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A close-up photograph showing a person's hands administering a vaccine to a young child. The person is wearing a green glove and using a syringe to draw liquid from a vial. The child is lying down, and the person is wearing a patterned shirt. The background is slightly blurred, showing more of the child and the person's hands.

# Fit for purpose? Global Coordination Mechanisms of Large-Scale Epidemic Response in Humanitarian Settings

December 2023

# Acknowledgements

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“Fit for purpose? Global Coordination Mechanisms of Large-Scale Epidemic Responses in Humanitarian Settings” was developed by the READY initiative. We would like to thank the research team from Johns Hopkins who made this study possible, as well as the many key informants and reviewers who informed and enriched this report. Colleagues from the UN, other international organizations, and donors provided valuable insights through consultations and/or participation in discussions to validate the findings.

*Cover photo: Fatima is vaccinated against cholera at a Save the Children-supported vaccination site in Sudan.*

*This paper was made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of READY and do not necessarily reflect the views of USAID or the United States government. Led by Save the Children, the READY initiative is implemented in partnership with the Johns Hopkins Center for Humanitarian Health, the Johns Hopkins Center for Communication Programs, UK-Med, and the Humanitarian Leadership Academy. READY is augmenting global capacity for non-governmental organizations to respond to large-scale infectious disease outbreaks. For more information, visit our website at [www.ready-initiative.org](http://www.ready-initiative.org).*



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# Executive Summary

Coordination mechanisms during large-scale epidemic responses in humanitarian settings have been criticized in the past, including in evaluations of the 2014–2015 West African Ebola epidemic and other more recent epidemics. As a result, structural and operational changes within the World Health Organization (WHO) and other institutions have sought to improve the speed and effectiveness of epidemic response coordination and response mechanisms in humanitarian settings.

This policy paper **aims to examine the global structures and processes of current coordination structures, identify gaps during large-scale epidemics** in humanitarian contexts, and **develop clear and practical recommendations to improve epidemic coordination mechanisms** in humanitarian emergencies.

In a humanitarian setting where established coordination structures, such as the cluster system and the refugee coordination model (RCM), are already in place, the addition of other coordination and response mechanisms for epidemics can complicate an already complex situation if there is a lack of clarity about **how each system works and how they interact and complement** each other. All coordination systems have strengths and

weaknesses, many of which have been previously documented. Without clarity and harmonization of models, different coordination and response mechanisms can blur the lines of roles and responsibilities and lead to a lack of accountability for affected populations.

The incident management system (IMS) is an important coordination and response mechanism that is increasingly being used by the WHO, as described in its emergency response framework (ERF), as well as by governments and other partners. The IMS model can be applied to any type of emergency (e.g., all hazards). Unlike the cluster system or RCM, which relies more on consensus, the IMS has a “command and control” mechanism that can ensure rapid decision-making, a critical aspect to contain the spread of a disease. However, it can also lead to vertical epidemic responses that neglect the additional cross-sectoral humanitarian needs of affected communities. There is a need for **clear explanations and standard operating procedures** on how WHO intends to use the IMS internally and externally with governments and other partners and how it will integrate with and complement other coordination systems in humanitarian emergencies.



Save the Children's Emergency Health Unit supported a cholera vaccination campaign in Sudan.

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In order to ensure **multisectoral coordination** and response to an epidemic, the focus needs to go beyond health care at an early stage in the epidemic response. Water, sanitation and hygiene, risk communication and community engagement, protection, and numerous other sectors (e.g., livelihoods, logistics, nutrition, food security, other socioeconomic aspects) need to be appropriately involved in preparedness, readiness, and response activities to holistically address continuity of care and the evolving needs of the population to control a large-scale epidemic. When a cluster system or RCM is already activated in a humanitarian emergency, and an IMS is also implemented to coordinate and respond to a large-scale epidemic, planning for and integrating different sectors in all aspects of the coordination and response are essential. Such integration requires the involvement of many partners from other sectors, including national and local responders, in the design, implementation, monitoring, and evaluation of the epidemic response coordination.

In addition, the overarching principle of **“do no harm”** must always inform the preparedness and response designs of epidemic coordination and response, as there are often unintended consequences that need to be assessed and addressed. Therefore, the inclusion of governments and local actors in coordination and decision-making processes is crucial. This inclusion requires a commitment to **community-centered responses** that go beyond simply community engagement. There must be a concerted effort to achieve a genuine shift of power to **local response mechanisms**. The United Nations (UN), other international organizations, and donor agencies need to ensure that local, regional, and national capacities are meaningfully strengthened and empowered to prepare for and respond to epidemics and humanitarian emergencies. There are caveats to “localization,” particularly regarding government leadership. In humanitarian contexts where a government is in conflict with the population or lacks control over certain areas of the country (such as Syria and Yemen), the coordination of an epidemic may rely on locally led

initiatives or be subsumed under the humanitarian architecture, with the UN often taking the lead.

Furthermore, **humanitarian principles** must be upheld when responding to an epidemic in all humanitarian settings. The global health security agenda and other infectious disease containment strategies must not compromise an independent, neutral, and impartial humanitarian response that puts humanity at its core. As mentioned above, when the government oppresses its population or does not have full access to a region of its country, regional and international organizations should be able to work independently with local authorities and the local population to ensure an impartial and neutral response to epidemics.

In these circumstances, an **impartial, independent, and neutral response by actors** to epidemics can be difficult, especially when WHO and other UN agencies are working closely with the government. Finding a balance between continuing to support national governments and responding to humanitarian emergencies in such contexts can be challenging. In these circumstances, where the coordinating agency for an epidemic is not perceived as neutral or independent, it may be necessary to delegate the coordination of the response.

In the aftermath of the coronavirus disease (COVID-19) pandemic, global frameworks are currently being developed to improve the overall **health emergency preparedness, response, and resilience (HEPR)** architecture of countries. HEPR aims to provide Member States with a blueprint to prepare for and respond to future health emergencies. The “5 Cs” of the new HEPR architectures are **c**ollaborative surveillance, **c**ommunity protection, safe and scalable **c**are, access to **c**ountermeasures, and emergency **c**oordination. How the recent HEPR framework will improve epidemic coordination, preparedness planning, and response in humanitarian contexts has yet to be defined but needs to be clearly addressed according to the different contexts of humanitarian settings.

This paper presents the following seven recommendations based on a scoping literature review and 28 key informant interviews with experts from various organizations involved in coordination and response to epidemics in humanitarian contexts:

**1. Empower national governments to take the lead in epidemic coordination.**

International humanitarian agencies, particularly the UN and international nongovernmental organizations (INGOs), must make meaningful changes to enable national and local organizations to coordinate and respond to epidemics in humanitarian settings. It is the responsibility of the national government to provide assistance to its population affected by an epidemic. The caveat is that when a government oppresses its people or does not have full access to a region of its country, regional and international organizations should be able to work independently with local authorities and the local population to ensure an impartial and neutral epidemic response.

**2. Improve clarity and ensure transparency of coordination models for national, regional, and international actors and agencies.**

**a. Context-specific, clearly written roles and responsibilities are necessary.**

These are needed for the cluster/sector leads, the incident manager and the humanitarian coordinator (HC) to improve effectiveness, transparency, complementarity, and accountability to affected populations during large-scale epidemics in different humanitarian contexts.

**b. Clarify how the IMS functions within and outside WHO.**

The roles and responsibilities of the IMS and the Incident Management Support Team (IMST) within WHO and those of national governments supported by WHO need to be more clearly defined to improve coordination and response to large-scale epidemics.

**3. Develop strategic response plans with national and local partners.**

Multisectoral strategic response plans for epidemics must be context-specific, contain

clearly defined roles for all existing and newly implemented coordination response mechanisms, and meaningfully involve national/local partners.

**4. Prioritize “do no harm” and humanitarian principles in the coordination of and response to epidemics in humanitarian settings.**

Placing the community at the center of the response and ensuring a “do no harm” approach must be emphasized, and feedback cycles must be incorporated to address unintended consequences and ensure accountability mechanisms for affected populations. Humanitarian principles must not be compromised, even when attempting to contain the spread of an infectious disease, for the sake of “global health security.”

**5. Where a national government oppresses its population or does not have control over all of its territory, the leadership of epidemic response coordination in humanitarian contexts must be independent and neutral from the national government.**

Epidemic response coordination should be led by an actor perceived as independent and neutral in the affected context. In certain situations, WHO (or another actor if it is the coordinating agency) may need to delegate its coordinating role to another international or local partner if it cannot maintain its neutrality and independence.

**6. Involve the humanitarian country team (HCT) in the coordination of large-scale epidemics.**

In humanitarian contexts, the HCT should be involved at an early stage in the coordination of large-scale epidemics in order to balance and complement the various response mechanisms to the overall humanitarian needs of the community and to ensure a multisectoral response.

**7. Include an additional focus on humanitarian contexts in overarching coordination frameworks such as HEPR.**

HEPR must specifically address the needs of different humanitarian contexts with clear operational guidance.

# Acronyms

|          |  |
|----------|--|
| COVID-19 | Coronavirus Disease  |
| DRC      | Democratic Republic of the Congo                                   |
| EMT      | Emergency Medical Team   |
| EOC      | Emergency Operations Center  |
| ERF      | Emergency Response Framework                                       |
| EVD      | Ebola Virus Disease  |
| GOARN    | Global Epidemic Alert and Response Network                         |
| HC       | Humanitarian Coordinator   |
| HCT      | Humanitarian Country Team  |
| HEPR     | Health Emergency Preparedness, Response, and Resilience            |
| IASC     | Inter-Agency Standing Committee                                    |
| IMS      | Incident Management System   |
| IMST     | Incident Management Support Team                                   |
| INGO     | International Nongovernmental Organization                         |
| KII      | Key Informant Interview  |
| MoH      | Ministry of Health   |
| NGO      | Nongovernmental Organization                                       |
| OCHA     | United Nations Office for the Coordination of Humanitarian Affairs |
| RCCE     | Risk Communication and Community Engagement                        |
| RCM      | Refugee Coordination Model   |
| UN       | United Nations   |
| UNHCR    | United Nations High Commissioner for Refugees                      |
| UNICEF   | United Nations Children's Fund                                     |
| WASH     | Water, Sanitation, and Hygiene                                     |
| WHO      | World Health Organization  |

# Introduction and Objective

Large-scale disease epidemics that occur during humanitarian crises can easily overwhelm an already fragile health system. A coordinated response from existing structures, combined with epidemic-focused mechanisms, is critical to minimizing human suffering. Coordination strategies and mechanisms are often complex and evolving. Lessons learned during the COVID-19 pandemic have further reinforced the need for clear and comprehensive coordination policies and frameworks. The pandemic highlighted the vulnerability of all health systems, the importance of nationally led coordination, and responses rooted in equity and social justice.

Numerous categorizations of coordination and response frameworks and models exist for humanitarian emergencies or acute events such as natural disasters, conflicts, or infectious diseases. However, most of these are internationally focused and are rarely designed to complement each other. This paper was developed as part of [READY](#), an initiative funded by the United States Agency for International Development's (USAID) Bureau for Humanitarian Assistance that aims to improve the capacity of national and international humanitarian nongovernmental organizations (NGOs) to respond to infectious disease emergencies with epidemic or pandemic potential. The objectives of this policy paper are as follows:

- Explore the global structures and processes of epidemic coordination mechanisms.
- Identify gaps in current epidemic coordination structures in humanitarian contexts.
- Develop clear recommendations for improving epidemic coordination mechanisms in humanitarian emergencies.

A comprehensive scoping literature review was conducted to critically analyze existing and emerging response frameworks, models, and coordination mechanisms for epidemic responses in humanitarian emergencies and to understand how various actors and institutions interact within these architectures in different contexts. In this policy paper, we have integrated the literature review findings and supplemented them with discussions during interviews with key policymakers and responders from international organizations involved in developing and implementing epidemic responses in humanitarian emergencies.

While this paper examines the coordination of the epidemic response in humanitarian settings from a global perspective, a second policy paper has been developed by READY to examine the perspectives of local and national actors on locally led responses to infectious disease outbreaks.

## Methodology

### Scoping review

Following Arksey and O'Malley's framework,<sup>i</sup> a scoping review was conducted to identify and analyze relevant literature to inform the development of the key informant questionnaire<sup>1</sup>. The search focused on peer-reviewed articles and grey literature on existing coordination frameworks used to respond to infectious disease threats in humanitarian contexts from 2005 to 2023. Appropriate inclusion and exclusion criteria

were developed, and a comprehensive search strategy was undertaken across multiple databases for peer-reviewed literature and relevant online platforms for grey literature. A total of 10,717 records from the scoping review were identified and screened for relevance. Of these, 971 full-text records were retrieved, of which 211 met the inclusion criteria. The final data extraction process included a subset of these articles (13 peer-reviewed and 38 grey) that specifically addressed the review questions.

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i This is a framework for conducting a scoping study based on experiences reviewing the literature.



## Key informant interviews

The topic guide for the key informant interviews (KIIs) covered key themes identified in the literature review on coordination mechanisms for epidemic responses in humanitarian settings. Themes included perceptions of existing coordination mechanisms for epidemic response in humanitarian settings, collaboration between different coordination models, financing of epidemic response, HEPR, and recommendations for improving epidemic coordination. Oral consent was obtained prior to all interviews.

## Background

In humanitarian settings, coordination is particularly important to ensure synergistic efforts to respond to the needs of affected populations. It involves bringing together humanitarian actors and defining roles and responsibilities according to predetermined criteria. In infectious disease epidemics, response coordination may occur at multiple levels or through multiple coordination mechanisms, depending on the size and scope of the epidemic, the capacity of the national government, the epidemiology of the disease, and the setting and context of the epidemic, among many other factors. For instance, certain infectious disease threats may trigger the implementation of additional coordination structures, such as the IMS, at the subnational, national, regional, and global levels<sup>2</sup>.

Coordination mechanisms and policies for the containment of epidemics in humanitarian emergencies continue to evolve, particularly in the wake of the COVID-19 pandemic, which has further underscored the need to develop comprehensive coordination, strategies, and frameworks for responding to infectious disease threats<sup>3–5</sup>. While the experiences of other recent infectious disease epidemics, such as cholera in Yemen and Ebola virus disease (EVD) in the Democratic Republic of the Congo (DRC), have highlighted the challenges of existing coordination practices, there remain several unexamined questions about the global governance mechanisms needed to respond to these unique threats with agility and timeliness<sup>6,7</sup>.

In an epidemic in a humanitarian setting, the relevant clusters involved in the response will depend on the nature of the epidemic. For example, in a cholera epidemic, the role of water,

A purposive sampling approach was used to select individuals and organizations that would best contribute to understanding the research problem. Mid- and senior-level staff with extensive experience in epidemic response in humanitarian contexts from 17 different INGOs, UN organizations, and donors were contacted from the researchers' professional networks (Annex B).

All KIIs were conducted via Zoom from May 2023 until the end of July 2023.

sanitation, hygiene (WASH), and health clusters will be essential. WHO is responsible for coordinating the actions of the health cluster at the global level and often co-leads the cluster at the national level.

In addition, acute events, such as large-scale epidemics, may trigger the establishment of an IMS by WHO (internally under its ERF) and/or the national governments supported by WHO. The IMS is a comprehensive and systematic approach to incident management that includes common operating principles and the interoperability of communications and information management. WHO adopted the IMS model in August 2016 as its internal model for coordinating and responding to all-hazards emergencies, following reforms after the Ebola epidemic in West Africa<sup>8</sup>. However, WHO's ERF recognizes that in conflict settings and fragile states, more "independent coordination mechanisms may be required"<sup>8</sup>. Regardless of the coordination framework adopted for a particular response, the objectives of coordination through an IMS remain similar: "to engage stakeholders in risk assessments and needs assessments, planning, information management and sharing, service delivery, monitoring, quality assurance, and advocacy"<sup>8</sup>.

Additional coordination structures and outbreak-related response mechanisms may be initiated in humanitarian settings, depending on the context and magnitude of the disease, including the following:

The RCM was first introduced by the United Nations High Commissioner for Refugees (UNHCR) in 2013. This guidance aimed to "ensure accountable, inclusive, predictable and

transparent coordination in responding to refugee situations”<sup>9</sup>. Following bilateral negotiations between UNHCR and the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) as part of the Transformative Agenda, a joint note in 2014 expanded on the RCM guidance for implementation in complex humanitarian settings<sup>10</sup>. These settings include situations where a complex emergency is ongoing, a HC has been appointed, and a UNHCR-led refugee operation is underway.

In order to support the epidemic response, emergency medical teams (EMTs) can be deployed within existing frameworks and may report to both cluster-led structures and national coordination mechanisms. Their coordination often falls under clinical case management or trauma working groups operating under cluster-led structures or national coordination mechanisms<sup>11,12</sup>.

In addition, the Global Outbreak Alert and Response Network (GOARN) “provides international public health resources to control outbreaks and public health emergencies” worldwide<sup>13</sup>. GOARN is a network of experts drawing on the technical capacity of more than 250 partners and is coordinated by an operational support team based at WHO headquarters in Geneva. GOARN members and partners can also support rapid risk assessments and event verification efforts during public health emergencies at the country level<sup>14</sup>.

More detailed background information on the existing coordination structures in humanitarian settings is provided in Annex A.

## Findings and Recommendations

The findings are based on an analysis and integration of the scoping review and the KII. Annex C presents a word cloud from the KIIs

using Dedoose (a qualitative software program). The word cloud illustrates the most frequently discussed topics during the interviews.

## Exploring Existing Coordination Structures

In this section, the policy paper focuses on two mechanisms (see below) that are often present or activated during large-scale disease outbreaks in humanitarian emergencies:

1. IMS, a model commonly used internally by WHO and sometimes by national governments with WHO support, is used for acute events and all-hazard emergencies such as large-scale epidemics.
2. The cluster system (or RCM for refugee emergencies) is already activated in most large-scale humanitarian emergencies and focuses on addressing the overall humanitarian needs during an emergency.

These mechanisms were examined for their strengths and weaknesses in responding to large-scale disease epidemics in humanitarian emergencies. In addition, the findings of this paper analyze the synergies between the two mechanisms and propose recommendations to improve future epidemic responses in humanitarian settings using an IMS when a cluster system is already in place.

### Chasing one pathogen at a time: the strengths and weaknesses of the IMS

While the model of the IMS originated in firefighting in North America in the 1970s, it was adopted by the US Centers for Disease Control and Prevention in 2003 and adapted by the WHO in its ERF in 2013<sup>15</sup>.

WHO's first IMS was implemented in Angola in 2016 to support a yellow fever epidemic in the country. Since then, the WHO's IMS structure has been used for several "acute events," including natural disasters, acute conflicts, and disease epidemics<sup>16</sup>. In humanitarian contexts where the cluster coordination system is already activated, the IMS structure is often perceived as an additional mechanism, internal to WHO, to focus on a specific pathogen or disease epidemic.

*"The incident management structures and the emergency operation centers. In a way, they feel quite opaque. ...I think agencies at large are much more familiar with the IASC [and] its cluster, coordination mechanism, [and] that side of the humanitarian architecture."*

**INGO staff**

Technical coordination of the response pillars has been described as one of the main functions of the incident manager. While on paper, the IMS is not a coordination mechanism per se but rather described as "a common organizational model for all hazards and emergencies"<sup>8</sup>, it does include a pillar for partner coordination, which can include partners from different organizations. The lack of a clear understanding of how and when to integrate partners into the IMS is a major source of confusion about the model used by WHO. In a humanitarian context, the cluster system's roles, responsibilities, and integration are not clearly outlined<sup>8</sup>.

*"Within the IMST, one of its [pillars] is called... 'partnership coordination,' where we bring partners together internally. ...So if it's an infectious disease, we move with a lot of GOARN partners; they bring a lot. If it is a humanitarian setting, the partnership is led by our global health coordination team."*

**UN staff**

Respondents opinion's differed on whether the IMS model could be considered a coordination model or a pure response "management" model. It was also unclear to many respondents whether the IMS model could also be applied outside of WHO. Currently, there is no overarching framework or description in place that clarifies how the incident manager or the IMS structure fits into existing coordination mechanisms in humanitarian contexts, be it the cluster system, EMTs, or the RCM. As noted above, the IMS structure is often perceived as an internal WHO structure. Still, more

and more governments and external partners are using this model for emergency response, including epidemics. As this often involves the same actors on the ground, it can lead to additional confusion among national and international agencies, particularly in humanitarian settings, where different coordination mechanisms may already exist.

*"The places where it's worked the best were when you had quite strong control from somebody. Someone stepped forward within the Ministry of Health (MoH) and said, 'Okay, we're in charge,' or they delegated it very clearly to another body."*

**INGO staff**

Various respondents identified the following main strengths of IMS in epidemics as done for the weakness part:

- a clear focus on epidemic containment
- technical expertise and financial support mechanisms
- rapid and delegated decision-making process
- flexible management structure
- very helpful in the absence of other coordination structures

The strength of the IMS model is the clear focus on the disease epidemic and, ideally, a joint strategy (such as a strategic response plan) endorsed by all actors in the epidemic response.

*"We have a common [strategic response] plan, and if you want to be part of the response to [for example] this cholera epidemic, you need to find your space within the plan rather than come with your own strategy."*

**Former UN staff**

The technical expertise of the incident manager and the pillar leads can provide high-quality guidance on the development and implementation of a specific disease, with a focus on health operations, including prevention and control measures, risk communication and community engagement (RCCE), health service delivery and training, and dedicated support from the other pillars<sup>5</sup>. Depending on the nature and scale of the emergency, different pillars may or may not be activated.

The WHO country incident manager generally has a more direct line of communication with the region

and headquarters, fewer partners, and the ability to make quick and authoritative decisions. This kind of “command and control” is built into the IMS model, as opposed to the cluster system and RCM, which are deliberately consensus-based.

In addition, the IMS can theoretically be a very inclusive and flexible system, drawing on the expertise of different partners to coordinate individual pillars.

*“My experience with this coordination system is good in terms of...finding the best experts, and you are finding people on that [particular disease who have] definitely gone through this [epidemic] before, so [it] makes the process much easier, and normally it’s very well structured.”*

**INGO staff**

The IMS structure can provide additional financial and human resources support for the coordination of the epidemic response, which has been identified as particularly important where no other coordination structure exists. Additional logistical and administrative support can be mobilized more quickly than regular WHO processes.

The main weaknesses of IMS in epidemics, as identified by various respondents, are the following:

- too pathogen-specific
- vertical disease epidemic strategy
- lack of transparency in structure
- too health-focused
- perceived as an internal WHO structure

WHO’s implementation of the IMS has been adapted to different contexts. When the structure was applied to infectious disease epidemics in humanitarian emergencies, such as in North Kivu during the 10th Ebola epidemic from 2018–2020, the IMS model was heavily criticized for setting up a parallel coordination mechanism working with the government while neglecting the existing humanitarian clusters<sup>17,18</sup>. The lack of integration within the humanitarian system led to various challenges in the epidemic response and contributed to strong community resistance to the Ebola-centric approach<sup>17,18</sup>.

*“This obsession with epidemic[s] that could become pandemic[s]—a lot of people think it’s a Western construct. And that the low-income countries are not in this kind of narrative because*

*they are dying of other things; they died of malaria; they died of malnutrition. The first thing that they said when we got...two centers burned down during Ebola in North Kivu: ‘We’ve been asking you for decades for water, and you come with Ebola center[s].’”*

**Former INGO staff**

In addition, the complex and confusing coordination structures and the “no regrets approach” undermined the humanitarian principles of impartiality and neutrality (see the DRC case study for more details).

*“One of the challenges was that there [during the 10th Ebola epidemic response in the DRC] was a limited integration at the onset of the clusters that have been pre-existing in a crisis setting. The protection cluster was frustrated, and rightfully so. And I think that that was quite an interesting dynamic for them to really push back; they were quite vocal to ensure that they were involved and that there was a better integration. That’s also because who leads a pillar in a response is not necessarily who leads the cluster.”*

**UN staff**

*“There were also a lot of mistakes because people came with the epidemic mindset, forgetting that this was a humanitarian setting...[with] rules and...[a] different way of working.”*

**Donor**

In addition, a parallel structure of the IMS can lead to the duplication of reporting mechanisms, parallel meetings with the same partner organizations (such as the health cluster), and additional human and financial resources and costs.

As noted above, respondents from UN organizations, INGOs, and donors mentioned that they found the IMS structure opaque and an internal WHO mechanism for organizing itself. Many acknowledged that the system is not clearly understood within different organizations and that this lack of predictability and clarity leads to confusion within WHO and its partners. The concept that governments could also establish an IMS structure to improve national responses to epidemics was not well understood by partners. Some respondents felt they were not systematically involved, whether the IMS was an internal tool for WHO or an external mechanism

implemented by the government and supported by WHO. Furthermore, at the community level, there is no distinction between NGOs responding to humanitarian needs through the cluster system and outbreak control needs through the pillar system, and the lack of integration means greater burdens at the community level.

*“That’s [IMS] an internal WHO tool. ...They keep it to themselves.”*

**UN staff**

*“People still do not understand the concept of what an EOC (emergency operations center) is and what, in particular, incident management is or isn’t. ...Many people don’t understand how it works and then don’t understand how partners can be embedded in that [incident management team (IMT)].”*

**UN staff**

The limited number of partners and the limited inclusion of other sectors keep the IMS model in epidemic responses very health-centered, resulting in a one-dimensional epidemic response focused on a specific pathogen or disease. Technical experts supporting an IMS may not be familiar with the on-the-ground realities of the humanitarian context, which can lead to technical recommendations that may not be feasible in certain contexts and may be culturally inappropriate.

In some circumstances, a country or region may have multiple ongoing large-scale disease outbreaks, which may result in the creation of multiple IMSTs for different epidemics. This results in additional meeting time, increased human, logistical, and financial resources, and possible duplication of effort. There is no guidance on how IMSTs should operate when multiple epidemics or other types of emergencies co-occur, particularly in the same geographical area.

It was also expressed that WHO’s IMS structure can be linked to government structures but can also be used separately, creating additional difficulties in terms of accountability, continuity of care, and partner involvement.

*“Incident management is still in some countries with a lot of challenges; it [lacks] engagement with the government and the local authorities. And this makes this system very detached and sometimes not useful.”*

**INGO staff**

The lack of clear accountability mechanisms within the IMS structure, particularly in humanitarian settings, has historically led to distrust of the system by some donors and partner organizations<sup>18</sup>.

*“WHO is mandated to work through governments; the health cluster is not. And this is where we got into a lot of trouble in the DRC, when we did have that incident management, coordinating directly with the government and the government, largely ignoring the humanitarian needs, as well as the respect for communities.”*

**Donor**

Finally, it was mentioned that the different pillars, or the IMS structure, mostly work independently and lack collaboration as well as a joint analysis to provide a comprehensive response strategy.

While the IMS structure is designed to focus on individual incidents, the model adopted by WHO in the past has failed to understand and work with existing coordination structures to address the additional needs of the affected population, which is essential in humanitarian (and most non-humanitarian) contexts.

## Recommendation

### Clarify how the IMS functions within and outside WHO.

The roles and responsibilities of the IMS and IMST within WHO and those of national governments supported by WHO need to be more clearly defined to improve coordination and response to large-scale epidemics.

The IMS system can enable improved epidemic coordination in the following ways:

- The incident manager should be involved in multidisciplinary epidemic coordination structures to avoid a primarily health-centered response.
- WHO and governments should develop a strategy to systematically integrate partners (including local actors) into the IMS model while maintaining its ability to make quick and authoritative decisions.
- Clearly define how IMS and IMSTs will be used beyond an internal WHO response to emergencies and how partners can be engaged.
- Include a clear description of how the IMS interacts with other coordination models in humanitarian settings (particularly the cluster system) and how it can address multiple simultaneous outbreaks and epidemics.
- Consider who is best placed to lead an IMS in situations where the government is oppressing its own people, and humanitarian principles must be upheld.

### The cluster system: does it have the capacity to coordinate a large-scale disease outbreak?

The cluster system has been described as the most established coordination structure in humanitarian contexts. However, its design, size, and the leadership and coordination capacity of cluster coordinators may make it more difficult to coordinate a major disease epidemic quickly and effectively in a humanitarian context<sup>19–22</sup>.

As a consensus-based and inclusive model, clusters aim to ensure that the voices of all partners are heard and reflected; this should be seen as a positive attribute, but it can also be limiting. Cluster meetings and processes tend to take time and can be cumbersome.

*“We have become so heavy on process, you know, writing appeals, benchmarks, [and] metrics, ...not to say they’re not important. They’re vital because we have to show progress. But the process became the output, rather than saving lives.”*

UN staff

Cluster coordinators need to be strong and persuasive leaders and coordinators. This can be challenging because they are often “double hatting” (representing both the cluster and the agency they work for) and may not have the autonomy to make certain decisions.

*“[In] a lot of these countries where we have crisis health clusters, [coordinators are either] double hatting or triple hatting.” And that has an impact when you’re responding.”*

UN staff

ii “Double hatting” or “triple hatting” refers to the health cluster coordinator taking on the role of the WR (country representative of WHO) and/or incident manager for a certain disease.

Furthermore, inter-cluster coordination has always been a challenge and a prominent weakness of the system. The health and WASH clusters routinely respond to disease outbreaks in humanitarian contexts and have developed guidelines to clarify and improve a joint response to cholera and other waterborne diseases<sup>23</sup>. However, large-scale outbreaks often require more specific technical expertise, additional financial support, strong coordination capacity across different disciplines and sectors, and rapid and authoritative decision-making capacity.

Since the establishment of the cluster system in 2005, many challenges have been documented<sup>19–22</sup>. These include, but are not limited to, divergent and sometimes conflicting mandates among UN agencies, inadequate communication channels, limited accountability mechanisms, ineffective leadership, a lack of skilled and experienced personnel, and challenges to inter-cluster coordination<sup>21,24</sup>. Nevertheless, this structure has endured over the years, providing a predictable and structured mechanism for responding to humanitarian emergencies where none existed before its creation. In recent years, the cluster system has improved its inter-cluster collaboration and sought to strengthen the participation and leadership of local and national actors<sup>25</sup>. Case studies in 2023 have shown how the nutrition, health, WASH, and food security clusters have improved their collaboration and proposed common objectives, strategic planning, joint implementation, advocacy strategies, and operational reviews and monitoring<sup>26</sup>.

*“The health and WASH [clusters collaborate] with the RCCE; those are usually the people [who respond to epidemics]. But then, of course, depending on the context, you may have to also really integrate bits on nutrition. Because let’s say you’re working in a context with high GAM [global acute malnutrition] rates or SAM [severe acute malnutrition] rates. So then, obviously, [because it] changes the way that you treat cholera in those cases or pregnant women, then you [need to] get involved [with] the cross-cutting people. ...So, it [needs] a multisectoral plan.”*

**UN staff**

Recent reforms, initiatives, and frameworks at the global and regional levels demonstrate how the various UN-led structures are trying to align and complement their activities in

humanitarian settings<sup>44</sup>. The Emergency Relief Coordinator’s recent flagship initiative seeks to transform the aid delivery system into one that is less bureaucratic and responsive to the needs articulated by affected populations<sup>28</sup>. To date, very little has been published to understand what this latest transformation would entail and how it could improve the current humanitarian response mechanisms.

The majority of the respondents felt that the humanitarian cluster system should be systematically involved in the coordination of all large-scale epidemics in humanitarian settings, as it could provide a more balanced, holistic, and multidisciplinary response:

*“OCHA plays...a much more neutral role in terms of balancing the needs and requirements of each of the humanitarian actors, whether they be UN or non-UN. OCHA is not there, prioritizing UNICEF [United Nations Children’s Fund] because it’s a UN agency over [the] Red Cross. They’re really just trying to coordinate in a relatively neutral way.”*

**International organization staff**

However, many respondents followed their statements with a “but.” The main reason for this caveat was their concern about the limited capacity of the cluster lead (particularly, the health and WASH clusters) to coordinate a major disease outbreak(s) in addition to continuing with their ongoing activities of the humanitarian response plan, especially if they cover other functions of the cluster lead agency. Respondents also noted that health clusters struggled to coordinate and respond to certain epidemics due to the lack of technical expertise in certain pathogens and diseases, such as viral hemorrhagic fevers.

*“[The response to epidemics] has become so highly specialized that you find that other agencies don’t have the capacity, don’t have the bandwidth, don’t have the resources, and may not have the risk appetite to be able to deal with a highly infectious pathogen, such as Ebola and Marburg.”*

**UN staff**

Many respondents mentioned that clusters still work in silos on the ground and that competition for funding and differences between agencies and mandates create gaps and hinder a comprehensive and holistic humanitarian response to epidemics.

*“The way that the humanitarian system structures [and] segments health in a particular way, like we break it down into ways that work for us [UN agencies] and ways that work for donors... which is quite challenging. We break it [sectors] apart, [like] WASH in health care facilities, but we separate WASH in health. So, how does that work?”*

**UN staff**

Another concern often raised by respondents was the process-heavy architecture of the cluster system, with its large number of partners, which hinders quick, effective, and authoritative decision-making because it is based on a consensus model.

*“You cannot control an outbreak [by consensus-based model], there’s certain things that need rapid decision-making with clear priorities, etc. So, I think you can do that without losing on each agency’s autonomy and independence. There is a trade-off: [Just because] you accept being part of a common response plan doesn’t mean that you lose authority or your ability to make your own decisions. But it means that you trade off a little bit of that ability for the bigger benefit altogether, [which is] much stronger than the sum of each of us.”*

**Former UN staff**

Respondents cited numerous strengths of the clusters, including their contextual knowledge of the humanitarian emergency and their established links with local actors and authorities, as well as their ability (not without challenges) to provide multisectoral response mechanisms through the inter-cluster coordination group or inter-cluster/sectoral collaboration<sup>23,26,29</sup>.

*“With the cluster, I think they have a role to play because that is where all of those existing partnerships sits right. And that’s where the knowledge is, too. It’s not like the IM needs [someone who] comes in and recreates everything because, in many places, there’s long-standing [conflict]. If it is a cluster that involve[s] local*

*partners, that’s just another incredibly valuable resource. Instead of trying to go in and establish, you know, a completely new structure and system to respond.”*

**National public health institution staff**

A study of the global health cluster examined and highlighted successful case studies of multisectoral epidemic responses during the COVID-19 pandemic in humanitarian settings, yet COVID-19 received exceptional international attention. This type of collaboration is not seen systematically in the coordination of more common large-scale epidemics in humanitarian settings<sup>30</sup>.

The roles of clusters in epidemics were described by various respondents as follows:

- information sharing
- bringing partners together
- understanding the overall gaps and needs of the humanitarian response
- continuity of essential services during a large-scale epidemic
- ensuring that community needs are met during an epidemic response

*“The health cluster and WASH cluster should be looking at how the epidemic response links into overall quality or availability of health services. That sort of bundling of epidemic services into other services, so that you don’t have a totally vertical epidemic program that is somehow totally separate from all the other health activities.”*

**International organization staff**

In addition, the accountability mechanisms of the HCT and the cluster leads can provide opportunities for predictability and accountability in international humanitarian action<sup>31</sup>.

When the cluster system and the IMS coexist in response to an epidemic in a humanitarian setting, it is unclear under which coordination mechanism the additional surge capacity brought in by GOARN, the EMT network, and other mechanisms falls under.



## Recommendation

### Involve the HCT in the coordination of large-scale epidemics.

In humanitarian contexts, the HCT should be involved at an early stage in the coordination of large-scale epidemics in order to balance and complement the various response mechanisms to the overall humanitarian needs of the community and to ensure a multisectoral response.

The rationale and benefits of involving the existing humanitarian structure during epidemics are as follows:

- Ensure that overall humanitarian needs are considered and prioritized during epidemic coordination and response. Thresholds that may trigger HC involvement should be defined. These thresholds need to go beyond the epidemiological data of the epidemic but may also be triggered by protection issues, community acceptance, the impact of the epidemic on other essential health and social services (such as routine immunization and school closures), or security and access concerns.
- Involve different clusters in epidemic coordination and response to ensure coherence and complement humanitarian response interventions.
- Strengthen the involvement of local actors who are familiar with the contextual realities (see recommendation for national leadership); this will be achieved (at least on paper) by implementing the recommendation for an inclusive multisectoral response plan.
- Link the epidemic coordination to existing structures and systematically involve HCT to improve accountability to affected populations, support continuity of care, and address post-epidemic humanitarian needs holistically.

## Cooperation and Complementarity Between the IMS and the Cluster System

In addition to an ongoing humanitarian response, where a cluster approach is applied, an acute event such as an infectious disease outbreak or epidemic may lead to the establishment of an IMS (see above). Recent literature has described the overlap in the role of the IMS and the humanitarian health cluster<sup>32,33</sup>. As noted earlier in this paper, the IMS follows a more “command and control” structure, while the cluster system follows a more collaborative and consensus-based approach. For a fast, efficient and effective response to an epidemic, the cluster system has been criticized for having “failed to provide effective coordination between different technical sectors”<sup>34</sup>. The IMS, on the other hand, focuses on aligning technical expertise in an epidemic but may not always address the more general health and non-health needs related to the epidemic<sup>35</sup>.

*“I think there is a challenge just because an IMS structure is very structured, and the cluster is not as structured. ...The cluster is more [of] a consensus. ‘This is what we’re agreeing to do together.’ Where it’s an IMS, it’s more like ‘this is the task. This is how we get to it.’ I think sometimes those two systems don’t mesh very well. It can be difficult.”*

**National public health institution staff**

Challenges between the IMS and the cluster system have been described in recent responses to humanitarian epidemics, such as cholera in Yemen and Ebola in the eastern DRC<sup>7,17</sup>.

*“I think there’s probably three elements [to coordinating epidemics]: the incident manager, there’s the cluster, and then the national authorities, and I think in the worst-case scenarios that we’ve seen, may be in the DRC. For example [in DRC], they’re running parallel systems.”*

**INGO staff**

Failure to harmonize the epidemic response between these two systems creates parallel lines of reporting (even within a single organization) and confusion for national and international counterparts which can lead to increased mistrust and hinder the response<sup>36</sup>.

*“The cluster, in some ways, has been disempowered when you have a major outbreak because of the IMS.”*

UN staff

As the literature and these KIIs make abundantly clear, coordinating the response to a large-scale epidemic requires much more than just a focus on health. WASH, RCCE, protection, and other sectors such as livelihoods, logistics, nutrition, and food security, depending on the nature and scale of the epidemic(s) and the humanitarian context, must be appropriately involved in preparedness, readiness, and response to holistically address the evolving needs of the population and control an epidemic in a humanitarian setting.

*“But what I would recommend is that even in the health crisis in [a] humanitarian situation, I would say...[to] give the coordinating power and let it reside with the HC...because the trend[] from the*

*WHO, especially for the regional offices, is to go it alone in those situations.”*

UN staff

In addition to the cluster system and the IMS structure for responding to epidemics in humanitarian contexts, there may also be members of EMTs and GOARN deployments, as well as existing national coordination mechanisms that may be in place. In refugee settings, an IMS may be established by national governments or WHO which do not collaborate with the existing RCM coordination model.

Each coordination mechanism has different strengths and weaknesses in large-scale epidemics in humanitarian settings; both are necessary. In these settings, the IMS model focuses on containing and stopping the spread of infectious diseases, while the cluster system addresses epidemics and other health and humanitarian needs to achieve a holistic, multisectoral response. Clear guidance and clarification of roles and responsibilities, as well as close collaboration between the two mechanisms, could improve the response to epidemics in humanitarian emergencies.

## Recommendation

### **Improve clarity and ensure transparency of coordination models for national, regional, and international actors and agencies.**

- There is a need for clearly articulated roles and responsibilities for the cluster/sector leads, incident managers, and HCs to improve effectiveness, transparency, complementarity, and accountability to affected populations.
- There is a need for clear and practical guidance on all the existing coordination and response models mentioned above, as well as future models under consideration, according to the different epidemic(s) and humanitarian contexts.
- Update and clarify the existing IASC scale-up protocol for the control of infectious disease events.
- Clarify different coordination mechanisms and their interactions in large-scale epidemics in humanitarian settings, including the IMS (within and outside of WHO), EMTs, the cluster approach, and the RCM. As contexts vary widely, scenarios should be developed (as suggested in the recommendation on adapted frameworks in humanitarian contexts).
- A transparent discussion of WHO’s operational capacities in varying contexts is essential before WHO is automatically entrusted with overall epidemic coordination in all humanitarian contexts.

# Strategic Response Plan: challenges and recommendations for developing a multisectoral epidemic response

Strategic response plans developed for specific disease epidemics often lack the flexibility for adaptation as well as real-time monitoring and evaluation cycles to understand the intended and unintended outcomes of a disease epidemic response.

*“The issues that we have with the strategic response plan are that they’re very short...we all knew Ebola was going to take longer than six months...we need this to be a very flexible response plan...you have the strategic response plan that usually WHO puts out. And then you have the overall humanitarian response plan that’s led by OCHA; it would be really good if these two could be integrated in some way.”*

Donor

While various organizations are invited to contribute to the development of a WHO-led strategic response plan, the funding is allocated only to WHO and UN partners.

*“We spent something like 45 million on...mostly on [epidemic-related activities], which is expensive, and it’s a big operation, and we lead that entire pillar. ...We were tasked with that officially in the strategic response plan. It was very clear. ‘This is your job, your mandate. Go do it.’ But there was no funding available for it, so we had to do all of our fundraising separately in order to provide a critical service to outbreak response. And when we approached [different donors], they said, ‘No, no. We’ve fully funded the SRP (strategic response plan).’”*

International organization staff

## Recommendation

### **Develop strategic response plans with national and local partners.**

Multisectoral strategic response plans for epidemics must be context-specific, contain clearly defined roles for all existing and newly implemented coordination response mechanisms, and meaningfully involve national/local partners.

For disease epidemics, multisectoral response plans should include the following features:

- roles and responsibilities of the different coordination and response mechanisms (e.g., IMS, clusters, RCMs, and EMTs) that are clearly written down and context-specific to ensure a coordinated and effective response (see recommendation above);
- strategic plans developed jointly with local stakeholders (such as national and local NGOs) and community representatives;
- funded as a whole, with an independent mechanism for allocating funds to the various multisectoral actors in the response plan according to their capacity, with an emphasis on governments and national/local NGOs;
- be complementary to and aligned with the humanitarian response plan; and
- designed to include feedback mechanisms to enable timely and appropriate adjustments to the epidemic response and to reduce unintended consequences (see recommendation on principles for epidemic response).

# Governments, National and Local Actors, and Communities: time for the international community to deliver on its promises

In this document, we distinguish between national and local response mechanisms because local actors responding to epidemics may not be aligned with or supported by national structures, especially in certain humanitarian contexts.

All key informants agreed that the national government, where feasible, should ideally coordinate an epidemic. The role of the international community is to support and strengthen the national government's response, but there are exceptions in certain humanitarian contexts where the government may not have the capacity or willingness to respond to the epidemic. In these situations, the international community may have relationships with non-state actors to assist them in coordinating epidemics in settings where part of the territory is not controlled by the government (depending on the political and security context and sanctions).

## National response structures

Most respondents agreed that, ideally, when an IMS is set up for a large-scale disease epidemic, the incident manager should be from the affected country.

Based on the responses of the majority of the key informants, where leadership or coordination capacity at the national level is limited or where national governments are not assertive enough to ensure that the international community gives them the space they need to take the lead, government structures can easily be sidelined or become entangled in numerous and different international coordination mechanisms.

*"[Country X] has preparedness plans for cholera. It's updated regularly, and it's even tested regularly. And then, when there's an actual cholera outbreak, someone comes from the outside and does something else. And does not even ask or take into account that a plan already exists. So, by doing the activation from the people who actually live in the country and maybe live for*

*years in the country, you are less likely to bypass the mechanisms in place that...[have] worked [and have]...been done in practice."*

Former UN staff

In addition, respondents noted that the different priorities of donors, the UN, and NGOs compared to the government could result in funds being used in ways that governments may not prefer, which can hamper efforts to ensure synergy in epidemic response among various stakeholders:

*"[The donor] gives money, but they give money only for non-sustainable WASH in health care facilities. The government of [country] has been very clear that all prevention money needs to be for sustainable WASH in healthcare facilities; The government makes a rule. [UN organization] takes money from [donor] for activities that are against the rule(s) of the government."*

UN staff

The disconnect between governments and donors, and between humanitarian and development donors, was identified by key informants as a major issue. Some informants mentioned that funding from the World Bank often goes directly to governments without the involvement of other donors, which complicates efforts to coordinate across sectors and link humanitarian and development funding:

*"The World Bank gives money directly to governments and allows them to ignore the other donors who are working through partners, and the humanitarian system. In [country] donors were cut out of those meetings because we were not needed. So here we are, funding large amounts of money to NGOs to try and stop transmission and treat. And we have the World Bank, who [are] in the MoH meeting together and making decisions without any of the donors present."*

Donor

In humanitarian contexts, where the government may be in active conflict with the population or lacks control over certain areas of the country, the coordination of an epidemic relies on locally led initiatives or is subsumed under the humanitarian architecture, often led by the UN.

*“In many countries, governments don’t want to or cannot access the populations. They’re in conflict with areas controlled by an armed group and where those populations are. They don’t have resources, or there’s just very poor governance, and you’re in a very fragile state. So the only way to really get access to [the] population is direct access to the communities, and I think this is where the humanitarians are really struggling.”*

UN staff

### **Localized response mechanisms: ensuring locally led coordination structures requires a power shift**

One aspect emerged very clearly throughout most of the KII: all epidemic responses in humanitarian settings are context-specific. Most respondents agreed that local actors and communities must not only be involved in the epidemic response but must also be empowered to actively participate in the decision-making processes. For more details on local perspectives on the opportunities and challenges of advancing the localization agenda (i.e., locally led action) in outbreak response, see the companion piece to this paper, “Why the delay? Perspectives of national and local actors on progress toward locally led outbreak readiness and response.”

*“I think coordination has to be developed locally and has to be led locally.”*

UN staff

As with other health and humanitarian interventions, community inclusion in designing, preparing, and implementing an epidemic response is crucial to avoid top-down decision-making and ensure buy-in. However, going beyond lip service and actually including communities in a meaningful way is still not happening in many cases.

*“We’re still trying to respond to outbreaks in a way or giving guidance in a way that is Western, as opposed to developing guidance and setting up response mechanisms for countries and mechanisms and ways that work for them [the community] and their health dynamics.”*

UN staff

Community-centered responses require not only community engagement and empowerment but also a real shift in power toward local response mechanisms<sup>19</sup>. Likewise, there needs to be a shift in mindset that focuses on the community’s right to assistance (as well as a right to health) rather than being a passive recipient of aid<sup>37</sup>.

*“The culture and the conflict that we’re looking into [highlight] the importance of working with the communities in a much more locally owned, demand-driven, country-driven response, and we do believe that if you’re not able to connect with those communities, to build trust with them, to strengthen their own leadership, even in these very difficult circumstances, the extent of the outside collaboration coming in is going to be extremely limited. We do believe in country-led development in everything.”*

Donor

*“When we work on emergency preparedness and response, especially in humanitarian settings, we need to be working with national NGOs, building their capacities, having standby agreements with them. Because when the humanitarian crisis worsens very often, the international NGOs leave, and you’re left with the national NGOs to work with, and therefore, we need to invest heavily in their capacity to identify and respond to these emergencies.”*

UN staff

For national and local actors to play an active role in the overall coordination of epidemics, donors must provide more sustainable and predictable funding, and implementing partners must devolve more responsibility for improving and sustaining local and regional capacity to prepare for and respond to health emergencies<sup>19</sup>.

## Recommendations

### **Empower national governments to take the lead in epidemic coordination.**

This requires a power shift, where UN agencies should step back and support national coordination and leadership.

In situations where governments are oppressing their own citizens or governments do not have control over certain parts of their territory, it may be necessary for regional bodies and the international community to play a much stronger and more independent coordinating role from the government, possibly working with non-state actors to support the coordination of epidemics. Organizations should be able to work independently with local authorities and the local population to ensure impartial and neutral responses to epidemics.

The following steps are key to ensuring national leadership during an epidemic:

- Make meaningful changes to support governments to lead coordination and response mechanisms; this will require UN agencies and INGOs to accept changes in power dynamics, funding, and influence.
- Improve cross-cluster, cross-sector, and cross-institutional coordination and collaboration between agencies.
- Reduce process-heavy administrative structures to allow systems to act promptly, efficiently, and effectively.
- Move beyond MoHs as lead coordinators in the early stages of an epidemic, possibly by establishing a coordinating body under the president or prime minister, depending on the nature, size, and stage of the epidemic, to ensure a holistic epidemic response.
- Independent funding for epidemic response should be predictable, scalable, and easily accessible to enhance national and local capacity to respond to epidemics.

### **International humanitarian agencies, particularly the UN and INGOs, must make meaningful changes to enable national and local organizations to coordinate and respond to epidemics in humanitarian settings.**

As with the recommendation above, this will require changes in power dynamics, funding, and influence.

The following key steps can ensure meaningful involvement of national and local organizations:

- Include “non-traditional organizations” in the IASC to “decentralize leadership and strategic-level decision-making to those closer to crises”<sup>19</sup>.
- Strengthen capacities, change funding modalities, and implement a meaningful localization agenda.
- Further opportunities and challenges for meaningful involvement of national and local organizations in outbreak readiness and response, including a focus on the communities themselves, are outlined in the companion paper, “Why the delay? Perspectives of national and local actors on progress toward locally led outbreak readiness and response.”

# Principles of Epidemic Response in Humanitarian Contexts: “do no harm”—understanding the unintended consequences of epidemic response

If the 2014 West African Ebola epidemic did not provide sufficient evidence of the need for a holistic and multidisciplinary epidemic response, the COVID-19 pandemic certainly did. Any intervention in a humanitarian setting will have unintended consequences that need to be considered and response mechanisms adapted accordingly. In a context with limited resources, it is important to recognize that whatever additional mechanisms or interventions are implemented, other aspects of the response may be halted or diminished. For example, the global COVID-19 vaccination programs affected routine immunization coverage, leading to a global increase in vaccine-preventable diseases<sup>38,39</sup>. Changes in health-seeking behavior during the Ebola epidemic in West Africa led to an increase in malaria-related mortality because people were afraid to go to a health center with a fever<sup>40</sup>. Hiring additional or task-shifting local medical staff to contain an epidemic means that a nurse, doctor, or community health worker cannot undertake their existing functions<sup>39</sup>. In humanitarian contexts, where the needs of the affected population are multiple, it is particularly important to reflect on and assess the competing interests between the epidemic response and the overall needs of the population and then make informed decisions with the communities<sup>37</sup>.

*“We know from Ebola in West Africa [that] malaria rates shot up. We know that pregnancy C-sections shot up, and we know [the] maternal mortality rate [increased]. Mortalities shot up, as well as HIV/AIDS. We have data that shows because the system became so seized and hijacked with dealing with one single pathogen or one public health problem, everything else fell by the wayside. I think to a lesser extent, but if we looked at proportionality, the same was true with COVID.”*

UN staff

The overarching principle of “do no harm” should guide the design of preparedness and response plans for an epidemic. Therefore, the

involvement of local actors and governments in the decision-making process is crucial and must be systematically applied by all actors.

*“The other thing that we do on a regular basis is that we actually bring the affected community to the front of the table to discuss their needs. So, hopefully, when these progress, we will have them as part of the decision-making process. Not just the needs assessment process.”*

UN staff

## Humanitarian principles: how do humanity, independence, neutrality, and impartiality play out in an epidemic response?

*“There’s always going to be a need for humanitarian architecture, for the reason that we exist now for principled, impartial humanitarian action.”*

UN staff

Maintaining humanitarian principles in crisis-affected countries and regions is already challenging due to security access constraints, the lack of impartiality of some cluster lead agencies (as most UN agencies work very closely with the governments, some of which may be oppressing their own people), sanctions by various donor governments, and the funding mechanisms of local organizations (which may rely on funding from cluster lead agencies, for example)<sup>41</sup>. In epidemic scenarios, humanitarian principles may be further threatened by the health security agenda, where, in some cases, the response to the public health threat appears to take precedence over humanitarian principles and response<sup>17</sup>.

The use of the military or police to control an epidemic in a conflict-affected region can exacerbate inequities, increase mistrust, and intensify hostility not only toward the response

activities but also toward the entire humanitarian assistance system and officials working in the region<sup>17,42</sup>. For example, during the 10th Ebola epidemic in the DRC, when the routine health needs of the community were not given the same importance as the Ebola response, humanitarian assistance was not seen as impartial<sup>17</sup>. In addition, the humanitarian principle of neutrality was compromised in the Ebola response when the WHO and the MoH partnered with the Forces Armées de la République Démocratique du Congo<sup>17</sup>.

Furthermore, the funding mechanisms of humanitarian clusters, particularly where national NGOs are financially dependent on funding from the cluster lead agency, create a power imbalance that can hinder independent and neutral humanitarian assistance, as donors and cluster lead agencies may tie funding to “priority” interventions in specific geographic areas rather than allowing national governments and organizations to set their own objectives<sup>22,37</sup>.

*“I think it’s very difficult for local agencies to access funding. I think it’s very difficult [as] part of that localization shift...We are constrained by our own compliance, our own risk appetite, our own sort of overhead costs...It’s all very unfair how the international for humanitarian funding mechanisms work.”*

INGO staff

In an active conflict situation, where the state either has limited or no authority or is in active conflict with its own population, the need for independent and neutral humanitarian assistance becomes even more important.

*“The cluster exists to allow for humanitarian health action in a way that aligns with humanitarian principles. The WHO IMS, if working through governments and governments are parties to the conflict, do not necessarily maintain that.”*

Donor

## Recommendation

### **Prioritize “do no harm” and the humanitarian principles in the coordination of and response to epidemics in humanitarian settings.**

- A large-scale epidemic response should involve all sectors of the humanitarian system to ensure that overall humanitarian needs are considered and prioritized while containing the spread of infectious diseases.
- Placing the community at the center of the response and ensuring a “do no harm” approach must be emphasized, and feedback cycles must be incorporated to address unintended consequences and ensure accountability mechanisms for affected populations.

Clear lines must be drawn between state and non-state actors and humanitarian actors to ensure access to all communities and acceptance of an impartial humanitarian response. This issue has been and continues to be a challenge for some UN agencies, particularly WHO, in certain humanitarian contexts.

Humanitarian principles must not be compromised, even when trying to contain the spread of an infectious disease, for the sake of “global health security.”

### **The Role of WHO: balancing an independent and neutral epidemic response in humanitarian settings while maintaining a close and privileged relationship with the national MoH**

WHO’s technical leadership in epidemics was not questioned by any respondents. However, many respondents noted that WHO may not always be the most appropriate organization to coordinate all large-scale epidemic responses in humanitarian contexts where the government is oppressing its people or does not have access to all of



its territory. Concerns were raised, including WHO's close and privileged relationships with MoHs, its operational capacity, and its health-focused mandate. Others mentioned that WHO's capacity in all these areas had improved over time.

Moreover, although a privileged relationship with MoHs is an advantage in most contexts, as noted above, epidemics require multidisciplinary and multisectoral coordination of responses that extend well beyond the health sector.

*"It's always been a challenge for WHO to maintain that healthy relationship with authorities in the country [and] to challenge the government. ...[When], you bring them as a central,*

*coordinating body [in a humanitarian emergency], that tension doesn't go away. It probably gets exacerbated."*

INGO staff

*"WHO constantly struggles, both structurally in terms of its mandate and culturally in terms of the individuals, to separate out what is right for the operation from what is right for WHO or from MoH. Because their mandate is to serve the MoH. That is their stakeholder. That is their audience, and then anyone else is not going to be equally balanced with that."*

INGO staff

## Recommendation

**When a national government oppresses its population or does not have control over all of its territory, the leadership of the coordination of epidemic responses in humanitarian contexts must be independent and neutral from the national government.**

Epidemic response coordination should be led by an actor perceived as independent and neutral in the affected context. In certain situations, WHO (or another actor if it is the coordinating agency) may need to delegate its coordination role to another international or local partner if it cannot maintain its neutrality and independence.

- Given its member state structure and privileged relationship with the MoH, WHO's neutrality and independence may be challenged in certain humanitarian contexts. Therefore, the delegation of the coordination role to other UN agencies or international organizations should be considered (in certain humanitarian contexts, coordination led by national organizations may also be challenging for similar reasons). In some situations, the HC and HCT may be better suited to lead the coordination of a multisectoral epidemic response in a humanitarian setting while the WHO maintains its role in the health response.
- Continue to improve WHO's administrative and logistical barriers to the rapid, efficient, and effective deployment of financial and human resources during an epidemic in a humanitarian context. Consider other mechanisms and organizations that may be better suited to undertake these tasks in specific contexts.

The architecture of WHO as a member state-based organization working very closely with the MoH may, in some circumstances, hinder the provision of an independent and neutral response to an epidemic in a humanitarian emergency<sup>43</sup>. It is important to note that in the past, other UN agencies have struggled to be independent and neutral from governments in such contexts and have had to weigh the risk of being declared persona non grata if they spoke out against such governments.

While the cluster lead agency does not report directly to the government, at least two respondents mentioned that the health cluster lead sometimes represents WHO at a senior level, blurring the reporting lines.

*"[A] cluster coordinator takes [on the] role of WR [WHO representative] at times and blurs roles and responsibilities."*

UN staff

# What Does the Future Hold? HEPR and the road to epidemic preparedness, readiness, and response

The new WHO framework HEPR aims to provide Member States with a blueprint to prepare for and respond to future health emergencies. Triggered by the COVID-19 pandemic, the framework was developed using more than 300 recommendations from reviews, reports, and evaluations of recent responses to public health emergencies<sup>44</sup>.

The HEPR architecture describes three thematic areas: global governance, financing, and HEPR systems. These systems are further broken down into five subsystems: collaborative surveillance, community protection, safe and scalable care, access to countermeasures, and emergency coordination (Fig. 1)<sup>44</sup>.

**Figure 1.** The 5 Cs of health emergency prevention, preparedness, response, and resilience



For each subsystem of the 5 Cs, HEPR proposes key core capabilities and sub-capabilities that should be strengthened or developed at national, regional, and global levels.

The proposed framework clearly outlines the need for multisectoral action to respond to and prepare for health emergencies.

*“HEPR intentionally [...] went one more onion ring out [...] if you’ve looked at the community protection side [...], which is looking at that kind of broader social and economic protection, including continuity of education, including food security ...you want your communities to participate in particular in public health and social measures you’ve got to make sure that you’re addressing their broader concerns. [...] So just within the*

*HEPR framework, WHO has [...] continued to say, this is inherently multisectoral. It can’t just focus on specific health issues, which means that you’re necessarily having to create hard-coded partnerships with other sectors as part of it.”*

**UN staff**

The details of the implementation of the framework at the national level, particularly in humanitarian emergencies, will vary according to context. The specifics of how HEPR will be implemented in humanitarian contexts are still under development. However, some respondents remain concerned that WHO itself, and health in particular, will retain too much of a central role and fail to learn from past mistakes.

*“HEPR...has clearly taken an approach of placing health within the broader multisectoral context. Still always placing...WHO in the center of it.”*

**UN staff**

Some respondents explained that HEPR used “an adapted language” for existing mechanisms and saw this framework more as a strategy to promote current strategies.

*“What we want HEPR to do is facilitate our localization agenda. I think there’s definitely... potential...because of this focus on building national capacities. I think there’s an opportunity to leverage that to strengthen our localization agenda.”*

**UN staff**

A critical element of emergency coordination in HEPR is the proposed “public health emergency workforce,” which is described as a deployable pool of multidisciplinary individuals to prevent, prepare for, and respond to health emergencies in support of the national systems<sup>44</sup>. HEPR explicitly states that an “effective emergency response requires an inter-disciplinary and multisectoral team that executes the response operations and engages in service delivery to the affected populations”<sup>44</sup>. However, it is unclear how this workforce will be operationalized. It is crucial to avoid another “global North-based” mechanism that focuses on outbreak containment rather than ensuring that the multiple needs of the affected populations are met during a public health emergency, particularly in a humanitarian context.

It is proposed that the global health threat or health emergency council, which is part of the HEPR governance structure, be anchored in WHO’s constitutional mandate<sup>44</sup>. This would create a

strong link between health ministers and heads of state. In some ways, HEPR can be seen as the operationalization of the revised international health regulations (IHR) and the pandemic treaty under discussion. However, as mentioned above, coordinating and responding to epidemics in humanitarian settings requires different modalities according to varying contexts that go well beyond stable and functioning state scenarios. For humanitarian settings, the integration of HEPR mechanisms requires clarification of how they will work with existing structures, such as the IASC system.

*“What we need to do as humanitarians is find ourselves as a correlation to [HEPR]. And they need to accept the fact that the history and the longevity and the bandwidth go[] outside of WHO for the IASC structure. I mean, the emergency directors, the IASC principals, the OPEC group— I mean, HEPR’s not going to change any of that.”*

**UN staff**

Finally, while much of the discussion on epidemic coordination takes place in Geneva and New York, the discussion on how to improve the response to health emergencies must be not only included but actually organized in the humanitarian context in the country where the epidemic is occurring.

*“There is a necessity to improve global coordination. I am slightly concerned [where] that conversation is happening. I mean, it’s very difficult to have that conversation with all the national partners that you need to have that conversation with. The people that actually respond to outbreaks. Actually, not even at the national level, as in the capital level [but] where people respond to outbreaks at the...local level.”*

**INGO staff**

## Recommendation

### **Include an additional focus on humanitarian contexts in overarching coordination frameworks such as HEPR. HEPR must specifically address the needs of different humanitarian contexts with clear operational guidance.**

In order to ensure a coordinated, multisectoral, and effective response to epidemics that respects humanitarian principles (see recommendations above), roles and responsibilities for multiple coordination and response mechanisms need to be clearly defined. This means that different leadership and modalities of coordination in a framework such as HEPR may be required based on different humanitarian contexts. While it is not possible to provide specific and detailed coordination models for all contexts, broad scenarios can be developed with various options. Some simplified scenarios are presented below, with the understanding that they have numerous exceptions and variations. Each of these needs to be disaggregated according to whether the epidemics are occurring in geographical locations where there is or is not an existing humanitarian coordination system in place (e.g., cluster system or RCM).

- I. Governments are in control of their territory and are not oppressing their nationals, and an epidemic occurs in geographic locations where there is a humanitarian emergency (e.g., numerous refugee settings, eastern DRC).
- II. Governments are oppressing their own nationals in the geographical location where an epidemic is occurring (e.g., Ethiopia (Tigray), Syria).
- III. Governments do not have control over a part of their territory where an epidemic occurs (e.g., parts of Yemen).

#### **The recommendations for a HEPR-like framework for humanitarian contexts are as follows:**

- Create a flexible and adaptable framework for a variety of evolving humanitarian contexts.
- Ensure that humanitarian principles are not compromised under the guise of global health security.
- The clear and transparent leadership of such a coordination framework must be explicitly stated.
  - Government or local leadership should be used where possible and acceptable (see recommendations for national governments).
  - The international community should take a stronger and independent leadership role in coordination when governments oppress their own nationals.
  - The international community may have relationships with non-state actors to help them coordinate epidemics in situations where part of the territory is not under government control (depending on the political and security context and sanctions).
  - Explicitly address how such coordination systems will ensure the continuity of existing humanitarian programs.
- Clear guidance on how and when non-health sectors (e.g., protection, nutrition, WASH, food security, socioeconomic) will be involved at the early stages of an epidemic, including who will lead these responses and how they will be coordinated within the existing health response coordination model.

# Case studies

During their respective interviews, several key informants mentioned epidemic responses in two different humanitarian situations. The following case studies provide a brief background on each of the different response coordination mechanisms established.

## Lebanon and the 2022 Cholera Epidemic

In late 2011, more than 1 million Syrian refugees fled to neighboring Lebanon after the start of the Syrian Civil War. By 2015, a quarter of Lebanon's population were refugees from Syria<sup>45</sup>. In early 2012, the UN Emergency Relief Coordinator appointed an HC and an HCT was soon established alongside the existing UNHCR-led system<sup>46</sup>. This was partly due to the Lebanese government's early adoption of a "policy of no policy" and refusal to recognize the refugee status of Syrians<sup>47</sup>. In addition to these two coordination mechanisms, a UN country team was led by the RC. In the early stages of the response, this multi-layered coordination structure led to overlapping responsibilities, duplication of efforts, and competition among actors<sup>46</sup>.

*"So that makes it even more complex because you have the refugee response plan as well, on top of the [humanitarian response plan], on top of the multisectoral response."*

UN staff

As the Syrian crisis showed no signs of abating, greater involvement of national authorities was required, and the Lebanese Crisis Response Plan was jointly developed by the Lebanese government and other partners in 2015. This crisis plan marked a paradigm shift in strategy toward a long-term resilience-building plan involving various government ministries, UN agencies, and humanitarian actors<sup>48</sup>. Despite its shortcomings,

this plan provided more space for multisectoral collaboration and greater involvement of ministries. It has since been regularly updated and continues to serve as a blueprint for humanitarian response.

*"The coordination mechanism had broadened from a pure [RCM], and [there] was already an integrated cluster and RCM model in place."*

UN staff

Against this backdrop, the first cholera epidemic in Lebanon in three decades was reported in 2022. The response to this cholera epidemic is considered largely successful, but it faced many challenges. Given its refugee mandate and expertise, UNHCR took the lead in coordinating the response from the outset, alongside the Lebanese government, and established the RCM. A system of co-leadership between UNHCR and an experienced international actor was established for each sector<sup>49</sup>.

The Ministry of Public Health, together with UNICEF, WHO, UNHCR, and other international partners, developed a joint response plan and established a national cholera task force<sup>50</sup>. A multisectoral response plan was established, focusing on oral cholera vaccination campaigns, WASH interventions, and infection prevention and control, among others. By early February 2023, cholera cases had declined, and the epidemic was declared over in June 2023<sup>51</sup>.



The Emergency Health Unit set up a Cholera Treatment Centre in September 2019.

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## The Democratic Republic of the Congo and the 10th Ebola Epidemic

The response to the 9th Ebola epidemic (2018) in the Equateur region, although well-funded, likely began after most of the cases had already been identified. WHO and the MoH, which co-led the response, were quick to declare their response efforts successful<sup>52</sup>. However, when the 10th epidemic (2018–2020) began to spread rapidly in urban areas of eastern DRC, particularly North Kivu, the existing response model co-led by the WHO and MoH proved inadequate. The presence of various armed rebel groups and decades of civil unrest in the region further complicated the response.

For the 10th epidemic, WHO led phase 1 of the response (i.e., strategic response plans 1–3) in collaboration with the MoH. From the outset, enormous resources were committed to the response to contain the epidemic, and an IMS structure was established at the country level<sup>18</sup>. Several international health workers were deployed to the DRC to support the staff on the ground. Despite this large-scale mobilization, the well-established humanitarian cluster system in the region was largely excluded. The UN leadership, stretched thin by limited resources, was also slow to engage. The IASC system-wide scale-up was not activated until mid-2019, many months after the response began<sup>17</sup>. The overall response was, therefore, rather uncoordinated and fragmented.

*“It was said to us straight: ‘This is an outbreak. We deal with this. We don’t need humanitarians here.’ That was the biggest mistake ever made.”*

UN staff

*“The risk of having everything led by an incident manager at WHO level means it’s put clearly into some medical aspects and the other clusters are*

*not engaged at all... And so, you end up having clusters working in an uncoordinated way.”*

INGO staff

With most efforts focusing on identifying and isolating cases and controlling the spread of the Ebola virus, additional urgent community needs, including but not limited to health, were often neglected.

*“6,000 children died of measles in that period. And that is on us.”*

UN staff

(supported by “Deaths from Democratic Republic of the Congo measles outbreak top 6000”<sup>53</sup>)

The lack of a coherent strategy aligning health and humanitarian needs further contributed to the population’s suspicion and mistrust of the health authorities<sup>52</sup>. Following the suspension of presidential elections, violence erupted in Beni and Butembo, and at least three Médecins Sans Frontières facilities were attacked<sup>54,55</sup>. After repeated calls from donor agencies for a more holistic response strategy, sweeping changes were made to the strategic response plan 4, and an “integrated” model of response was rolled out<sup>17,56</sup>. Eventually, the number of cases began to decline, and the epidemic was finally declared over in June 2020.

The 10th Ebola epidemic marked a critical juncture in international epidemic coordination. It was successfully contained through aggressive testing, contact tracing, and isolation. It also saw the first widespread use of the approved Ebola vaccine. However, the decision to prioritize the health crisis over the humanitarian crisis was perceived as a misstep that further damaged an already fragile context.



A healthcare worker at a Save the Children-supported health facility during the Ebola outbreak

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# Limitations

As with all research, this policy paper has several limitations. Various forms of bias may have been introduced due to the design of the questionnaire, a particular way of asking the questions, and nonverbal communication via video calls. Measures were taken to reduce respondent and observer bias (such as a standardized questionnaire and multiple interviewers), but some biases may have remained.

The diversity of key informants from different international organizations with extensive backgrounds in humanitarian health and epidemic response should provide diverse perspectives on the subject, but at the time of the interviews, most respondents were based in headquarters positions, which may have influenced their responses. Only two respondents were in-country and working in humanitarian contexts at the time of the interview. In addition, as the activities of different organizations were part of the research

question, organizational interests may have influenced the responses of some key informants.

The purposive sampling method may have introduced selection bias. These were mitigated by using a snowball sampling method, where additional interviewees were added during the interview phase.

While the companion piece to this research examines the perspectives of local responders to epidemics in humanitarian settings, the perspectives of different MoHs and national public health institutions were not included.

Finally, as the topic of epidemic response coordination is currently being discussed in many organizations and publications, reviews and recommendations are being formulated and updated regularly, and some of the documents used as background may have been updated or revised since.

# Recommendations Summary

In this policy paper, seven clear recommendations were proposed based on the responses from the KIIs and the findings of the scoping literature review. The majority of respondents focused their recommendations on multisectoral response mechanisms, improved coordination, and localized response structures (see Annex D). Other topics included the role of the HCT, WHO, and HEPR.

The key recommendations are summarized below. The left column represents the overall recommendation for improved epidemic response coordination, while the right column provides a more detailed description of how to achieve this.

**Table 1:** Key Recommendations Summary

|   |  |
|---|--|
| <p><b>1</b>      <b>Empower national governments to take the lead in epidemic coordination.</b></p>   | <p><b>International humanitarian agencies, particularly the UN and INGOs, must make meaningful changes to enable national and local organizations to coordinate and respond to epidemics in humanitarian settings. It is the responsibility of the national government to provide assistance to its population affected by an epidemic. The caveat is that when a government oppresses its people or does not have full access to a region in their country, regional and international organizations should be able to work independently with local authorities and the local population to ensure an impartial and neutral epidemic response.</b></p> |
| <p><b>2</b>      <b>Improve clarity and ensure transparency of coordination models for national, regional, and international actors and agencies.</b></p> | <p><b>Context-specific, clearly articulated roles and responsibilities are necessary.</b></p> <p>These are needed for the cluster/sector leads, the incident manager and the HC to improve effectiveness, transparency, complementarity, and accountability to affected populations during large-scale epidemics in different humanitarian contexts.</p> <p><b>Clarify how the IMS functions within and outside WHO.</b></p> <p>The roles and responsibilities of the IMS and IMST within WHO and those of national governments supported by WHO need to be more clearly defined to improve coordination and response to large-scale epidemics.</p>      |
| <p><b>3</b>      <b>Develop strategic response plans with national and local partners.</b></p>  | <p>Multisectoral strategic response plans for epidemics must be context-specific, contain clearly defined roles for all existing and newly implemented coordination response mechanisms, and meaningfully involve national/local partners.</p>   |



|   |  |
|---|--|
| <p><b>4</b>     <b>Prioritize “do no harm” and humanitarian principles in the coordination of and response to epidemics in humanitarian settings.</b></p>   | <p>Placing the community at the center of the response and ensuring a “do no harm” approach must be emphasized, and feedback cycles must be incorporated to address unintended consequences and ensure accountability mechanisms for affected populations. Humanitarian principles must not be compromised, even when attempting to contain the spread of an infectious disease, for the sake of “global health security.”</p> |
| <p><b>5</b>     <b>Where a national government oppresses its population or does not have control over all of its territory, the leadership of epidemic response coordination in humanitarian contexts must be independent and neutral from the national government.</b></p> | <p><b>Epidemic response coordination should be led by an actor perceived as independent and neutral in the affected context. In certain situations, WHO (or another actor if it is the coordinating agency) may need to delegate its coordinating role to another international or local partner if it cannot maintain its neutrality and independence.</b></p>  |
| <p><b>6</b>     <b>Involve the HCT in the coordination of large-scale epidemics.</b></p>  | <p>In humanitarian contexts, the HCT should be involved at an early stage in the coordination of large-scale epidemics in order to balance and complement the various response mechanisms to the overall humanitarian needs of the community and to ensure a multisectoral response.</p>   |
| <p><b>7</b>     <b>Include an additional focus on humanitarian contexts in overarching coordination frameworks such as HEPR.</b></p>  | <p>HEPR must specifically address the needs of different humanitarian contexts with clear operational guidance.</p>  |

## Conclusion and Next Steps

This paper has highlighted the strengths and weaknesses of the various mechanisms used in epidemic coordination in humanitarian settings and has identified clear and practical strategies and recommendations for improving a coordinated response. For a holistic, multisectoral, and ethical epidemic response, large-scale epidemics need both local humanitarian response coordination structures and complementary coordination mechanisms focused on containing the spread of infectious diseases, such as the IMS model.

This paper advocates for clear guidelines and improved collaboration and integration between different epidemic coordination systems in humanitarian contexts. It provides guidance on how to move forward to ensure future coordination responses are effective to address large-scale epidemic in humanitarian emergencies and to inform the current global discussions on improved pandemic preparedness.

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# Annexes

## Annex A: Background for a Better Understanding of the Current Coordination Mechanisms in Humanitarian Contexts

In humanitarian settings, coordination is particularly important to ensure synergistic efforts to respond to the needs of affected populations. It involves bringing together humanitarian stakeholders and defining roles and responsibilities according to predetermined criteria. In infectious disease epidemics, response coordination may occur at multiple levels or through multiple coordination mechanisms, depending on the size and scope of the epidemic, the capacity of the national government, the epidemiology of the disease, and the setting and context of the epidemic, among many other factors. For example, certain infectious disease threats can trigger the implementation of additional coordination structures, such as the IMS), at the subnational, national, regional, and global levels<sup>2</sup>. With the spread of the EVD crisis in West Africa in 2014, a number civil-military inter-agency coordination relationships co-evolved with the spreading of the EVD crisis in West Africa in 2014<sup>57</sup>. Conversely, the massive cholera epidemic in Yemen highlighted numerous challenges to the delivery of epidemic mitigation efforts through the existing cluster approach<sup>32</sup>. Inter-agency and inter-cluster coordination, such as collaboration between health and WASH clusters, was found to be essential for cholera containment but difficult to implement in this context.

Coordination mechanisms and policies for the containment of epidemics in humanitarian emergencies continue to evolve, particularly in light of the COVID-19 pandemic, which has further highlighted the need to develop comprehensive coordination and response strategies and frameworks for responding to infectious disease threats<sup>3–5</sup>. While the experiences of other recent infectious disease epidemics, such as cholera in Yemen and EVD in the DRC, have highlighted the challenges of existing coordination practices, there remain several unexamined questions about

the global governance mechanisms needed to respond to these unique threats with agility and timeliness<sup>6,7</sup>.

### National Response Structures

The national government and local response mechanisms should lead and coordinate all epidemic responses in their country. Many countries have experience establishing EOCs or specialized task forces for specific diseases, such as cholera. Institutions such as the African CDC support and promote these mechanisms to enhance national capacity to prepare for and respond to large-scale epidemics<sup>58</sup>.

Nationally led EOCs have proven successful worldwide and are used for a variety of hazards, including humanitarian emergencies and infectious disease epidemics<sup>59,60</sup>. However, during recent infectious disease epidemics in humanitarian contexts, the international community established parallel coordination mechanisms<sup>18,36</sup>.

Reasons for this include a lack of national preparedness funding, limited in-country public health core capacities, and significant power and resource imbalances between UN agencies and INGOs compared to governments in ongoing humanitarian emergencies<sup>19,61,62</sup>.

OCHA's 2023–2026 Strategic Plan describes trends toward more locally coordinated response structures as the UN's 2030 Localization Agenda<sup>63,64</sup>. Recently, WHO published the 2022–2026 strategy for the National Action Plan for Health Security (NAPHS), which aims to support Member States in the "implementation of IHR core capacities, and is based on One Health for all-hazards, whole-of-government approach"<sup>65</sup>. The

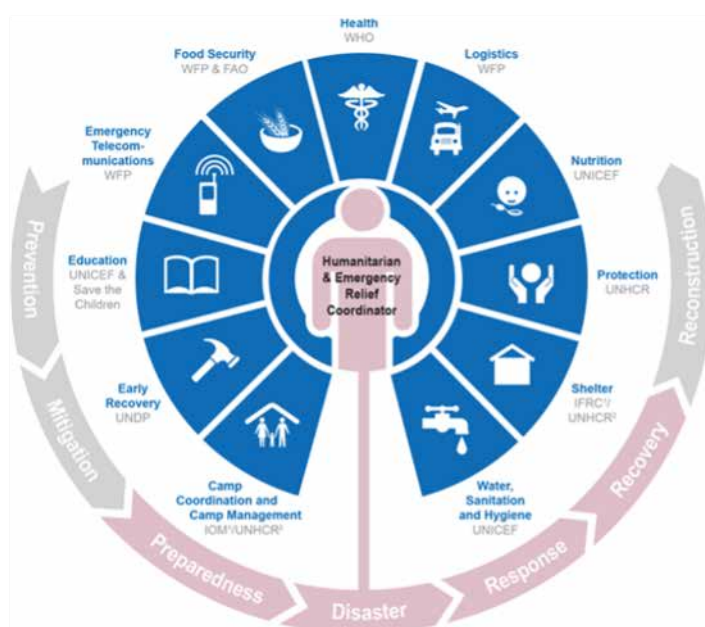
NAPHS brings together different sectors, identifies partners, and allocates resources to improve the health security capacity of each Member State.

## Cluster Coordination

The cluster system of coordination for humanitarian action was introduced in 2005 as part of the Humanitarian Reform Agenda. The objective of introducing these reforms was to improve the predictability, accountability, and effectiveness of humanitarian relief efforts through enhanced coordination and partnership. The cluster system was introduced in response to concerns about the timeliness, quality, and accountability issues

noted in international humanitarian responses<sup>66</sup>. The humanitarian actors involved in the cluster coordination system include UN agencies and non-UN agencies. The agencies leading the clusters at the global level are primarily the UN but also include the NGO Save the Children, as well as the International Federation of Red Cross and Red Crescent Societies. At the country level, clusters are managed by the HC and the HCT. At the global and national levels, each cluster is headed by a Cluster Lead Agency, which is tasked with coordinating technical capacity and strengthening systemic preparedness to respond to humanitarian needs in its specific sector (see Figure 1, which depicts clusters at the global level)<sup>67</sup>.

**Figure 1:** Cluster System



There are 11 different clusters in the cluster coordination system, each covering a key aspect of humanitarian response, including shelter, education, and health. The role of the health cluster is to “relieve suffering and save lives in humanitarian emergencies while advancing the well-being and dignity of affected populations”<sup>68</sup>. In an epidemic in a humanitarian setting, the relevant clusters involved in the response will depend on the nature of the epidemic. For example, in a cholera epidemic, the role of the WASH and health clusters will be essential. The WHO is responsible for coordinating the actions of the health cluster, and its activities are guided by strategic priorities<sup>69</sup>. As of July 2023, there are 31 health clusters active

worldwide, two of which are regional coordination mechanisms (Pacific and Syria). The health clusters currently serve 103 million people, with a projected funding requirement of US\$3.5 billion, of which only about 8% (US\$288 million) has been provided by donors. In 10 countries, the MoH acts as a co-coordinator of the health cluster<sup>70</sup>.

The five priorities for the health cluster outlined in the 2020–2023 strategic plan include:

- strengthening coordination among local, national, regional, and global actors to prevent, prepare for, respond to, and recover from public health and humanitarian emergencies;



- strengthening collaboration across clusters and sectors to achieve better health outcomes;
- strengthening our collective and individual health information management and use;
- improving the quality of health cluster actions; and
- strengthening health cluster advocacy at local, country, regional, and global levels.

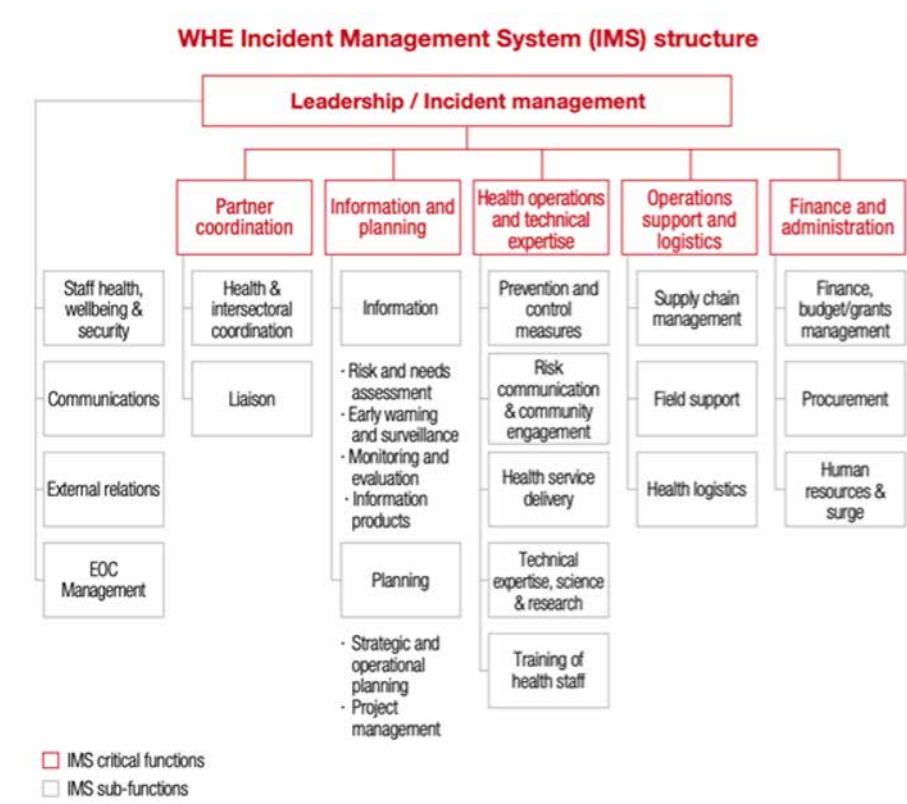
## The Incident Management System

WHO’s IMS provides a “standardized yet flexible approach”<sup>8</sup> to managing humanitarian responses, both within WHO and together with its partners, particularly the MoH. It was adopted by WHO in August 2016 as an organizational response to all-hazard emergencies after reforms following the Ebola epidemic in West Africa. According to the ERF, the IMS is triggered when the WHO recognizes an acute emergency and includes the establishment of an in-country IMT that covers the critical IMS functions<sup>8</sup>. WHO coordinates field operations and provides operational oversight and technical assistance to in-country operations

and officials. In humanitarian settings, it is not uncommon for an IMS to exist alongside an established in-country cluster coordination team.

Partner coordination is one of the critical functions of the IMS, and the ERF recommends a flexible approach, recognizing that the success of the coordination frameworks depends largely on the capacity of the national MoH to lead response activities, as well as other mitigating factors, including the specific context of the response activities. The MoH, with support from WHO, can lead health sector coordination, often relying on its existing protocols and technical and operational plans implemented through an EOC based in the MoH. The ERF recognizes, however, that in conflict settings and fragile states, more “independent coordination mechanisms may be required”<sup>8</sup>. Regardless of the coordination framework adopted for a particular response, the objectives of coordination through an IMS remain similar: “to engage stakeholders in risk assessments and needs assessments, planning, information management and sharing, service delivery, monitoring, quality assurance, and advocacy”<sup>8</sup>.

**Figure 2:** WHE Incident Management System Structure



## Refugee Coordination Model

The RCM was first introduced by the UNHCR in 2013. This guidance aimed to “ensure accountable, inclusive, predictable and transparent coordination in responding to refugee situations”<sup>9</sup>. Following bilateral negotiations between UNHCR and OCHA as part of the Transformative Agenda, a joint note in 2014 expanded on the RCM guidance for implementation in complex humanitarian settings<sup>10</sup>. These settings include situations where a complex emergency is ongoing, an HC has been appointed, and a UNHCR-led refugee operation is underway. The note outlined the accountability, roles, and responsibilities of the HC and the UNHCR representative in line with the strategic outputs of the IASC. It also detailed practical interactions between representatives in different contexts, depending on the geographical location of refugees in relation to the host communities<sup>10</sup>. In response to the lessons learned from implementing the Comprehensive Refugee Response Framework and reaffirming the Global Compact on Refugees by UN Member States in 2018, the RCM guidance was further updated in 2019. In 2022, UNHCR implemented the RCM through the Regional Response Plans in Afghanistan, the DRC, South Sudan, and Ukraine and led the Regional Response and Resilience Plan in Syria with the UN Development Program, supporting host governments in 32 countries to protect and assist over 27 million people<sup>71</sup>.

## Emergency Medical Teams

The deployment of EMTs is clearly defined in the Blue and Red book guidance documents<sup>11,12</sup>. Their coordination often falls under clinical case management or a trauma working group operating within the health cluster or another independent coordination platform, such as the on-site operations coordination center. EMT coordination should take place within existing emergency response frameworks, whenever possible. It should be led by the clinical care or emergency response departments of the MoH of the responding national government, specifically within the health operations pillar of the EOC. For disease epidemics in humanitarian settings where both cluster-led structures and national coordination mechanisms are in place, the reporting mechanism for EMTs may be blurred.

## Global Outbreak Alert and Response Network

GOARN “provides international public health resources to control outbreaks and public health emergencies” globally<sup>13</sup>. An expert network harnessing the technical capacity of over 250 partners, GOARN is coordinated by an operational support team based at WHO headquarters in Geneva. GOARN members and partners can also support rapid risk assessment and event verification efforts during public health emergencies at the country level. A rapid response team, which may include experts from the affected country and regional and global partners, including members of international networks such as GOARN, can be mobilized to support coordination, verification, in-depth investigation, and risk assessment activities<sup>14</sup>.

## Financing Mechanisms

Lack of access to fast, reliable, and flexible funding for epidemic response has long been identified as a key challenge<sup>72–75</sup>. During the COVID-19 pandemic, funding shortfalls were found to negatively affect the pandemic response in humanitarian settings, most of which are located in low- and middle-income countries<sup>74,75</sup>. Inadequate funding for pandemic preparedness and a lack of timely mobilization of funds during the pandemic were observed, indicating significant funding gaps<sup>74</sup>. The literature has documented concerns about numerous issues, including conflicting incentives, fragmented and unpredictable funding leading to improvised responses, and a lack of “at-risk advance procurement and pre-positioned manufacturing capacity”<sup>73</sup>. In addition, performance-based financing has been described as leading to supply chain breakdowns and pauses during the pandemic<sup>76</sup>.

Several specific funding mechanisms for epidemic responses have been previously described in the literature, including the now-defunct Pandemic Emergency Financing Facility, which was housed at the World Bank. While intended to enable the mobilization of resources to support a timely response, its impact was the opposite. Because the strict conditions for the release of these funds required the disease to spread across multiple countries, by the time the funds were mobilized, it

was often too late; this was observed during the North Kivu Ebola epidemic in the DRC as well as during the COVID-19 pandemic<sup>73</sup>.

The Central Emergency Response Fund (CERF) is the current funding mechanism that allows for rapidly mobilizing funds in response to a humanitarian crisis<sup>77</sup>. Developed by the UN General Assembly in 2005, the CERF aims to improve humanitarian response in emergencies. While the fund has previously supported large-scale responses to infectious disease epidemics, it is intended to complement other funding streams and thus may not be sufficient to ensure a rapid response in the absence of other fundraising efforts.

WHO also has an internal mechanism to be able to respond quickly to epidemics and other health emergencies<sup>78</sup>. In 2022, the Contingency Fund for Emergencies (CFE) was allocated to 35 emergencies, including 18 disease epidemics, 11 complex emergencies, and six natural disasters in 40 different countries<sup>78</sup>. The fund is financed by WHO Member States.

In addition to these centrally managed funding mechanisms, several donors, such as the World Bank, the Bill and Melinda Gates Foundation, and some high-income countries, provide direct funding for humanitarian crises, including epidemics, in these settings.

The Pandemic Fund was established by the World Bank in September 2022. It aims to provide sustainable financing to low- and middle-income countries to support pandemic prevention, preparedness, and response<sup>79</sup>. Compared to the Pandemic Emergency Financing Facility, the Pandemic Fund focuses on preparedness and prevention aspects of epidemics in addition to response mechanisms. A partnership agreement between the government and one of 13 pre-accredited implementing agencies such as the African and Asian Development Banks, WHO, UNICEF, the Global Fund to Fight Tuberculosis, AIDS and Malaria (Global Fund), and Gavi, the Vaccine Alliance, is required in order to access the funding<sup>80</sup>. It is unclear how humanitarian contexts will benefit from this newly created fund, as only recognized governments can apply. The first round of funding was allocated in July 2023, with 37 low- and middle-income countries receiving funding for pandemic prevention, preparedness, and response activities<sup>81</sup>.

## Annex B: Number of Key Informants per Institution

| Institution                       | Number of KIs |
|-----------------------------------|---------------|
| WHO                               | 6             |
| UNICEF                            | 5             |
| MSF                               | 3             |
| OCHA                              | 1             |
| UNHCR                             | 1             |
| GOARN                             | 1             |
| Save the Children                 | 1             |
| Partners in Health                | 1             |
| ICRC                              | 1             |
| IFRC                              | 1             |
| GTFCC                             | 1             |
| USAID                             | 1             |
| Global Fund                       | 1             |
| Bill and Melinda Gates Foundation | 1             |
| World Bank                        | 1             |
| CDC                               | 1             |
| Africa CDC                        | 1             |



# Annex D: Code Co-Occurrences for Recommendations

| Codes                                  | Accountability to affected populations | Accountability to donors | Cluster | Accountability | Challenges of Cluster | Roles and responsibilities of | Strengths of Cluster | Data management | EMTs | Financing | Distribution of funds in country | Global funding mechanisms | Outbreak related funding | GOARN | Government | Emergency Operating Centres | Specific task forces | Humanitarian Principles in outbreak | Community needs vs outbreak | Independent response | WHO-Govt Relationship | Humanitarian-Development Nexus | IMS | Challenges of IMS | Role of IM | Strength of IMS | Interaction between Coordination | Localization | Localized response mechanisms | Preparedness to response | Multisectoral response mechanisms | NGOs | OCHA | IASC | Recommendations |    |  |
|--|--|--------------------------|---------|----------------|-----------------------|-------------------------------|----------------------|-----------------|------|-----------|----------------------------------|---------------------------|--------------------------|-------|------------|-----------------------------|----------------------|-------------------------------------|-----------------------------|----------------------|-----------------------|--------------------------------|-----|-------------------|------------|-----------------|----------------------------------|--------------|-------------------------------|--------------------------|-----------------------------------|------|------|------|-----------------|----|--|
| Accountability to affected populations | 1                                      | 1                        |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       | 2          |                             | 1                    |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      | 3               |    |  |
| Accountability to donors               | 1                                      | 3                        |         |                |                       |                               | 1                    |                 |      |           |                                  |                           |                          |       |            | 1                           |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 | 1  |  |
| Cluster                                |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| Accountability                         | 3                                      |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            | 2                           |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| Challenges of cluster                  |  |                          |         |                |                       | 5                             | 1                    |                 |      | 4         |                                  |                           |                          |       |            | 3                           |                      |                                     |                             | 2                    | 1                     | 1                              |     |                   | 2          | 1               | 4                                | 3            |                               | 1                        | 4                                 |      |      |      | 1               |    |  |
| Roles and responsibilities of          |  |                          |         | 5              | 5                     | 2                             | 1                    |                 |      |           |                                  |                           |                          |       | 1          | 1                           |                      |                                     |                             | 1                    | 1                     | 1                              | 2   | 2                 | 1          | 1               | 11                               | 2            |                               | 3                        |                                   | 5    |      |      | 2               |    |  |
| Strengths of Cluster                   |  |                          |         | 1              | 1                     | 2                             |                      |                 |      |           |                                  |                           |                          |       |            | 1                           |                      |                                     | 2                           | 3                    | 1                     | 3                              |     |                   | 1          | 6               |                                  |              | 3                             |                          |                                   |      |      |      | 1               |    |  |
| Data management                        |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            | 1                           | 2                    | 1                                   |                             |                      |                       |                                |     |                   |            |                 | 2                                | 1            |                               | 1                        |                                   |      |      |      |                 | 7  |  |
| EMTs                                   |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            | 3                           | 2                    |                                     |                             |                      |                       |                                |     |                   |            |                 | 7                                | 1            | 1                             | 1                        |                                   |      |      |      |                 | 1  |  |
| Financing                              |  |                          |         |                |                       | 4                             |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 | 12 |  |
| Distribution of funds in country       |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| Global funding mechanisms              |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| Outbreak related funding               |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| GOARN                                  |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 | 5  |  |
| Government                             | 2                                      | 1                        | 1       |                | 2                     | 3                             | 1                    | 1               | 2    | 2         | 4                                |                           |                          |       | 3          |                             |                      | 4                                   | 3                           | 2                    | 3                     |                                |     | 4                 | 1          |                 | 8                                | 3            | 3                             | 3                        | 2                                 | 1    |      |      | 9               |    |  |
| Emergency Operating Centres            |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| Specific task forces                   | 1                                      |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| Humanitarian Principles in outbreak    | 1                                      | 1                        |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| Community needs vs outbreak            | 1                                      |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| Independent response                   |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| WHO-Govt Relationship                  | 2                                      | 1                        |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| Humanitarian-Development Nexus         |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| IMS                                    |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| Challenges of IMS                      |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| Role of IM                             |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| Strength of IMS                        |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| Interaction between Coordination       | 1                                      |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| Localization                           |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| Localized response mechanisms          | 1                                      | 1                        |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| Preparedness to response               |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| Multisectoral response mechanisms      | 2                                      |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| NGOs                                   |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| OCHA                                   |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| IASC                                   |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| Recommendations                        | 2                                      | 1                        | 1       |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| Sectoral coordination                  |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| WHO                                    | 2                                      |                          | 1       |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| Parallel response mechanisms           |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| Role of WHO                            | 1                                      |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| Technical expertise vs leadership      |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| WHO Instruments                        |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| ERF                                    |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |
| HEPR                                   |  |                          |         |                |                       |                               |                      |                 |      |           |                                  |                           |                          |       |            |                             |                      |                                     |                             |                      |                       |                                |     |                   |            |                 |                                  |              |                               |                          |                                   |      |      |      |                 |    |  |



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