SP5

OUTBREAKS AND EMERGENCIES

Introduction and value proposition

An infectious disease outbreak, whether in a community, region or a global pandemic, has major health impacts. It can also lead to immense direct and indirect financial costs and disrupt the functioning of communities, especially impacting the most vulnerable. One of the key lessons learned from the outbreak of COVID-19 has been the impact of outbreaks on all countries and the importance of surveillance and preparedness for outbreaks of public health concern.

Populations living in fragile, conflict and vulnerable (FCV) settings are particularly at risk of outbreaks of vaccine-preventable diseases. In the past decade, civil conflict and war have resulted in mass migration of refugees, internal displacement, and the formation of conflict areas. Natural disasters and climate challenges also result in mass population movements. Many displaced people settle in temporary camps, informal settlements and urban slums. National health authorities often face significant challenges in maintaining immunization services and managing outbreaks in these settings. Nearly 20 million children do not receive basic childhood vaccines each year, and 40% of these children live in FCV settings.[1]

The Organization of Economic Cooperation and Development (OECD) has defined 'fragile contexts' as the combination of exposure to risks and insufficient coping capacity of the state, system and/or communities to manage, absorb or mitigate those risks. The OECD estimates that 1.8 billion people are living in fragile contexts, a figure that could rise to more than 2.3 billion by 2030.[2] In FCV settings, routine immunization coverage is typically low, outbreaks are common and mortality is high. The OECD estimates that 60% of preventable maternal deaths, 53% of deaths of children younger than 5 years, and 45% of neonatal deaths occur in these settings.[3]

1. Strategic Advisory Group of Experts on Immunization (SAGE). The Global Vaccine Action Plan 2011–2020: Review and lessons learned. 2019. Geneva: WHO. Available at: https://www.who.int/immunization/global_vaccine_action_plan/GVAP_review_lessons_learned/en/

2. OECD. States of Fragility 2018: Highlights. 2018. Paris: OECD. Available at: https://www.oecd.org/dac/conflict-fragility-resilience/docs/OECD%20Highlights%20documents_web.pdf

3. Zeid S, Bustreo F, Barakat MT, Maurer P, Gilmore K. For every woman, every child, everywhere: a universal agenda for the health of women, children, and adolescents. Lancet. 385(9981):1919-20. doi: 10.1016/S0140-6736(15)60766-8.

The COVID-19 outbreak highlights the importance of all countries having robust systems for the early detection and rapid response to outbreaks and sharing of information. Ensuring rapid response to outbreaks and improved access to services in FCV settings requires innovative, integrated approaches tailored to local contexts. Successful solutions often involve joint planning and coordination of efforts by a diverse range of partners. Community leaders, civil society organizations (CSOs), health workers, and immunization programme managers can establish linkages between service providers and communities, and help to build a resilient local health system that can adapt to complex and evolving challenges.

It will not be possible to sustain current coverage levels, ensure global equity in vaccination coverage, and realize disease control and mortality reduction goals without improving access and utilization of services in FCV settings. There have been successful models to increase access to immunization services in FCV settings as part of a package of health services. However, efforts to improve coverage are often not sustained, not tailored to local contexts, and have not been scaled up to have significant impact.

Strategic Priority Goal and Objectives

Goal

Immunization programmes can (1) anticipate, prepare for, detect, and rapidly respond to vaccine-preventable and emerging disease outbreaks, and (2) ensure immunization service delivery during acute emergencies and among communities affected by conflict, disaster and humanitarian crisis

Objectives

- Ensure preparation for, detection of, and rapid, high-quality responses to vaccine-preventable disease outbreaks

- Establish timely and appropriate immunization services during emergencies, and among communities affected by conflict, disaster and humanitarian crisis

Context and challenges

There are numerous challenges in the preparedness and management of responses to outbreaks of national or global health importance. Maintaining quality routine immunization services during outbreaks and other emergencies is difficult yet paramount to control the spread of infection and prevent further outbreaks. Outbreaks of pathogens targeted for elimination are also of particular concern where international spread can negatively impact global progress.

Coordinating global responses to outbreaks has become increasingly complex, requiring concerted and coordinated efforts by countries, affected citizens, WHO and partners to mitigate their impact. In the past three years, there have been numerous large outbreaks of measles, prompting WHO to activate its Emergency Management System to coordinate global response efforts.[4] There has also been a resurgence of diphtheria in some FCV settings due to low vaccine coverage. While many outbreaks are occurring in FCV settings, the resurgence of measles has become a global challenge. Other outbreaks of global importance include vaccine-derived poliovirus,[5] Ebola, meningitis, yellow fever and cholera. Responding to these outbreaks has been challenging, particularly in settings where there may be community mistrust of government officials and outside partners.[6]

Key challenges in the detection and response to outbreaks and achieving high routine immunization coverage include:

Management and coordination

Outbreaks present challenges to the various management and coordination mechanisms that exist between national health authorities and disease control, development and humanitarian partners. Emerging outbreaks, such as Ebola in DRC and COVID-19, exert pressure to take time-sensitive decisions on the basis of imperfect epidemiologic data. These challenges are greatest in FCV settings, where partners develop multi-year response plans that might not be flexible enough to respond to evolving outbreaks.

Responding to outbreaks requires coordinated efforts within government ministries and departments and across partners which may have different priorities that do not align with those of national health authorities and local communities. It is important to prioritize which interventions to deliver to meet varied health needs.

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4.   WHO. Measles – Global Situation. 26 November 2019. https://www.who.int/csr/don/26-november-2019-measles-global_situation/en/

5.   Global Polio Eradication Initiative. Q&A with Michel Zaffran: cVDPV2 and the vaccine available to stop it. 19 December 2019. http://polioeradication.org/news-post/caught-between-a-rock-and-a-hard-place-cvdpv2-and-the-vaccine-available-to-stop-it/

6.   Cousins S. Violence and community mistrust hamper Ebola response. Lancet. 2018;18(12):1314-1315. doi: 10.1016/S1473-3099(18)30658-3.

Political concerns, access and security

Outbreaks that occur in communities where there is a lack of trust between the community and government authorities are particularly challenging. Tensions may exist between local authorities and the international relief community, or between any other combination of actors, making both the acceptance and delivery of assistance problematic. With emergence of vaccine hesitancy, vaccination can become politicized and the subject of contention. Partnership and dialogue with affected populations is therefore critical.

In FCV settings, emergencies are often associated with highly charged, unstable political contexts. Agencies need to apply core humanitarian principles, including impartiality, when working in these environments. National health authorities, UN agencies and partners need to recognize the right to vaccination of non-citizen children/communities and work under a policy framework to ensure equitable access to services.

Providing routine immunization services in a safe and secure environment can be a major challenge in conflict settings. In the past decade, healthcare workers have often been targeted and health facilities destroyed in conflict settings.[7] Considerable investment is required in management of security and in negotiating access to affected communities. Unfortunately, health care workers may be forced to balance the pressures of providing services in their community and their own personal safety.

Weak health systems

Government capacity to provide an essential package of primary health care services and to support public health functions is limited in many countries and may be negatively impacted by emergencies and/or outbreaks. The COVID pandemic highlighted limited public health response capacity in many countries and the challenges to provide primary care services in concert with mitigation measures. Additional challenges in FCV settings include insecurity, limited service delivery to rural or isolated populations, inadequate infrastructure, limited human resources, and inadequate coordination and oversight of health services. Health care workers may not be adequately paid and may prioritize other activities at the expense of primary care services. In addition, demotivated health care workers may not provide quality services, discouraging caregivers' utilization of services.

Data and estimations of vaccination coverage

Accurate estimates of vaccination coverage are pillars on which to build evidence-based interventions and prevent disease outbreaks. There are challenges in monitoring administrative coverage data with irregular reporting and inaccurate reporting. Estimation of the total number of zero-dose and under-vaccinated individuals is crucial to establish the true size of high-risk populations and to monitor interven-

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7.   United Nations Office for the Coordination of Humanitarian Affairs (OCHA). Global Humanitarian Overview 2020. 2019. Geneva: OCHA. Available at https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/documents/files/gho-2020_v8.3.pdf

tion coverage and effectiveness. Realistic denominators may be difficult to obtain and are particularly problematic in urban slums and FCV settings. Population-based surveys of coverage are resource intensive and may be politically controversial, prone to bias, or based on inappropriate methodology. It is particularly challenging to conduct surveys in in FCV settings where a reliable sampling frame may not be available if settlements have been abandoned and new settlements established.

Funding mobilization and financial mechanisms

Most national health authorities have limited discretionary resources to respond to outbreaks. Even when resources are mobilized, there may be government or donor-driven restrictions on use of funds and support may be slow to address the growth of cases. Outbreak responses require fast, flexible and predictable funding. Innovative financial mechanisms such as cash, voucher transfers and mobile banking are beginning to be used to address these challenges. Ideally, national mechanisms of resource flows and mobilization are integrated into the health system for emergency responses, including case management subsidization. In FCV settings, this is often not the case and resource mobilization from external partners is needed.

In protracted crises, donor fatigue remains a major challenge. In addition, funding partners may resist support for vaccination and remain focused on their own priorities rather than a population's wider needs.

Community engagement and demand

In the past decade, misinformation about vaccine safety and the spread of vaccine hesitancy has contributed to low vaccination coverage and the resurgence of vaccine-preventable disease outbreaks in several countries. Community engagement and partnerships are therefore critical in outbreak prevention and response. In FCV settings, parallel systems of government and non-government structures can complicate community engagement activities. As vulnerable populations in these settings are faced with multiple needs and priorities, including shelter, health, food and security, listening to communities and understanding their priorities is essential to inform the design of appropriate response strategies.[8]

Vaccine-preventable disease control/elimination programmes

Detection and rapid response to outbreaks by disease-specific control programmes is resource intensive and can disrupt provision of routine services. The Global Polio Eradication Initiative (GPEI) was established in 1988 and has been highly successful in preventing paralytic polio, which remains endemic in only two countries. However, circulating vaccine-derived poliovirus outbreaks have emerged in several countries since the withdrawal of the type 2 oral poliovirus vaccine in 2016 and the response to these outbreaks has been challenging. Measles outbreaks

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8.   WHO. Community Engagement for Quality, Integrated, People-Centred and Resilient Health Services. https://www.who.int/servicedeliverysafety/areas/qhc/community-engagement/en/

have also emerged as a global health priority. Gavi provides support to prevent measles outbreaks in countries with low coverage, through supplemental immunization activities. The Measles and Rubella Initiative (M&RI) has limited resources to support outbreak responses in Gavi-eligible countries.

There are also global programmes to prevent and respond to outbreaks of diseases for which there is a limited global stockpile of vaccines, including cholera, meningitis and yellow fever. The International Coordinating Group (ICG) on vaccine provision manages the stockpile and supports outbreak response activities. An ICG mechanism has been developed to support outbreak responses with the newly licensed Ebola vaccine. Global efforts to coordinate responses to outbreaks of pertussis, diphtheria, typhoid fever and other vaccine-preventable diseases are more ad hoc. The humanitarian mechanism for vaccination in emergencies supports the purchase of vaccines that are in short supply, such as pneumococcal conjugate vaccine (PCV), for populations with limited access due mainly to conflict and displacement.

Stockpiles and unlicensed vaccines

The unpredictability of outbreaks and humanitarian emergencies makes it challenging for individual countries to stockpile vaccines. Moreover, globally there are shortages of vaccines for many epidemic-prone diseases, such as meningitis, monkeypox, cholera, yellow fever and pandemic influenza. The ICG manages stockpiles of meningitis, yellow fever, cholera and Ebola vaccines. Availability in the global market for other vaccines and timely supply to the country in need is often the biggest challenge in emergency situations. This issue applies not only to vaccine supplies but also to anti-toxins and injection equipment, which is more challenging due to larger bulk and longer transport time.

With limited national and global stockpiles, some countries are left facing severe shortages while others have stockpiles of unused or expired products. There is a need to maximize the utility of scarce resources and ensure the equitable distribution of available resources to countries in need. Strategic stockpiles of licensed vaccines and financial resources that could be used to support outbreak operations would allow countries to respond faster in a crisis.

Vaccines are under development for priority diseases, including Lassa fever, hepatitis E virus and Nipah virus. The use of unlicensed vaccines in outbreak settings is complex and requires regulatory approval, community engagement, ethical oversight, technical review and support, as well as careful monitoring for adverse events. WHO and partners successfully demonstrated the efficacy of Ebola vaccine during outbreaks in West Africa and received expanded use authorization for the use of Ebola vaccine during the 2018–2020 outbreak in the Democratic Republic of the Congo (DRC). This framework is also being used in response to the COVID-19 outbreak.

Technical support

Countries often need technical support to respond to outbreaks and address the issues outlined above. Generally, WHO is the lead agency supporting ministry of health responses. More support is often needed in FCV settings, where challenges

may be amplified. CSOs can provide support in areas where access is limited. However, the presence of multiple partners on the ground with their own workplans often creates challenges in delivering the right technical assistance.

In April 2000, WHO established a formal network of partners to respond to infectious disease outbreaks, natural disasters, and other humanitarian emergencies. The Global Outbreak and Response Network (GOARN) is a collaboration of institutions and networks that pool human and technical resources for rapid identification, confirmation and response to outbreaks of international importance. In 2016, WHO created the Health Emergencies Programme to help countries prepare for, prevent, respond to and recover from emergencies, including outbreaks.

Key focus areas

In acute emergencies and humanitarian settings, the highest priority should be on maintain/improving routine immunization services. When vaccine-preventable disease outbreaks occur with high mortality and/or global spread, vaccination campaigns are often used to rapidly increase immunization coverage and stop transmission. Strategic interventions and subsequent operationalization of campaigns depends on the context and nature of the emergency.

Key focus area: Coordination and integration

Strengthen coordination and implementation of outbreak preparedness, detection, and response at all levels – in the contexts of a comprehensive health and overall humanitarian response, implementation of international health regulations, and efforts to support health systems strengthening

Evidence and gaps

During large outbreaks of international importance, most countries establish emergency operations centres (EOCs), where partners work together under ministry of health leadership. Most EOCs include an incident management system (IMS) and technical working groups to coordinate activities. In some outbreaks, the UN Office for the Coordination of Humanitarian Affairs (OCHA) cluster platform is used to coordinate response activities between UN partners, national authorities, and other support organizations. This is particularly common in settings with a protracted crisis. In outbreaks that cross borders, regional coordination is needed to synchronize activities and support cross-border control measures. Outbreak control may require use of interventions not yet licensed by countries. National regulatory authorities often have fast-track pathways for emergency situations and National Immunization Technical Advisory Groups provide technical review and oversight.

Responses to outbreaks often rely on supplementary immunization activities (SIAs) or other interventions (e.g. mass drug treatment or bed net distribution) to prevent or mitigate outbreaks. While mass campaigns may be a necessity to respond to outbreaks, the best and most cost-effective approach is to prevent epidemics entirely by (re)establishing service delivery in parallel with or as early as possible after the campaign and ensuring high sustained coverage.

In the past decade, multiple outbreaks of international importance have occurred simultaneously in FCV settings and it is not unusual for multiple partners to plan SIAs to response to these outbreaks. SIAs require considerable human and financial resources and are particularly challenging in humanitarian settings where there are other urgent health needs. The decision to carry out SIAs requires joint planning among response partners, affected communities and local authorities and should be based on the decision-making framework of vaccination in humanitarian emergencies approved by the Strategic Advisory Group of Experts on Immunization (SAGE).[9] Multi-antigen SIAs can minimize disruption of services and also serve as a vehicle to provide other interventions, such as vitamin A, deworming, soap and mosquito nets.

Strategic interventions

Optimal management, coordination, fast-track regulations, integration and technical support are critical in managing outbreaks.

Table 1: Strategic interventions – Coordination and integration

Intervention	Examples	Roles and responsibilities
Optimal management of outbreak preparedness, detection and response	▪ Adopt best practices for outbreak management. ▪ Develop new mechanisms for the timely coordination of in-country and global resources to support vaccination in response to outbreaks. ▪ Leverage outbreak responses to address root causes of the outbreak, without delaying the response. ▪ Support a flexible approach to enable countries to provide services to migrant, displaced and refugee populations. ▪ Use the humanitarian framework and mechanism to provide access to affordable vaccines.[10]	National health authorities, WHO, UNICEF, ICG, Gavi, CSOs, and other UN and humanitarian partners supporting work in FCVs and other areas that have a humanitarian response plan
Coordinated and integrated approach across disease control programmes.	▪ Coordinate global and national support in outbreak responses through sharing of microplans, population data, mapping and population movement. ▪ Coordinate SIAs and use to deliver additional health services ▪ adapted to the crises and supported by the health system's pillars.	National health authorities, WHO and partners involved in disease control programmes (e.g. GPEI, M&RI, ICG)
Fast-track authorization	▪ Support fast-track authorization for timely access to new vaccines in emergency situations.	WHO, vaccine manufacturers, national regulatory authorities
Technical support	▪ Maintain capacity to rapidly mobilize multilingual roster of experts. ▪ Diversify consultant base to include experts on communication, social sciences, and behavioural sciences. ▪ Develop rapid response teams to be rapidly mobilized for national or international response.	WHO, GOARN, bilateral partners, social science networks

9. WHO Strategic Advisory Group of Experts on Immunization (SAGE). Vaccination in Acute Humanitarian Emergencies: A Framework for Decision Making. 2017. Geneva: WHO. Available at: https://www.who.int/immunization/documents/who_ivb_17.03/en/

10. WHO. Accessing Affordable and Timely Supply of Vaccines for use in Humanitarian Emergencies: the Humanitarian Mechanism. 2017. Geneva: WHO. Available at: https://www.who.int/docs/default-source/documents/publications/accessing-affordable-and-timely-supply-of-vaccines-for-use-in-humanitarian-emergencies.pdf?sfvrsn=14e5289d_1

Assumptions and risks: The main risk to be managed is that national authorities and international agencies will insufficiently commit to development of multi-agency, -programme and -sectoral coordination mechanisms to develop the capability to comprehensively prevent, prepare and respond to outbreaks.

Key focus area: Planning and development of local capacity

Invest in and sustain local capacities and resilient health systems to ensure timely detection of and response to outbreaks; identify and address the underlying causes of outbreaks; and ensure communities affected by outbreaks, other emergencies, and humanitarian crises have continuous access to immunization services; and ensure service delivery recovery plans are embedded into outbreak and emergency response.

Evidence and gaps

Countries need to have plans and structures in place to rapidly identify and respond to outbreaks. Outbreak investigations should identify the reasons the outbreak occurred and inform the response activities and prevention measures taken. Country outbreak response plans also need to include activities to monitor and respond to adverse events following immunization. As outlined in the International Heath Regulations (IHR), Joint External Evaluations (JEEs) review national preparedness plans and the capacity of countries to implement them. JEEs should include capacity development planning based on findings from the review.

Capacity development at the local level in FCV settings is often done in collaboration with CSOs and non-state actors. Forums to engage with them and support their activities need to be established so they can contribute to resilient health systems and be involved in key assessment and planning processes. It is essential that resourcing and technical support from CSOs are tailored to strengthen health systems pillars – health service delivery, medical supplies, human resource policy, financing, health information and leadership/governance. Notably, the development of local capacity is constrained by non-payment of health workers, reduced health workforce numbers, reduced motivation, service interruptions and health workforce insecurity. Use of poorly trained health care workers to administer vaccines can lead to adverse events and damaged community trust.[11]

Strategic interventions

Local capacity should be developed through strengthening of local response and IHR capacities, building resilient health systems, and improving systems and capacities for planning, monitoring and evaluation, and use of health information and data tools.

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11.   WHO. Humanitarian Health Action: South Sudan news releases and feature stories. https://www.who.int/hac/crises/ssd/releases/en/

Table 2: Strategic interventions – Planning and development of local capacity

Interventions	Examples	Roles and Responsibilities
Optimal management of outbreak response active vaccination at the local level	• Leverage outbreak response support to address root causes of the outbreak, without delaying response. • Ensure that donor community/partners support flexible approach to provide services to migrant, displaced, refugee populations. • Encourage CSOs to use the humanitarian framework to access affordable vaccines.	National health authorities, WHO, UNICEF, ICG, Gavi, CSOs, and other UN and humanitarian partners supporting work in FCVs and other areas that have a humanitarian response plan
IHR core capacities	• Maintain and increase capacity at the national and subnational levels for surveillance and response to outbreaks.	National immunization programmes
Resilient health systems	• Develop resilient health systems at the local level flexible enough to provide services during crises. • Implement national health plans that support a package of essential services including vaccinations. • Ensure that recovery plans are part of emergency plans of action, without delaying emergency responses.	National health authorities, development partners
Planning	• Develop and annually review outbreak preparedness plans. • Conduct operational reviews mid-year and end of the year to take corrective measures and adapt to context changes. • Integrate local capacity building for HR, financing, logistic and supply chains, information systems and governance into responses. • Ensure front-line workers are properly trained and implement safety systems to prevent, detect and mitigate vaccine safety concerns.	National health authorities, response partners
Monitoring and evaluation	• Monitor key performance indicators for outbreak preparedness, detection and response including process indicators (country versus global). • Conduct after-action reviews after every large-scale outbreak response.	WHO and national health authorities
Tools	• Develop tools to characterize communities' vaccination coverage, particularly areas with high numbers of zero-dose children. • Provide rapid reports of health facility functioning, including mechanisms by which data are captured and reported. • Provide a reliable census of functioning health facilities, including reporting structures, using tools such as the Health Resources Availability Monitoring System (HeRAMS).[12]	WHO, UN and other humanitarian partners

Assumptions and risks: Planning and development of local capacity assumes that national health authorities and international agencies will collaborate effectively to build resilient health systems. Key risks include:

• Disruption of the health system may impact human resource management and planning and other system pillars, including finance, payment of health care workers, maintenance of basic infrastructure, interruptions to telephone and data communications, and threats to health worker security.

• Service delivery to refugee and internally displaced persons will be stopped and redirected to legally resident populations.

• Inability of humanitarian workers to support field-based activities. Establishing support through community health workers can mitigate this impact.

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12.   WHO. Health Resources and Services Availability Monitoring System (HeRAMS). https://www.who.int/hac/herams/en/

- Preparedness is neglected due to the absence of outbreaks. There have been many examples of this during the evolution of the COVID-19 outbreak.

- Emergency response misses the opportunity to promote recovery.

- Lack of support for a health systems approach leaves gaps and vulnerabilities after the outbreak.

Key focus area: Integrated surveillance

Continued investment in regional, national, and local capacity to conduct integrated surveillance for priority diseases, especially following an emergency or humanitarian event, maximizing opportunities to monitor and characterize multiple pathogens to ensure early detection of outbreaks.

Evidence and gaps

It is essential that countries are able to detect and track outbreaks through the building and maintenance of laboratory capacity, ensuring accessibility to the laboratory supplies and reagents, and providing guidance on diagnostic laboratory standard protocols. Providing feedback to the community about the outbreak should also be a key component of response plans. Technology such as Integrated Disease Surveillance and Response (IDSR) handheld devices and WHO's Early Warning, Alert and Response System (EWARS)[13] can be used for surveillance alerts and sharing information rapidly.

After an emergency, such innovations should be integrated into national systems, to support more integrated and comprehensive surveillance systems.[14] WHO and disease control programmes are supporting this shift through integration of vaccine-preventable disease control information into wider system platforms, such as District Health Information Systems (DHIS). The IHR Joint External Evaluation can also be used to monitor the effectiveness of coordination of surveillance within a country.[15] Public health information systems can provide alerts to be investigated but do not provide information on responses.

Strategic interventions

Integrated surveillance systems for rapid detection and response to outbreaks need to be developed and strengthened through expanded technical support.

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13. WHO. Early Warning, Alert and Response System (EWARS). https://www.who.int/emergencies/surveillance/early-warning-alert-and-response-system-ewars/

14. Draft GVAP workstream on vaccination in fragile states and humanitarian emergencies 9th March 2019

15. Strengthening Health Security by Implementing the International Health Regulations (2005): Joint External Evaluations (JEE) mission reports. https://www.who.int/ihr/procedures/mission-reports/en/

Table 3: Strategic interventions – Integrated surveillance

Interventions	Examples	Roles and Responsibilities

Rapid detection and response to outbreaks	▪ Integrate district emergency preparedness and management, provincial-level support, and national-level laboratory verification as outlined in the IHR, incorporating:
	
	  - Real-time alerts from public health information systems.
	
	  Community-based early warning systems for human and animal health events.
	
	▪ Establish principles and material transfer agreements to facilitate sharing of samples between countries for analysis.
	
	▪ Create or maintain capacity for:
	
	  - Rapid verification and investigation by response teams of priority diseases.
	
	  - Safe collection and transportation of specimens.
	
	  - Laboratory diagnosis of priority diseases.
	
	  - Isolation and clinical management of patients.
	
	  - Equitable and effective partnerships with affected communities; early detection and response to adverse events and misinformation.
		National health authorities at all levels; countries

Technical assistance	▪ Monitor progress in disease reduction for priority diseases and integrate surveillance systems for different diseases. ▪ Integrate surveillance information management systems using platforms such as DHIS.	Countries (with WHO and partners support)

Assumptions and risks: Maintenance of capacity for early detection and response requires considerable logistics support for case finding, laboratory investigation and response. Laboratories need a constant flow of reagents and diagnostic kits. Field investigation teams need training and supplies for case investigation, specimen collection and safe and timely collection of specimens. Local health authorities need support for clinical management of patients as well as collection, analysis and feedback of surveillance data.

Key focus area: Tailored approaches and innovations for interventions

Develop, implement and evaluate innovative, tailored approaches and relevant frameworks and tools to safely, ethically and equitably vaccinate populations during outbreaks and in humanitarian settings and initiate re-establishment of immunization services following the initial emergency response along with broader early recovery efforts and in line with disaster risk reduction principles.

Evidence and Gaps

In settings where services have been disrupted, re-establishment of service delivery sites, provision of supplies and ensuring availability of critical human resources can rapidly raise coverage. Innovative strategies can be used to continue operations at these sites, such as working with CSOs to understand root causes of service disruption and to develop strategies tailored to local contexts. Services need to be re-aligned to rapidly changing locations.

Table 4: Strategic interventions – Tailored approaches and innovations

Interventions	Examples	Roles and Responsibilities
Tailored approaches to support service delivery	▪ Secure agreement with local authorities/armed combatants on service delivery strategies (outlined below) that are acceptable to parties in conflict.	CSOs access, negotiators on both sides of conflict.
Service delivery strategies	▪ Fixed site: Maintain and re-establish service delivery if possible. If there are challenges with infrastructure create temporary facilities for new or transit populations. ▪ Mobile health teams: Deployment to priority areas ▪ Outreach services: Local community health workers support service delivery and social mobilization activities. ▪ PIRI: Periodic intensification of routine immunization services. ▪ 'Hit and run' vaccination: Quick in-and-out operations using windows of opportunity, such as ceasefires. ▪ Barrier vaccination zones: Often referred to as firewalling, this strategy may involve setting up vaccination posts around inaccessible areas. ▪ Transit and cross-border vaccination: Establishment of vaccination posts at checkpoints and border crossings. ▪ Displaced people camps: Vaccinating at refugee and displaced people camps and other mass gathering sites or high population density settings.	CSOs, countries, other partners
Flexible age, schedule and dosing options	▪ Develop a flexible, fit-for-purpose approach based on local context, covering choice of antigens (as recommended in the humanitarian framework) and age groups targeted.	Programme managers, service delivery partners
Innovative vaccine delivery and cold chain management	▪ Use cold chain equipment and vaccine delivery approaches tailored to complex settings. ▪ Leverage other emergency and humanitarian deliveries and logistics for vaccine delivery (e.g. bundling vaccination with food distributions). ▪ Use appropriate vaccine vial size and controlled temperature chain to improve access to vaccines.	Countries and service delivery partners
Mobile technologies	▪ Promote evidence-based mobile technology solutions for digital surveillance, management and supervision, communication, and demand promotion. ▪ Use GIS-based tools to gain insight into populations to guide vaccine supply chain management. ▪ Use satellite imagery to estimate population density, alternative supply and cold chain approaches, and deployment of newly developed vaccines.	Countries, UN and other partners

In settings with civil conflict, combatants may establish checkpoints where vaccination can be provided to populations moving across the lines of conflict. In the past decade neglected tropical diseases or newly emerging diseases have occurred in areas of civil conflict, including the Ebola outbreaks in West Africa and DRC. In both of those outbreaks, ministries of health and partners supported the testing and use of candidate vaccines as part of the outbreak response. Re-building of trust between government and communities with regard to provision of essential health services, including vaccination, is a high long-term priority.

Strategic interventions

Countries and partners, including CSOs, need to build on past experience of service delivery strategies to provide services that are adapted to local contexts. Effective strategies require flexibility and innovation, including flexible age, schedule and dosing options, innovative vaccine delivery and cold chain management, novel vaccine deployment, and use of innovative mobile and GIS technologies.

Assumptions and risks: Responding to outbreaks and emergencies requires managing and/or adjusting the perception of risks for service providers, implementing partners and funding organizations. While risks increase, the cost of inaction also grows. In conflict settings, the use of smartphones, GPS, cameras, and other devices may be prohibited. In many recent conflicts, smartphones have been systematically destroyed for fear of drone targeting. Gaps in communication can be addressed through sending report forms by SMS to phones that have no GPS. Key risks include:

- Strategies fail because they are not tailored to local contexts.

- Known effective approaches are not used/adapted.

- Reliance on emergency response slows rebuilding.

Key focus area: Community engagement

Prioritize two-way communication and engagement with communities and health workers during outbreaks and in humanitarian settings to promote participation in decision-making; to ensure access to and use of services; and to identify and address unmet health needs.

Evidence and gaps

Reinstating disrupted routine services requires effective work on both vaccination supply- and demand-side issues. CSO engagement and private sector partnerships are often useful to address community concerns and address unmet health needs during outbreak response. The social science community can play a critical role in characterizing these needs.

Pockets of vaccine hesitancy may jeopardize outbreak responses and need to be assessed and addressed rapidly to mitigate their impact. Event-based surveillance systems can help rapidly identify potentially damaging news stories and rumours. Response to these stories is most effective if managed by trusted partners working with community leaders. In insecure settings, CSOs can negotiate access and provide services to communities and serve as intermediaries between governments and anti-government elements. However, linking health service delivery with military assistance can create tensions between anti-government elements and service delivery providers.

Strategic interventions

Community engagement should be advanced through use of proven operational strategies for improving engagement and social mobilization; use of innovative methods to identify needs, factors affecting service use and to develop appropriately tailored responses; and negotiation of access to populations in crisis settings.

Assumptions and risks: Success of community engagement strategies assumes that service providers and partners can identify trusted contacts who can negotiate access to communities. Without effective community engagement, partners will be unable to provide services and outbreaks will likely expand.

Table 5: Strategic interventions – Community engagement

Interventions	Examples	Roles and Responsibilities
Access and security	▪ Follow best practices to ensure negotiations are conducted by neutral, impartial partners and involve both state and non-state actors. ▪ Ensure all parties respect and protect the impartiality and neutrality of all health actors ▪ Avoid forced measures for vaccination campaigns. ▪ Prioritize community engagement to secure trust and facilitate access.	Ministries of health, CSOs, UN agencies
Communication and social mobilization	▪ Community listening and social mapping ▪ Recruit health workers, social mobilizers, volunteers and vaccinators from affected communities. ▪ Involve affected communities in planning. ▪ Ensure communications are gender and culturally appropriate, use local languages and are disseminated through accepted channels. ▪ Include dialogue with gatekeepers, such as local traditional and religious leaders, informal leaders (e.g. of youth groups, women's groups). ▪ Provide information through different forums, such as mass media, community theatre, community groups, faith-based organizations, CSOs, house-to-house visits, mobile phone messages.	Ministries of health, UNICEF, WHO, CSOs, other partners

Assessment strategy and tools	▪ Support the use of methodology and tools to:
	
	  - Characterize communities with a high percentage of under-vaccinated children.
	
	  - Understand why caregivers do not use services.
	
	  - Address the root causes of under-use of services.
	
	  - Identify and address unmet health needs; and
	
	  - Identify novel engagement approaches to deal with inequities linked to gender, age, geography, ethnicity or socioeconomic status.
		Ministries of health, UNICEF, WHO, CSOs, behavioural scientists, and other partners

Resources

Tools

- Vaccination in Acute Humanitarian Emergencies: Implementation Guide; https://apps.who.int/iris/bitstream/handle/10665/258719/WHO-IVB-17.13-eng.pdf?sequence=1

- Vaccination in Acute Humanitarian Emergencies: Framework for Decision Making; https://apps.who.int/iris/bitstream/handle/10665/255575/WHO-IVB-17.03-eng.pdf;jsessionid=166D0E8611FA4E53330179D8D421B387?sequence=1

- Early Warning, Alert and Response System (EWARS); https://www.who.int/emergencies/kits/ewars/en/

- Inter-Agency Standing Committee (IASC) protocols for emergency response; https://interagencystandingcommittee.org/iasc-transformative-agenda/content/iasc-humanitarian-system-wide-scale-protocols-released

- Health emergency preparedness initiative; https://www.who.int/ihr/publications/9789241511827/en/

- Emergency response framework; https://www.who.int/hac/about/erf/en/

- Health Resources Availability Monitoring System (HeRAMS); https://www.who.int/hac/herams/en/

- Perceived Needs Scale (HESPER); https://www.who.int/mental_health/publications/hesper_manual/en/

- Public Health Emergency Operations Centre Network (EOC-NET); http://www.who.int/ihr/eoc_net/en/index7.html

- Global Outbreak Alert and Response Network (GOARN); https://www.who.int/ihr/alert_and_response/outbreak-network/en/

- Managing Epidemics Handbook; https://www.who.int/emergencies/diseases/managing-epidemics/en/

Disease-specific tools

- Polio standard operation procedures (SOPs); http://polioeradication.org/wp-content/uploads/2016/07/sop-polio-outbreak-response-version-20193101.pdf

- GPEI: mOPV2 request forms; http://polioeradication.org/tools-and-library/resources-for-polio-eradicators/gpei-tools-protocols-and-guidelines/

- M&RI request process; https://measlesrubellainitiative.org/

- SOPs for Outbreak Response (polio, measles, etc.)

Policies and strategies

- Gavi fragility, emergencies, and refugees policy; https://www.gavi.org/programmes-impact/programmatic-policies/fragility-emergencies-and-refugees-policy

- UNICEF Minimum Community Engagement Standards; https://mesh.tghn.org/site_media/media/uploads/articles/attachments/UNICEF_Minimum_Quality_Standards_DRAFT.pdf

- Humanitarian mechanism (for access and supply of vaccines); https://www.who.int/immunization/programmes_systems/sustainability/The_Humanitarian_Mechanism_ToRs.pdf?ua=1

- ICG (guidelines, bylaws, request form); https://www.crisisgroup.org/

- IHR and Health Cluster Reform; https://www.who.int/ihr/about/en/

Related networks

- Sonar-Global social science research network; https://www.sonar-global.eu/

- Social Sciences in Humanitarian Action Platform; https://www.socialscienceinaction.org/