

A Rapid Review of COVID-19 Vaccination Roll-Out

Lessons learned on service delivery and integration

September 2022



Image courtesy: <https://www.afro.who.int/news/moving-forward-science-covid-19-vaccine-effectiveness-africa>

Acknowledgements



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**World Health
Organization**



COVID GAP
Led by Duke University and COVID Collaborative

*A systematic review of COVID-19 vaccine roll-out experiences and lessons learned is being undertaken by the **World Health Organization (WHO)**, the **U.S. Agency for International Development (USAID) MOMENTUM Country and Global Leadership project**, and **COVID GAP**, to produce learnings for program audiences at all levels—global, regional, country, and sub-national. This slide deck is the first in a series of multiple rapid review products, highlighting learning, best practices, and recommendations for one of the eight selected themes.*

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Executive Summary

Background

Spearheaded by WHO, USAID's MOMENTUM Country and Global Leadership project, and COVID GAP, this systematic review on the COVID-19 vaccine roll-out experience provides early findings from the first rapid review on the theme of service delivery and integration.



Service Delivery & Integration

Methods

We combined the rigors of a systematic review with the time-bound delivery of a rapid review learning product.

Limitations: Most studies conducted in early phase of COVID vaccine roll-out and in high-income countries.

- First round of rapid review
- 25 studies analyzed

25

Three Service Delivery Models

Mass Vaccination



Mobile Vaccination



Fixed-Post Vaccination



Key Takeaways

Mass vaccination sites require multi-disciplinary teams of clinical and administrative staff to run effectively.

Mobile vaccination clinics typically employ varied community mobilization strategies to bring in people to the clinics for vaccination.

Fixed-post vaccination sites require the least amount of spatial adaptation because they are purpose-built, however, mobilization is critical.

Recommendations

Adapt Strategies to Current Context



- Emphasize walk-in opportunities
- Pursue partnerships – community volunteers, students, private sectors
- Frequent, evidence-based communication

Generate Demand with Trust



- Deploy diverse, inter-personal communication strategies
- Cultivate leaders and champions for vaccination

Background

- COVID-19 vaccination efforts are faced with challenges around the distribution, delivery, and demand for the vaccines. The COVID Vaccine Delivery Partnership is shifting country assistance towards the scale-up of vaccinations, particularly for high-priority populations (such as health care workers, elderly people, people with comorbidities, pregnant women, etc.) and towards integration of COVID-19 vaccination into immunization programs and primary health care (PHC).
- Learning from experiences, best practices, and innovative solutions can help countries in their efforts to scale-up and optimize COVID-19 vaccine delivery

The systematic literature review will cover eight thematic areas on COVID-19 vaccine rollout and produce rapid reviews:



Political Will & Financing



Supply & Logistics



Planning & Coordination



Demand & Uptake



Service Delivery & Integration



Health Workforce



Monitoring & Evaluation



Adverse Event Monitoring & Management

This presentation provides early findings from the first rapid review on the theme of service delivery and integration

Objectives of Service Delivery and Integration Rapid Review

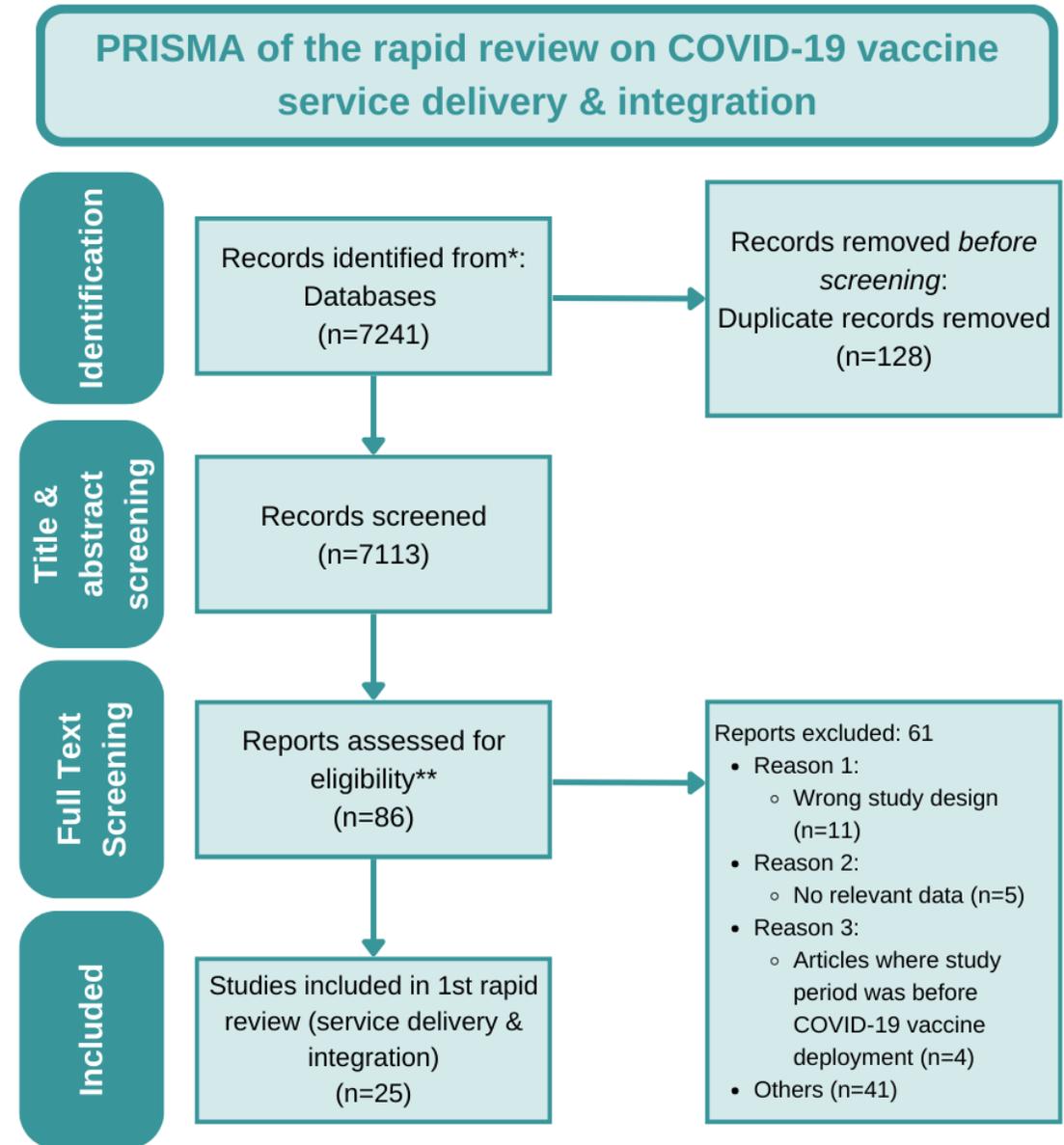
1. Describe the **different service delivery models** for COVID-19 vaccine rollout.
2. **Describe adaptations** made for integrated service delivery and for reaching different priority groups in different contexts.
3. Synthesize the **best practices and lessons learned** from these rollout strategies.



Methods

We combined the rigors of a systematic review with the time-bound delivery of a rapid review learning product

- Conducted the search in: PubMed, Scopus, GIM Text, GIM numeric using developed search criteria
- Two persons independently screened each title and abstract and full text in COVIDENCE
- An initial title and abstract screening of a sample of 1,000 papers was done to inform domain specification, development of the abstraction tool, and refinement of search strategy
- Inclusion and exclusion criteria were pre-specified
- Data was abstracted on Excel and analyzed on Dedoose
- **First round of rapid review on service delivery and integration consists of 25 papers**
- Synthesis was by **vaccine delivery models**

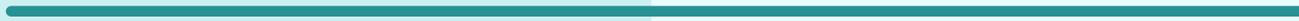


*PubMed, Scopus, Global Index Medicus

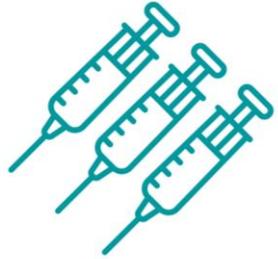
**Sub-set of papers identified as relevant to service delivery & integration



Results



Results showed three main service delivery models:



Mass vaccination

High-volume, high-speed vaccination activities, typically conducted in non-health care settings for rapid vaccine delivery during health emergencies.



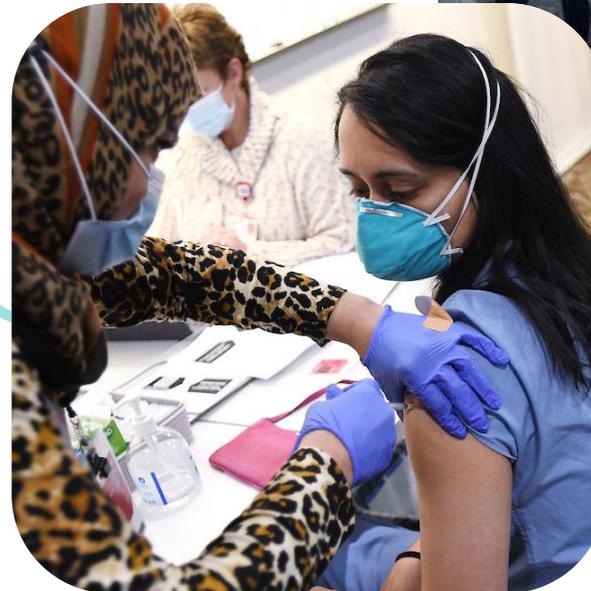
Mobile vaccination

Mobile vaccination is an umbrella term to describe various initiatives to bring vaccination services closer to communities in need on a small scale. Typically targets rural areas, underserved minorities and socially marginalized populations.



Fixed-post vaccination

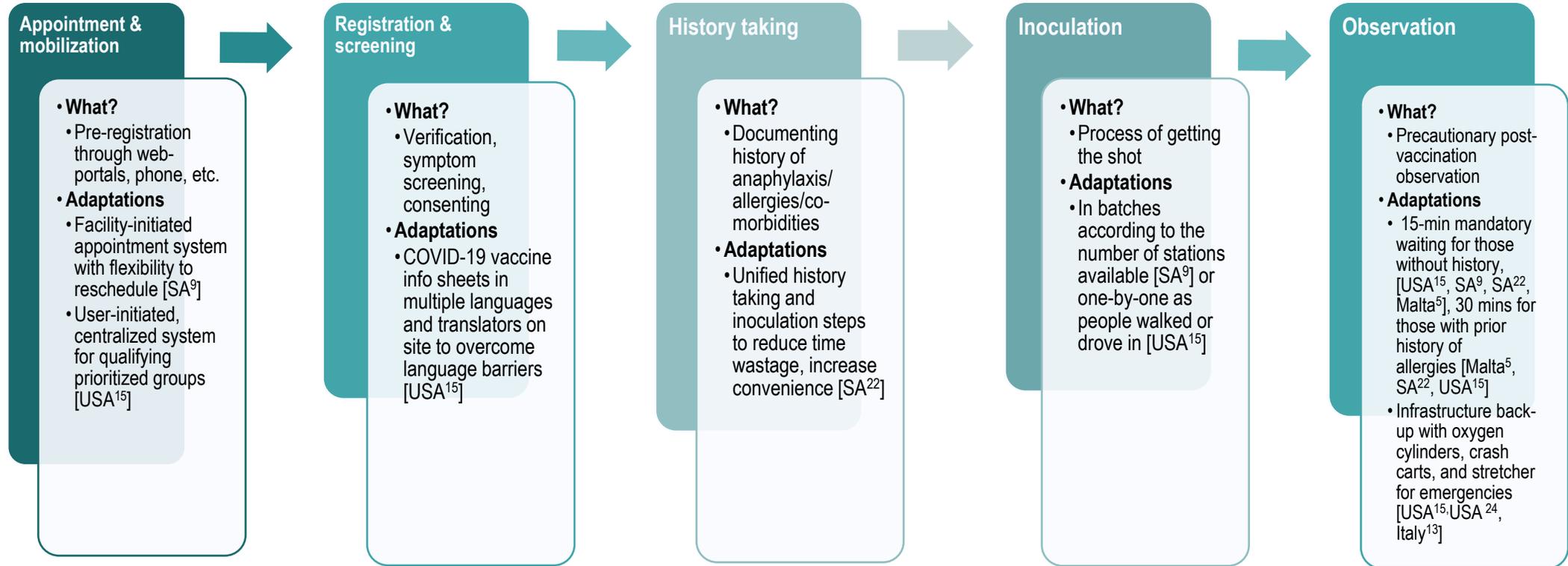
Vaccination services that are provided in a purpose-built or adapted permanent/semi-permanent physical structure, usually within health care settings, like an immunization clinic in a hospital or primary health care facility. It could also refer to non-traditional health care settings, such as school health clinics.





Mass vaccination sites were observed to have five functional steps with adaptations made for different contexts.

Each site requires a multi-disciplinary teams of clinical and administrative staff to run effectively.



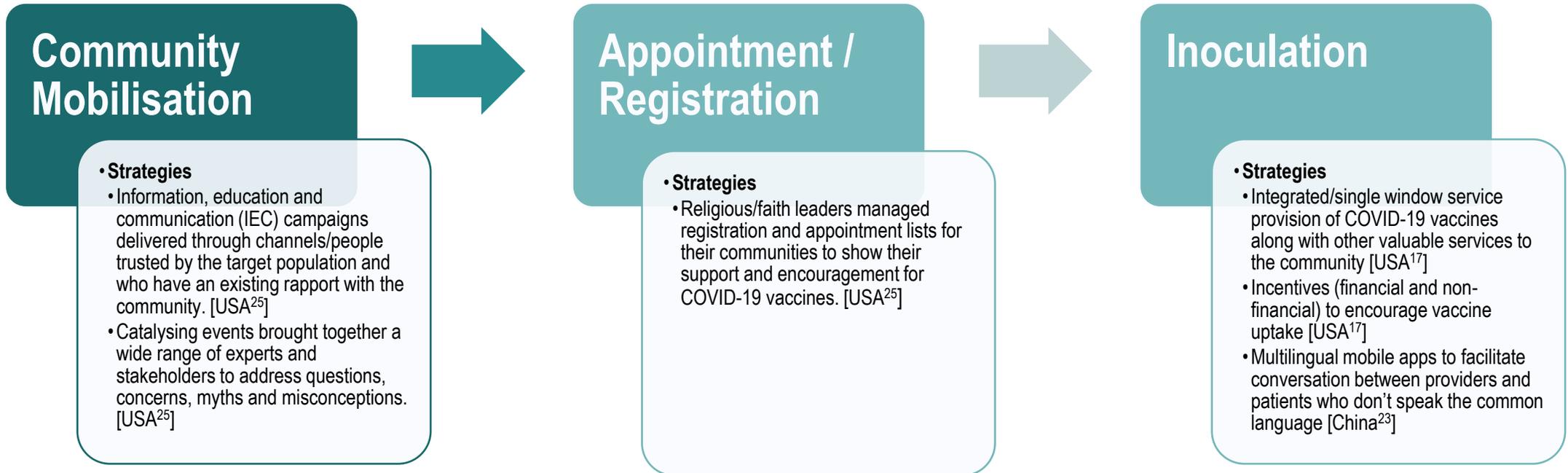
Lessons learned

	Challenges	Enablers
Pre-vaccination/ mobilization	<ul style="list-style-type: none"> Lack of a system to categorize potential clients by their risk-level [SA⁹] Inability of system to optimize appointment slots with HCWs availability [SA⁹] 	<ul style="list-style-type: none"> Partnerships with private sector partners, local hospital systems for scheduling support, planning, inventory management, and set-up and maintenance of data systems
At vaccination	<ul style="list-style-type: none"> Compromise in regular clinical care in order to meet staffing needs of mass vaccination sites [SA⁹] 	<ul style="list-style-type: none"> Partnerships with local medical groups for infection prevention and control, site security, supply of medical equipment [USA²⁴] Partnerships with local community and university for volunteer support [SA²²]



Mobile vaccination clinics employed various strategies to execute the three main functional steps.

Mobile vaccination clinics typically employ varied community mobilization strategies to bring in people to the clinics for vaccination.



Lessons learned

	Challenges	Enablers
Pre-vaccination/ mobilization	<ul style="list-style-type: none"> • Historical mistrust of the formal health care system created challenges in mobilizing the people to take the vaccine. [USA²⁵] • Inequity and lack of transparency in the vaccine allocation process for disadvantaged communities created challenges of sufficient vaccine availability for socially marginalized populations. [USA²⁵] 	<ul style="list-style-type: none"> • Forming and leveraging partnerships with groups/people who have an existing relationship, rapport and trust of the target population [USA¹⁷] • Consistent engagement and frequent presence of the clinic/team with the community [USA¹⁷] • Serving everybody who came to the clinic and not turning them down propagated trust within the community [USA¹⁷]
At vaccination	<ul style="list-style-type: none"> • Cultural and language barriers create differences in the way the disease is explained, and in the rapport of doctor–patient relationship. [USA¹¹, USA²⁵] 	<ul style="list-style-type: none"> • Providing COVID-19 vaccines as an add-on service with other services valuable to the community [USA¹⁷] • Counseling that helped clear doubts about the COVID-19 vaccine [USA¹⁷]



Fixed-post vaccination sites required the least amount of spatial adaptation because they are purpose-built, however, mobilization is critical.

Pre-vaccination/mobilization

• Strategies

• IEC campaigns with a difference

- Contextually relevant communication [SA²²]
- Risks vs benefit approach to adverse event (AE) discussions [SA²²]
- Targeted messaging [USA¹⁰], high frequency education and communication efforts tailored for target communities, parents and family (for students) [USA¹⁰, USA⁸]
- One-on-one counseling for real-time update on vaccine effectiveness for under-represented groups in clinical trials [England³]
- Declination forms for awareness of consequences of not taking the vaccine [USA¹]

• Engaging vaccine champions and opinion leaders to advocate for the vaccine

- Medical and political leadership at the forefront in active conversations with target populations [England³, USA¹, USA¹⁰]
- Leveraging community voices and radically diverse viewpoints for consensus-building [USA¹⁰], dispel myths, misconception, and rumors

• Practical appointment systems reduced barriers to accessing the vaccine

- Walk-ins for those with no pre-plans of taking the vaccine/missed appointments [SA²², England³]
- Multi-lingual appointment portals to overcome language barrier. [USA¹⁰]

At vaccination

• Strategies

- **Incentives (financial/non-financial)** for encouraging vaccine uptake [USA¹, USA², USA⁸, USA¹⁰]
- **Flexibility** in the parental consenting process for students through online or over-the-phone provisions [USA⁸]

Lessons learned	Challenges		Enablers	
	Pre-vaccination/mobilization	At vaccination	Pre-vaccination/mobilization	At vaccination
	<ul style="list-style-type: none"> • Distrust of the fast-paced vaccine development [USA²] and historical distrust in the formal health care system [USA¹⁰] • Logistical constraints for vaccines with short shelf life [USA¹²] • Lack of timely data on COVID-19 vaccine safety and efficacy for pregnant women [England³] • Long waiting time during the early phase of the pandemic [SA²²] 	<ul style="list-style-type: none"> • Language barriers in understanding vaccine information sheets and consent forms for non-English speaking populations [USA⁸] 	<ul style="list-style-type: none"> • Identifying people facing barriers and removing barriers to access by arranging transportation, providing internet for booking, and offering walk-ins. [USA¹⁰] 	<ul style="list-style-type: none"> • Partnerships with the private sector for efficient vaccine sourcing, staffing, running data systems, etc. [USA¹⁰, USA⁸] • Partnerships with community and civil society organizations to mobilize human resource support for vaccine distribution and operations management. [USA⁸]

Summary of challenges and potential solutions, by delivery model, as seen in this review

S/N	Challenge	Potential Solution	Delivery Model
Pre-vaccination/mobilization			
1.	Difficulty in prioritizing patients based on risk levels (South Africa ⁹)	Creation of a database with history/risk levels of those expected to take the vaccine at the facility	
2.	Barriers to appointments, especially for socially vulnerable populations (South Africa ⁹)	Option for walk-in shots (SA ²² , England ³), flexible appointment bookings by scanning QR code (USA ¹²), appointment by invitation (USA ¹⁹), arranging internet access for those who need it [USA ¹⁰]	
3.	Cultural and language barriers in securing appointments and navigating vaccine clinics (USA ¹¹ , USA ²⁵)	Multilingual and special needs app for those who don't speak the common language (Germany ²³ , USA ¹⁰),	
4.	Myths, misconceptions, and mistrust in formal health system/the vaccine (USA ²⁵ , Berry ² , USA ⁸ , USA ¹⁰)	Deliver IEC through trusted channels (USA ²⁵), organize community catalyzing events with a variety of stakeholders (USA ²⁵), maintain repeated clinic presence to build trust in the community (USA ¹⁷), work with trusted partners who have a rapport with community (USA ¹⁷), provide COVID-19 vaccine as integrated service with other essential services (USA ¹⁷), offer incentives—cash/in-kind (Berry ² , USA ¹⁴ , NASN ¹⁰)	
5.	Inequity in vaccine allocation (USA ²⁵)	Strong advocacy for vaccine availability irrespective of insurance status, immigration status, etc. (USA ⁶)	
6.	Lack of info on COVID-19 vaccine for pregnant women (England ³)	Q&A sessions with leadership of OB/GYN and midwifery departments, one-on-one counselling of real-world vaccine efficacy data (England ³)	
At vaccination			
7.	Logistics—timely coordination of vaccines (USA ¹²)	Interactive vaccine dose prediction sheet to coordinate stock, need, etc. (Italy ¹³)	
8.	Challenges in consenting process (USA ⁸)	Allow consenting over phone (USA ¹⁰), multilingual app providing translation of consent form (Germany ²³)	

Key service delivery challenges and learnings related to priority populations, as seen in this review

S/N	Priority population	Challenge	Learnings	Delivery Model
1.	Health care workers	<ul style="list-style-type: none"> Distrust of vaccine-development process Myths, misconception, and rumors 	<ul style="list-style-type: none"> Frequent, relevant IEC efforts to address doubts on rumors and misconceptions, and clarification on the rigor and legitimacy of the vaccine development process 	
2.	Elderly people	<ul style="list-style-type: none"> Age-related illnesses and mobility issues making it difficult to navigate the mass vaccination site 	<ul style="list-style-type: none"> Unify history-taking and inoculation steps to reduce inconvenience and time spent (Italy²¹) 	
3.	Pregnant women	<ul style="list-style-type: none"> Lack of clear guidance on vaccinating pregnant women due to non-inclusion in clinical trials resulting in concerns about safety and risk of vaccinating pregnant women (England³) 	<ul style="list-style-type: none"> Counseling and service delivery should be by providers women regularly interact with (England³) Update and disseminate real-time data and insights on COVID-19 vaccine safety and efficacy for pregnant women 	
4.	Socially marginalized populations (injecting drug users [IDU], undocumented migrants, traditionally vaccine-hesitant people, etc.)	<ul style="list-style-type: none"> Distrust in the formal health care system Myths, misconception, and rumors Language and cultural barriers Barriers to access owing to geographic, racial and ethnic marginalization 	<ul style="list-style-type: none"> Approach IEC campaigns with utmost sensitivity Targeted messaging addressing concerns to the population (USA⁸, USA¹⁰) Provide COVID-19 vaccine as an add-on service with other services of interest to the community (England³, USA¹⁷) Provide incentives (cash/in-kind) (Berry², USA¹⁴) Provide walk-in options (USA¹⁰) Address social determinants of health, which restrict access (lack of transportation, internet access for bookings, etc.) (USA¹⁰) 	

Examples of COVID-19 vaccine integration as seen in this review

S/N	Target Population	Integration	Delivery Model
1.	Injecting drug users	Point of care tests for HIV, syphilis, and Hep C, and needle exchange programs along with COVID-19 vaccines (USA ¹⁷)	
2.	Pregnant women	COVID-19 vaccines with ultrasonograms and check-ups in antenatal clinics (England ³)	
3.	Students	COVID-19 vaccines with flu-vaccine shots (USA ¹⁰)	
4.	General population	COVID-19 vaccines offered at blood donation camps (Israel ¹⁶)	

Key findings from the literature and recommendations

Adaptations

Tweaks to early pandemic phase strategies are needed today

- Requiring pre-visit appointments is no longer necessary with more vaccine supply available. Mobilization messages should emphasize walk-in are welcome.
- Risk/benefit messaging for AE following immunization concerns was fit for the early phase. Today's messaging should address falling risk perception and vaccine confidence.
- Pursue partnerships—community volunteers, students (nursing, pharmacy, or medical students)—for extra hands; private sector for logistics support.
- Tailored communication is required. Strategies and messaging should address current concerns, be evidence-based and frequent.

Demand generation

Multidisciplinary collaboration and confidence building approaches are key to drive uptake

- Programs should invest in interpersonal communications, e.g., one-on-one conversations for some groups with high distrust of the health care system.
- Programs should cultivate leaders and influencers—medical, political, religious, community leaders—as champions for vaccination.
- Communication strategies should engage diverse voices with the goal of building consensus, not just to convince.
- For priority and socially marginalized populations, invest in trust-building and provide tailored approaches, like incentives, add-on/ integrated services, push delivery.

Limitations and next steps

Limitations

Gaps in literature warrants contextualization of findings

- Most studies were done in the early part of the global COVID-19 vaccine roll-out when cases were rising, vaccine supply was short, and demand for shots was high.
- Most studies were from high-income countries, so literature review findings should be contextualized and strategies adapted for low- and middle-income country (LMIC) settings.
- More studies from LMICs are needed. Global partners should support LMIC researchers to document and share their lessons learned.
- Update literature review in the future when more countries have published their experiences.

Targets of recommendations

■ Immunization community

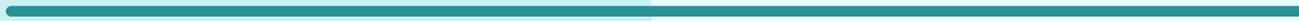
■ Country programs

■ Global/regional partners/donors

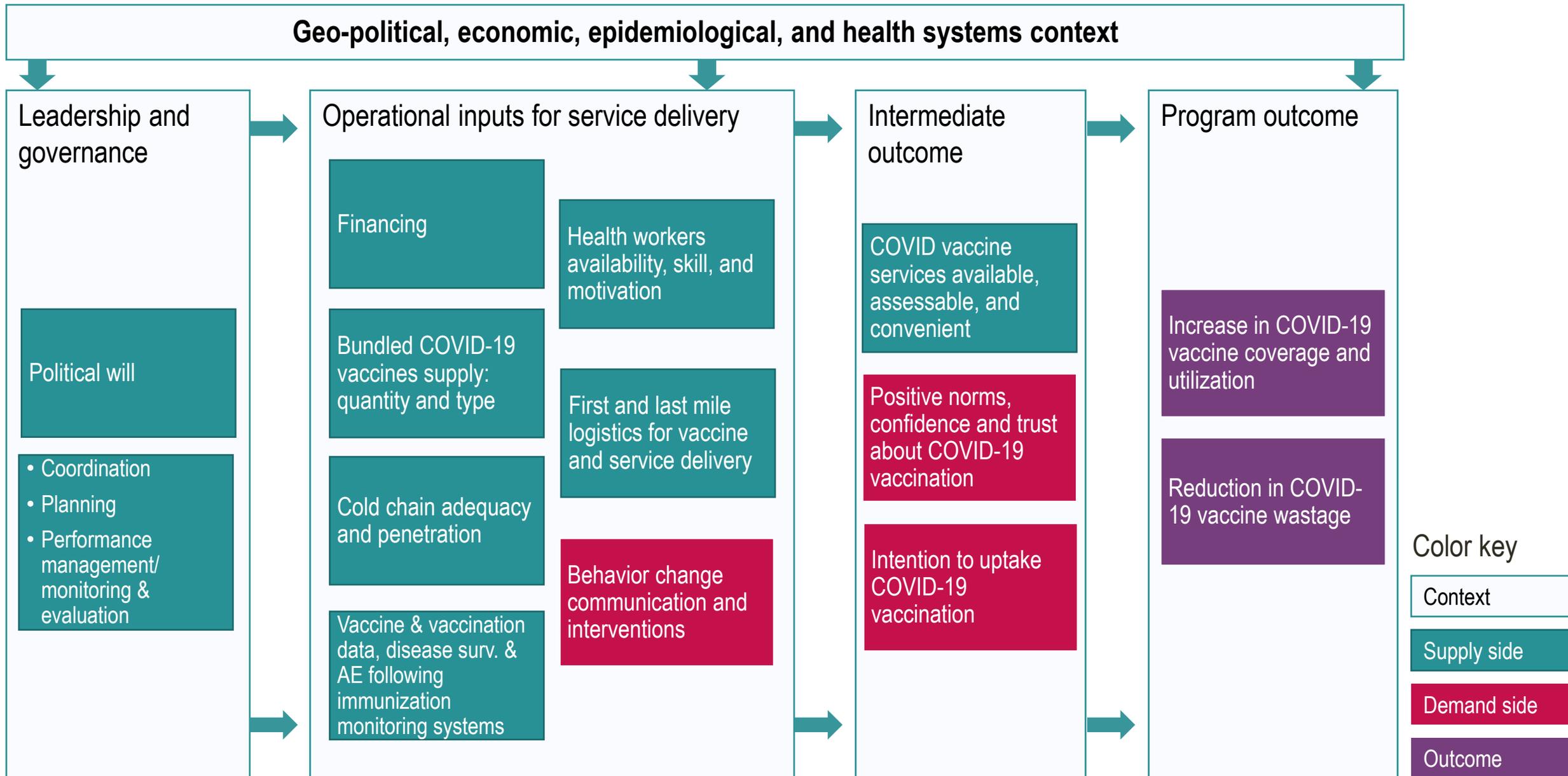
■ Researchers



Appendix



Theory of change: Elements of the COVID 19 vaccine deployment, delivery and demand



Overview of study design, countries, and data sources

Study Design	No. of Studies (N=25)	Countries	Data Sources
Case studies	7	USA (4), Italy (1), Israel (1), China (1)	Program implementation process data (4), facility registers (2), secondary sources (websites) (1)
Observational study (1 time assessment, no control group)	5	USA (4), Italy (1)	Web-based survey (1), state database (1), facility registers (2)
Pre – post study	1	England (1)	Facility registers (1)
Retrospective program evaluation	7	USA (4), Malta (2), South Africa (1)	Facility records (2), primary qualitative data (2), government database, published research reports, internal reports (2), grey sources: newspapers, websites (1)
Cluster randomized trial	1	USA (1)	Electronic medical record (1)
Others (integration ideas, lesson learned from an open-label study, app pilot testing)	4	Israel (1), South Africa (1), Germany (1), Sudan (1)	E-registries (1), program implementation process data (1), unspecified (1)

Number of studies*: Delivery models and target population

Target population	Mass vax	Mobile vax	Fixed vax – health care settings	Fixed vax – non health care settings	System-level delivery insights	Row total
HCW	1		5			6
Pregnant women			2			2
Students & affiliates				2		2
Socially marginalized pop (e.g., IDU)		1	1			2
Gen population	5	4		1	4	14
Column total	6	5	8	3	4	

*Some papers reported more than 1 model. Hence, the row and column totals don't add up to 25

Studies extracted – 1/4

S/N	Author_Year	Country/s of study	Geographic setting	Health care context	Implementer	Study design	Scope of intervention	Target age group	Target population
1	Berry_2022	USA	Rural			Observational study (no control group) with only one time assessment			Specific occupational group
2	Berry_2022	USA		Others (e.g., workplaces, educational institutes, markets, supermarkets, social gathering, worship centers)	Private	Intervention and control group with random assignment	Pilot	Adults	Nursing home residents
3	Cater_2022	England	Rural	Tertiary, community	Public	Pilot before and after study	Pilot	Young adults 18–24, young professionals 25–34, adults 35–49, older adults 50–64	Pregnant & lactating women
4	Cuschieri_2021	Malta			Public	Retrospective program evaluation	Routine national	Adults	General population
5	Grech_2021	Malta	Urban & islands	Tertiary, community	Public	Retrospective program evaluation	Routine	Adults	Specific occupational group: HCWs, community pharmacy staff, teachers, elderly (+60y), medically vulnerable groups
6	Martinez_2022	United States (Mexico border counties)	Urban	Community	Public	Retrospective program evaluation	Routine sub national	Adults	General population

Studies extracted – 2/4

S/N	Author_Year	Country/s of study	Geographic setting	Health care context	Implementer	Study design	Scope of intervention	Target age group	Target population
7	Hirshberg_2021	USA		Primary	Private	Observational study (no control group) with only one time assessment	Pilot		Pregnant & lactating women
8	NASN_2021	USA	Urban	Community	Public	Retrospective program evaluation	Routine sub-national	All ages	General population
9	Reddy_2021	South Africa	Peri-urban	Tertiary	Public	Retrospective program evaluation	Routine sub-national	Adults	HCW
10	NASN_2022	USA		Others (e.g., workplaces, educational institutes, markets, supermarkets, social gathering, worship centers)	Civil society organization	Retrospective program evaluation	Routine national	Not stated	General population
11	Alcendor_2022	USA	Urban, rural, security challenged	Community	Academic institution	Retrospective program evaluation	Pilot	Adults	People in vulnerable situations
12	Andrade_2021	USA	Urban	Community	Academic institutions	Case studies	Pilot	Adults	Frontline health care worker
13	Brambilla_2021	Italy	National	Mass vaccination in non-health care setting	Public	Case study	National	All ages	All population groups attending mass vaccination

Studies extracted – 3/4

S/N	Author_Year	Country/s of study	Geographic setting	Health care context	Implementer	Study design	Scope of intervention	Target age group	Target population
14	Fareed_2021	USA	Urban	Community	Academic institutions	Observational study (no control group) with only one time assessment	Pilot	Adults	Frontline health care worker
15	Fischl_2022	USA	Urban	Community	Public	Case studies	Pilot	Adults	
16	Jaffe_2022	Israel	All	Others	Public	Other	Routine national	Not stated	Working adults
17	Heidari_2022	USA	Urban	Community	Academic institutions	Case studies	Pilot	Adults	
18	Mohamed_2022	Sudan	All			Commentary		Adults	People in vulnerable situations (e.g., IDPs, conflict-affected locations, disaster-affected areas)
19	Sanchez_2021	USA	Urban	Tertiary	Academic institutions	Case studies	Pilot	Adults	Frontline health care workers

Studies extracted – 4/4

S/N		Country/s of study	Geographic setting	Health care context	Implementer	Study design	Scope of intervention	Target age group	Target population
20	Rosen_2021	Israel	National	Primary	Academic institutions	Case studies	Routine national	Adults	People with co-morbidities
21	Signorelli_2021	Italy	Urban	Mass vaccination in non-health care setting	Private	Observational study (no control group) with only one time assessment	Pilot		General population
22	Goga_2021	South Africa	Urban	Primary	Academic institutions	Main objective: phase 3B open label, but secondary objective focuses on 10 lessons learned	Pilot	Adults	Specific occupational group
23	Noack_2022	Germany	Urban	Tertiary	Private sector	Pilot testing of an app	Pilot	Adults	Immigrants
24	Jin_2021	China	Urban	Community	Public	Case studies		Adults	General population
25	Mutakabbir_2021	USA	Urban	Community	Academic institutions	Observational study (no control group) with only one time assessment	Pilot	Not stated	General population

Thank you

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