

Strengthening system resilience in Lebanon's childhood vaccination system: findings from a mixed-methods project

KEY MESSAGES

- Childhood immunisation services in Lebanon face profound challenges under current economic conditions. This brief summarises findings from a mixed-methods research project that aimed to describe the effects of a series of system shocks on vaccination delivery in Lebanon through the Primary Healthcare Network and identify interventions to support vaccination delivery system resilience given current operational constraints.
- Successive shocks in Lebanon generated varied risks to vaccination delivery, but also prompted diverse system responses, most of which were absorptive or adaptive in nature. We found that many of the best evidenced interventions to support system resilience in Lebanon had been implemented at different points as part of shock responses.
- Recommendations include near-term expansions in use of mobile medical units, service integration, and the use of flexible financing and contracting arrangements with implementing partners to better support vaccination delivery.

BACKGROUND

CHALLENGES TO VACCINATION DELIVERY IN LEBANON

The Lebanese health sector faces profound – perhaps existential – challenges. There is a need to better understand how essential health services such as childhood vaccination delivery are coping in the face of the deepening economic crisis. There is also an urgent need to identify interventions that can help promote vaccination uptake under the specific operating constraints that now exist in Lebanon. There is now strong evidence to suggest there have been substantial declines in vaccination coverage across communities in Lebanon, linked initially to the COVID-19 pandemic, but increasingly to worsening economic conditions as households deprioritise preventive health services in favour of subsistence needs.

Addressing vaccination coverage shortfalls will help reduce the burden of mortality and morbidity from vaccine-preventable disease, helping to contain demand on overstretched health services, and reducing the risk of catastrophic health costs for host community, refugee and migrant families in Lebanon, many of whom are under now intense financial stress.

This policy brief summarises findings from a mixed-methods project to describe vaccination delivery system responses to shocks in Lebanon, and identify potential resilience-building interventions. We aimed to [i] explore how external shocks affect health systems, [ii] identify pathways or system constraints that may explain how

and why health systems respond to shocks in the ways that they do, and [iii] identify relevant interventions to bolster system resilience. We did so through an in-depth case study on childhood vaccination delivery in Lebanon.

ABOUT THE RESEARCH

We explored system resilience in childhood vaccination delivery using a mixed-methods approach incorporating system dynamics and qualitative thematic analysis of data gathered in Lebanon, and an international systematic review of the evidence on resilience-building measures for vaccination delivery systems in settings of protracted humanitarian crisis. Our qualitative work drew on interviews with 38 individuals working in various parts of the vaccination delivery system in Lebanon. We also reviewed official documents relating to crisis response in Lebanon, and meeting minutes for the national and regional Health Working Groups.

Our focus was on vaccination delivery through the Ministry of Public Health's (MoPH) Primary Healthcare Network (PHCN) of clinics, although we explored dynamics affecting service providers in the private and third sectors alongside this. We considered how the vaccination delivery system responded to a series of shocks from 2012-22, including large-scale refugee arrivals from Syria, COVID-19, the Beirut blast in August 2020, and the current economic and political crisis.

FINDINGS

IDENTIFYING SOURCES OF RISK WITHIN THE SYSTEM

We found that although each of the shocks that occurred in Lebanon originated outside the vaccination delivery system, they interacted with existing structures in the system to produce risks which cascaded across multiple levels, from national to local.

Risks linked to **refugee arrivals** took time to materialise. Syrian refugees were mostly not familiar with service access points for vaccination in the Lebanese healthcare system on arrival from 2013 onwards, so demand increased only gradually as awareness of both the health sector landscape, and availability of vaccination at nominal cost, improved. System responses during the early phases of the Syria Crisis response were mostly based on anticipated risk, in particular the perceived threat of an outbreak of a high-consequence vaccine preventable disease (polio).

The **COVID-19 pandemic** contributed to dramatic declines in vaccination uptake in 2020. Risks here were identified mainly at facility level, and were linked to fear among service users and health workers alike about the potential for transmission of COVID-19.

The **economic crisis** had wide-ranging effects on both demand for, and supply of, vaccination. There was a large shift in demand behaviour especially among host communities, moving from the private sector to vaccination uptake through the PHCN, as households found it harder to pay for private vaccination.

Some common risks to vaccination uptake across the shocks were identified, mostly at **facility level**. These included facility-level crowding which drove down vaccination uptake because it reduced patients' confidence in the quality of services. Health worker attrition was another common, and major, risk to resilience in vaccination delivery.

We also identified parts of the **health system** where different shocks interacted to create escalating risks to vaccination delivery – particularly in the cold chain. The introduction of solar fridges at facility level was an important part of the response to refugee arrivals, to increase cold storage capacity locally. However, this equipment required internationally sourced spare parts which became much harder to obtain as import restrictions tightened during the economic crisis. This coincided with a hike in the price of fuel which made it much more costly for facilities to run back-up electricity generators instead.

SYSTEM RESPONSES TO SHOCKS IN LEBANON

We found evidence of a range of **system responses** to these shocks over time at national, regional and local levels (Box 1). At national and regional levels, most responses focused on governance, financing and to some extent service delivery approaches. At facility level, many of the key response measures addressed workforce issues.

Facility-level responses primarily involved coping strategies to help manage changing service demand. These included measures such as temporary clinic closures, changes to clinic working hours and alterations to staffing levels. A key part of the response to refugee arrivals, however, was capacity building for staff through training. As the strain on facilities intensified during the economic crisis and health worker out-migration become more of a problem, there were also efforts to recruit entry-level health workers and interns to help ensure service continuity.

System delays were consistently highlighted as important determinants of the timeliness and effectiveness of shock responses. Some of these occurred in predictable areas (e.g. in procurement and delivery of vaccine doses to facilities). Time delays affecting the speed of recognition of emerging humanitarian crisis by government, donors and other international actors, and in mobilisation of funding to implementing partners, also emerged as key points for intervention.

INSIGHTS ON RESILIENCE BUILDING MEASURES FROM THE WIDER LITERATURE

The central finding from our systematic review – which included 50 studies from countries affected by protracted humanitarian crisis – was that no “silver bullet” solution to supporting resilience in vaccination delivery systems in humanitarian contexts exists. Instead, a **portfolio approach** – combining interventions in different ways at different times – is likely to be needed depending on the nature of the shock, and the phase of the response concerned (shock onset, shock management, or the recovery phase).

Many of the interventions identified by the review have already been implemented in some form in Lebanon. The review showed that **vaccination campaigns and supplementary immunisation activities (SIAs)** are likely to be mainstay measures in bolstering vaccination uptake following shocks. Large-scale refugee arrivals from Syria were followed by campaigns focusing on delivery of polio and measles-containing vaccinations in 2013-15, periodic SIAs since that time, and a nationwide measles vaccination campaign following a large outbreak in 2018-19.

We found good evidence supporting the use of **multiple service pathways** including mobile health services such as the Mobile Medical Units that have been used in Lebanon periodically and have recently been expanded to address declining uptake as economic conditions worsen. The review also found good evidence on the effectiveness better **integration of vaccination with other in-demand services** (e.g. nutrition), and some evidence favouring flexible approaches to contracting and funding disbursement for improved vaccination outcomes.

Box 1: Key system responses identified by level of action

	ABSORPTIVE STRATEGIES	ADAPTIVE STRATEGIES	TRANSFORMATIVE STRATEGIES
National level	<ul style="list-style-type: none"> Focusing infectious disease surveillance activities on COVID-19 [I] ● 	<ul style="list-style-type: none"> Initiation of donor response strategies [G F] ●●● Policy change to reduce cost of vaccination through PHCs [G F] ● National vaccination campaigns [S] ● Introduction of electronic central vaccine stock management system [M I] ● Direct payment of MoPH staff salaries by donors [F] ● 	<ul style="list-style-type: none"> Policy change to promote nurse-led vaccine delivery via task-shifting [S W] ● Policy change to recruit private clinics to the MoPH's network [S] ●● Introduction of e-record systems [I] ●
Cross-level	<ul style="list-style-type: none"> Cycling of vaccine stock back to regional (district) level to maintain dose viability where cold chain vulnerabilities were identified [M] ● 	<ul style="list-style-type: none"> Introduction of border crossing vaccination sites [S] ● Scale-up of MMU use [S] ●● Implementing partner subsidies for vaccination delivery [F] ●● Scale-up of community engagement activities [P] ●●● Introduction of solar fridges [M] ● Change in the currency of implementing partner funding to facilities [F] ● Introduction of supplementary payments by implementing partners to improve workforce retention [F W] ● 	<ul style="list-style-type: none"> Introduction of payment-by-results to support task-shifting [F] ●
Local level	<ul style="list-style-type: none"> Temporary vaccination clinic closures [S] ●●● Changes to clinic working hours [S] ●● Changes to clinic staffing levels [W] ● Reversion to pen-and-paper clinic records when e-systems not operational [I] ● Improved health worker skills and experience through accumulated clinical exposure [W] ● 	<ul style="list-style-type: none"> Staff training (cultural understanding, refugee needs, infection prevention and control and other topics) [W] ●● Introduction of online and social media-based community engagement activities [P] ● Increased recruitment of entry-level healthcare workers and interns to support service delivery [W] ● 	

Key system responses identified by the main system level of action (rows), and according to the category of response (columns). Coloured dots indicate the points at which each response was observed (red dot = refugee crisis response; green dot = COVID-19; blue dot = the economic crisis). Bold letters indicate the kind of intervention implemented, using the WHO health system building blocks (F = financing; G = governance; I = information; M = medicines and technologies; P = people; S = service delivery; W = workforce)

The most successful interventions relied on **leadership** from domestic ministries of health, **flexible funding and contracting** approaches from donors and other partners, and in particular, close **community engagement**.

However, much of the evidence included in the review originated from low-income, conflict-affected or post-conflict settings, and addressing populations with often low levels of health literacy and in some cases very limited prior contact with health services of any kind. Caution is therefore needed when considering applicability of findings in Lebanon where the operating context differs from these other settings in important ways.

RECOMMENDATIONS

Economic and social conditions in Lebanon continue to deteriorate and there is an ongoing risk that host community, migrant and refugee populations alike will deprioritise preventive services such as vaccination in favour of subsistence needs. The recent identification of the first cases of cholera in Lebanon since 1993 highlight the continuing risk of spillover from neighbouring Syria, and of outbreaks of vaccine-preventable disease more generally.

We identify a series of recommendations (Box 2) for government, donors and technical agencies, implementing partners and for academic and policy researchers to help support the continued delivery of childhood vaccinations in Lebanon.

About the brief

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Box 2: Recommendations

THE LEBANESE GOVERNMENT

- Consider permitting targeted extensions to current use of Mobile Health Units, with implementing partner support, to increase uptake among low coverage populations.
- Explore opportunities for integration of services in the PHCN with other essential services (in health and other domains) to maximise opportunities for vaccination uptake.
- Work with implementing partners to introduce, and where relevant expand the use of, community mobilisers recruited from within low coverage host communities, refugee and migrant populations.

DONORS AND TECHNICAL AGENCIES

- Explore flexible approaches to financing and contracting with partners to safeguard the stability of financing flows, and allow space for longer-term, strategic approaches to service design to support vaccination delivery.
- Consider temporarily reinstating salary support for human resourcing in critical positions in the vaccination delivery system to combat staff attrition.

IMPLEMENTING PARTNER ORGANISATIONS

- Lobby for increased financial allocations from donors to support strengthened resilience in the vaccination delivery system.
- Perform (or where relevant publish the results of existing) evaluations of pay-for-performance and other incentivisation interventions to determine the extent to which different models have improved coverage for key vaccinations.

ACADEMIC AND POLICY RESEARCHERS

- Urgently generate and disseminate evidence on different intervention portfolio designs, and ways in which these may be tailored for use at different levels in the vaccination delivery system in Lebanon.