the design of the WHO Guidance for AAR, published on the WHO website in 2019.

One hundred and twenty-two documents were examined from two categories: 66 “methodological” reports or documents describing AAR processes or
other knowledge management techniques for post event review, and 56 AAR reports or other forms of post-event review, which describe the methodologies used for specific events or emergencies. A substantial amount of information related to AAR is grey literature found on websites. This was considered in the reviews but was not used as a basis for any findings.

The results of the literature review indicate that there is general consensus around the principal characteristics of an AAR.

Although it is difficult to clearly express the scope of AARs, particularly vis-à-vis other post-event learning and evaluation methods, the following features essentially define the AAR. An AAR:

- contributes to a culture of continuous personal, collective and institutional learning aimed at the gathering of lessons learned and best practices;
- is relatively quick and cheap to conduct, and is conducted shortly after the action or event being evaluated;
- relies on open, honest and equal interaction between participants, and on the collective sharing of experience and perceptions of the event, project or issue being reviewed; and
- comprises a basic consistent analytical structure applying four main research questions in order to better understand what should have happened during the management of an event, what actually happened, what went well and what did not and why, and what can be improved and how.

Applying the principles outlined above, AARs may be useful to support a component of a larger emergency evaluation, but have a focus on learning, which is one of the primary purposes for conducting an AAR. AARs present too many methodological limits to supply the quantitative outcomes required by the other types of evaluation conducted for the purpose of accountability.

Normally, an AAR is a quick, facilitated, safe, flexible and open process that is time bound to the event under review. The methodology is pedagogical, interactive, and generally comprises a mix of several knowledge management and learning techniques. More specifically, AARs can make use of a previous data collection (based on secondary data review and survey), followed by a facilitated workshop held shortly after an emergency or event that brings together the different actors who participated in the response to the event. Most importantly, AARs should produce outcomes that can be transformed into recommendations for decision-makers when recorded in an after action report. AARs are an opportunity to translate participants’ experiences during the response into actionable roadmaps or plans, which can then be incorporated into national planning cycles. Many of the above key elements have now been incorporated into the recently published WHO Guidance for AAR, which takes Member States through the whole AAR process, from planning, preparing and conducting an AAR, to reporting AAR findings and following up on proposed actions. Accompanying this guidance, WHO has also provided AAR toolkits for different AAR formats, with templates, checklists, facilitators’ manuals, PowerPoint presentations, and a database of trigger questions. Moving forward, these ready-to-use tools both simplify and standardize the way AARs are conducted.

Finally, one of the critical outcomes of an AAR is the creation of a repository of key challenges, best practices and resulting recommendations. This literature review outlined the importance of ensuring that lessons are not lost and that a mechanism for accessing the lessons is available through a "lessons learned database", which helps to build institutional memory and provides a resource for emergency preparedness and response stakeholders. The WHO Guidance for AAR has addressed this by providing a final AAR report template for the documentation of lessons learned and best practices. With a template provided, this is an important step forward to standardize data collection, which in turn can contribute towards the creation of a global "lessons learned database".
An after action review (AAR) is a qualitative review of actions taken to respond to an emergency, as a means of identifying best practices, gaps and lessons learned, and challenges emerging during the response. AARs generally follow a specific analytical framework that seeks to identify what practices worked well, and how these can be institutionalized and shared with relevant stakeholders; and what practices did not work and require corrective action. AARs can be used as a functional evaluation of the national response capacities and processes in place; thus, an AAR can identify the actions needed to improve the response capacity and plans for future events. Such reviews are important in a culture of continuous learning and improvement.

In 2015, the Report of the Review Committee on Second Extensions for Establishing National Public Health Capacities and on IHR Implementation recommended that “States Parties should urgently ... ii) 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”. Following this recommendation, AAR was included as one of the four components through which Member States should monitor, evaluate and report on the implementation of core capacities under the International Health Regulations (IHR).

There are four components of the IHR Monitoring and Evaluation Framework (IHR MEF):

- Annual reporting to the World Health Assembly by States Parties;
- Voluntary external evaluation using the joint external evaluation (JEE) tool;
- AARs; and
- Simulation exercises.

The annual reporting to the World Health Assembly is obligatory, whereas the other three components are voluntary.

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6 An “event” is defined as an emergency incident or occurrence. The terms “event” and “incident” are often used interchangeably. An event may be insignificant or could be a significant occurrence, either planned or unplanned (e.g. extreme weather event or mass gathering), that may affect the safety and security of communities. Under the Article 1 of the IHR, an event is defined as “a manifestation of disease, or an occurrence that creates a potential for disease” (with particular reference to public health events of international concern). Source: (1)
Implementation of the IHR MEF provides a comprehensive, multisectoral picture of a country’s capacities and functionalities for preventing, detecting, notifying and responding to public health emergencies. Each of the four components contributes in a different way to the identification of strengths, gaps and priorities, which are then addressed in multisectoral national action plans for health security.

This literature review was conducted to guide and provide an evidence base for developing a process for conducting AARs as part of IHR MEF, but also as a management tool to improve the performance of organizations and programmes through continuous learning.

The findings of this review ultimately contributed to the design of the WHO Guidance for AAR (3) and the accompanying comprehensive toolkits (4) to assist the Member States in planning, preparing, and conducting AARs for collective learning and operational improvement after a public health response.

This paper is addressed to health, humanitarian and development professionals, and to bodies and organizations active in the applied use of knowledge management techniques in monitoring and evaluation of performance, country planning and operations, in the context of health emergency preparedness and response.

The review begins with a description of the methodology adopted for the literature search, followed by the findings. The results of the review cover topics ranging from the basics and origins of AAR theories, to the benefits and purposes, evaluation systems, knowledge management theories and methodologies, lessons learned and implications from the real-world application of AARs since their introduction in the 1970s by the United States (US) Army (5).
2 METHODOLOGY

2.1 REVIEW PROTOCOL

The review protocol consisted of:

- elaborating a search strategy in collaboration with WHO library staff in WHO headquarters, Geneva, Switzerland;
- undertaking consultations with the Country Preparedness and International Health Regulations (CPI) team at WHO headquarters, other sections from WHO headquarters and WHO regional offices, the World Food Programme (WFP), Harvard T.H. Chan School of Public Health (HSPH), the European Centre for Disease Control, the University of Lund (Sweden) and the University of Monash (Australia);
- collating data and information in a synoptic Excel matrix;
- reading the materials; and
- writing a final report.

2.2 SEARCH STRATEGY, DATA SOURCES AND PUBLICATION TYPES

The screening methodology involved selection by title, abstract and keywords. The search was conducted in several interconnected stages. The first step involved a top-level search using interdisciplinary databases such as PubMed, Medline and SAGE Journals Online.

The second phase involved:

- searching of original peer-reviewed articles; review articles; standards; PowerPoint presentations; guidelines; government; health-care, humanitarian and industry reports of AARs; and other types of grey literature through general Internet searches; and
- targeted and narrative searches of the websites of various organizations:
  - WHO;
  - various United Nations organizations – the UN Children's Fund (UNICEF), Food and Agriculture Organization of the UN (FAO), WFP, UN High Commission for Refugees (UNHCR), UN Office for the
Coordination of Humanitarian Affairs (UNOCHA), UN Strategy for Disaster Risk Reduction (UNISDR) and the UN Office for Project Services (UNOPS);

• other international organizations — the International Organization for Standardization (ISO), International Organization for Migration (IOM), International Committee of the Red Cross (ICRC), the International Federation of Red Cross and Red Crescent Societies (IFRC), https://www.humanitarianresponse.info/, ReliefWeb, Médecins Sans Frontières (MSF), Active Learning Network for Accountability and Performance in Humanitarian Action (ALNAP), Common Humanitarian Standard (CHS), World Bank e-library, Profiling and Assessment Resource Kit database, ACAPS, Save the Children, CARE International, Click4it and Better Evaluation; and

• national or regional organizations — Public Health England (PHE), Public Health Agency of Canada (PHAC), US Centers for Disease Control and Prevention (CDC), European Centre for Disease Prevention and Control (ECDC), HSPH, National Health Service (NHS, United Kingdom), National Aeronautics and Space Administration (NASA), US Army, British Army and several fire brigades from around the world.

Many documents accessed were obtained because they were referenced in other documents consulted previously. There were no restrictions on country or study type, to ensure that the review incorporated a comprehensive range of contexts.

A final phase involved consulting with experts from different institutions (ECDC, HSPH, University of Lund, University of Monash and WFP) to identify additional references.

2.2.1 SEARCH TERMS

Searches combined free text, acronyms and medical subject headings (Mesh). The searches were optimized to be both effective and efficient in capturing the most relevant literature in the time available. The terms used for search purposes included those listed in Box 1.

BOX 1. TERMS RELATED TO AARs USED FOR SEARCH STRATEGY


Sources were included for assessment if they met the following inclusion criteria:
- they were related to at least one of the review questions (Annex 1);
- they were produced between 1982 and 2017 (to cover the entire history of AARs);
- they were written in English, French, Italian or Spanish; and
- full text was available (accessed through WHO if necessary).

Sources were excluded if they were unrelated to any of the review questions.

A literature review matrix (Annex.) was generated in Microsoft Excel to gather sources, key information and metadata. Tables and boxes presented in this document were extrapolated from the matrix.

The information and the studies collected were evaluated as “relevant”, “fairly relevant” or “non-relevant”. The evaluation was based on the material’s relevance to the objectives and questions of the review, reliability and potential for bias, potential for conceptual overlapping, clarity of results and conclusions presented.
The literature review allowed the collection of:

- 122 documents, of which 66 were classified as “methodological” – that is, technical guidelines about AAR, or about other knowledge management techniques or other post events reviews methods; and
- 56 reports of AARs or of other forms of post-event review.

Of the 66 “methodological” pieces, two were considered “non-relevant” and five “fairly relevant”. Of the 56 reports of AARs or other forms of post-event review, 12 were considered “non-relevant” because they were not related to any of the review questions. Thus, 107 “relevant” documents were included in the review.

A significant amount of information that was collected from online sources was not included in the matrix, because the material was not in “doc” or “pdf” format. Although the information gathered from these online sources was not inserted in the matrix and was not considered in the quality assessment analysis, the information was crucial for the development of this report.
In post-emergency settings, an AAR is a knowledge-sharing and learning-focused tool (6). The AAR brings together a team – at the end of an emergency response – to discuss the encountered successes and failures in an open and honest fashion. The purpose is to learn from the experience, then use the lessons learned and best practices to improve performance, either in the next phase of the response, or the next time a similar event occurs (7). Specifically, AARs provide team members with the opportunity to analyse their own behaviour, its contribution to the outcome, and any potential changes that may be needed (8).

There is no standardized definition for AARs post-event response assessment, particularly one that spans sectors and disciplines. Hence, as a starting point of this study, the definition considered was borrowed from the military, for which AARs are recognized as a specific “professional discussion of an event, focused on performance standards” (5). However, further research demonstrated that AARs could have a broader application for reviewing a range of issues, as well as different means of data collection, facilitation and analysis. In short, there is a divergence in the literature because AARs can be considered as both a specific knowledge management evaluation tool with a definite methodology (9), and an approach for capturing lessons after an event that can benefit from a variety of methodologies and outcomes and depths of review (10).

In the WHO Guidance for AAR (3), AAR is defined as the “qualitative review of actions taken to respond to an emergency as a means of identifying best practices, gaps and lessons learned.” Specifically, it describes a process which 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.”

Although it is difficult to clearly set the scope of AARs, particularly vis-à-vis other post-event learning and evaluation methods, the following features essentially define the identity of the AAR:

- AARs contribute to a culture of continuous per-
THE GLOBAL PRACTICE OF AFTER ACTION REVIEW

- contributes to a culture of continuous personal, collective and institutional learning aimed at the gathering of lessons learned and best practices;
- is relatively quick and cheap to conduct, and should be conducted shortly after the action or event being evaluated;
- relies on open, honest and equal interaction between participants, and on the collective sharing of experience and perceptions of the event, project or issue being reviewed; and
- comprises a basic consistent analytical structure applying four main research questions in order to better understand what should have happened during the management of an event; what actually happened; what went well and what did not, and why; and what can be improved and how (6).

In summary, AARs are a qualitative but systematic way to review planned action that allows the identification of strengths, weaknesses and lessons to improve organizational learning and response capacity. AARs are applicable to almost any event, and although their emphasis is normally on learning after failures, AARs conducted following successful experiences can also provide interesting insights into how systems can learn from best practices, producing results in a short time (13).

4.1.1 PURPOSE OF AARs

AARs use a sharing of experience to improve performance by preventing recurrent errors and reproducing success (14). The purpose of AARs is to capture, document and experience in order to improve future practice by:
- providing an opportunity to collectively analyse the results achieved;
- facilitating joint lesson learning for the benefit of future processes;
- identifying key point and strategic issues for further improvement; and
- strengthening team dynamics.

These peculiarities make AARs an effective tool for: undertaking continuous assessment of organizational performance, looking at successes and failures (13), providing a space for staff to capture key learning at a critical juncture of an emergency response, generating lessons learned that can be shared across disciplines, and allowing the building of a set of recommendations for the management for improving emergency policy and practice (15).

In particular, AARs can provide a forum for determining the root causes of successes and failures in performance, and for developing strategies for mitigating causal factors in the future (16). Conducting regular AARs can help to track progress, correct unintended impacts and ensure that planned outcomes are achieved (17).

4.1.2 BENEFITS: WHAT AARs CAN DELIVER

The main benefits of an AAR come from applying its results to future situations. By applying learning, a team can improve and perform to higher standards. By the end of an AAR, participants must clearly understand what worked well and why, what did not go well and where improvements can take place (18).

AARs can yield many benefits when conducted in an environment of openness, honest discussion, clarity and commitment to identifying and recommending solutions.

In the context of post-emergency evaluations, AARs help to prevent oversimplified interpretations of the response narrative (by encouraging discussion of errors and “near misses”) (19), enhance operational sensitivity and resilience, and provide opportunities to acknowledge individual expertise – all hallmarks of high-reliability organizations (20). In this regard, the most relevant benefits of conducting an AAR are the highly structured and supported analytical framework it provides for identifying lessons and best practices, and the focus it places on learning (as a primary objective) and performance.
This is especially pertinent to health-care, humanitarian and emergency professionals, whose learning activities are under constant time pressure (21).

From a technical point of view, conducting AARs should help to identify what elements of the response have been successful and should be taken forward, as well as what has not worked. Where failures are identified, there will be valuable knowledge and learning that should be captured (22). This has several advantages for participating organizations (5):

- the feedback generated from the review compares the actual output of a process with the projected outcome;
- through the AAR process, participants can identify organizational and environmental strengths and weaknesses, and agree together on how to develop future performance; and
- the shared learning experience improves task proficiency and promotes good relationships among the organizational members and others committed to the same issue (23).

Other important benefits described in the WHO Guidance for AAR (3) includes documentation of lessons learned, allowing advocacy for financial or technical support, and promoting ownership through obtaining a consensus among participants regarding the follow-up activities, to both prevent the next event and improve future response.

Furthermore, the information collected and lessons identified from AARs can be systematized and shared among peers or other stakeholders facing similar challenges or threats, for their benefit. Results can be recorded in registries so that they can be accessed next time there is a crisis (24). The building of these registries may also allow some deep analysis for retrospective and trend-based studies.

### 4.1.3 CHARACTERISTICS OF AARs

Guidance from the United States Agency for International Development (USAID) (23) summarizes some key features of AARs into a useful checklist for planning and conducting AARs. These key features are:

- effective leadership engagement;
- equal participation of team members;
- inclusion of stakeholders;
- positive environment for feedback; and
- generation of shared knowledge.

Starting from this model and shifting towards a conceptual perspective borrowed from an academic paper on AAR used as a training tool (25), the trademarks that underline the effectiveness and the success of AARs are:

- observational learning, intended as a participative learning that occurs by observing the behaviour of others;
- collection and understanding of individual and group perceptions; and
- goal setting towards action to be taken in order to solve the identified issues.

From a technical point of view, the AAR approach involves basic aspects of social interaction such as learning and cognition, team dynamics and collection of feedback (26). Thus, although cognitive learning is a crucial part of the AAR process because it is focused on what happened during a response, feedback has to be considered as being at the heart of the AAR process, because it concerns providing individuals involved in the response with information about what needs to be improved in the future on a task or set of tasks. In other words, AARs allow participants to have an active role in producing lessons learned, while also benefiting from these lessons. Also important are team dynamics, because the individuals in the team are interdependent and seen as a “working unit”.

This means that an AAR can focus directly on the tasks and goals that were to be accomplished and discover why things happened, encouraging participants to highlight and discuss important lessons from the review (28).
4.1.4 ANAlytical FRAMEWORK OF AARs

All literature sources reviewed confirm that AARs are always structured around one basic analytical methodology that aims to respond to four main questions developed from the original method, which was established by the US army in the 1970s. This method was later adapted by international companies, fire brigades and the health-care sector for use in emergencies.

The questions are:
1. What was supposed to happen?
2. What actually happened?
3. Why was there a difference?
4. What can we learn from this?

This model (Fig. 1) is considered highly functional for its simplicity, and is normally adapted to the needs of the review and to the context. In fact, all the literature sources assessed agree that the strength of AARs is grounded in the simplicity of this model. However, it has to be taken into consideration that, as stated by the Cumbria Learning and Improvement Collaborative (CLIC), the most important process to be kept is the dichotomous relation between “agreed facts” (questions 1 and 2) and “shared opinions” (questions 3 and 4) (11).

The outcome of the AAR hinges on the assessment of process, or how the response performed vis-à-vis planned assumptions or processes, and why the system did not function in the way it was designed to function.

The WHO Guidance for AAR (3) adapted the above analytical framework into three key phases that are common to all AARs:

1. **Objective observation** – to establish how actions were implemented during the response and contrast them to what ideally should have happened according to existing plans and procedures.
2. **Analysis of gaps and best practices and contributing factors** – to identify the gaps between planning and practice; and to analyse what worked well and what worked less well, and why.
3. **Identification of areas for improvement** – to identify actions to strengthen or improve performance and determine how to follow up on them.

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**FIG. 1. VISUALIZATION OF AARs**

1. **What was supposed to happen?**
2. **What actually happened?**
3. **Why was there a difference?**
4. **What can we learn from this?**

**Agreed Facts**

**Shared Opinions**

*Source: (11)*
4.1.5 FORMS OF AARs

Generally, AARs take place as one of the following: a formal organized event hosted by a facilitator, an informal short review between a few individuals at any stage in a project (28), or a personal (one-on-one) conversation (Table 1). The type of AAR to be conducted may vary depending on the activity to be reviewed, the level of various team members’ participation in the project, the scope of the project, and a general assessment of which approach might work best (29). Each type of AAR generates a rich reflection. However, whether the AAR is formal, informal or personal, documenting the results will capture the learning for potential use in future projects.

More specifically, a formal AAR is resource intensive and involves the planning, coordination and preparation of supporting training aids, the AAR site, support personnel, and time for facilitation and report preparation. A lead facilitator/interviewer guides the review discussion following an agenda, and notes are recorded with the help of a note taker. Following the AAR session, a formal report is presented. Although it may be desirable to have a neutral facilitator, who was not involved directly in the response – thereby allowing all team members to participate equally without responsibility for the process as a whole – any member of a project team can serve as facilitator.

Informal AARs require less preparation and planning (5). Frequently, an informal AAR is carried out by those responsible for the activity and, if necessary, the discussion leader or facilitator can either be identified beforehand or chosen by the team itself. As with a formal AAR, the standard format and questions guide the discussion (18).

In short, formal evaluations are systematic and rigorous, whereas informal evaluations are more ad hoc (30). Informal AARs are usually conducted on site immediately following an event, activity or programme.

Finally, there are personal reviews. As the name implies, a personal review is a planning utility that concerns individual reflection on the course of action or activities of the immediate past (or even of longer term activities) (23).

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<th>FORMAL AARs</th>
<th>INFORMAL AARs (HOT WASH OR DEBRIEF)</th>
<th>INTERVIEW BASED</th>
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<tr>
<td>Are facilitated by an objective outsider</td>
<td>Are conducted by those closest to the activity</td>
<td>Are conducted with individuals</td>
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<tr>
<td>Take more time</td>
<td>Take less time</td>
<td>Take less time</td>
</tr>
<tr>
<td>Use complex techniques and tools</td>
<td>Use simple review techniques and tools</td>
<td>Use interview technique</td>
</tr>
<tr>
<td>Are scheduled beforehand</td>
<td>Are conducted when needed</td>
<td>Are conducted when needed</td>
</tr>
<tr>
<td>Are conducted in meeting or other formal settings</td>
<td>Are held at the event site</td>
<td>Are held at the event site</td>
</tr>
</tbody>
</table>
In the WHO Guidance for After Action Review (3), four AAR formats are proposed to offer collective learning and operational improvement after a public health response. These include:

1. **debrief AAR** – an informal facilitator-led discussion with no more than 20 participants focusing on a limited number of functional areas (3 or less), taken place over half a day with more focus on learning within a team (best for smaller responses);

2. **working group AAR** – an interactive format that consists of guided group work and plenary sessions with up to 50 participants focusing on more than 3 functional areas, taken place over 2-3 days (best for responses that involved multiple sectors);

3. **key informant interview AAR** – a longer and more in-depth review of an event that begins with a literature review and feedback surveys, followed by semistructured interviews and focus group discussion, taken place over several weeks (best for complex and larger responses where those involved can no longer be brought together, or where confidentiality and non-attribution are necessary for honest and open feedback);

4. **mixed-method AAR** – a blended approach of the above three AAR formats consisting of a working group AAR with contents supplemented from key informant interviews (best for responses with a large scope where the majority but not all those involved can be brought together).

These AAR formats proposed in the WHO guidance can be adapted to accommodate the institutional culture, practice, and needs.

AARs can also be classified according to:

- the scope of the object of the review; or
- the number of partners who are leading it (single versus joint).

In the first case, the object of the review may be training (25), an emergency (31) or a specific response function. The US Federal Emergency Management Agency (FEMA) (32) distinguishes two types of evaluations according to the scope of the object in relation to the scale of the event: small scale (hot washes and critiques), and major incidents, which are followed by after action reports.

In the case of major incidents, an AAR can vary according to the number of partners leading it. Although such AARs are normally conducted by one institution (internal or external), in the humanitarian world there are examples of joint AARs, where different partners (e.g. international NGOs and UN agencies) share their resources and data to undertake the review (33).

### 4.1.6 LIMITS OF AARs IN POST-EMERGENCY REVIEWS

In some cases, an AAR may not be the most appropriate tool or may not result in the desired outcomes. Although this may be related to contextual or methodological problems (e.g. weak facilitation or preparation), AARs are not an appropriate tool to provide impact assessment. Furthermore, they should not be used to evaluate an individual’s performance, and could create difficulties if adopted in simulations involving “emergent” learning objectives (21).

One of the main research questions of this study was to determine the specific role of AARs in the spectrum of post-emergency reviews. As a result, the investigation acknowledges the lack of a general and validated consensus, not only in relation to the role of AARs, but also to all the modalities of post-emergency reviews in general. However, research on the distinct typologies of knowledge management and evaluation techniques available in studies of the marketing, health-care, emergency management, development and humanitarian sectors has allowed some comparisons, which are outlined in the sections below.
4.2.1 LIMITS OF THE AAR AS A TOOL FOR EVALUATION

The first question was aimed at identifying specific boundaries for AARs in the spectrum of evaluation typologies in health-care and post-event emergency. This question led directly to a second relevant query on how AARs could contribute to undertaking an evaluation. Hence, a general overview of available evaluation models was conducted. It identified three evaluation models frequently used in the evaluation of public health projects and interventions, as well as in the development and humanitarian sectors, as outlined below.

**OECD MODEL**

In the model from the Organisation for Economic Co-operation and Development (OECD) (34), most types of evaluation can be described as a response to the following questions (35):

- **Unit of analysis** – what is being evaluated (policy, country programme, meta, theme, cluster, sector or project)?
- **Timing** – when is the evaluation occurring (formative mid-term, summative or ex-post)?
- **Approach** – what kind of methodology should be adopted (impact, participatory, process or mixed)?
- **Relationship to the subject** – what is the nature of the evaluator vis-à-vis the subject of the evaluation (independent, self-evaluation, internal, external, peer or mixed)?

**CDC MODEL**

The model from the US Centers for Disease Control and Prevention (CDC) (36) recognizes that several different types of evaluation could be conducted, depending on when they are used and their intended objective. The different types of evaluation could be summarized as:

- **Formative evaluation** – which ensures that a programme or programme activity is feasible, appropriate and acceptable before it is fully implemented;
- **Process/implementation evaluation** – which determines whether programme activities have been implemented as intended;
- **Outcome/effectiveness evaluation** – which measures programme effects in the target population by assessing the progress in the outcomes or outcome objectives that the programme is to achieve; and
- **Impact evaluation** – which assesses programme effectiveness in achieving its ultimate goals.

**IZA MODEL**

The third model is from the Institute for the Study of Labour (IZA), Bonn (Germany) (37). According to the IZA, evaluations in the humanitarian sector use monitoring data, outcome and perception studies or real-time evaluations (RTEs). On the one hand, there are “high-quality outcome and perception studies” that use well-collected quantitative data, allowing measurement of the changes in conditions of beneficiaries in the target area before and after a programme. Although these studies are important, they do not indicate whether the change in status would have been the same without humanitarian assistance, or whether the change was caused by the intervention, or was due to some other programme. This is because such studies do not offer a reply to the question “Why?”, but offer only a quantitative description of indicators encountered or not. Conversely, there are outcome studies that employ qualitative data based on small and unrepresentative samples, including surveys limited to the humanitarian community (e.g. donors, officials and NGOs) and other evaluation tools (e.g. key stakeholder interviews). These methods bring added value to impact evaluations with the collection of feedback and perceptions; however, there are frequent challenges in interpretation because these methods are insufficient to produce robust analyses of attributable impact (38). This classification is summarized in Box 2 (37).

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*For a definition of monitoring, please check the OECD Development Assistance Committee (DAC) continuing function that uses systematic collection of data on specified indicators to provide management and the main stakeholders of an ongoing development intervention with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds: OECD-DAC – Glossary of key terms in evaluation and results based management, 2010.*
These three models make it possible to examine and identify the role of AARs in emergency response evaluation. Starting with the OECD model, an AAR could be intended as a participative approach that could be used at various periods during an event (e.g. soon after or ex-post) and that could be applied in the evaluation of different units of analysis. For example, it could be used for post-event evaluation, specific functions of the response (e.g. surveillance, laboratory for case management), or cross-cutting themes such as coordination, logistics or resource availability.

It becomes clear that the simple structure of an AAR may be useful to support a process/implementation evaluation, with a focus on learning, as in the CDC model. However, AARs present too many methodological limits to supply the quantitative outcomes required by the other typologies of evaluation reported by the CDC (formative, outcome and impact), in addition to being used in supporting the robust impact evaluations as described by the IZA.

AARs could nevertheless provide team members with the opportunity to analyse their own behaviour, its contribution to the outcome, and any potential changes that may need to occur (8). At the same time, AARs could act as an integrative support tool to enrich other typologies of evaluation, adding a systematic but qualitative touch to other kinds of assessment.

In conclusion, AAR is a tool that is relatively simple, qualitative, flexible, easy to use and focused, and can thus play an important role in supporting other types of evaluation.

**4.2.2 AARs AS LEARNING TOOLS**

It is useful to define and situate AARs in various learning models. A master’s thesis focused on AARs intended as a military learning or training tool (25) outlined several parallel but distinct learning or training approaches – behavioural modelling training, reflective learning and action learning – and compared them to AARs.

Behavioural modelling is a training technique that draws on the concept of observational learning (39) and incorporates observed positive or negative behaviour (40). Being a component of social learning theory, this could be summarized as the act of
showing employees how to do something and guiding them through the process of imitating a modelled behaviour. However, even if, during an AAR, the use of a model is crucial (e.g. when answering the question of what was supposed to happen), the lack of “expert model” is the key difference between AAR and standard behavioural modelling. In the behavioural modelling training, the model is represented by an expert person, to stimulate learning and effectively model the desired (or possibly undesired) behaviour. In contrast, in AARs, the participants themselves are the behavioural models and the modelled behaviour is not created before the training, but is instead created during the AAR or borrowed from the recent past, making it possible to apply it to the actual context or conditions.

There are also differences between AARs and reflective learning, which asks an individual learner to reflect upon prior experiences to maximize the learning gained from those experiences. Although the AAR uses a reflective perspective, when applied retrospectively, this is always conducted in a collective environment to capitalize not only on an individual’s experiences, but also on the experiences of others (participants and facilitator).

In action learning, there is generally a regular consultation (41) to discuss work, question existing knowledge and share the difficulties (42). This meeting of peers, developed by physicians in the 1920s, allowed medical colleagues to learn from one another’s experiences based upon their well-developed and previously learned knowledge base. AARs differ from action learning because AARs aim to create a discussion among actors who bring different types and levels of knowledge to share “fresh” experiences.

Another key difference is that while learning models often focus on the individual’s learning outcome, collective learning is a key outcome for AARs. Several sources in the literature point to collective learning as one of the defining features and benefits of AARs (43). Collective learning can tend towards institutional or organizational learning if the scope of the review is broad.

In conclusion, a comparison of AAR and different learning models can help to clarify the mechanics of AARs, and their benefits and limitations. As a collaborative or collective learning tool, an AAR can have a strong impact on how teams perform and interact with other parts of a system.

4.2.3 AARs AND OTHER RELEVANT KNOWLEDGE MANAGEMENT TECHNIQUES

To complete the general overall picture of AARs in emergency settings, other knowledge management techniques were explored. While they tend to employ different terminology, these techniques have several traits in common with AARs. For the sake of establishing a useful order, these knowledge management techniques are outlined according to their position in terms of timing with respect to the response.

BEFORE ACTION REVIEW

A before action review (BAR) comprises a short disciplined conversation that efficiently provides foundations for rigorous, meaningful learning by the same people engaged in the action. The BAR is about being prepared before launching into action, preparing to achieve the desired results together and preparing to learn together effectively (44). In short, BAR is a preview session that considers what issues might arise during a piece of work (45).

LEARNING REVIEW

Similar in methodology to the BAR, but different in terms of phase of execution, is the learning review. This is a technique used by a project team to aid team and individual learning during the work process (46).

HOT WASHES, CRITIQUES AND DEBRIEFINGS

Soon after an event, other kinds of evaluation or review are conducted. These are called “hot washes” or “critiques”. According to FEMA (32), hot washes and critiques occur at the company level (although multiple companies may be involved), and typically evaluate small incidents, reviewing the functioning of
specific tactics and identifying changes that might induce better results. They are conducted on a case-by-case basis, mostly for training purposes and for the overall improvement of operations. Critiques are normally conducted internally to an organization or team.

Similar to hot washes, “debriefings” (47) are defined as moderated discussions focused on gaining understanding and insight about a specific operation or exercise. Debriefings are predominantly conducted at the tactical or operational level, and include only those people specifically involved in a given operation or exercise, under the lead of a person of authority or subject matter expert. Debriefings typically last somewhere between a few minutes and a few hours. The primary goal of a hot wash or a debriefing is to identify issues that require attention, and record the facts about what happened before memories fade. Although some hot washes identify “strengths and weaknesses” or “things that went well or not so well,” it is usually not possible to systematically address “Why?” questions in the immediate aftermath of the incident.

**PEER ASSESSMENT**

The HSPH defines peer assessment in post-emergency reviews as “a process designed to analyse a public health system’s response to an emergency, identify root causes of successes and failures, and highlight lessons that can be institutionalized by the responding public health system and others to improve future responses” (48). In this case, the focus of peer assessment is to support the understanding of how and why problems occurred, as a step towards identifying and addressing contributing factors that are likely to condition forthcoming events. Furthermore, the peer aspect “fosters communication and collaboration across jurisdictions”, and can also serve to bring an external input to the assessment. According to USAID, peer assessments can be conducted after an incident, but also before (as a preparedness exercise) or during an event (18).

**RETROSPECTIVE**

As with the “look-back session” and the “reflective learning” mentioned in the previous section, a retrospective is about “learning after doing” (13) and is therefore run once the project or the event is finished. Given that there is no possibility of changing results, the focus is on developing recommendations to be implemented by people other than those making the recommendations.

**SUMMARY OF AARS AND OTHER RELEVANT KNOWLEDGE MANAGEMENT TECHNIQUES**

In conclusion, the method and tools used for identifying lessons and best practices in relation to an event can depend on when, in relation to the event, the review will be conducted, as well as the purpose or expected outcome. It is important that, after any of these approaches, best practices and knowledge come back not only to the review participants but also to senior management (49).

Maintaining the AAR terminology as a “brand” that aims to define all these approaches, the different methodologies have been summarized and listed in Table 2.
Timing of the AAR in relation to the event under review will depend on the purpose and desired outcome. Essentially, there are three periods (50):

- **Before the event** – In this case, the purpose of the review is to review preparedness efforts for a particular event or project, to anticipate challenges and establish a general process for implementing the actions. This can also be run, for example, as a table-top exercise.

- **During the event** – In this case, the purpose is to undertake course correction during an event or project. It can be used to assess the level of performance vis-à-vis strategic and event-specific response plans for a single actor or across partners.

- **After the event** – In this case, the purpose is to identify lessons and best practices, and establish better ways of implementing actions for future events.

This timing is illustrated in a master’s thesis on emergency response reviews (51), where AARs, intended as part of a specific emergency learning framework, can be broken down into six individual and self-explanatory categories (Box 3).

### BOX 3. EMERGENCY LEARNING FRAMEWORK

- Intracrisis exercise – after action review
- Intercrisis debrief – after exercise review
- Intracrisis event – during event reflection
- Debrief event – after event review
- Ongoing learning and planning meetings
- Intercrisis (or prescriptive) learning

Source: (51)

Clearly, the concept of AARs cannot be reduced to a single method conducted at a specific moment in relation to the event or project being reviewed. In fact, AAR and the logic it proposes can be applied at different phases of the emergency response review process, and can satisfy different outcomes. In the WHO Guidance for AAR (3), which focuses on collective learning at the end of an event, AARs are recommended to be conducted as soon as possible (or within three months) following the official declaration of the end of the event by the ministry of health.
Although most of the sources found in the literature refer to AAR only as a facilitated interactive session, the process of planning will largely depend on the scope, objective and form of AAR to be conducted. There may be some key steps in common such as: collection and review of emergency related documentation, contacting all participants and asking them about some key events of the emergency, and organizing the setting of the AARs (52). In general, informal AARs will have fewer steps and require less time to plan.

To take an example from the Society for Simulation in Healthcare (SSH) the process of organizing a debriefing can be summarized in seven steps, shown in Box 4 (21).

Another example of an AAR with a larger, more complex scope, is that developed by the Asian Development Bank (ADB) (6). This ARR has four main steps – planning, preparing, conducting and following up – as shown in Box 5.

**BOX 4. SEVEN STEPS FOR AARs (DEBRIEF)**

- Define the rules of the debriefing
- Explain the learning objectives
- Benchmarks for performance
- Review what was supposed to happen
- Identify what actually happened
- Examine why things happened the way they did
- Formalize learning

Source: (21)
From a practical point of view, this structure poses the setting of ground rules before the evaluation as an integral part of the process of an AAR. Setting these rules includes obtaining agreement from all taking part that the AAR takes place in an environment in which participants feel that discussions are confidential, open, honest and safe (28).

Once AAR process is established, it should also be determined how long the process should last. The length of AARs varies, depending on the scope and objectives. In some cases – for example, military training evaluation or emergency nurse post-event evaluation – the AAR may have a duration of only 15 minutes to 2 hours. However, in a disaster and humanitarian setting, an AAR will be more complex and will thus take more time. For type 2 emergencies, CARE International and UNICEF describe the main event as typically comprising a two-day workshop. For a smaller type 1 emergency, a similar – though much lighter – process is encouraged (53). In other cases, the length of an AAR meeting can vary, depending on the magnitude of the event or project reviewed, the number of partners involved (54) and perceived learning opportunities.

As described earlier, four formats of AAR are outlined in the WHO Guidance for AAR (3) each with different timeframes, the optimal number of pillars (broad technical areas of the response) to be reviewed, and the number of participants. Member States can decide on the most appropriate format depending on factors such as number of participants, cultural context, complexity of the event, location of the AAR, and resources available.

An AAR provides a prime opportunity to assess the functionality of IHR core capacities. Therefore, following the identification of the best practices and challenges of the response, the WHO guidance also recommends participants to use qualitative ratings provided (3) to assess whether the selected IHR core capacities reviewed were performed without challenges, with some challenges, with major challenges, or unable to be performed.
The techniques used in an AAR can vary, depending on contextual issues, and can include both written reports and face-to-face discussions (55). An interesting study on AARs about the response to pandemic influenza A (H1N1) 2009 in the US (56), showed that the techniques used may vary according to the context, the participants, the resources available and the team leading the AAR. However, most of the reviewed sources agree that the whole process should be kept as simple and as easy to remember as possible.

All AARs follow the same general format (exchange of ideas, feedback and observations and focus on improving), but different methodologies can be used to undertake them; for example, focus group discussions, interviews, workshops and participative appraisal. These methods fall into four categories (26):
- surveys or questionnaires;
- interviews;
- task analysis data gathering process; and
- observation.

Normally, every AAR workshop follows a similar structure, with the facilitator getting agreement for the ground rules at the outset, and ensuring that everyone is clear about the specific purpose, objective and scope of the AAR and the logic to be used (9). Once the facilitator is satisfied that all aspects of participants’ expectations have been explored, and that each has contributed what actually happened from their own experience, then the facilitator invites the AAR participants to discuss why they thought there was a difference between these two aspects.

When AARs are conducted by humanitarian stakeholders and international NGOs, the facilitator normally starts the process with scene setting (disaster timeline) and then uses group work to identify lessons learned and best practices (52). In post-emergency reviews, the approach proposed by the HSPH peer assessment method is to conduct one-to-one interviews, followed by group interviews and then a facilitated “look back” session, which will be based on the root cause analysis method and the building of a timeline or story arc. This approach is similar to the one adopted in other settings, such as in the military sector and by USAID, as shown in Box 6 (5).

**CHRONOLOGICAL ORDER OF EVENTS**

This technique is logical, structured and easy to understand. It follows the flow of the activity from start to finish. By covering actions in the order they took place, participants are better able to recall what happened.

**KEY EVENTS, THEMES OR ISSUES**

A key events discussion focuses on critical events that directly support identified objectives before the event began. Keeping a tight focus on these events prevents the discussion from becoming sidetracked by issues that do not relate to the desired objectives. This technique is particularly effective when time is limited.

**OPTIONAL DISCUSSION GUIDE**

When relevant or useful, the AAR facilitator can employ a blended discussion technique that draws from elements of a chronological or thematic review. In addition, it may be helpful to collect information by:
- drilling further into the process or resources behind an event or set of events;
- asking participants to identify unexpected results and discuss their impact on the review topic or topics;
- using “what-if” scenarios to assess how different actions might have altered outcomes; and
- collecting data through complementary or more detailed review methods (e.g. evaluations, studies and statistics).

**BOX 6. TECHNIQUES FOR AAR FORMAT**

*a Root cause analysis is a qualitative, retrospective, quality improvement tool used to analyse adverse incidents and sentinel events (e.g. a preventable error leading to death, serious physical or psychological injury, or risk of such injury) at the lowest system level (57).*

Source: (18)
Generally, in terms of roles and responsibilities, all the sources assessed agreed that AARs should involve an internal or external facilitator and participants. To ensure neutral facilitation, it may be a good idea to identify an external facilitator. Even if the AAR is conducted internally, someone should be identified who can facilitate the session to ensure that the AAR keeps to time and remains focused, and that everyone contributes. The facilitator can ask questions to clarify the distinction between opinion and fact, and help participants to expand on comments to provide an in-depth picture of what happened, what worked and what did not, and why. The WHO Guidance for AAR (3) also emphasizes the importance of an impartial facilitator or lead interviewer who was not directly involved in the response to lead the AAR. This impartial facilitator or interviewer may be staff from partner agencies, international experts, or WHO staff.

Determining who will facilitate the debriefing should be done during the planning phase (59). The AAR facilitator should make a concerted effort to draw in and include all participants in the AAR session (18). According to US Army guidelines for AAR (5), the facilitator should be someone who is both knowledgeable about the tactics, techniques and procedures, and capable of performing the tasks themselves. In a public health setting, this would equate to an individual with the appropriate clinical or emergency management skills, but who is also comfortable with facilitation and spurring discussion. Ultimately, there should not be a disproportionate emphasis on technical issues at the expense of managerial, administrative or coordination functions (10). The role of the facilitator is summarized in Box 7.

Unluckily, it is not always possible to use a facilitator; for example, using a facilitator can be costly and inefficient because of the need to conduct an AAR during normal operations. It is therefore critical to understand how to train teams to conduct their own AARs that result in effective learning. More recent work suggests that self-guided debriefs (i.e. an AAR that is guided by the team using a detailed guide) can be effective (8). However, there are cases in the literature where AARs have been conducted without a facilitator. A study on the role of the facilitator in AARs (7) also found that using trained facilitators significantly improved the effectiveness of the AARs compared with not using a facilitator, but the paper noted that few studies had been conducted without the use of a facilitator.
There is no standard protocol about when to conduct AARs in emergency response settings; however, the literature review found that there are two main schools of thought about timing. One is that an AAR should be performed after each identifiable event or milestone and become a live-learning process (60), or be considered as a routine part of the life cycle of any response (54). The other, as stated by some humanitarian organizations (33), is that AAR should take place within the first 3–4 months of a response to a type 2 emergency, to reveal what has been learned, reassess directions, and review both successes and challenges (61). This divergence has been confirmed by a meta-study conducted on reviews of the 2009 response to pandemic influenza A (H1N1) (56) in the US involving health-care practitioners. In the study, participants indicated that real-time data collection or evaluation for the AAR (as opposed to waiting until after the event is over) was or would have been beneficial, because it offers an opportunity to have multiple cycles of improvement during the response, especially for extended events such as pandemic influenza A (H1N1). However, in the same study, several participants noted that real-time AAR activities were difficult to implement during real incidents, when practitioners are busy with the response.

All sources screened appeared to agree that AARs should be carried out shortly after the end of the event, while the team is still available and “memories are fresh” (13). This is because the flexible and easy structure of AARs makes it possible to capture the learning before a team splits up, or before people forget what happened and move on to something new (17). Aligning with the general agreement from these sources, the WHO Guidance for AAR (3) recommends conducting AARs as soon as possible after the declaration of the end of the event by the ministry of health (or within three months).

The materials found in the literature review revealed numerous recommendations about how to conduct AARs and what to avoid. Recent research suggests that three things are essential for an AAR to be an effective learning tool (62):

- The AAR should allow for feedback on the actions taken, and information sharing. Sharing task-related information allows team members to quickly identify the correct approach.
- The AAR should provide a framework that allows team members to critically reflect on the event, challenge implicit assumptions, and understand why something is working or not working.
- The AAR should provide a framework for establishing common goals and future action plans, to prevent similar occurrences in the future (63) and to improve learning (8).

An additional strength of the AAR format should be in its flexibility. A chronological format can be used to structure the discussion; alternatively, it can be organized around key events, themes, or issues. Process or cross-cutting themes (e.g. logistics, management, administration and support) can be discussed separately or woven into the substantive discussion. Each technique will generate discussion, and will identify strengths and successes, weaknesses and areas for improvement, and concrete, actionable recommendations (18).

Certain practices could compromise the success of an AAR. As noted in the previous section, AARs are structured discussions with the aim of enabling learning. They are not a blaming process. Everyone who participated in the project should be given equal opportunity to share, regardless of their expertise or position, and all views should be respected and recorded (this may include partners and users, when relevant) (22).
In other words, during the AAR, hierarchy should be suspended and staff should feel free to express their experiences without fear of reprisal. Moreover, AARs are not performance reviews and should not be conducted in order to allocate blame (or credit), but rather to encourage honest reflection by practitioners on in-country processes, and on key challenges and results achieved (54). In line with the reasoning above, the WHO Guidance for AAR (3) has also emphasized the importance of having a lead facilitator who is external to the response as well as avoiding having a senior manager as a facilitator to allow honest and open discussion. The WHO guidance underscores the importance of ensuring an optimal environment for collective learning.

A second issue is the use of statistics, which could become a double-edged sword. During an AAR, statistics could supply objective facts that reinforce observations of both strengths and weaknesses. The danger lies in statistics for their own sake. For example, presenting chart after chart of ratios, bar graphs and tables quickly obscures any meaning and lends itself to a “grading” of unit performance. This stifles discussion and degrades the value of the qualitative nature of AAR. Conversely, statistics and statistics-based charts can be valuable in identifying critical trends or issues, and can reinforce teaching points (5). Table 3 summarizes what to do and what not to do when conducting an AAR.

<table>
<thead>
<tr>
<th><strong>DO</strong></th>
<th><strong>DON’T</strong></th>
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<tbody>
<tr>
<td>Schedule the AAR shortly after the completion of an activity</td>
<td>Conduct AARs without planning</td>
</tr>
<tr>
<td>Make AARs routine</td>
<td>Conduct AARs infrequently and irregularly</td>
</tr>
<tr>
<td>Collect objective data whenever possible</td>
<td>Allow debates to become bogged down when establishing the facts</td>
</tr>
<tr>
<td>Use trained facilitators</td>
<td>Allow dominating leaders to run AARs</td>
</tr>
<tr>
<td>Establish clear ground rules – encourage honesty and openness, focus on things that can be fixed and keep all discussion confidential</td>
<td>Base performance evaluations and promotions or demotions on mistakes admitted in AARs</td>
</tr>
<tr>
<td>Proceed systematically:</td>
<td>Allow unstructured, meandering and disorganized discussions</td>
</tr>
<tr>
<td>● What did we set out to do?</td>
<td></td>
</tr>
<tr>
<td>● What actually happened?</td>
<td></td>
</tr>
<tr>
<td>● Why did it happen?</td>
<td></td>
</tr>
<tr>
<td>● What are we going to do next time?</td>
<td></td>
</tr>
<tr>
<td>Involve all participants in discussions</td>
<td>Allow senior managers or facilitators to dominate discussions</td>
</tr>
<tr>
<td>Probe for underlying cause-and-effect relationships</td>
<td>Criticize or fault individual behaviour or performance</td>
</tr>
<tr>
<td>Identify activities to be sustained as well as errors to be avoided</td>
<td>Conclude without a list of learnings to be applied in the future</td>
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</table>
AARs are considered as a simple system of evaluation; nevertheless they can produce rich results that can be used for gathering lessons learned and best practices, management and implementation (13). As stated by the HSPH, in AARs, lessons learned can be generalized to focus on:

- actions that might prevent similar weaknesses or build on strengths in future responses;
- alternative actions the department could have taken to create different outcomes;
- changes or capacity development that could be implemented before future events to change subsequent outcomes;
- solutions that are innovative and potentially generalizable to similar jurisdictions (although the response goals may be different – that is, in different circumstances, a particular response may have been appropriate) (48); and
- addressing recurring difficulties in learning lessons; these difficulties can occur in part because of the failure to produce generalized recommendations that strengthen the system and increase capacity (instead producing recommendations specific to the context of the management of the particular event being reviewed) (64).

The results of an AAR should be transformed into recommendations directed to the relevant stakeholders and gathered into after action reports. Several sources in the literature note that the completion of such reports (64) is part of the reporting process for responsible public safety agencies, emphasizing the improvement of emergency management and first-response operations at all levels, and offering a means for documenting system improvements and planning implementation.

According to FEMA, after action reports should be completed within 120 days of every major or significant incident or event. The report should be shared with all interested public safety and emergency management organizations.

The literature review identified some suggestions for collecting and achieving recommendations gathered in after action reports. These are summarized in Box 8.

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6.1 AFTER ACTION REPORTS

The results of an AAR should be transformed into recommendations directed to the relevant stakeholders and gathered into after action reports. Several sources in the literature note that the completion of such reports (64) is part of the reporting process for responsible public safety agencies, emphasizing the improvement of emergency management and first-response operations at all levels, and offering a means for documenting system improvements and planning implementation.

According to FEMA, after action reports should be completed within 120 days of every major or significant incident or event. The report should be shared with all interested public safety and emergency management organizations.

The literature review identified some suggestions for collecting and achieving recommendations gathered in after action reports. These are summarized in Box 8.

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As can be imagined, the closely related terminology (including two AAR acronyms) within the after action evaluation discourse can be confusing.
Although a number of templates are available online, there is no standard format or length for an AAR. Despite a large amount of energy being invested in homogenizing formats, the reports produced from AARs found in the literature are almost as varied as the organizations that produced them. This diversity affects the management of the data derived from an after action report because it makes it difficult to undertake individual and cross-case analysis. For this reason, the WHO Guidance for AAR (3) has provided a final AAR report template to encourage standardized data collection, a positive step towards facilitating the compilation of lessons learned from AARs to promote global collective learning. In the WHO guidance, it is recommended that final AAR reports are shared as widely as possible, including between countries, as it can be helpful for other countries experiencing similar challenges and risks. However, respecting possible sensitivities, the WHO guidance also clearly states that the decision on whether to publish the final AAR report ultimately resides with the health authority’s leadership.

Recent studies of AARs are increasingly supporting the notion that information collected in after action reports could be gathered in a database of reports, to connect past experience to future improvements (33). This basic idea is borrowed from an academic consortium (24), and inspired by other systems, such as the Lessons Learned Information Sharing (LLIS) system developed by FEMA (32). Such a database could offer a way to identify and analyse rare events, and the responses to them, through the use of qualitative methodologies of analysis. This approach would make it possible to: understand the context of rare events and the mechanisms that drive successful and unsuccessful practices; identify and share best practices; drive individual and organizational improvement; and describe the nature and frequency of incidents (24).

The lack of a homogeneous system of reporting is an important issue that challenges the systematization of the information gathered (24). Moreover, whereas a typical improvement in a preparedness system requires systematic methods for learning from an individual organization’s experience in unusual situations, in the case of public health emergencies, this process is challenging because these are singular events, and responses may vary significantly from one incident to another. To cope with these issues, other sectors, such as aviation, have found ways to learn from one-of-a-kind events, and these may provide a model for the public health emergency preparedness system.
that would enable the identification and systematic analysis of such events (24). Methods used in other sectors include reporting mechanism, incentive for reporting and data sharing.

Certainly, reporting mechanisms could be improved through the standardization of after action reports; also, effective work could be done in relation to incentive for reporting. For example, in the aviation industry, the critical incident registry’s purpose is to facilitate organizational learning and improvement of systems, rather than accountability – this approach seems to be a key reason why airline personnel submit reports about safety deficiencies that would not otherwise be detected. As is the practice in current after action reports, calling attention to system responses that worked well, in addition to those that were problematic, could help to emphasize the registry’s goal of driving improvement and learning.

The biggest challenge is related to data sharing. The literature review indicated that, although the principles of transparency and sharing should be at the base of humanitarian actions, actors are not always prone to share challenges, perhaps because of the need to protect job security and avoid personal blame. However, as demonstrated from the studies of the aviation industry, some registries share only the facts, removing the origin of the reports and making their contents available to the general public or keeping them confidential.

Finally, since the objective of a lessons learned database or critical incident registry is to facilitate learning from individual incidents and apply the findings in other contexts, a public-health emergency-preparedness lessons-learned database requires a framework and set of tools that can produce meaningful and actionable insights about performance drivers and outcomes. This requires, first of all, development of a consensus for a method for performing rigorous analyses of individual incidents and for evaluating emergency responses. The development of the WHO Guidance for AAR (3) aims to address the above concerns through creating a standardized approach to conducting AARs and providing ready-to-use toolkits (4) with templates, checklists, facilitators’ manuals, PowerPoint presentations, and a database of trigger questions, to guide AARs from their preparation, conduct, to reporting.
AARs in public health emergencies are a way to review actions taken by bringing together a team during or at the end of an emergency response. The AARs are based on a specific analytical framework that seeks to identify what worked well and how these practices can be institutionalized and shared with relevant stakeholders, as well as what did not work and requires corrective action. AARs can be used as practical assessments of response capacities and processes in order to identify actions needed to improve capacity for future events and should be considered as part of a culture of continuous learning and improvement.

The main purpose of an AAR is to capture and document feedback and experiences in order to improve future practices by means of an interactive analysis that is systematic and focuses on lessons learned. This approach can bring several benefits, such as an appraisal that does not apportion blame, documentation for strengths and weaknesses for future improvement, development of capacity and team building, improvements in thinking, a shared contextual awareness, and assistance with sustaining a competitive advantage and disclosing creativity that enables decision-making.

Normally, an AAR is a quick, facilitated, safe and open process that is time bound to the event under review. The methodology is pedagogical, and comprises a mix of several knowledge management and learning techniques. More specifically, the format could make use of a previous data collection (based on secondary data review and survey), followed by a workshop (often conducted by a facilitator) that aims to bring together the different actors who participated in the response to an event. With the WHO Guidance for AAR (3), and the accompanying online training (65) and toolkits (4) published in 2019, Member States now have a clear step-by-step roadmap and ready-to-use toolkits to conduct AAR, with the technical support of WHO upon request.

AARs should produce outcomes that can be transformed into recommendations directed to decision-makers when recorded in after action reports. Recent academic and institutional studies tend to support the idea of gathering this important information in databases such as critical incident registries, to connect past experience to future improvement. The development of such registries is ongoing. In the WHO Guidance for AAR (3), a final AAR report template has been provided to assist with standardized data collection, which could facilitate the compilation of a global “lessons learned database”. Ultimately, the development of this database can promote transparency and collective learning among peer countries or other stakeholders to strengthen the global preparedness and response to public health events.
REFERENCES


58. WHO. South Sudan emergency response: after action review. World Health Organization (WHO); 2014.


ANNEX. LIST OF REVIEW QUESTIONS

- What is the definition of an AAR?
- What are the differences between AAR, operational review, and lessons learned?
- Where does AAR sit on a spectrum of post emergency review?
- What are cross-cutting methodological best practices that define an AAR?
- What are cross-cutting pitfalls which define an AAR and must be avoided?
- What are other cross-cutting methodological features that appear in AARs?
- How to change culture towards one critical review of actions and continuous learning?
- When should an AAR be conducted?
- For what events are AARs most relevant?
- What terminology is used?
- What is the format of an AAR?
- How long should the AAR be?
- Who should be responsible for planning and conducting AARs?
- How many people should participate in an AAR?
- What methods of data collection can be used for an AAR? (and what are the advantages and disadvantages of the different methods)
- How are the results used?
- How are the results shared?