

# Strengthening vaccination delivery system resilience in protracted humanitarian crises

## KEY MESSAGES

- This policy brief identifies interventions that can help to increase the coverage of childhood vaccinations in protracted humanitarian settings by strengthening the resilience of vaccination delivery systems.
- It is based on a systematic review of 50 studies, focusing not only on identifying which interventions work but also on how they work and the contextual factors shaping this.
- Whilst there is no single solution to ensuring long-term resilience in vaccination delivery, a number of effective interventions are identified that address vaccination supply and demand. These include the use of multiple service pathways (including mobile services), better integration of vaccinations with in-demand health services, and strengthening community engagement approaches.
- The most successful interventions relied on leadership from domestic ministries of health, funding and flexibility from agency and donor partners, close community engagement, and an ability to negotiate safe access for vaccinators and outreach workers.
- Whilst many of the interventions focused on adaptive responses with short term effects, the review highlights some interventions with the potential to transform vaccination delivery systems, especially in the fields of governance and health financing.

## BACKGROUND

### Low vaccination coverage in humanitarian settings

Childhood vaccination is one of the most effective public health interventions, preventing up to 3 million deaths a year. However, immunisation coverage in many humanitarian settings remains low, leaving children – both from displaced populations and host communities - vulnerable to disease outbreaks, ill health, and death. Zero-dose children (who have received none of their scheduled doses) are much more likely to live in these settings and are at particular risk of communicable disease-related mortality and morbidity.

In protracted humanitarian settings, which we define as any country subject to at least five consecutive years of UN-coordinated humanitarian action, the challenge of increasing coverage is compounded by long-term disruptions to service delivery, resource constraints and shifting demand pressures from mobile populations. The evidence-base to address low coverage in these settings is piecemeal, with little or no consideration given to strengthening the resilience of vaccination systems in the long-term.

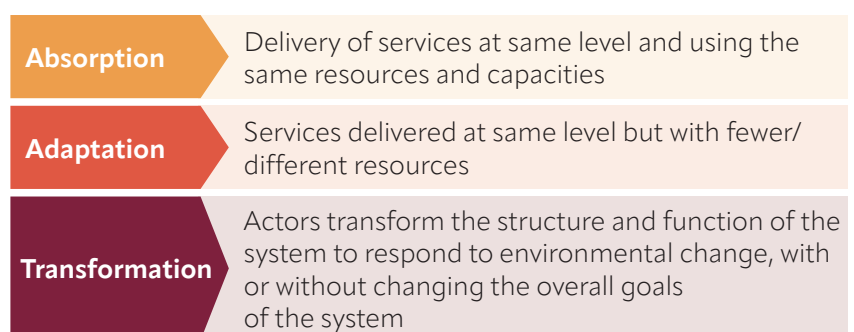
There is an urgent need to identify interventions that can help promote sustained improvements in vaccine uptake in these contexts, to reduce ill-health and death from preventable diseases and subsequent financial impacts on families and pressures on health services.

### About the research

Our systematic review aimed to identify effective interventions to strengthen the resilience of vaccination delivery systems to maintain and improve childhood immunisation coverage in protracted humanitarian settings. We focused on studies published between 2001 and 2021.

Resilience, in this context, refers to the capacity of a health system to absorb, adapt, or transform when exposed to a shock and still retain the same control over its structure and functions (see figure 1).

Figure 1: Mechanisms for system resilience



## SYSTEMATIC REVIEW KEY FACTS

<b>Number of studies:</b>	50
<b>Countries:</b>	Nigeria, South Sudan, Afghanistan, Cameroon, Haiti, Somalia, Multiple settings (most studies from aforementioned countries)
<b>Interventions considered:</b>	<ul style="list-style-type: none"> <li>• Macro level interventions that either addressed system resilience directly or did so through actions across at least one of the WHO health system building blocks;</li> <li>• Meso level interventions that were either area-focused at district level or above, or looked at specific tranches of vaccination delivery</li> </ul>
<b>Outcome measures:</b>	<ul style="list-style-type: none"> <li>• Primary: population level vaccine coverage</li> <li>• Secondary: included vaccination delivery metrics and system resilience metrics</li> </ul>

## KEY FINDINGS

Table one provides a summary of the interventions identified in the review, showing the mechanisms by which they supported system resilience (absorptive, adaptive or transformative) and their outcomes.

*Table 1: Summary of interventions to support vaccination system resilience in humanitarian settings*

Intervention class	Intervention type	Setting type	Mechanism	Outcome
Vaccination campaign (17 studies)	Vaccination campaign	Multiple	Adaptive	Variable, increases in coverage with variations according to geography/pop. group
Health financing (7 studies)	P4P	Conflict	Adaptive	Variable – positive, no effect and decrease
	Funding disbursement	Conflict	Adaptive	[Secondary outcome only] Improved accounting for funding disbursed
	Private sector engagement	Conflict	Transformative	Increased coverage (but from a single study)
	Development financing	Multiple	Adaptive	Increased coverage
Service integration (6 studies)	Mobile health teams	Conflict	Adaptive	Improvements in coverage
	Nutrition and routine immunisation	Complex	Adaptive	Increase in number immunised, increased coverage
	Polio eradication and routine immunisation	Conflict	Potentially transformative	Increased coverage
Community engagement & mobilisation (4 studies)	Composite packages of community engagement activities	Conflict	Adaptive	Increased coverage or reductions in missed opportunities for vaccination depending on the study
Health information & surveillance (3 studies)	Outreach surveillance activities or use of GIS for population denominator estimation	Conflict, natural disaster	Adaptive	Variable according to the study
Governance & coordination (3 studies)	Civil-military engagement; cross-country coordination (in the context of population displacement)	Complex, conflict	Transformative	Improved coverage, reductions in the number of zero-dose children and improved accessibility (variously, according to the study)
Health workforce (2 studies)	Use of community mobilisers or technical surge capacity	Conflict	Adaptive	Reductions in missed opportunities for vaccination

*Note: The table does not include multidimensional interventions from the review as these varied considerably in their composition, thus making it difficult to include a simple overview outcome assessment.*

### **Vaccination campaigns were the most common intervention to support delivery system resilience.**

All vaccination campaign studies described short-term and adaptive responses to crisis, including mobilisation of significant additional resources domestically, from international donors and other non-governmental actors. The most successful campaigns were multi-dimensional interventions, combining a mix of service delivery modes (fixed site, mobile outreach, door-to-door approaches), intensive community mobilisation efforts and health worker recruitment and training, to strengthen both vaccine supply and demand simultaneously.

**Service integration had a positive impact on vaccination uptake by increasing the range of access points for service users.** Examples include integrating childhood immunisation with nutrition services or polio eradication work. Mobile Health Teams also improved vaccination coverage by enabling outreach, especially into poorer and marginalised communities.

**Robust community engagement was key for improving outcomes by improving trust in service providers.** It also increased awareness of the need for vaccination, of its benefits, and of suitable service access points. There was especially promising evidence on the effectiveness of Volunteer Community Mobilisers (VCMs) recruited from within affected populations on improving uptake and reducing missed opportunities for vaccination. Recruiting VCMs from within affected communities also resulted in spill-over benefits such as improved case surveillance for vaccine-preventable diseases.

### **Evidence on health financing was limited and results – especially for recognised interventions such as Payment for Performance (P4P) – were conflicting.**

This may be due to differences in the design of P4P interventions across countries, some of which involved payment of financial incentives to health workers directly, whereas others were targeted to health facilities.

**Whilst most interventions reinforced adaptive resilience capacities, some interventions had transformative potential.** These included governance capacity change through inter-governmental cooperation, and improving health financing by changing structures and accountability systems governing financing for vaccination delivery.

**Some common factors contributed to the success of interventions across contexts.** More successful interventions relied on leadership from domestic ministries of health, funding, flexibility of agency and donor partners, and, in security-compromised areas, an ability to negotiate safe access for vaccinators and outreach workers.

## **RECOMMENDATIONS**

No single solution exists to promoting resilience in vaccination delivery systems and adaptations are likely to be needed across a range of fronts to address significant barriers to access and low trust in service providers. We also noted the heavy emphasis in published work on specific vaccinations - particularly polio. However, the research does have important implications for policy and practice in several areas.

### **Policy and health services**

- Work with implementing partners to introduce, and where relevant expand the use of, community mobilisers recruited from within low coverage host communities and refugee populations
- Ensure multiple, parallel service panels to reach affected populations including mobile health teams and integration with other in-demand services such as nutritional support

### **Funding**

- Increased financial allocations to support strengthened resilience in vaccination delivery systems – and a recognition from donors that prioritising efficiency over effectiveness in increasing vaccination uptake may not be an optimal approach to programming in these settings.
- Ensure stability in funding flows, including to crisis-affected countries.

### **Research**

- Evaluate complex intervention packages and consider optimal mixes of different types of measure for different settings.
- Build the evidence base by supporting strengthened evaluation of delivery approaches for the full range of routine antigens in these settings.
- Conduct novel research to address critical evidence gaps, particularly on effective health intelligence approaches and systems for monitoring vaccination uptake in crisis-affected contexts.

**About the brief:** Work described in this brief forms part of a wider project exploring resilience in vaccination delivery systems in Lebanon, in response to compound crises. For further information about the research reported in this brief, or the wider project, please contact Dr Sharif Ismail ([sharif.ismail@lshtm.ac.uk](mailto:sharif.ismail@lshtm.ac.uk)) at London School of Hygiene and Tropical Medicine.

A full version of the review is available here: <https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-022-08653-4>

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