

MOMENTUM

Private Healthcare Delivery



■ Technical Report

PRIVATE SECTOR ENGAGEMENT FOR IMMUNIZATION PROGRAMS IN LOW- AND MIDDLE-INCOME COUNTRIES



MOMENTUM works alongside governments, local, and international private and civil society organizations, and other stakeholders to accelerate improvements in maternal, newborn, and child health services. Building on existing evidence and experience implementing global health programs and interventions, we help foster new ideas, partnerships, and approaches and strengthen the resiliency of health systems.

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Cover photo: Health staff in Vietnam prepares Pfizer COVID-19 vaccination dose. Copyright: Dung Tham Chi for MOMENTUM Routine Immunization/2022.

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ABBREVIATIONS

AEFI	adverse event following immunization
CHAM	Christian Health Association of Malawi
COVAX	COVID-19 Vaccine Global Access Facility
DTP3	third dose of diphtheria, tetanus, and pertussis vaccines
EPI	Expanded Program of Immunization
FBO	faith-based organization
FP	family planning
Gavi	the Vaccine Alliance
GRISP	Global Routine Immunization Strategies and Practices
GVAP	Global Vaccine Action Plan
IPS	Indonesia Pediatric Society
LMIC	low-and middle-income country
MCH	maternal and child health
MCV1	first dose of measles-containing vaccine
MOH	ministry of health
MOMENTUM	MOMENTUM Private Healthcare Delivery
MOU	memorandum of understanding
NGO	non-governmental organization
NIP	national immunization program
PHC	primary health care
PPP	public-private partnership
PSE	private sector engagement
UHC	universal health coverage
UNICEF	United Nations Children’s Fund
USAID	U.S. Agency for International Development
WHO	World Health Organization

1. EXECUTIVE SUMMARY

UPDATING PREVIOUS EVIDENCE WITH NEW ANALYSIS

This technical report updates and summarizes the evidence base on private sector engagement (PSE) for immunization service delivery in low- and middle-income countries (LMICs) using a new analytical framework (see Figure 1) developed by MOMENTUM Private Healthcare Delivery, with insights from our work and learnings over the past two years. MOMENTUM conducted a scoping review on immunization service provision through the formal private sector, including for-profit and not-for-profit, pharmacies, faith-based groups, and nongovernmental organizations (NGOs), and updated the evidence base following the publication of Mitrovich et al. (2017), which was foundational for the development of the 2017 World Health Organization (WHO) guidance document “Engagement of private providers in immunization service delivery. Considerations for National Immunization Programmes.”

FIGURE 1: LEARNING QUESTIONS FOR PRIVATE SECTOR ENGAGEMENT FOR IMMUNIZATION

This technical report aims to address the following learning questions for private sector engagement for immunization:

What motivates private providers to participate in immunization service delivery?

What are existing barriers and enablers for private sector immunization service delivery and reaching zero-dose children, alongside COVID-19 vaccination rollout?

What are the risks and challenges to national immunization programs as they relate to private sector engagement and oversight for immunization service delivery?

What are the processes and mechanisms of engagement between the public and private sectors and which mechanisms are associated with successful engagement?

Initiating the scoping review from 2017 onward, MOMENTUM found 27 discrete analyses from the experiences of 24 countries (see Figure 2) to add to the 17 collated by Mitrovich and colleagues and the 37 by Levin and Kaddar. This totaled over 80 well-documented analyses of PSE for immunization in LMICs. In addition, we also reviewed reference lists and citations of the articles included. We examined grey literature and programmatic documents. In particular, the 2020 regional review from the United Nations Children’s Fund (UNICEF) on PSE in immunization and the PATH and SHOPS Plus projects. We contacted key experts and stakeholders working across immunization; family planning (FP); and maternal, newborn, and child health to identify additional technical resources. We combined the new publications from our updated search, the findings of two previous reviews, and the grey literature to provide a comprehensive evidence update.

From this evidence base, this technical report synthesizes experiences and lessons learned from PSE by examining motivations, barriers and enablers, risks and challenges, processes of public and PSE, and contextual factors. MOMENTUM identifies and presents promising practices from the past 20 years and applies that to the task of rebuilding and extending immunization programs after the shocks of the initial years of the COVID-19 pandemic.

PRIVATE SECTOR ENGAGEMENT IS ESSENTIAL TO MORE RESILIENT IMMUNIZATION PROGRAMS

Immunization programs can use PSE as one option to help expand coverage in response to widespread challenges in LMICs, including urbanization, constrained fiscal space, conflict and population displacement, transition from development aid to development finance, the need for surge capacity to respond to emergencies and pandemics, such as COVID-19, and the imperative to vaccinate throughout the life course.

The WHO broadly defines private sector as “comprising all health-care providers who exist outside the public sector, whether their aim is for philanthropic or commercial purposes” (1). This technical report therefore considers immunization service provision to be by private for-profit and not-for profit hospitals, clinics, or pharmacies, as well as NGOs and faith-based organizations (FBOs).¹ The scope and scale of the private sector’s role in immunization has grown steadily. There is now an increasing body of evidence on the importance of NGOs and FBOs and the for-profit sector in ensuring the availability of immunization where most zero-dose children reside such as in urban settings, remote regions, and fragile and conflict-affected settings (2). Some evidence found that the private sector may contribute to improved access to essential immunization services. Although the NGOs/FBOs have been providing immunization services for some time, the for-profit sector has increasingly become involved over the last two years (during the pandemic). The growing private sector in LMICs must also be considered when introducing new vaccines to leverage their presence and capacities in hard-to-reach areas, in addition to increasing coverage of essential immunization services.

PROMISING PRACTICES

From the evidence review, we identified several promising examples of the private sector’s role in immunization. Governance and policy frameworks that support the inclusion of the private health sector include formal agreements to regulate service delivery and leverage the range of motivations² (see Section 5) that drive private providers to become involved in vaccination. Successful PSE requires a systems approach that maps their current and potential roles, and then integrates them into broader health systems strengthening.

Various requirements and practical support from central governments are essential to effectively leverage the private sector to participate in immunization service delivery. These include providing vaccines free of charge, highly targeted subsidies (e.g., for vaccines that are not part of the Expanded Program of Immunization [EPI], for service delivery costs), and free or subsidized provision of ancillary supplies and cold chain equipment; bundling of payments; and supporting logistics. Planning and monitoring efforts are more effective when linked with regulation requirements based on national standards for services, reporting, and performance monitoring. Information systems should be aligned including involving the private sector in vaccine monitoring, especially in the surveillance of adverse events following immunization (AEFIs).

Private health workforce numbers and their inclusion in training and supervision were essential to planning and ensuring quality assurance. In some cases, government-recruited clinical staff were seconded to private pharmacies or private clinics to provide immunization services. Non-government providers are critically important to ensure that there are adequate and appropriate vaccination staff in remote, fragile, and conflict-affected settings to reach places without government services and in settings where they are not

¹ FBOs are non-governmental entities dedicated to specific religious identities, often including a social or moral component.

² These motivations include increased profitability, non-financial personal or institutional motivations and opportunities to improve quality of services.

always trusted. Examples include not only providers from nonprofit and faith-based organizations, but also for-profit providers.

When immunization is integrated into primary health care (PHC), some experience suggests that private providers may be more motivated to deliver a comprehensive package of services. Countries will also need to establish a mechanism for oversight and regular monitoring of private sector immunization services to identify risks and mitigate and manage them as needed. There may be opportunities to examine the role of pharmacies, community health workers, professional societies, and umbrella agencies for FBOs in immunization service delivery and demand creation as part of a national program for immunization.

New evidence has been collated on the role of pharmacists, through a systematic review and additional studies (3, 4), ranging from small retail medicine outlets to larger commercial pharmacies. In mixed health systems that have strong traditions of the for-profit sector providing immunizations, there is a need to both encourage and regulate this contribution to ensure compliance with national schedules and standards, and minimize financial exclusion.

Tailored strategies are needed to allow immunization programs to best leverage opportunities of the private sector in individual countries and health systems. Countries should explore how to optimize PSE for immunization service delivery and what might be the right mechanisms to do so. This could be through public-private partnerships (PPPs) or through contracting out with existing local governance capabilities to offer the best capacity to optimize the determinants of successful engagement.

FURTHER WORK IS NEEDED

Our findings also have several important implications for future work in this area. Globally, we need more documentation on what motivates private sector health workers to participate in immunization service delivery and we need to identify effective mechanisms to promote their participation. To this end, there are examples of the successful adaptation of social franchising and outcome-based financing approaches from maternal and reproductive health efforts that have not been tested in immunization programs. We need more formative research to better identify the true motivators of private providers—whether monetary or non-monetary—and design effective incentives and link them to appropriate reimbursement and payment schemes. There is potential to examine the role of demand side financing (vouchers, cash transfers, tax rebates) and supply side financing (pay for performance) in immunization service delivery to determine whether these innovations might lead to improved coverage and equity of immunization services. There may be a potential for task-sharing with pharmacies, community health workers and other non-traditional partners on aspects of immunization such as planning, service delivery, demand creation, and monitoring or surveillance.

There is an urgent need to undertake further mapping using GIS with existing data on health facilities (either government or non-government) in countries to assess the potential of the private sector to reach unvaccinated populations and zero-dose children. This may include developing high-resolution maps of the locations of private health care providers and pockets of low vaccination coverage as part of ongoing efforts to monitor equity in immunization services. This undertaking should also include identifying vaccination delivery strategies and where private providers may help to reach populations with low coverage. A better understanding of the spatial variation in vaccination coverage in the context of different delivery strategies for different antigens and opportunities to leverage private sector providers will be useful to strengthen the immunization program in the future.

More documentation about the experiences gained from COVID-19 vaccination efforts is needed. As mentioned previously, there needs to be a stronger focus on new partners in service delivery, especially

those providing care throughout the life course to help prepare for future expansion of immunization programs. Within countries, proactive outreach and engagement with a variety of civil society actors is required to ensure the quality of immunization programs and to mobilize broad-based support for immunization among stakeholders such as private service providers, educators, administrators and media, and religious and traditional leaders.

To advance this work, MOMENTUM Private Healthcare Delivery will conduct several country case studies to document some of these promising experiences that are complementary to the work of other MOMENTUM awards. In future years, we also hope to engage further with immunization stakeholders including The World Health Organization (WHO) and UNICEF to update the existing global guidance on PSE.

In line with the Immunization Agenda 2030, we advocate for more multi-sectoral collaboration, coordination and integration of immunization with PHC services so that holistic and preventive services are provided across the life course. Recovery of immunization services will also require us to collectively leverage the capacities of the private sector—whether within the health sector or beyond—so that we can restore, rebuild, and strengthen resilient immunization programs for the future.

2. INTRODUCTION

This section introduces the reader to the negative impact of COVID-19 on immunization programs in low- and middle-income countries (LMICs), and the unrealized potential of the private sector to work together with national governments in reducing inequities and increasing immunization coverage across the life course. We discuss previous guidance on private sector engagement (PSE) and present updated evidence from our scoping review to describe the characteristics of successful PSE, examining motivations to participate in service delivery, and advance the learnings on effective PSE in immunization service delivery in LMICs. We then turn our attention to learning questions that have guided the engagement of MOMENTUM Private Healthcare Delivery in this technical area. This technical report is targeted toward national health planners, the expert advisory bodies supporting them, and development partners active in supporting immunization programs at global, regional, and national levels.

2.1. IMPACT OF THE COVID-19 PANDEMIC AND IMPLICATIONS FOR PRIVATE SECTOR ENGAGEMENT

National immunization programs (NIPs) have made remarkable progress toward reaching global vaccination targets, which has led to reduced incidence of vaccine preventable diseases over the last four decades (5) and contributed to the reduction of under-5 mortality. This progress has, however, stagnated over the last decade. By 2019, the global coverage for third dose of diphtheria, tetanus, and pertussis (DTP3) vaccines was 86% (6), lower than recommended coverage of 90% (7) by the Global Vaccine Action Plan (GVAP). The COVID-19 pandemic has resulted in a reversal of progress made by NIPs to meet recommended immunization coverage targets. Immunization systems and infrastructure were negatively affected, routine service delivery and outreach were suspended, families were unwilling or unable to attend vaccination sessions, and supply chains were disrupted, which led to decreased immunization coverage worldwide. This decrease was compounded by stark global inequity of access to the COVID-19 vaccine itself. The World Health Organization (WHO) stated in mid-2022: “Only 16% of people in low-income countries have received a single vaccine dose – compared to 80% in high-income countries. In certain lower-income countries, many of the most at-risk people in society – healthcare workers, the elderly and those with underlying health conditions – are going unprotected” (8).

From 2020 to 2022, many children missed out on basic childhood vaccines, estimated at 25 million children un- or under-vaccinated in 2021, which is 6 million more than in 2019 (9). In addition, the immense work of introducing vaccines against COVID-19 clearly strained resources resulting in a marked slowing in the expansion of protection for children and families. Reclaiming the losses due to the pandemic and improving the gains made over the past 40 years in vaccination requires innovative approaches, strategic coordination across the public and private sectors, and newer ways of working to restore and rebuild resilient immunization programs that are responsive to the communities they serve, ensuring equitable access and delivery of high-quality immunization services. Countries’ work to restore disruptions in immunization services due to the pandemic has become increasingly urgent, including identifying vulnerable populations, tracking immunity gaps, and responding to avert outbreaks, as well as the increasing number of zero-dose children who missed essential vaccinations. Better use of private health care providers, whether for-profit or not-for-profit, will be pivotal in restoring immunization services and significantly expanding coverage across the life course to attain national immunization coverage targets.

The COVID-19 pandemic has also stretched health systems and reinforced the need to restore fundamental commitments to strong primary health care (PHC) systems and adopt a whole-of-society response to the

crisis across public and private sectors (10, 11). In health care, such partnerships have included the engagement of the private sector (whether for-profit or not-for-profit) in responding to the pandemic for testing, contact tracing, health information systems, isolation, treatment, delivery of COVID-19 vaccination, and in maintaining essential health services (12–14). Although the private sector has been involved in vaccine research and development, as well as distribution, the focus of this brief is on immunization service delivery. For many LMICs, it seems likely that COVID-19 vaccination efforts will extend beyond 2022, requiring sustained vaccination of new age groups and populations, and many other adaptations in the way vaccination delivery is organized. For LMICs that need to establish routine immunization programs for adults, leveraging non-government providers who already have access to these populations will be essential to achieving adequate coverage.

Continued implementation of mass vaccination against COVID-19 has already required many ministries of health (MOHs) in LMICs to look beyond public health care delivery systems alone, and leverage resources such as facility and human resource capacities from private providers to expand their existing but limited capacities (11). This is also due, in part, to NIPs previously focused on children under 5 now also having to reach adult populations and those with existing co-morbidities. In order to reach billions of people who have not yet been vaccinated, and restore the gains lost due to the pandemic, there needs to be increased coordination and collaboration between public and private sectors. This approach will need to start with understanding the financial and non-financial motivations of why private providers may wish to provide immunization services that may not be particularly lucrative.

2.2. PRIOR GLOBAL GUIDANCE AND EVIDENCE ON PRIVATE SECTOR ENGAGEMENT

Health care providers in the private sector, which includes not-for-profit organizations and more recently private for-profit practitioners in LMICs, have been providing immunization services for years. As noted above, recent experience gained through COVID-19 vaccinations in LMICs has demonstrated that private sector capacity can be leveraged in different ways to ensure equitable access to vaccines, testing, and surveillance. For instance, existing immunization structures and procedures of MOHs in resource-constrained settings met major difficulties in rapidly procuring, storing, and ensuring equitable delivery of COVID-19 vaccines. A number of assessments have revealed that successful mobilization of nongovernmental organization (NGO) stakeholders and their resources was important to overcome bottlenecks and guarantee rapid, safe, and equitable delivery of the COVID-19 vaccine (15, 16).

The WHO defines private sector in health as all non-state actors that could be for-profit and not-for-profit, formal and informal, domestic and international (16). There is now increasing recognition that all countries have mixed health systems and that care-seeking and service provision occur across a range of health facilities varying in governance and regulation (16). The private sector's involvement in health systems has grown significantly in scale and scope, driven in varying proportions by community demand, observed gaps in government service reach and quality, and the potential to generate revenue for providers. This includes the provision of health-related services, medicines and medical products, financial incentives, training for the health workforce, information technology, infrastructure, and support services. Therefore, it is important that efforts to expand the reach of immunization services also account for the role of the private sector.

The 2017 guidance from WHO defines PSE as: the deliberate, systematic collaboration of the government and the private sector to move national health priorities forward, beyond individual interventions and programs (1). In many LMICs, large networks of private health care providers of different types exist across urban and rural areas and these may span for-profit, not-for-profit, and formal and informal entities (1, 17, 18). As such,

the private sector provides an important resource for health care services that is available to a broad cross section of populations including underserved low-income groups and remote communities.

A WHO-commissioned evidence review by Mitrovich et al. (2017) (18) and earlier work by Levin and Kaddar (2011) (19) summarized lessons under the following three areas: immunization service delivery (including contribution to vaccine delivery, quality standards, advocacy for immunization, program monitoring, and post-market surveillance and decision-making); impact on equity of immunization services; and interaction between the pharmaceutical industry and private sector.

Public-private partnerships (PPPs) and strengthened collaboration between the public and private sectors to reach underserved populations have also been highlighted as important strategies in the Global Routine Immunization Strategies and Practices, a companion document to the GVAP (2011–2020) (20). The Immunization Agenda 2030 goes further to advocate for broadening partnerships and multi-sectoral approaches so that civil society, communities, and the private sector work together toward common goals as one of its four core principles (21).

In addition to increasing immunization coverage rates and addressing gaps in equity and access to quality immunization services, the 2017 WHO guidance note (PSE) for immunization highlighted the potential of the private sector in many countries to improve immunization services in various ways. These, include increased access to skills and expertise, improved operational efficiencies, and strengthened innovations (1). Well-coordinated and systematic PSE also has the added advantage of shared risk, relieving resource pressures on governments.

2.3. A NEW FOCUS ON PRIVATE SECTOR ENGAGEMENT

LMIC private sector facilities, including for-profit and not-for-profit (often faith-based) agencies, vary widely in their capacity and willingness to provide immunization services. In some fragile and conflict-affected settings, private (NGOs/FBOs) providers often are responsible for the bulk of public sector services, whereas in other countries with more mature mixed health systems, such as India and Indonesia, there may be less overlap with public and private sectors operating independently to serve different market segments.

Although there is a growing body of evidence on the potential contributions of private health sector institutions in meeting national immunization rates in different countries, this sector's role in immunization service delivery is still nascent in many LMICs. Making best use of actors beyond the public sector may be a new concept, and fall outside of a country's existing policies and practices. Immunization service delivery in LMICs is almost always embedded within national public health systems, with the public sector assuming primary or sole responsibility. This is because immunization is an essential health service requiring standardized national immunization schedules; quality assurance for vaccine procurement, storage, safety, and supply; and the necessity of monitoring and tracking population-based coverage targets for the Expanded Program on Immunization (EPI). However, challenges such as fiscal space constraints on health, increased disease burden, aging and demographic shifts, external shocks, conflicts, and political and economic barriers weigh heavily on the public sector. The private sector may offer some solutions (e.g., more human resources, additional cold chain capacity, and increased reach in some of the communities difficult to access) to some of these problems. As discussed above, the recent impact of the pandemic and future demands of continued vaccination against COVID-19 also demand a broader partnership for immunization programs.

Although governments have primary responsibility for their NIPs, the private sector's role and involvement in improving access, quality, efficiency, and resilience of immunization services have not yet been fully realized.

This document builds on prior evidence related to the private sector’s role in immunization, shares new evidence from the COVID-19 pandemic and provides promising practices to further engage the private sector to enhance immunization programs. Interim findings from this body of work were also used in webinar discussions hosted by different U.S. Agency for International Development (USAID) forums in late 2021, involving immunization and private sector stakeholders, with the aim of drawing attention to the potential of the private sector. These discussions helped to clarify key learning questions, which were then used in the analysis of new evidence.

3. METHODS

3.1. LITERATURE SEARCH STRATEGY

A literature review was conducted to assess existing evidence on immunization service delivery through the private sector, updating reviews on this topic (as described below). The review time frame, September 2016–November 2021, was designed to complement the review noted above by Mitrovich et al. (2017) (18) that supported the 2017 WHO guidance document and was designed to complement the 2011 review by Levin and Kaddar (19).

Our search included immunization service provision through for-profit and not-for-profit clinics, pharmacies, faith-based health service providers, and NGOs. Given the varied nature of such health care services, we used a multipronged approach to gather representative and relevant descriptions. A search on PubMed was conducted on November 8, 2021, using the following keywords: private-sector, non-governmental, immunization, vaccination, health service delivery, developing countries, and related terms. The online search generated 1,063 titles that were screened for relevance, leaving 393 abstracts of published articles. Publications were included for full text review if they focused on: 1. LMICs; 2. PSE; and 3. immunization service delivery. Of 50 full texts reviewed, 27 were excluded because they either focused on high-income countries, had no PSE, or no immunization delivery, leaving only 23 relevant articles for this analysis.

To cross-check search results, the reference lists of earlier seminal papers (including the key review articles noted above) were reviewed, and we tracked citations of these key publications. We also examined grey literature and program documents on the subject by contacting immunization experts through the MOMENTUM Private Healthcare Delivery network. This did not identify any formally evaluated experiences that were not already published in peer-reviewed journals we searched, but did include a range of authoritative commentary and formative assessments that were incorporated into the discussion.

3.2. DATA EXTRACTION, ANALYSIS, AND SYNTHESIS

This technical report utilized an analytic framework developed through MOMENTUM engagements in 2021 through webinars and consultations with private providers and other stakeholders working across immunization, family planning (FP), and maternal and child health (MCH). This analytic framework is designed to inform long-term applicability of PSE to strengthen immunization programs (see Annex 1).

The authors extracted quantitative and qualitative data from the included publications to Microsoft Excel, using a template developed with relevant categories for analysis. The categories emerged from MOMENTUM's learnings from webinars and consultations with immunization partners across the MOMENTUM suite of awards (Private Healthcare Delivery, Routine Immunization Transformation and Equity, Integrated Health Resilience, and Country and Global Leadership) over the past two years. The data extraction template included: a) first author details; b) year of publication; c) country and region of focus; d) topic area; e) percentage of private providers offering vaccination services; f) percentage of vaccinations provided by private providers; g) types of vaccines provided; h) stakeholders or actors involved; i) advantages of PSE; j) motivation for the private provider wanting to engage; k) barriers and enablers for the public sector; l) process of engagement; and m) risks and challenges. The authors conducted a content analysis of the extracted data prior to the narrative synthesis.

In the extraction and analysis, the two global reviews of evidence on PSE discussed in the introduction were also used to cross-check the relevance and completeness of our themes (18, 19). These two reviews had been instrumental in the development of WHO’s guidance document in 2017 (1).

Findings from data extraction were consolidated using standard narrative synthesis methods (22) similar to those used in scoping or systematic qualitative reviews in health services research. This analysis framework is based on the learning questions outlined in Box 1 on page 14.

4. OVERVIEW OF THE EVIDENCE BASE: PRIVATE SECTOR CONTRIBUTIONS

Findings from the review of recent publications are organized according to the key questions that formed the analysis framework. To create a more comprehensive record of the evidence, closely related findings from the earlier unpublished 2017 review by Mitrovich and colleagues and the 2011 review by Levin and Kaddar are also summarized in this section.

4.1. OVERVIEW OF PUBLICATIONS FROM 2016 TO 2021 AND FROM PRIOR REVIEWS

The range of settings and type of evidence reviewed from the recent published literature from 2016 to 2021 are presented in Table 1 below. There were 22 publications comprising discrete national or subnational analyses in 24 countries, two regional reviews, and one systematic review. In nearly all instances, the private sector role was seen as extending the reach and coverage of immunization services to unreached communities. This included unvaccinated and under-vaccinated children; no publications differentiated zero-dose children (who miss the first of the essential vaccines) from those who are late or incomplete in their vaccinations. In some reports, such as from India, the private sector was seen as providing a preferable alternative, a finding echoed by Levin and Kaddar in 2011 (19). In reports from Kenya (4) and the Western Pacific (23), the private sector played a role in introducing new vaccines, a function also reported by Levin and Kaddar (see Table 1). Figure 2 below provides an overview of the updated evidence base mapped according to WHO regions including the number of publications by country.³

This six-year period adds 27 discrete analyses across 24 different country experiences to the 17 collated by Mitrovich and colleagues and the 37 by Levin and Kaddar, making more than 80 well-documented analyses of PSE for immunization in LMICs. In addition, there are regional analyses from the WHO Western Pacific Region (23) and South Asia (24) and one systematic review (3) on the role of pharmacies in LMICs. The table below consolidates these analyses from ours and two previous reviews, noting where possible the nature of the PSE that was described.

³ Please see Annex 1 for a more detailed table with an overview of the updated evidence base mapped according to WHO regions including number of publications by country.

FIGURE 2: OVERVIEW OF THE UPDATED EVIDENCE BASE MAPPED ACCORDING TO WHO REGIONS INCLUDING NUMBER OF PUBLICATIONS BY COUNTRY

See Annex 1 for full tabulation of studies from 1998 to 2021)

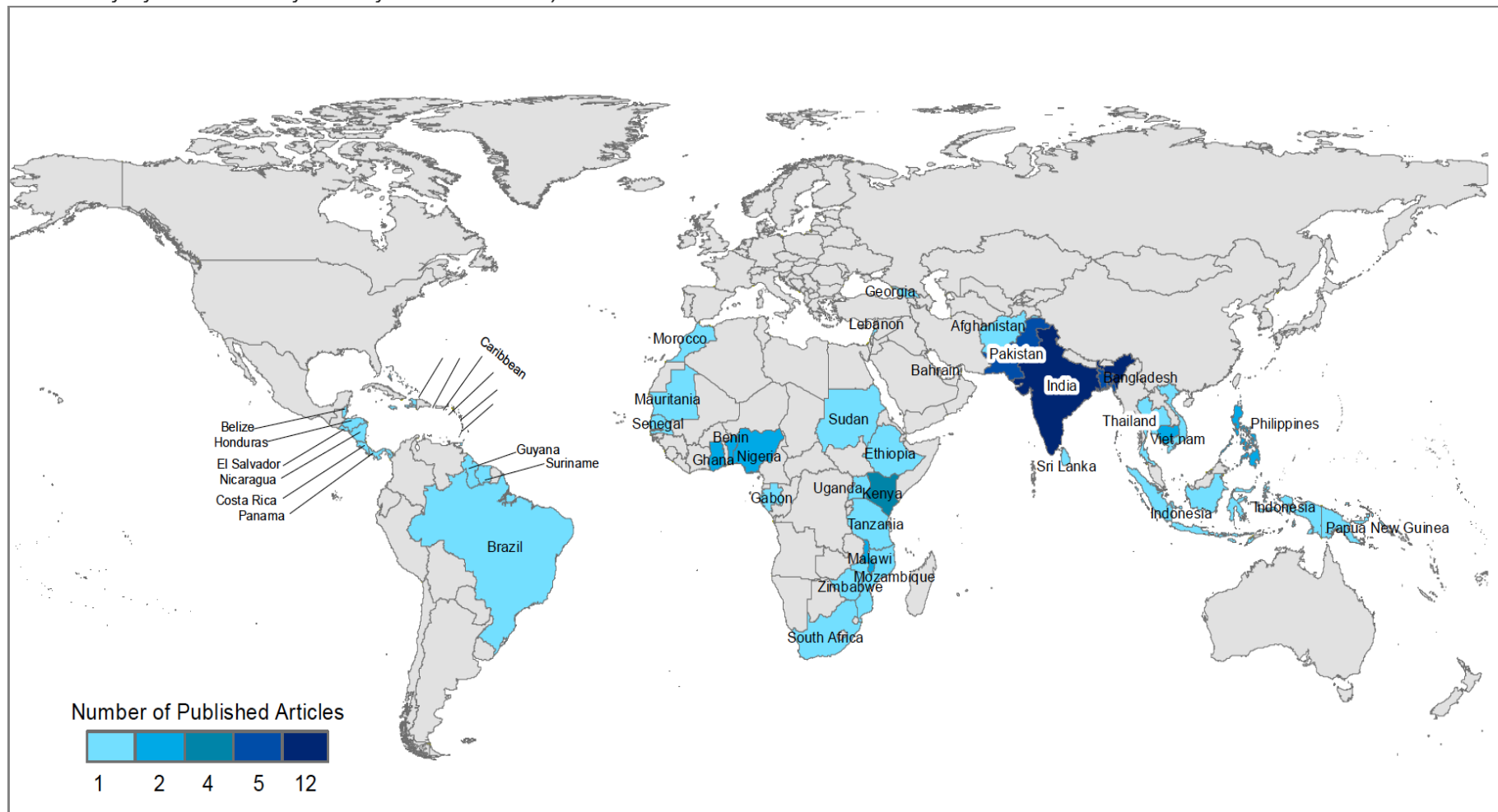


TABLE 1: SUMMARY OF NEW 2016–2021 PUBLICATIONS INCLUDED IN THIS REVIEW

ARTICLE SUMMARY					EVIDENCE SUMMARY—DATA AVAILABLE				
Country and region	First author	Year of publication	Topic area	Vaccinations (%) given by private providers	Motivations for the private provider	Barriers and enablers for PSE	Process of engagement	Risks and challenges	
Country studies									
Benin, Malawi, and Georgia	Levin et al.	2019	Scope of private sector financing		YES	YES	YES	YES	YES
Benin, Mozambique, Nigeria, South Africa	Vouking et al.	2019	Interventions to increase vaccine distribution		NO	NO	YES	NO	NO
Kenya, Malawi, Senegal, Tanzania	Olorunsaie et al.	2017	Missed opportunities and barriers		NO	NO	YES	NO	NO
Kenya	Ho et al.	2016	Retail medicine outlets for typhoid vaccine		NO	YES	YES	YES	YES
Sudan	Ahmed et al.	2019	PSE contribution to service delivery		YES	YES	YES	YES	YES@
Uganda (north)	Namakula et al.	2021	Pro-poor access by for-profit health care providers		NO	YES	NO	YES	YES
Afghanistan	Vink et al.	2021	PSE for increasing coverage		YES	YES	NO	YES	YES
Bangladesh	Adams et al.	2019	For-profit motivations and strategies		NO	YES	YES	YES	YES
Bangladesh	Islam et al.	2018	Contracting-out urban PHC		NO	YES	NO	NO	YES
India	Sarveswaran et al.	2019	Preferences for PSE		NO	NO	NO	NO	YES
India (Gujurat)	Hagan et al.	2017	Knowledge, attitude, and practice study		YES	NO	YES	NO	YES
India	Davalbhakta et al.	2020	Underutilized private sector		NO	NO	NO		
India	Lahariya et al.	2019	Adult vaccination		NO	NO	NO	NO	NO
India	Farooqui et al.	2020	Private sector share in vaccine sale		YES	NO	YES	NO	NO
India	Vashishtha	2017	Malpractices in vaccination marketing by private sector		NO	NO	NO	NO	YES
Pakistan	Imtiaz et al.	2017	PPP for MCH services		NO	NO	NO	YES	YES
Indonesia	Tan et al.	2020	System strengthening through pediatric societies		NO	YES	YES	YES	YES
PNG	Field et al.	2018	Partnership model		YES	NO	NO	YES	YES

ARTICLE SUMMARY					EVIDENCE SUMMARY—DATA AVAILABLE				
Country and region	First author	Year of publication	Topic area	Vaccinations (%) given by private providers	Motivations for the private provider	Barriers and enablers for PSE	Process of engagement	Risks and challenges	
Regional reviews									
South Asia (7 countries)	Guo et al.	2019	Regional review on PSE for equitable coverage with maternal, newborn, and child health services		NO	NO	NO	NO	YES
West Pacific (14 countries, 9 LMICs)	Amarsinghe et al.	2018	Regional review on PSE for immunization		YES	YES	YES	YES	YES
Systematic review									
LMICs (25 countries)	Yemeke et al.	2021	Systematic review on role of pharmacists		NO	NO	YES	YES	YES

In the two prior reviews and in our included papers, some analyses documented the proportion of vaccinations provided by the private sector. The variability is large, and dictated by public policy, along with the degree of public/private mix in the broader health system (especially for maternal or child health services). However, there are a significant number of settings where over one-third of vaccinations are provided in the private sector by both not-for-profit and for-profit health care providers, illustrating the critical importance of effective PSE for immunization efforts. In fragile or conflict-affected settings (e.g., Afghanistan or Sudan), non-profit providers, usually through NGOs, provide a significant proportion of vaccinations.

TABLE 2: PROPORTION OF VACCINATIONS PROVIDED BY PRIVATE PROVIDERS (WHERE RECORDED)

Country	National proportion (%)	Vaccine type	Source
Africa:			
Benin	8	National immunization program and non-NIP Vaccines	Levin et al., 2019 (26)
Malawi	27	National immunization program	Levin et al., 2019 (26)
Nigeria	21	All immunizations	Mitrovich et al., 2017 (18)
Sudan	16	Government supply of Penta-3 vaccines	Ahmed et al., 2019 (25)
Uganda	30	Routine immunizations (30% were in for-profit)	Mitrovich et al., 2017 (18)
Asia:			
Afghanistan	47	Polio, DTP, and measles	Vink et al, 2021(27)
Bangladesh	22 (non-profit, urban) 3–4 (non-profit rural) 1–2 (for-profit) 62 (non-profit NGO, Dhaka region)	Not specified	Levin & Kaddar, 2011(19)
Cambodia	30–40 (non-profit, overall)	Not specified	Levin & Kaddar, 2011 (19)
India	10–36 (for-profit) 45–65 (new vaccines) for-profit, urban	Not specified Hib or HepB	Levin & Kaddar, 2011 (19)
India	9	All immunizations	Mitrovich et al., 2017 (18)
Pakistan	3–4 (for-profit)	Not specified	Levin & Kaddar, 2011 (19)
Pakistan	3 (general) 25 (Karachi)	Not specified	Mitrovich et al., 2017 (18)
Philippines	10	All immunizations	Mitrovich et al., 2017 (18)
Sri Lanka	15	Not specified	Levin & Kaddar, 2011 (19)
Thailand	10 (general) 33 (urban)	Not specified	Levin & Kaddar, 2011 (19)
Other Countries:			
Caribbean	10–20	Infant vaccination	Mitrovich et al., 2017 (18)
Lebanon	40 (non-profit) 60 (for-profit)	All immunizations	Mitrovich et al., 2017 (18)
Papua New Guinea	30 for Penta3, 26 for MCV1	Penta3 and MCV1	Field et al., 2018 (28)
Mexico	5	Not EPI vaccines—HepA and varicella	Mitrovich et al., 2017 (18)

5. MOTIVATIONS, ENABLERS, RISKS, AND MECHANISMS OF ENGAGEMENT

5.1. MOTIVATIONS FOR PRIVATE PROVIDERS TO ENGAGE IN IMMUNIZATION SERVICES

Previous reviews gave less attention to the motivations of private providers for engaging in immunization services. However, this is a critical area to understand—in both the consultations leading up to this review and in considering private sector roles in universal health coverage (UHC) (13, 29). Publications reviewed since 2011 explored the underlying motivations, or at least perceived benefits, for private sector providers to participate in immunization service delivery. We classified these motivations as:

- A. Increased profitability for the private sector provider
- B. Non-financial personal or institutional motivations
- C. Opportunity to improve quality of services

A. INCREASED PROFITABILITY FOR PRIVATE SECTOR PROVIDERS

Profitability motivations related to potential increase in revenue were examined, even if fees were not charged for vaccines; because of an increase in the number of customers going to the facility, or possibilities for cross-promotion of services. In urban Bangladesh, where the private sector provides up to 95% of vaccinations, providers reported the revenue from service charges as a key reason for their participation (29). In Uganda, clients who received free immunization services could also be informed about other available in-house pediatric and PHC services (30). In retail (for-profit) medicine outlets in Western Kenya, demand for new typhoid vaccines was unexpectedly high because of government subsidies that lowered the prices for the vaccine at such sites (4). In Sudan, private (for-profit and nonprofit) providers in formal partnerships with the government received free vaccines, equipment, and/or placement of government vaccinators. They reported an increase in their client volumes as one benefit that emerged (25). However, Ahmed et al. note that although vaccines were provided for free, some service providers still charged a service fee for vaccination (25).

Although the information is limited, the above suggests that acknowledging the need of private providers to at least recover their own costs, and possibly to make some profit, is an essential element for successful engagement. Given the imperative to ensure equitable access to vaccination services, this approach requires mechanisms that do not place unsustainable financial burdens on clients.

B. NON-FINANCIAL PERSONAL OR INSTITUTIONAL MOTIVATIONS

Beyond profit, there is some evidence that PSE can tap into the desires of private providers to offer an essential health service to their local communities. In Bangladesh, clinicians reported a concern for the poor and vulnerable who lack access to PHC services as their motivation (29). Institutional reputation was also an important driver, with some providers reporting that offering immunization increased their social status (29). In Uganda, free immunization services were seen as social entrepreneurship, demonstrating institutional concern for communities in need of services (30). In Kenya, retail medicine outlets that provided typhoid vaccines gained credibility, especially as clients were referred from local hospitals (4).

Institutional recognition was also found to be important. In Sudan, providing immunizations helped ensure that providers were included in government decision-making and advisory processes (25), a motivator also reported in two of nine LMICs in the Western Pacific (Cambodia, China, Fiji, Kiribati, Palau, Papua New Guinea, Philippines, Solomon Islands, Vanuatu) (23). The Government of Sudan has been looking into non-monetary incentives such as through awards or public recognition (25). In Afghanistan, private providers reported that being recognized as a serious partner in the health system was a reason to participate in immunization service provision (27). Institutional recognition and inclusion in policy were clearly under-utilized motivators, given the paucity of examples in recent publications, and recognized as major gaps in prior reviews in 2017 (18) and 2011 (19).

C. OPPORTUNITY TO IMPROVE QUALITY OF SERVICES

There is some evidence that private health care providers found participating in immunization to be a vehicle to improve the quality of their services. In Afghanistan and Sudan, involvement in immunization service provision brought extra government support, including training, facility renovations, equipment, and supplies, as well as supervision with the potential link to quality improvement programs (25, 27). Quality improvement can be a two-edged sword, as noted in Sudan, in that full engagement places facilities at risk of suspension if they do not meet quality standards (25). The importance of involvement in quality standards and monitoring programs was noted by Mitrovich et al. (18) in relation to the examples from India, and by Amarasinghe (23) and colleagues in six of nine LMICs in the Western Pacific.

5.2. ENABLERS OF PRIVATE SECTOR ENGAGEMENT

Previous reviews (18, 19) have suggested that important barriers to PSE for immunization are the lack of inclusion of NGO/for-profit facilities in policy processes, and/or in information systems that are crucial to immunization planning, monitoring, and reporting. Some ways to overcome these barriers and mitigate risks of PSE (see next section) can be found in recent publications.

A. GOVERNMENT PROVIDES AND REGULATES PRACTICAL SUPPORT TO PRIVATE SECTOR PROVIDERS

Several country examples have attributed their ability to provide immunization services to their government's in-kind incentives to private health care providers. In Afghanistan, Benin, Malawi, Sudan, and Uganda, for-profit and non-profit providers received government support in the form of vaccines and equipment to provide free immunization services (25, 26, 29, 30). In Afghanistan and Sudan, national governments provided training and supportive supervisory visits that gave the private facilities additional credibility in their service provision (25, 27). In these examples, formal agreements, particularly in Benin, Malawi, and Sudan (25, 26), and formal assessments and/or annual licensing as a systematic approach for ensuring quality standards are met in private facilities, supported the inclusion of the private providers. These types of support were also reported as important in the Western Pacific (23) and by prior reviews. These efforts are critical to overcoming barriers to access to commodities and quality immunization services. For instance, in Western Kenya, the government purchased typhoid vaccines (Typhim Vi-Sanofi Pasteur, Lyon, France) from a local supplier at a market price of ~9.0 USD per dose and were made available to clients through medicine outlets for as low as ~0.5 USD (4, 25). These low vaccine prices were made possible by government subsidies that generated high demand for the vaccine (4).

In addition, private providers highly value being included in refresher training, as noted above, and it is an important way to mitigate quality risks. In Afghanistan, the PPP program in Uruzgan province provided training for private providers working in remote and insecure parts of the province who were selected for the

program based on a training needs survey (27). In earlier reviews (18), training was a key feature in Bangladesh (especially on schedules and AEFIs) and in the single state experience in Nigeria.

There were minimal reports of financial incentives, for example, a subsidy per vaccinated client, in these most recent publications. However, in Afghanistan (27), it was found that the government paid a monthly incentive to providers to compensate them for not charging for the vaccination services to ensure free services from private health care providers. We did not find examples of voucher schemes similar to those that have been used in reproductive health settings (31–33).

B. LEVERAGING ACCESSIBILITY AND ACCEPTABILITY OF PRIVATE PROVIDERS

Previous reviews (18, 19) and some examples (26, 34) in this update indicate that some local private providers or pharmacies with community health pharmacists may be the preferred method of offering immunization service provision because of easier access, shorter wait times, or perceptions of higher-quality services compared to public providers. Both access and trust were critical in conflict-affected Afghanistan where private providers were trusted over the government to provide vaccination services (27). A 2021 systematic review of the role of pharmacists in immunization in LMICs noted their benefits in geographic accessibility and trust, applicable to both advocacy and promotion, and (in eight of the 25 country studies) to the provision of vaccination services. This finding was echoed in retail medicine outlets in western Kenya, both in terms of accessibility and trust. This review makes a strong case for the need to better integrate community pharmacies into NIPs (3, 4). Long wait times or vaccine stock-outs are serious deterrents to vaccination in most settings. In earlier experiences in India and Mauritania (19) and in some examples in this update from India (34), Benin (26), Tanzania, Kenya, and Malawi (26, 35) shorter wait times and more flexible hours allowed private facilities to make vaccination more available.

C. STRONG IMMUNIZATION SUPPLY CHAIN

Traditionally, lack of effective immunization supply chains is a key barrier to PSE in many LMICs, hence the importance of practical support noted above. In the example from Sudan, a key gap was that most private providers needed to provide their own equipment (25), a hindrance also seen in Benin, Georgia, and Malawi (26). In those examples where additional equipment was provided, this was highly valued by private providers and seen as a strong motivation for engaging in immunization programs.

There were few examples where extra work was documented to explicitly involve private providers in national effective vaccine management updates or cold chain optimization mapping; however, settings where non-government providers were already filling in the gaps for government services, they were most likely involved in such activities. We sought examples of private facilities outside the health sector supporting vaccine cold chain capacity with contributions of refrigeration equipment. Although there are anecdotal reports of such examples, these were not documented in this update or prior reviews.

5.3. RISKS AND CHALLENGES OF PRIVATE SECTOR ENGAGEMENT

Important risks and challenges with PSE engagement seen in prior reviews (18, 19) include lack of adherence to national schedules and standards, inequitable exclusion of some populations by fees or other means, lapses in quality and safety monitoring, and failures to ensure every opportunity for vaccination in PHC services. These, with some examples of their mitigation, were seen in this update.

A. LACK OF ADHERENCE TO NATIONAL STANDARDS

Regulation and supervision of private immunization services are essential to ensuring that national vaccine schedules and quality guidelines are followed. Past reviews (18) and examples from this update (23, 26, 34, 36) found these to be persistent challenges, and in many settings, non-profit providers were more adherent and regulated than for-profit providers. Formal agreements with clear requirements, with or without strict licensing, were seen as important responses in Afghanistan (27), Sudan (25), and Benin and Malawi (26). In 2019, across Benin, Malawi, and Georgia (26), although most facilities were appropriately accredited for immunization, supervisory visits found that some private facilities had non-compliant cold chain equipment or poor-quality vaccine management. Such lapses were also seen in Gujarat, India (37), retail outlets in Kenya (4), and private institutions in Indonesia (36). The Nigeria example collated by Mitrovich and colleagues (18) required compliance with government reporting and evaluation standards in exchange for practical support.

One critical element of service quality is the promotion of “every opportunity” vaccination. In a study undertaken in four African countries (Kenya, Malawi, Senegal, and Tanzania) of missed opportunities for vaccination, disaggregated by facility governance, for-profit private providers were less likely to review vaccination records in Tanzania and Malawi, while non-profit private providers more likely to do so in Malawi when compared to public facilities. In all four countries, there were many missed opportunities for immunization services during sick child visits, with deficiencies shown across public and private facilities (35). In Gujarat, India, a high prevalence of missed opportunities in private immunization facilities was linked to health care providers overestimating the concerns of parents over multiple injections (37). In a study in Bangladesh by Uddin and colleagues (collated in [18]), a screening tool was successfully added to clinic practices to improve the verification of vaccination records during child health visits.

Lack of awareness, training, and systematic engagement on existing policies and regulations for private providers was also noted in countries in the Western Pacific. Most of these countries had policies regulating the private sector, but only 50% of private sector respondents were aware of them (23). In this region, and in Indonesia (36) and India (37), a stronger role for professional societies (such as pediatric bodies) has been proposed to address this issue.

This update and earlier reviews did not include examples of the use of formal quality-assured networks, such as socially franchised health facilities, although citation tracking revealed one such example from Kenya. A 2012 publication (32, 38) on Kenya’s HealthStore Foundation’s franchise network of 83 nearly identical child and family wellness clinics under the brand name “CFW Shops” found increased access to essential vaccinations and treatment. The social franchising mechanisms did not emphasize immunization in particular, but did aim to brand these clinics as places with good-quality family health and primary health care. Models for this approach to quality assurance and access are better established in FP or reproductive health (32, 38).

Regulatory policies for PSE, supportive implementation through supervision and monitoring, and systematic inclusion of private providers in training and learning (as noted above) are essential to ensuring that private provision of vaccination adhere to national schedules and standards.

B. FINANCIAL BARRIERS TO ACCESS

Many of the collaborations between the private and public sectors involve the distribution of free vaccines; however, many of the private provider facilities require that patients pay additional administrative fees. In Sudan, despite the government oversight described earlier, clients were often required to pay additional service fees (25). Such fees were also seen also in Kenya (35), as well as in Benin, Malawi, and Georgia (26) where fees were associated with vaccination cards, services, and registration. In this study, many clients found the fees acceptable, given that vaccination represented a very small proportion of private health

expenditures, but it was noted that this could deter low-income clients from being vaccinated (26). In some examples, such as Afghanistan (27) and Sudan (25), the Western Pacific settings (23), and in the 2017 review (25), the risk of financial exclusion was well recognized. Although examples were seen of regulations to ensure that vaccinations were being provided for free, this was infrequently extended to ancillary services. This broader set of service costs remains a risk that such out-of-pocket expenses may reduce equitable access to vaccination.

This review sought examples where commodity fees for cost-recovery for vaccines provided were sought, as practiced in other technical areas, but found none apart from vaccines for travel or other “non-essential” usages which fell outside the scope of this brief. This acknowledges the broad-based consensus that essential vaccines should be provided for free because of their role for the good of the public. However, it does represent an area of cost recovery that is currently unexplored.

C. CURRENT LIMITATIONS IN INCLUSION OF PRIVATE PROVIDERS FROM INFORMATION SYSTEMS, SAFETY, AND OTHER MONITORING

A recurrent problem in PSE for immunization is related to capturing information in public health systems, especially the reporting of vaccine coverage, AEFIs, and notifiable diseases. Both prior reviews documented this challenge and a search for good regulatory practices yielded few examples (18, 19); however, many countries do have a standing requirement for regular reporting of vaccination activities by private providers, especially non-profit (NGO or faith-based) providers who are filling the gaps of government services. There is considerable variation, with many, such as in Benin and Georgia, reporting only standard NIP vaccines (26). In the Western Pacific, six of nine LMICs shared data on immunization activities and AEFIs (23). Lack of visibility of private facilities reduces their inclusion in micro-planning, renders immunization performance measures incomplete, and risks missing safety signals monitoring for the significant proportion of vaccines given in the private sector. In successful examples of inclusive regulation seen above, such as in Afghanistan, Benin, Malawi, and Sudan, active inclusion in all aspects of program monitoring was an important mitigation of this risk. In Vietnam (39), a project led by PATH has formalized government agreements with fee-charging immunization facilities in two provinces to ensure their service delivery information is entered directly into the national government’s immunization information system.

5.4. MECHANISMS OF ENGAGEMENT BETWEEN THE PUBLIC AND PRIVATE SECTORS

Many of the motivations, barriers and enablers, and risks and challenges discussed above are mediated by the processes and mechanisms by which the private sector is engaged in immunization. Given that immunization represents a cost-effective, high-impact intervention in public health, most national governments in LMICs have strict controls on immunization with commitments to universal provision. In the broader health system, there is a greater array of examples of governance mechanisms to support private sector involvement in the pursuit of UHC (40), both for the curative services that are a mainstay of private providers’ contributions and for preventive services such as for reproductive health. Examples of engagement mechanisms are less common in immunization, a gap that Levin and Kaddar flagged in 2011(19). This update adds some examples of engagement mechanisms that have been important to respond to the issues discussed above.

A. FORMAL PUBLIC-PRIVATE AGREEMENTS OR PARTNERSHIPS

PPPs, or formal agreements documenting mutual obligations, were seen in Nigeria (18), Sudan (25), and Afghanistan (27) with the government providing training, vaccines, and other commodities, and in some cases, equipment, while private providers committed to service delivery and participation in reporting, supervision, and safety monitoring. In each case, this approach resulted in a significant share of vaccinations made available in the non-government sector: 21% in one state in Nigeria (18), 16% in Sudan (up to 47% in some settings there) (25), and in Uruzgan province in Afghanistan (27), private providers gave 47% of vaccinations. In the province, villages where PPPs were active, infant vaccination coverage was more than double that in comparison sites. Afghanistan and Sudan are examples of where formal agreements were used in fragile, conflict-affected settings that often rely on NGOs to access vulnerable communities. In 2017, in Darfur Sudan, 49 NGOs provided immunization services to 15.5% of the target population (25) under memorandums of understanding with government authorities, as well as registration and regulation through the Humanitarian Aid Commission.

Ghana's immunization program has a history of PSE, as seen in the previous reviews (18, 19), characterized by a mixed service delivery system that combines public sector services funded by the Ministry of Health (MOH), and private non-profit and for-profit providers. Over the past decade, a growing share of immunization service delivery has been covered through National Health Insurance Scheme payments to private providers (41). More recently, as a part of the COVID-19 response, the private sector was also engaged in the Vaccines for Africa Initiative across several African countries (42). In Ghana, a consortium of prominent private sector players established several vaccination sites; donated vaccines to the MOH; built cold chain warehousing and logistical capacity to store, transport, and distribute different vaccines; and supported risk communication and community engagement efforts (42). Beyond immunization, Ghana's experience demonstrates that although some engagements are best managed through formal contractual arrangements, the relevance or acceptability of these vary greatly, even across different subnational settings; in some cases, less formal arrangements are preferred by private providers (43).

B. CONTRACTING ENGAGEMENT WITH NON-PROFIT NGO OR FAITH-BASED ORGANIZATIONS

Several past reviews on PSE for immunization service delivery found that not-for-profit facilities run by NGOs or faith-based organizations (FBOs) tend to be situated in remote and rural areas or in densely populated urban and peri-urban areas. They are also often better coordinated with NIPs, especially if they have a history of filling service delivery gaps in defined areas. In Kenya, children were more likely to receive immunization if living in settings served mainly by non-profit entities, compared with those served by for-profit institutions (18).

In Georgia (26) and Bangladesh (44), governments directly contracted private not-for-profit health care providers to provide immunization services in line with national standards and integrated with national systems. Earlier reviews reported similar government contracting with NGOs for settings of need in Afghanistan, Cambodia, Pakistan, and Rwanda (18, 19), among others. These were commonly associated with improvements in immunization program reach and satisfactory quality. These findings accord with the general evidence (45) found on contracting NGOs for PHC. In Papua New Guinea (28), an NGO contracted out health services, including vaccination, to private organizations on behalf of the community it served. The NGO was responsible for compliance with national policies and systems, showing an increase in immunization coverage (26% for measles and 31% for pentavalent vaccines). Typical of the complicated governance of health services in Papua New Guinea, this was in a setting where government services had limited reach, and a large resource extraction enterprise contributed to a non-profit community compensation fund for health and other social services. To provide service coverage, the fund engaged both for-profit management companies and the FBOs that were historically the most common service providers.

There were no well-documented examples of performance-related payment systems such as those that have been seen in reproductive health or other areas in LMICs (46).

C. ENGAGEMENT THROUGH PROFESSIONAL ASSOCIATIONS AND NETWORKS

In southern Indonesia, public and private sector immunization service delivery could be strengthened if stakeholders, such as the Indonesia Pediatric Society (IPS), lead coordination (36) efforts, given its pivotal role in coordinating clinicians, advisors, educators, and advocates. Similar calls have been seen in India (37).

For FBOs, a potential means of engagement is through umbrella agencies that provide oversight and systems support to multiple facilities. For example, in Malawi, 88% of FBOs provided vaccinations (compared to 56% of for-profit and 60% of not-for-profit), noting that most are managed through the Christian Health Association of Malawi (CHAM) facilities (26). In Malawi, CHAM is the largest non-governmental health care provider, with a large network of facilities and training colleges. Other countries in Africa have similar FBOs. These may provide a systems-oriented mechanism for engagement with the government on those elements of immunization programming that require centralized planning or coordination (47–49). Such networks may also facilitate or oversee formal assessments that national governments may require for facilities to become qualified to provide vaccination services (26).

6. ILLUSTRATIVE CASE STUDIES

In this section, we present five case studies that demonstrate PSE in immunization service delivery. Two of the studies illustrate examples of PSE in immunization programs that are largely supported by development partners, another shows the nature of PSE in the context of graduating from Gavi, the Vaccine Alliance (Gavi) support, with another highlighting the role of professional societies in strengthening immunization programs, and the final case study focuses on the potential role of pharmacists in immunization service delivery.

SUDAN (25)

Sudan's experience in PSE is relevant to conflict-affected or otherwise fragile settings. Beginning in 1995, Sudan's private health care providers partnered with the country's federal and state immunization programs to provide immunization services, subject to accreditation, regular supervisory visits, and inclusion in governance structures. The findings in the published literature were also confirmed by the regional review of the United Nations Children's Fund (UNICEF) (50), noting that private providers are critical to extending program reach in both urban and rural settings. The provision of training, supplementary staff, free bundled vaccines, some cold chain equipment support, and incorporation into relevant information systems motivated the private sector to engage in immunization service delivery. The availability of free vaccines reportedly led to an increase in families attending private provider clinics, thus expanding their client base.

Private providers valued being included in the program's decision-making and advisory processes, such as representation in state-level technical immunization committees and health coordinating task forces. Receiving supplies and training also motivated providers to participate in formal reporting and monitoring systems. The government is also examining options for non-monetary incentives such as through awards or public recognition. Supervision to ensure that providers meet quality standards was important; however, private providers also noted the inherent risk of losing accreditation if they fail to comply. Overall, the private sector, particularly partnerships with local NGOs, has assisted in overcoming geographical and financial barriers to access immunization services in rural and remote communities.

AFGHANISTAN (27)

PSE in immunization service delivery has been critical in places where there is distrust and overall misinformation around public sector services in conflict-affected communities. In 2013, in Afghanistan's Uruzgan province, private health care providers were encouraged to participate in immunization service delivery through staff training; renovations of their health facilities; provision of equipment, vaccines, and medicines; and inclusion in data reporting and monitoring provided by the government. Training and support extended beyond immunization to other MCH care, with this integrated approach seen as improving the quality of care provided. Providers were found to be motivated by public recognition that they were considered a serious partner in the health system. This also highlighted the reality that some communities perceived non-government providers as more trustworthy, and they were less likely to patronize them. Trust is an essential factor for care-seeking and the engagement of locally known non-profit agencies assists in overcoming geographical and financial barriers that rural and remote communities and villages face in accessing services.

GEORGIA (26)

Georgia's experience is relevant to countries graduating from receiving Gavi support. In 2019, an assessment was conducted of the government's large-scale, national-level contracting of not-for-profit private providers to offer immunization services. Acknowledging resource gaps, the government had supplied free cold chain equipment to private providers, training, free vaccine supplies, and access to national immunization systems. Private clinics are accredited, regulated, and supervised. The evaluation found the following areas needing improvement: lack of reporting of vaccines not in the standard schedule, continued use of non-compliant cold chain equipment, and reports of long wait times discouraging uptake. Despite national regulations prohibiting charging for vaccines, many private providers had additional fees associated with vaccination cards, services, or registration. Such costs were found to deter low-income clients from being vaccinated in private facilities. The public-private engagement in Georgia has expanded the resources and clientele available to each sector, but further regulation of the private sector is recommended to ensure safe and effective immunization service delivery.

INDONESIA—THE POTENTIAL OF PROFESSIONAL SOCIETIES (36)

Professional societies, such as the IPS, often have members who work across sectors, with many managing private practices and institutions. Recognizing the need to improve immunization coverage, and that over 60% of the population reportedly use the private sector for general health care, Indonesia undertook to systematically engage private sector providers. In 2016, the American Academy of Pediatrics partnered with the IPS, with support from the U.S. Centers for Disease Control and Prevention, to implement an advocacy project to strengthen immunization services. An initial needs assessment identified three main priorities: integrating public and private vaccine service delivery data; combatting vaccine hesitancy; and improving community awareness. An advocacy workshop trained 10 IPS leaders as "champions" from IPS on core advocacy skills. An additional 143 pediatricians from across the country were then trained on strengthening immunization advocacy, incorporating vaccine education into daily practice, and participating in a program to recognize immunization service delivery. This last item was an IPS-initiated data system designed to record whether a physician participated in immunization service delivery, and if so, to publicize their contributions in various forums as a type of non-monetary incentive. In later work, the IPS expanded to coordinate relevant data and knowledge-sharing, as well as protocols for quality assurance and advocacy. By mid-2019, a quantitative and qualitative evaluation at the end of the project found that commitment to and support for immunization services had increased, along with an improvement in coverage in selected sites. These achievements were specific to Indonesia; however, the paper noted a range of other successes of the American Academy of Pediatrics in advocacy and capacity-building in related professional society partnerships in Ethiopia, Kenya, Nepal, Nigeria, Tanzania, the Philippines, the Democratic Republic of Congo, and Uganda.

LEVERAGING PHARMACIES AND MEDICINE SHOPS

A systematic review (3) showed that over the past three decades, the role of pharmacists in vaccination has expanded in some countries to include vaccine storage, reporting of vaccine adverse events, vaccination education and advocacy, and vaccine administration. This finding is of global importance for several reasons. Many people first seek care from pharmacies and drug shops, community pharmacies or medicine shops, which are often perceived as affordable and trusted providers.

The worldwide crisis in human resources for health demands a major rethinking of the roles of health care providers. An expansion of the role of pharmacists in vaccination is particularly evident in middle- and high-

income countries, with clear increases in access and coverage in countries like the United States, where more than 340,000 pharmacists were trained on pharmacy-based vaccine delivery by 2021. The situation is less promising in LMICs. Although 15 of 25 countries studied by Yemeke and colleagues involved pharmacies in education on vaccines, only eight allowed administrations of vaccines or storage of vaccines, and fewer had pharmacies involved in the reporting of adverse events. Anecdotal reports of unregulated procurement and administration of vaccines in medicine shops show the need to regulate this sector, given that community demand is clearly there.

In Kenya, another study from retail medicine outlets (4) confirmed that this is a highly preferred service location for community members, and showed the sector's potential in relation to new vaccines (in this case against typhoid). Both papers show the need for greater efforts to formalize the role of pharmacies and medicine shops in vaccination, and expand the training of pharmacists to ensure that they can educate and advocate on vaccines. The evidence also strongly suggests the need to consider including them as vaccination providers, especially when they can overcome distance barriers, and strengthen community trust in immunization programs.

7. PROMISING PRACTICES—AND EVIDENCE OPPORTUNITIES—A SYSTEMS ANALYSIS

The evidence presented so far in this brief makes a case for intentional and systematic engagement of the private sector to rebuild immunization coverage, reach areas with low uptake (i.e., remote rural communities, urban poor, and chronically underserved communities), and strengthen immunization programs. To support this latter aim, we review the current evidence against standard WHO health system building blocks that include governance and leadership, health financing, service delivery, health workforce, information systems, supplies and logistics, and community engagement (see Figure 3).

FIGURE 3: HEALTH SYSTEM BUILDING BLOCKS



Modified from the [WHO Health Systems Framework](#)

7.1. GOVERNANCE, POLICY, AND REGULATION

Several experiences illustrate the importance of government recognition and inclusion in policy and planning processes as important motivators for private partners to engage. Including private partners in planning may also enable a broader vision of how to reach communities with low uptake of vaccination, including zero-dose children (those who have missed the first dose of essential vaccines).

Private providers, both for-profit and non-profit, have been shown in many settings to be better placed to reach communities that are remote, conflict-affected, or in poor urban areas. For example, community members in poor urban informal settlements were reported as going to pharmacies for vaccinations when regular clinics or outreach services proved difficult.

There is good evidence for engagement mechanisms composed of formal PPPs with conditional accreditation or formal contracting of service provision. Regulation and systems to accredit private providers and monitor

their performance have been shown to be effective in managing the significant risks and challenges, ensuring that national quality standards and protocols are met, financial barriers do not exclude any populations, and private providers are included in monitoring systems. A UNICEF regional review noted the role of government in a limited proportion of countries in regulating private providers so as to limit them to only vaccines already in the public sector immunization schedule.

The experiences in this briefing paper also demonstrate the untapped potential of more systematic work with professional organizations. Specialist medical or nursing societies (such as pediatric societies) can play a role in advocacy, training, information systems, and quality monitoring. Umbrella agencies, such as FBOs like CHAM, can provide an additional point of liaison and coordination for the centralized functions that are essential to immunization program management.

All of the above requires further evidence to be developed, particularly given that what is suitable for one context may differ in another. However, based on this review, the areas of governance, policy, and regulation that appear to provide the greatest opportunity for learning to assist immunization program delivery include:

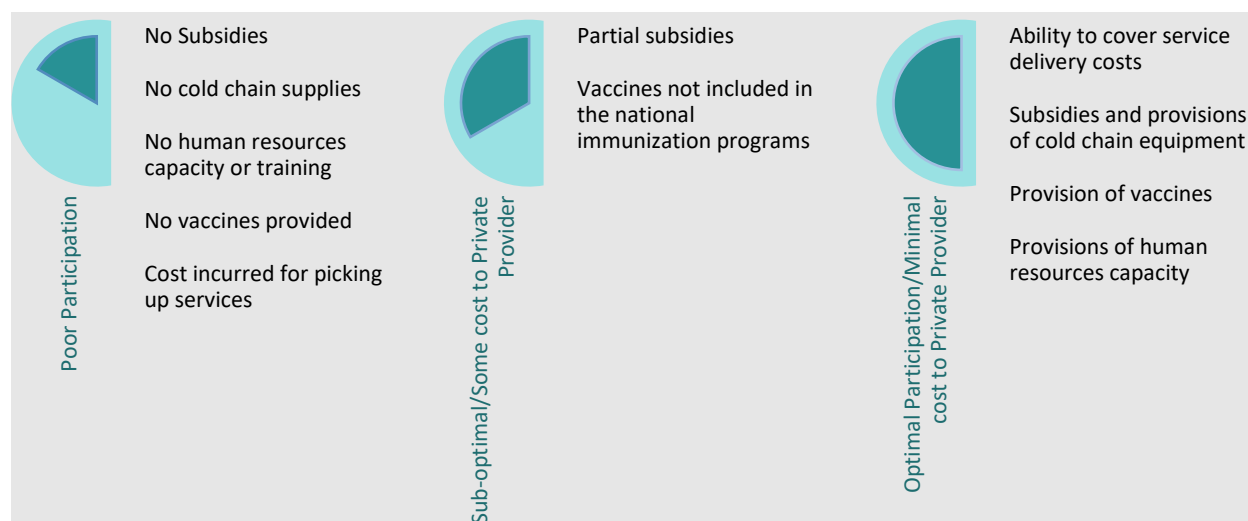
- Recognizing that non-government providers may have access to under-vaccinated communities previously inaccessible through the public sector approaches alone, and including these non-governmental providers in microplanning efforts to account for these communities, while participating in planning and service delivery.
- Establishing PPP models that aspire to ensuring equitable access to high-quality immunization services without exacerbating pre-existing financial or socio-cultural barriers to immunization services, whether it be through formal agreements or partnerships, accreditation, contracting, performance management, or participatory oversight.
- Creating more coherent and clear knowledge on the role of facilitating PSE in immunization programs—coupled with ensuring that systems (e.g., means-based approaches or third-party payment mechanisms) are established to ensure fees are not a disproportionate barrier to access.
- Determining which forms of accreditation work best for PSE in immunization programs, and how these accreditation mechanisms interact with other such mechanisms a government may promote for the private sector (e.g., for participating in maternal health initiatives or social insurance schemes).

7.2. FINANCING AND PAYMENTS

Private providers need to closely consider the costs of operations, whether for-profit or non-profit. Regulations to require provision of essential vaccines as part of the NIP schedule at minimal or no cost have been important in most experiences. These also need to consider additional service fees that facilities may charge. Although some non-monetary incentives have demonstrated the power to motivate engagement, most successful examples discussed in this brief have also included important practical support by the government to ensure financial barriers do not exclude some populations.

In poorer settings, support has included ensuring compliant cold-chain equipment and provision of ancillary supplies. Some cases have included financial subsidies to support services and the secondment of additional staff. In all cases, the essential vaccines are provided free to the provider. The figure below shows a potential spectrum of cost implications on what is an acceptable cost for the private sector provider.

FIGURE 4: SPECTRUM OF COST IMPLICATIONS ON PSE



In mixed markets, such as many in Asia, there are strong community preferences for private providers, even when fees are charged, because of the value families place on convenience and a perception of higher quality. These providers also play a key role in “non-essential” vaccines, such as those for travel or new and/or not on the NIP schedule. In the evidence to date, regulation to manage essential vaccines at minimal cost, as mentioned above, remains critically important to these markets. Also, important, as discussed below, is the full inclusion of private providers in reporting and AEFI reporting so that governments can track progress and ensure that safety monitoring is robust.

Based on this review, in the areas of financing and payments, new evidence that may provide the greatest opportunity for learning to assist immunization program delivery include additional evidence of financing mechanisms for PSE in immunization programs that have been utilized in maternal health, or reproductive health and FP, such as payment per service, demand-side monetary incentives tailored to the private sector, or voucher systems.

7.3. SERVICE DELIVERY

The core focus of this technical report is the expansion of service delivery options through engagement with private sector partners. Such expansion would be supported by the policy, regulation, planning, monitoring, and financing discussed previously, and by the considerations on staffing, supplies, information systems, and community engagement discussed below. The evidence to date shows a clear role for private providers in urban settings, both non-profit (such as in Bangladesh) and for-profit (many locations), that leverages their existing presence. Private providers, especially non-profit and faith-based, also work in remote and rural areas, especially those that are fragile or conflict-affected, including during humanitarian emergency responses. From our review, Sudan (25) and Afghanistan (27) are examples of such settings. A UNICEF online review provided some insight into life-course aspects. In 12 of 17 countries in the Middle East and North Africa, private providers focused on children under five years of age and pregnant women, compared with five countries where private providers also vaccinated adolescents and adults.

Early mapping of the presence and potential of private providers during national-level planning and local micro-planning has been a feature of successful engagement. To this end, determining whether private

providers can fully replace government services and thus be contracted to do so, or act as a complement to government services, has been a critical early decision point. Community preferences and existing care-seeking patterns need to be considered. Communities that already use the private sector for other maternal, child, adolescent, or adult health care may point to unexplored opportunities to include immunization in the offerings of private providers.

Ensuring effective vaccine management and high-quality service delivery requires links to regulation and accreditation in line with national standards and schedules, as discussed above. These would be supported through regular supportive supervision and monitoring; successful examples of engagement in our review combined these elements. This is especially important in sites where the private sector is contracted to fill gaps that government services do not reach.

Based on this review of the areas of service delivery, new evidence that may provide the greatest opportunity for learning to assist immunization program delivery include:

- Leveraging the presence of non-government health care providers in remote and rural areas to provide immunization services.
- Including private health care providers in national-level planning sessions and local microplanning activities to determine their ability to support immunization service delivery.
- Exploring community preference and existing care-seeking patterns among those seeking health services through private health care providers.
- Assessing capacity for health care providers to support cold chain and logistics requirements for immunization service delivery.

7.4. HEALTH WORKFORCE

Examples of effective immunization programs that strengthen quality service provision in the private sector did so by including their staff in refresher training (across all relevant program areas, including data monitoring) and supportive supervision for on-the-job updates, linked to regulation of standards as noted above. In Afghanistan, health care providers are trained through the private partnership program in Uruzgan to address low vaccination coverage rates in remote and conflict-affected communities. In addition, the MOH in Benin and Malawi provide regular training of health workers from private clinics, particularly on the introduction of new vaccines; however, this training did not address improving vaccination service delivery. Many studies documented large variations in competence and commitment for immunization among private health care professionals, which underscores the importance of relevant support. In settings where private facilities were filling in gaps outside of government reach, there was the potential to second government staff to work as vaccinators in non-government facilities, as seen in Sudan.

Workforce investments like this were also highly valued by private providers and helped motivate them to engage in immunization service delivery. Including private health staff in accreditation and recognition of training, especially if this offers career enhancement, added to their commitment.

Private facilities offered another way to respond to the massive lack of health workforce in many countries. To this end, some evidence supported designating private staff as part of a surge workforce on standby for outbreaks, including as part of the COVID-19 response. There is now significant evidence for the untapped potential of task-shifting within the private sector, especially to clinical staff of pharmacies and medicine shops (3, 4). There is also some evidence for the role of community health workers in supporting immunization in the non-government sector (18, 24).

Based on this review of the health workforce, new evidence that may provide the greatest opportunity for learning to assist immunization program delivery include:

- Mapping the existing capacities of private health care providers in terms of competence and commitment for immunization service delivery.
- Documenting the effectiveness of training and supportive supervision by private providers as drivers for participation.
- Examining the role of pharmacies further in extending service reach, including differentiation of informal medicine outlets to registered ones, and the regulatory mechanisms needed for success.
- Investigating the potential of secondment mechanisms or other task-shifting opportunities to bridge gaps in staff capacity, either secondment of government staff to private facilities or enlistment of private practitioners to boost capacity in government facilities.

7.5. INFORMATION SYSTEMS

Ensuring that private health facilities are registered in databases is essential to planning and monitoring their contribution to immunization service delivery. Also critical to quality services is the full participation of private providers in government systems for tracking service delivery, reporting of AEFIs, and safety monitoring. This requires either that private providers adopt government information systems or for them to ensure that their systems are interoperable with existing systems implemented by national or local governments.

The evidence in this brief often highlighted challenges in this area. Challenges included poor timeliness and completeness in reporting numbers and types of vaccines administered on a regular basis, lack of awareness about reporting immunization data as well as on collecting and reporting information on AEFIs and disease notification, and poor compliance to sustained periodic reporting. Prioritizing data systems and training is a way to ensure that good practices are followed. In addition, some responses linked satisfactory reporting to accreditation, accountability, or recognition to incentivize participation, as seen in Sudan (25) and Indonesia (36). A recent consensus statement on successful implementation on digital health during pandemics highlighted that trust and transparency are also key to engaging different stakeholders to effectively collaborate and share data (51).

Based on this review of the areas of information systems in which new evidence may provide the greatest opportunity for learning to assist immunization program delivery include:

- Ensuring that national governments prioritize investments for training of all governmental and non-governmental immunization service providers on the in-country reporting policies and protocols.
- Motivating all stakeholders to report timely, high-quality data by providing refresher courses or fostering trust and transparency when engaging the private sector players.
- Involving private sector players in review and reporting processes so that they stay aware of the minimal data set required for reporting to promote uniformity.

7.6. SUPPLIES AND LOGISTICS

As illustrated by the evidence on financing and PSE, ensuring the access of private providers to free or subsidized vaccine supplies is essential to enable financial accessibility, adherence to quality of cold chain

equipment, and ensure effective and safe vaccine handling. These operations were essential elements of training, as was attention to the correct use of multi-dose vials to ensure every opportunity for vaccination even when staff may be hesitant to open vials for sessions of smaller sizes. Effective vaccine management assessments should also include private/ non-governmental sectors so that all aspects of the immunization supply chain are considered at the national, subnational, and district levels.

Experience over the past two decades has shown that the optimization of cold chain equipment is also very context-specific, and countries need to plan according to their particular characteristics. In some reports, private sector partners have been included in national forecasting and procurement exercises, especially to ensure their capacities in terms of storage, temperature monitoring, distribution, and stock management. This approach has proven particularly important during the COVID-19 vaccine rollout (11), and is likely to be an important long-term expansion of national capacity in some countries.

Based on this review of the areas of supplies and logistics in which new evidence may provide the greatest opportunity for learning to assist immunization program delivery include:

- Optimization of cold chain equipment for immunization service delivery through non-governmental service providers, particularly for remote and rural communities.
- Integration of cold chain infrastructure that already exists in pharmacies and medicine outlets in rural and remote communities with the immunization program to improve vaccination coverage rates in these areas.
- Exploration of government provision of cold chain equipment to address inadequate equipment in non-governmental health facilities to ensure that they are compliant for immunization service delivery.

7.7. COMMUNITY ENGAGEMENT

Experiences in diverse settings and service delivery points have shown that private providers, such as local non-profits in conflict-affected Afghanistan (27), local retail medical outlets (21), and other pharmacies (24), may have an advantage in gaining community trust and in offering more flexibility in service provision to improve access. For-profit and non-profit private providers may also offer client-centered care in terms of offering other desired services, such as FP services and sick visits for children (38). They may also offer more convenient operating hours or a willingness to stagger visits to accommodate multiple vaccinations (37). The studies in this brief showed a preference for receiving immunization services through private health care providers in many mixed health systems, especially in Asia (23, 37). This includes fee-charging for-profit facilities in settings such as India, where higher-income families preferred to receive their vaccinations from the private care providers rather than at public clinics.

Countries may leverage these demand-side preferences by more proactively mapping patterns of care-seeking in national or local planning and identifying where complementary service provision can lighten the load on government clinics. As discussed above, when a significant proportion of community uptake is taking place in the for-profit sector, it is especially important to target regulation and monitoring to ensure essential vaccines are offered in line with the national schedule and standards and at minimal cost. Private providers can also be general advocates for immunization, including during campaigns, a function also noted by UNICEF in the Middle East and North African region. Enlisting private sector providers, pharmacies, and community groups into a broad alliance for vaccine advocacy and communication campaigns can add impact, especially when these voices are trusted by the community.

7.8. ADOLESCENT AND ADULT VACCINATION, INCLUDING AGAINST COVID-19 (11)

Many countries have enlisted private providers in supporting vaccinations against COVID-19, as well as the use of non-traditional partners in supporting roles such as supplies, logistics, or communications. Adults may be more accustomed to seeing private providers for care, compared to families with young children who are the typical clients of government MCH clinics. As vaccination against COVID-19 becomes established as a part of routine practices within immunization programs, programs will benefit from examining this part of their emergency response for adaptations useful to sustain life-course vaccinations. Key questions to ask of adaptations made for COVID-19 include:

- Which partners were involved, what were their motivations, and what monetary and non-monetary incentives were used?
- What roles did they play, and how was compliance with quality and safety standards enabled?
- How were their roles in reporting, safety monitoring, and identification of AEFIs optimized?
- Which private providers are already offering services to adult populations (e.g., those providing HIV treatment and care) and were able to add vaccination to their portfolio? Are there providers that adolescents or adults are already more comfortable using, and who could be key service providers for future adolescent and adult vaccines (including against COVID-19)?
- Are there new providers able to support adolescent vaccination (including against human papillomavirus) and other preventive services for those in school?
- Did private providers, including non-profit and FBOs, deliver vaccinations against COVID-19 for hard-to-reach populations; if so, can this be continued?
- How has the COVID-19 response leveraged professional societies, such as medical or nursing societies, or umbrella agencies such as CHAM? Can these groups play an advocacy, coordination, or quality improvement role in the long term?
- How did private agencies and their networks play a part in communications, generating demand and building confidence in the vaccination program; and how may these efforts be sustained?

8. CONCLUSIONS

This review collated a significant body of evidence spanning more than 20 years. It included three scoping reviews and 80+ documented country experiences. In addition, a recent major systematic review of the role of pharmacies and medicine shops was conducted. Despite this volume of publications, the evidence base for PSE in immunization programs varies in consistency, as well as leaving several as of yet unanswered questions. One further consideration when drawing conclusions is the rapid generation of evidence and learnings that has emerged from the COVID-19 pandemic. This has thrust many new PSE practices into the immunization arena, and the experiences and evidence of what this means for the future of immunization programs remains to be seen.

However, contrary to previous eras, there is now a widespread consensus on the importance of the private sector in multiple settings, with some examples where it provides the majority of vaccinations. This is considered the “formal” private sector, both for-profit and non-profit, given the minimal level of centralized recognition and support essential to vaccine management and delivery.

This review has focused on what motivates these private providers to participate in immunization service delivery, the barriers and enablers, the risks and challenges, and the processes and mechanisms of engagement, providing examples of how different contexts influence successful PSE. This has been mapped against the WHO’s health systems building blocks to shed light on how those insights can inform health system design and delivery.

To facilitate **governance that supports PSE**, better mapping of the current scale and scope of private sector activities, as well as the potential capacity for immunization service delivery, is an urgent priority within countries. This is necessary to restore and strengthen NIPs after the pandemic across geographies, levels in the health system, and the range of vaccines. This mapping can use geographic information systems and data from the new Pan American Health Organization/WHO/UNICEF joint reporting forms to explore the potential of the private sector to reach unvaccinated populations and zero-dose children through development of high-resolution maps that include private health care providers and pockets of low vaccination coverage. Such mapping can also identify potential new partners who are not yet engaged in immunization, especially those already providing services to infants, adolescents, pregnant women, and adults. Government provision of practical support, quality monitoring, and formal regulations were hallmarks of successful experiences in many contexts.

However, any successful engagement of new and existing private providers starts with an understanding of the factors that motivate their involvement. In this brief, some motivators were found to be monetary, both via fees charged/revenue received, but also by increasing client flow to facilities. Non-monetary motivations were found to be just as important in many settings, including recognition and legitimacy, the ability to take part in national decision-making, the potential to improve quality of care, and a mandate to serve their community. Evidence in the brief shows that such factors could be built into formal agreements via accreditation, regulation, and practical support; all were consistent with making vaccinations available at minimal cost.

In terms of **financing** and payments for PSE in immunization programs, this brief has highlighted a broad range of ways in which financing can act as a barrier or enabler of PSE in immunization programs. As seen during the COVID-19 crisis and beyond, it has become increasingly essential for governments to engage constructively with the private sector to improve equitable access to health services and improve the quality of services they provide. For immunization services, this may involve contracting with private health facilities using public funds to allow access to immunization services free of charge in zero-dose communities.

Financing can be used to increase efficiency, for example, by designing incentives that encourage the delivery of preventive and PHC services over curative care such as provision of the full immunization schedule for children. Immunization needs to be prioritized within the overall national UHC benefits package so as to ensure that people have guaranteed access to essential immunization services, irrespective of employment status, income, or enrollment in health insurance.

As countries graduate from Gavi support and transition into the middle-income category, funding for immunization will be increasingly uncertain and additional partners, such as the private sector, foundations, and trusts, will need to be engaged. Securing access to affordable vaccines post-transition and helping countries plan for fully funded and sustainable immunization programs are also urgently needed.

In terms of the **health workforce** and **service delivery**, substantive roles for the private sector in immunization programs are identified in urban settings across all income levels and for for-profit (many places) and non-profit (such as in urban Bangladesh). Non-government providers are critically important in remote, fragile, and conflict-affected settings to reach places without government services and in settings where they are not always trusted (such as Afghanistan). This includes many NGO and FBOs, as well as for-profit providers. Private providers also play a role in making new vaccines available, often through the for-profit sector at a fee. However, one recent example in Kenya showed that by having typhoid vaccine provided to adults at retail medicine outlets, a broader range of income groups could be reached.

The role of pharmacies in vaccine delivery has been prominent in high-income countries, as illustrated in responses to COVID-19, but underutilized in LMICs. The Yemeke et al. systematic review and work of Ho et al. in Kenya helped document what has been successful so far, showing strong roles in promotion and advocacy for vaccines; however, given the still limited roles in service delivery, there is potential for expansion. Other key partners with limited evidence but future promise include professional societies, such as specialist medical or nursing bodies, and umbrella agencies of FBOs. Both of these groups can support coordination, training, quality monitoring, recognition, and some system elements such as supplies distribution

In terms of **information systems**, incorporating private providers into databases for planning, and information systems for reporting, including those for safety monitoring, is a promising practice that needs further development and evidence. The COVID-19 pandemic has also demonstrated the need to invest in

Summary of Recommendations for Private Sector Engagement in Immunization

Governance that supports private sector engagement, together with better mapping the scale and scope of the private sector.

Understand and leverage private providers' motivations, including monetary, reputational and others to encourage involvement of new and existing private providers.

Financing: contracting with the private sector increases efficiency and prioritizes immunization within universal health coverage.

Private sector has an important role in health workforce and service delivery for immunization programs in urban settings, remote, fragile, and conflict-affected settings.

Incorporate private providers into **databases for planning and information systems for reporting**, including those for safety monitoring.

Subsidized access to vaccines and other commodities is vital for private sector engagement in immunization programs.

Further **research, evaluation, and documentation** of providers' motivations and the mechanisms behind successful engagement in a range of contexts is needed.

digital health systems to monitor vaccinations, ensure surveillance of adverse events, and strengthen the wider digital immunization architecture.

In terms of **supplies and logistics**, subsidized access to vaccines and other commodities is vital for PSE in immunization programs. Experiences varied in subsidizing cold chain equipment; however, a common theme was some mechanism to ensure that private providers met national standards. Successful examples were often those that used formal, comprehensive mechanisms of engagement, such as PPPs, formal agreements, or contracting, tailored to match local governance norms, identified risks, and leveraged the reasons that motivated private providers to participate.

This review builds on the work of Mitrovich et al. (2017) and Levin & Kaddar (2011), and identifies some emerging practices and important priorities for future work. In the years ahead, MOMENTUM aims to build upon these promising practices and address existing evidence gaps. **Most beneficial will be evaluations and research related to the motivations of providers and the mechanisms behind successful engagement in a range of contexts.** Some mechanisms that have been promising in other health areas have not been explored well in immunization, such as social franchising or other innovations seen, for example, in reproductive health. It will be helpful to test a broader range of monetary and non-monetary mechanisms to support immunization. These include targeted subsidies for equipment or expansion of service offerings, or vouchers for priority groups, as well as service expansion through health insurance-based models where payments can be linked to improved outcomes. For example, increased vaccination coverage among those with lower incomes. Task-shifting in well-designed and carefully measured experiments may demonstrate what pharmacies, community health staff, and other new partners can do in LMICs.

MOMENTUM is considering two immediate priorities. First, the use of available geographic information system data, linked to new provisions in global immunization reporting, can expand the global and regional overview of current and potential private sector contributions. Second, the documentation of experiences of routine immunization during the rollout of COVID-19 vaccines in LMICs can identify which private sector partners were offering routine immunization during the emergency surge response (i.e., important to future pandemic preparedness planning) and which represent assets that can permanently expand the reach and resources for routine immunization and life-course vaccination. This can focus on new partners who are already providing care throughout the life course to help immunization programs reach adolescents and adults in the future. This will be complemented by other work underway, including that by MOMENTUM Routine Immunization Transformation and Equity, of other non-traditional partners working in areas beyond service delivery, including FBOs and civil society organizations supporting communications and advocacy. With these experiences, and this technical update, MOMENTUM would like to engage with global immunization partners and donors to update global guidance on PSE.

PSE has emerged as a key priority in several global guidance documents and policy frameworks such as USAID's Maternal and Child health and Nutrition roadmap to 2030, the IA2030, and Gavi's Phase 5 Strategies. This brief summarizes the state-of-the-art evidence on PSE for immunization in LMICs and will be disseminated during future webinars and uploaded to existing immunization forums and knowledge repositories.

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ANNEX 1

OVERVIEW OF THE UPDATED EVIDENCE BASE MAPPED BY WHO REGION, INCLUDING NUMBER OF PUBLICATIONS, BY COUNTRY

WHO region	Country	Year	Author	Private sector partner	Type of engagement	Review Article
AFR	Benin	2019	Levin et al.	For-profit and not-for-profit private clinics	The MOH supplies vaccines and technical support to private clinics to provide immunizations where the private clinics charge nominal and vaccination registration fees to clients.	Wanyoike et al. 2022
	Benin	2019	Vouking et al.	Private transporters	The private sector relieves the government of vaccine collection and transportation risks.	Wanyoike et al. 2022
	Ethiopia	2006	Government of Ethiopia	For-profit private immunizations	A low percentage of immunizations are provided by the for-profit private sector.	Levin and Kaddar 2012
	Gabon	2011	Ategbo et al.	Private sector health centers	The private sector provided higher vaccination coverage rates than the public sector, particularly for EPI and non-EPI vaccines.	Mitrovich et al. 2017
	Georgia	2019	Levin et al.	For-profit and not-for-profit private clinics	The MOH supplies vaccines and technical support to private clinics to provide immunizations where the private clinics charge nominal and vaccination registration fees to clients.	Wanyoike et al. 2022
	Ghana	2006	Bass	Mission hospitals	A large percentage of not-for-profit immunizations occur in mission hospitals.	Levin and Kaddar 2012
	Ghana	2011	Makinen et al.	Private not-for-profit health facilities	The government provides free vaccines to private facilities, especially in rural locations.	Mitrovich et al. 2017
	Kenya	2006	Bass	Private not-for-profit	A large proportion of immunizations are conducted by private not-for-profit staff in the north and northeastern districts.	Levin and Kaddar 2012
	Kenya	2013	Sood and Wagner	For-profit and not-for-profit private facilities	Fewer immunizations measured in areas for-profit private facilities.	Mitrovich et al. 2017
	Kenya	2016	Ho et al.	Private sector medicine outlets	Private providers supply subsidized vaccines.	Wanyoike et al. 2022
	Kenya	2017	Olorunsaiye et al.	For-profit and not-for-profit private clinics and faith-based facilities	A high proportion of for-profit private clinics and faith-based clinics charge clients fees for immunizations.	Wanyoike et al. 2022
	Malawi	2017	Olorunsaiye et al.	For-profit and not-for-profit private clinics and faith-based facilities	Private care providers charge clients for immunizations and are reluctant to open multidose vaccines in fear of vaccine waste.	Wanyoike et al. 2022
	Malawi	2019	Levin et al.	For-profit clinics and not-for-profit private clinics	The MOH supplies vaccines and government vaccinators to private clinics, and in return the private clinics provide vaccinations.	Wanyoike et al. 2022

WHO region	Country	Year	Author	Private sector partner	Type of engagement	Review Article
AFR	Mauritania	2003	Ouedraogo	Private for-profit clinics	A small proportion of immunizations take place in for-profit private facilities.	Levin and Kaddar 2012
	Morocco	1998	Madrid	Private for-profit clinics	A small proportion of hepatitis B and Hib immunizations take place in for-profit private facilities.	Levin and Kaddar 2012
	Mozam-bique	2019	Vouking et al.	Private transporters	The private sector relieves the government of vaccine collection and transportation risks.	Wanyoike et al. 2022
	Nigeria	2014	Oluoha et al.	Private facilities	Public-private partnership where private facilities have a memorandum of understanding with the MOH to provide free immunizations in return for MOH support in reporting, monitoring, and evaluation.	Mitrovich et al. 2017
	Nigeria	2019	Vouking et al.	Private transporters	Vaccine distribution to health facilities was outsourced to a private transporter who delivered vaccines from the cold stores directly to target facilities.	Wanyoike et al. 2022
	Senegal	2017	Olorunsaiye et al.	For-profit and not-for-profit private clinics and faith-based facilities	Private care providers charge clients for immunizations and are reluctant to open multidose vaccines in fear of vaccine waste.	Wanyoike et al. 2022
	South Africa	2019	Vouking et al.	Private transporters	The private sector relieves the government of vaccine collection and transportation risks.	Wanyoike et al. 2022
	Sub-Saharan Africa	2014	Wagner and Szilagyi	NGOs and for-profit clinics	Lower rate of BCG immunization in private clinics than in public clinics.	Mitrovich et al. 2017
	Sudan	2019	Ahmed et al.	NGOs and for-profit clinics	The government and private clinics have a cost-sharing relationship where the private facilities provide immunizations while the government supplies cold chain equipment and vaccinators for no charge.	Wanyoike et al. 2022
	Tanzania	2017	Olorunsaiye et al.	For-profit and not-for-profit private clinics and faith-based facilities	Private care providers charge clients for immunization and are reluctant to open multidose vaccines in fear of vaccine waste.	Wanyoike et al. 2022
	Uganda	2021	Namakula et al.	Formal private for-profit providers and NGOs	A partnership was created between the NGOs and the government for the provision of free immunizations.	Wanyoike et al. 2022
	Zimbabwe	1998	Madrid	Private for-profit clinics	A small proportion of hepatitis B and Hib immunizations take place in for-profit private facilities.	Levin and Kaddar 2012

WHO region	Country	Year	Author	Private sector partner	Type of engagement	Review Article
AMR	Brazil	2008	de Soárez et al.	Private sector	There is low private for-profit immunization coverage.	Levin and Kaddar 2012
	Caribbean	2011	Irons and Dobbins	Private providers	Public providers provide more vaccinations than private providers, but private providers help fill the gap.	Mitrovich et al. 2017
	Costa Rica	1998	EPI newsletter	Private sector, private pediatricians	Private pediatricians volunteer to provide vaccines for free, but there is still low private sector implementation of immunization programs.	Levin and Kaddar 2012
	El Salvador	1998	EPI newsletter	Private sector	The private sector engaged in polio eradication and contributed to the national vaccination coverage.	Levin and Kaddar 2012
	Honduras	1998	EPI newsletter	Private pediatricians, physicians, and hospitals	A low percentage of the private sector is involved in immunization delivery, but immunization services are generally provided through public sector and some minimal engagement with private pediatricians, physicians, and hospitals.	Levin and Kaddar 2012
	Nicaragua	1998	EPI newsletter	Private clinics	Private clinics are involved with a large percentage of the population, but the private sector's contribution to overall vaccination coverage is small.	Levin and Kaddar 2012
	Panama	1998	EPI newsletter	Private sector	The private sector participates heavily and contributes to the overall vaccination coverage.	Levin and Kaddar 2012
EMR	Afghanistan	2021	Vink et al.	Private providers	Private providers vaccinate clients in return for training, supplies, and renovated facilities.	Wanyoike et al. 2022
	Bahrain	2016	Jawad	For-profit clinics	The for-profit private clinics fill the gap for immunizations that the public sector cannot reach.	Mitrovich et al. 2017
	Lebanon	2016	Rady	Private for-profit clinics	The majority of vaccinations provided in Lebanon are from private for-profit clinics, while others are provided by the government.	Mitrovich et al. 2017
	Pakistan	2006	Pakistan's MOH	For-profit private sector	The level of for-profit immunizations for children and women is low.	Levin and Kaddar 2012
	Pakistan	2010	Hasan et al.	Private providers	In Karachi, a large percentage of the children immunized were immunized at private clinics due to a large concentration of private facilities in urban areas.	Mitrovich et al. 2017
	Pakistan	2012	Zaidi	For-profit private practitioners	The main source of private immunizations was for-profit physicians.	Mitrovich et al. 2017
	Pakistan	2015	Zaidi et al.	NGOs and private clinics	Vaccination rates in contracted NGO clinics are higher than in public/governmental clinics.	Mitrovich et al. 2017
	Pakistan	2017	Imtiaz et al.	People's Primary Healthcare Initiative	A partnership was created between the public and private sectors for maternal and children care, including immunizations.	Wanyoike et al. 2022

WHO region	Country	Year	Author	Private sector partner	Type of engagement	Review Article
SEAR	Bangladesh	2010	Uddin et al.	NGO	The NGO's clinics and public-private partnerships provide 95% of immunizations.	Mitrovich et al. 2017
	Bangladesh (urban)	2019	Adams	Small and medium-sized formal private for-profit health facilities	The government contracted out primary health care to NGOs on a projected basis.	Wanyoike et al. 2022
	India	2002	Peters et al.	For-profit private sector	There are low levels of for-profit private immunizations.	Levin and Kaddar 2012
	India	2004	Howard and Roy	For-profit private sector	There are low levels of for-profit private immunizations, but women use private for-profit immunizations more than other demographics.	Levin and Kaddar 2012
	India	2007	Yoong	For-profit private sector	There are low levels of for-profit private immunizations, but higher urban involvement.	Levin and Kaddar 2012
	India	2007	Puri et al.	For-profit private sector	There are low levels of for-profit immunizations, but high levels of typhoid/MMR and hepatitis B vaccines.	Levin and Kaddar 2012
	India	2009	UNICEF	Private providers	Private sector involvement is higher in urban areas.	Mitrovich et al. 2017
	India (Gujaret)	2017	Hagan et al.	Private medical practitioners	Private medical practitioners were reluctant to provide multidose vaccinations to prevent vaccine waste, and more training was required to improve vaccine safety.	Wanyoike et al. 2022
	India	2015	Sharma et al.	Private sector	There were low levels of vaccination coverage through the private sector for Hib immunizations.	Mitrovich et al. 2017
	India	2016	Hagan et al.	Private sector	There were low levels of vaccination coverage through the private sector for BCG, measles, DTP3, and OPV3 immunizations.	Mitrovich et al. 2017
	India	2016	Sharma et al.	For-profit and not-for profit clinics	The private sector's engagement was limited to high-income states.	Wanyoike et al. 2022
	India	2017	Vashishtha	Private practitioners	Poor regulation of the prices of vaccines provided by private practitioners.	Wanyoike et al. 2022
	India	2019	Lahrinya et al.	Private providers	The supplementation of the private providers to the NIPs was successful in increasing childhood vaccination coverage.	Wanyoike et al. 2022
	India	2019	Sarveswaran et al.	NFHS data	If people are not receiving <i>anganwadi</i> (child care) services they are more likely to use the private sector.	Wanyoike et al. 2022
India	2020	Davalbhakta et al.	Private health care workers	Decentralize COVID-19 screening and testing facilities.	Wanyoike et al. 2022	

WHO region	Country	Year	Author	Private sector partner	Type of engagement	Review Article
SEAR	India	2020	Faroqui et al.	Private sector providers	The Ministry of Health and Family Welfare's multi-year strategic plan on immunization recognized that the private sector has a key role in immunization services.	Wanyoike et al. 2022
	Indonesia	2020	Tan et al.	Private pediatricians	A national health care policy specifically uses private providers to achieve universal health coverage, including immunizations.	Wanyoike et al. 2022
	Sri Lanka	2007	Agampodi and Amarasinghe	For-profit private sector	Low levels of for-profit immunizations with the Colombo district with the highest rates of immunizations.	Levin and Kaddar 2012
	Thailand	1998	Madrid	For-profit private sector	There are low levels of for-profit immunizations, but higher levels in urban locations.	Levin and Kaddar 2012
SEAR/ EMR	South Asia Region (Bangladesh & India) and Eastern Mediterranean Region (Afghanistan & Pakistan)	2019	Guo et al.	Demographic and Health Survey	The private sector was expanded to account for immunization services that require long-term investment from the public sector.	Wanyoike et al. 2022
WPR	Cambodia	2006	Bass	Not-for-profit private sector and NGOs	There is a large amount of private not-for-profit immunizations, especially with NGOs.	Levin and Kaddar 2012
	Cambodia	2008	Soueng et al.	Private providers	The private providers provided 65% of the immunization services, however, the vaccinations provided differ by the antigen.	Mitrovich et al. 2017
	Papua New Guinea	2018	Field et al.	Private contractors and NGOs	Private organizations were contracted out by NGOs on behalf of the community for immunization services.	Wanyoike et al. 2022
	Philippines	2014	Patel et al.	Private hospitals	The private hospitals provide half of the hepatitis B birth dose vaccination coverage.	Mitrovich et al. 2017
	Philippines	2016	Suy	Private sector	The private sector provided 10% of the overall vaccination coverage.	Mitrovich et al. 2017
	Republic of Korea	2010	Cho et al.	Private providers	The majority of private providers offer vaccinations.	Mitrovich et al. 2017
	Vietnam	2008	Murakami et al.	Private maternal clinics	The private maternal clinic's immunization services are provided usually on a fee-for-service basis.	Mitrovich et al. 2017

WHO region	Country	Year	Author	Private sector partner	Type of engagement	Review Article
WPR	West Pacific Region (Cambodia, China, Fiji, Kiribati, Palau, Papua New Guinea, Philippines, Solomon Islands, Vanuatu)	2018	Amarsinghe et al.	NIPs and private providers	NIPs supply vaccines and training to private facilities where the private facilities charge only a service fee for vaccines.	Wanyoike et al. 2022
All	LMICs	2021	Yemeke et al.	Pharmacists	Pharmacists may play a role in improving vaccination coverage.	Wanyoike et al. 2022