Guidance on operational microplanning for COVID-19 vaccination

INTERIM GUIDANCE

16 NOVEMBER 2021

World Health Organization

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WHO continues to monitor the situation closely for any changes that may affect this interim guidance. Should any factors change, WHO will issue a further update. Otherwise, this interim guidance document will expire 2 years after the date of publication.

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Acronyms

AEFI	adverse events following immunization
CBO	community based organization
CSO	civil society organization
EIR	electronic immunization registries
GIS	geographic information system
IDP	internally displaced persons
NDVP	national deployment and vaccination plan
NGO	non-government organization
NITAG	national immunization technical advisory group
PFM	public financial management
PPE	personal protective equipment
RCCE	risk communication and community engagement
RED	reaching every district
SAGE	strategic advisory group of experts
UCC	ultra-cold chain
WHO	World Health Organization

Introduction

At the national level, planning for COVID-19 vaccine deployment focuses on creating an enabling policy environment, procurement system and resource allocation. Successful implementation requires a collaborative effort between governments, private sectors, development partners and communities. At district and sub-district levels, successful introduction, uptake and equitable distribution of COVID-19 vaccines depend on robust and continuously funded operational microplanning.

Microplanning for COVID-19 vaccination involves developing a detailed roadmap for implementing COVID-19 vaccines in the catchment area of a primary health care facility or corresponding institution. The microplan includes components necessary for management of human resources, vaccines and logistics; demand generation and communications; service delivery; and community engagement.

An operational microplan is not just a collection of spreadsheets and budgets. Rather it acknowledges human, financial, and logistical resources as well as the geographical, demographic, and socio-cultural attributes of the resident population and target community groups.

There are key distinctions between childhood routine immunization and COVID-19 vaccination. The populations to be vaccinated are larger; the multiple age ranges need tailored strategies for delivery, demand and uptake; and planning will need to be regularly revisited and updated over at least a two-to-three-year period as vaccine availability increases and products evolve.

COVID-19 vaccination microplans should be tailored to specific contexts and linked with operational aspects of immunization and other programmes for addressing such issues as difficult access and scarce resources. Therefore, planners and immunization programme managers should refer to and build from other routine immunization and VPD-specific microplanning experiences and data inputs, as relevant and feasible, to help inform this process.

Microplanning for COVID-19 vaccination is a continuous process that depends on the type and supply of vaccines, demand and uptake and findings from monitoring and involves re-evaluation and revisions for leveraging resources and opportunities.

Purpose of the document

This document provides operational guidance and information to support planners and immunization programme managers at the national and sub-national levels on microplanning for COVID-19 vaccination implementation. The tools can be adapted based on context-specific requirements and used in harmony with plans and guidance already in place (notably given the rapidly and continually changing COVID-19 situation and vaccine supply).

The World Health Organization (WHO) and its immunization partners recommend operational microplanning for vaccination services using a bottom-up approach, based on the context and challenges and implementing locally feasible solutions. *(1)* To support governments, WHO has developed tools and guidance to strategically plan for COVID-19 vaccine deployment at the national level to maximize reach while addressing challenges. *(2,3)*

This document provides a conceptual framework and guidance on COVID-19 vaccination microplanning.

Target audience

This guidance is directed at district and sub-district level authorities, immunization programme managers and supervisory staff from health and other related departments, as well as institutions and stakeholders responsible for planning, implementation and monitoring of COVID-19 vaccination.

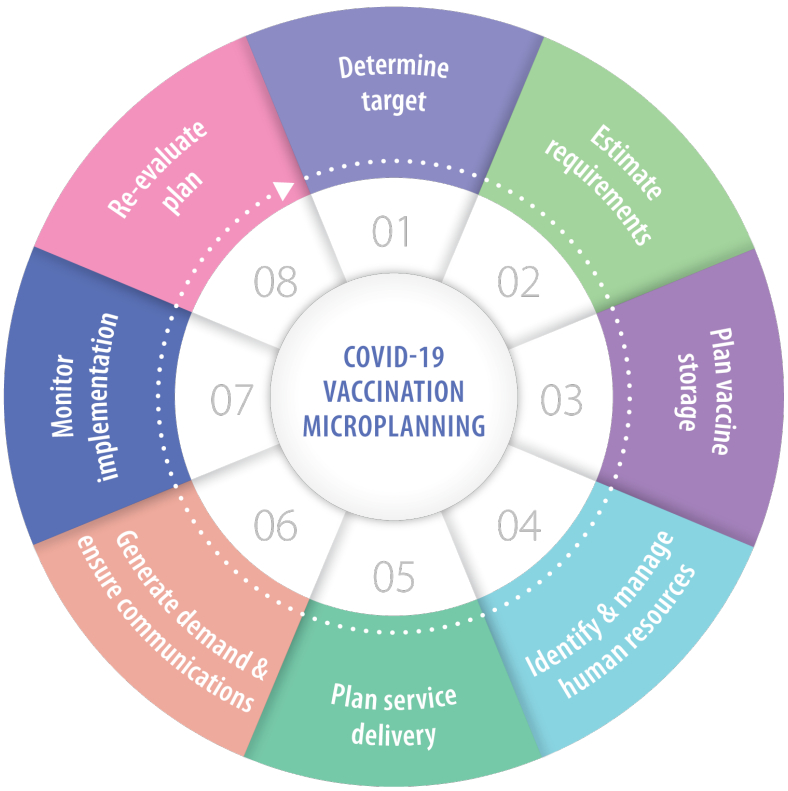
Scope and organization of the document

This guidance is based on the core principles of the values framework for allocation and prioritization of COVID-19 vaccines as recommended by the WHO Strategic Advisory Group of Experts (SAGE), *(4,5)* operational strategies outlined in the WHO guidance for developing National Deployment and Vaccination Plan (NDVP), *(6)* "Reaching Every District" (RED) strategy for immunization microplanning, COVID-19 vaccine implementation guides used in other WHO's regions, and other guidance developed by immunization partners on different aspects of COVID-19 vaccination.

The conceptual framework in this document envisages a systematic eight-step process for microplanning (Figure 1), with recognition that this needs to be harmonized/merged with what countries are already using. These planning steps are further described in separate sections, each including key messages, operational guidance, specific activities required for planning, budget allocation, mapping, and a list of additional resources on the topic. Standard tools and procedures to facilitate planning in each step are given at the end of the document. These tools can be adapted depending on the context and requirements.

This is a living guidance and will be revised periodically based on newer guidelines. Countries are encouraged to adapt the information in this operational guide based on their current COVID-19 vaccination situation and to consider needs for increased resourcing and allocation of additional resources. Countries are also encouraged to use this guidance as a means to develop a living microplan that can be continually revisited and updated for real-time use.

Fig.1. Eight-step process for COVID-19 vaccination operational microplanning



Major challenges with COVID-19 vaccination

Implementing COVID-19 vaccination involves the introduction of multiple, newly developed vaccines meant for a wide range of age groups, with more products to be added in the coming months and years.

Challenges associated with COVID-19 vaccination – which vary according to context and vaccine availability – are as follows:

- age of high-risk groups and vulnerable individuals outside the routine immunization system for infants and adolescents
- erratic and unpredictable supply - limited availability and uncertainties about the timing of vaccine arrival
- short shelf life, complex vaccine handling and stringent storage requirements for some vaccines (such as Ultra-Cold Chain (UCC))
- management of multiple vaccine products with differing vaccine efficacy, target age groups and recommended schedules and novel vaccine presentations
- limited and rapidly evolving information on the vaccine supply, future immunization schedule and the need for booster/subsequent doses
- limited and already stretched human resources requiring rapid capacity building
- urgency to deliver vaccine to specific sub-population group during a crisis, including when health systems may be under strain
- adequate communications and information sharing about different vaccines and managing misinformation, rumors and other concerns that can impede uptake and confidence
- management of expectations and preferences when vaccine supply is constrained while motivating people to get vaccinated in places where vaccines are available
- timely access to resources by vaccinators or at point of service because of less conducive spending environments.

Attributes of a COVID-19 vaccination microplan

1. **CLEAR** in describing the specifics about who should receive the available vaccine and where and when; and the strategies, roles of people/organizations/groups, individual responsibilities, and resources involved in planning, management, implementation, mobilization, supervision and monitoring of the vaccination activities
2. **FLEXIBLE,** so that the plan can be updated rapidly and effectively, particularly given rolling (and at times uncertain) cycles of vaccine supply and introduction of new vaccine products, each with different specifications
3. **REALISTIC,** planning for individual teams to vaccinate target populations based on the context of the geographic area, fiscal space and services to be offered to ensure timely and optimal use of available vaccines
4. **TESTED** and validated by supervisors in the field before it is finalized and implemented and not just endorsed by higher-level administrators
5. **ADAPTABLE,** for need-based changes and expansions in service delivery considering accumulated evidence and emerging situations to ensure equitable distribution of quality vaccination services
6. **INTEGRATED,** linking COVID-19 vaccination plans and strategies to existing vaccination and other health programmes for leveraging existing systems, where feasible.

Planners and immunization programme managers should understand and anticipate these challenges and recognize their inter-dependencies to develop realistic and actionable COVID-19 vaccination microplans. **To ensure planning based on local context, challenges and specific requirements, the microplanning process should be led by district and/or local level authorities.**

Objectives of microplanning for COVID–19 vaccination

- Resource and implement COVID-19 vaccination in a strategic and prioritized manner aligned with the national deployment and vaccination plan (NDVP) for COVID-19 vaccines for effective rollout, acceptance and uptake of vaccines by high-risk population groups and vulnerable individuals.
- Ensure equitable delivery and uptake of available COVID-19 vaccines in catchment areas, regardless of location, social condition, gender or any other discriminatory criteria.
- Enable programme managers to deliver multiple COVID-19 vaccines with different specifications in the same or different timeframes with clear communication to complement the delivery of multiple vaccines.
- Optimize COVID-19 vaccination service delivery while simultaneously ensuring continuity and integration with routine immunization programme, vaccination campaigns targeting older age groups and essential health services.

Major Considerations

Prioritize high-risk population groups and vulnerable individuals

WHO's Strategic Advisory Group of Experts (SAGE) on immunization recommends phased introduction of COVID-19 vaccination depending on:

Epidemiologic setting and different scenarios of constrained vaccine supply

- **Different epidemiologic settings for COVID-19 transmission** – community transmission, cluster of cases, sporadic cases and no cases.
- **Different scenarios based on vaccine supply –**
  - **Stage I** scenario of very limited vaccine availability (ranging from 1–10% of each country's total population) for initial distribution
  - **Stage II** scenario as vaccine supply increases but availability remains limited, (ranging from 11–20% of each country's total population)
  - **Stage III** scenario as vaccine supply reaches moderate availability (ranging from 21–50% of each country's total population).

Strategic guidance on prioritization to guide overall COVID-19 vaccination plan.

- Values framework for the allocation and prioritization of COVID-19 vaccination (WHO SAGE)
- Roadmap for prioritizing use of COVID-19 vaccines in the context of limited supply (WHO SAGE)
- Vaccine specific recommendations *(7)*

High-risk population groups and vulnerable individuals at greater risk of acquiring infection, transmitting the disease or of developing severe disease or dying should be identified and prioritized for COVID-19 vaccination (Annex 1). This prioritization should be done nationally by the health ministry based on the advice of the national immunization technical advisory group (NITAG) and/or expert group. At the district/sub-district level, immunization programme managers should follow the national guidelines on prioritization while considering population groups that are vulnerable because of inequities or because they are in humanitarian settings.

Deciding service delivery strategies

Routine immunization programmes and vaccination campaigns targeting older age groups ollow service delivery approaches such as health facility based fixed sites, community-based outreach sites, mobile teams and mass vaccination. These approaches can be used for COVID-19 vaccination with required adaptations. Identifying and tailoring appropriate service delivery strategies will help to make vaccination services more accessible and acceptable by targeted high-risk population groups and vulnerable individuals. The microplan should consider the following:

- **Acceptability:** social customs, religious and cultural norms, trust in public services and communications, timing, location (safety and reliability), preferences and past experiences
- **Accessibility:** terrain, location (such as remotely located and hard to reach high-risk rural populations, minority populations (including migrants and tribal groups), highly mobile or nomadic populations, conflict-affected areas and fragile contexts
- **Approachability:** behaviour (and socio-religious status) of vaccinators and frontline workers, areas with poor health services (urban slums and new and informal settlements) and perceived quality, confidence and trust in services

Vaccine-specific characteristics, such as mode of administration and dosage should also be considered while deciding on service delivery strategies.

Adaptability of plans to factor in supplies of different COVID-19 vaccines

Depending on the context, health facilities may receive supplies of different vaccine types at the same time. This may require planning for the following situations:

- **Storage,** if the vaccines have different cold chain requirements
- **Earliest expiry first out,** if different vaccines have shorter usable shelf life or are close to the expiry date *(7)*
- **Stock management,** for ensuring adequate supply of second doses and monitoring utilization by product
- **Mixed schedules** if individuals receive doses of different products in their primary series or boosters
- **Administration,** if a different number of doses is needed to complete the schedule or there are different intervals between doses
- **Wastage,** if times after reconstituting or taking out of the cold chain are different
- **Acceptance,** if the community has hesitancy or preference for a specific vaccine product or products due to concerns related to vaccine safety, confusion about multiple vaccine availability and general mistrust in vaccines.

The decision to use (and feasibility of using) different vaccine products simultaneously in a catchment area will depend on the level of logistical capacity, health worker skills, sociodemographic context, and geography. Planners and immunization programme managers must ensure that different vaccine types do not get mixed during storage or transportation or at the time of administration.

Resources deployed for COVID-19 vaccines rollout should be utilized, whenever possible, as an opportunity to strengthen routine immunization and Primary Health Care (PHC) systems. Therefore, microplans for COVID-19 vaccination should be compared and aligned with the other immunization/ PHC annual plans for at least the next 2–3 years.

Simplify COVID-19 vaccine deployment and management and minimize the risk of programme errors by minimizing the number of different COVID-19 vaccines at service delivery level.

Given the quickly changing vaccine landscape, allocation at the national level of specific products to particular geographies should be clearly articulated as soon as product availability is known, to help subnational levels adapt their plans accordingly.

Provisions for adequate operational funding and human resources

COVID-19 vaccination will require funding to implement all related activities like vaccine and logistics management, human resource strengthening, demand generation and continuous communications. Therefore, planners and immunization programme managers should consider short- and mid-term funding requirements in their microplans. Operational costing and projections should be developed for a relatively short period (such as for immediate 6 month needs and aligned with annual and/or supplementary budget and planning timelines) and revised periodically based on the latest updates on vaccine supply and recommended strategies. *(9)*

It is important to plan and budget for COVID-19 vaccination while maintaining the budget for ongoing routine immunization activities (NDVP, Pg19).

The budget requirement will vary among districts due to cost differences, available health infrastructure, target population groups and vaccine delivery strategies. Furthermore, the estimated costing should account for incremental costs specific to COVID-19 vaccines, as well as approximate estimates of ongoing routine immunization and health system costs that will be used for COVID-19 vaccine deployment. The budget section of the microplan should be reviewed and revised regularly and/or as per needed to address situations as they evolve. *(10)*

Budgetary projections from district/sub-district level plans should feed into national level budgeting and preparations to ensure availability of required resources in advance at the service delivery level.

Microplans should also ensure that the immunization workforce is sufficient to undertake COVID-19 vaccination without compromising routine immunization and other essential health services. Immunization programme managers could consider involving/hiring additional vaccinators, social mobilizers and support staff from the private sector.

Digital microplanning for equitable access and delivery of COVID–19 vaccines

Digital microplanning involves the use of geospatial data and technologies, including geographic information systems (GIS), to support the planning and monitoring of service delivery at the health facility and community levels. Digital microplanning for COVID-19 vaccination should start with development of digital maps of health facility catchment areas, ensuring that all settlements and populations are mapped for inclusion in the microplan. This will also include mapping of cold chain storage facilities and warehouses to facilitate development of storage and transportation plans.

Digital microplanning ensures that all population sub-groups are accounted for (including the settlements on the edges of catchment areas), geographic access-related gaps are identified and planning for outreach activities is optimized to ensure equitable distribution and reach of services. (*11*, *12*, *13*)

Conceptual framework for COVID–19 vaccination microplanning

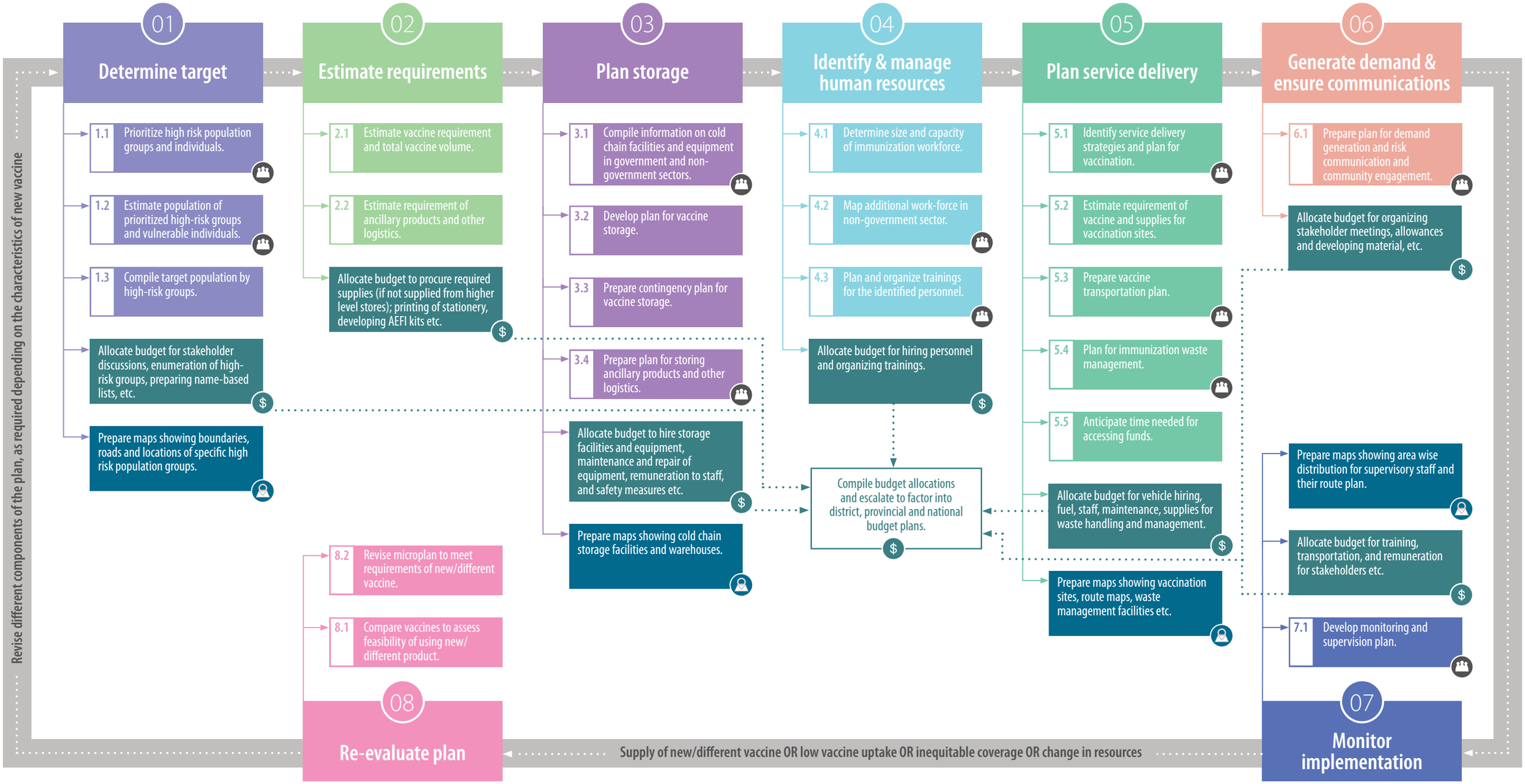
A conceptual framework outlining eight critical steps required for microplanning, the activities involved in each step and their inter-relationship is illustrated in Figure 1 (below). Objectives of each of these eight steps are summarized in Table 1. More details about each of these steps appear in subsequent sections of this e-document.

Table 1. Steps in COVID-19 vaccination microplanning and its objectives

Step		Objectives
1.	**Determine target**	Identifying and prioritizing high-risk groups and vulnerable individuals; estimating target population using available data sources for each sub-group to facilitate phased roll out of COVID-19 vaccination; allocating budget for activities related to enumeration of target population; and developing catchment area maps indicating high-risk populations in the catchment area
2.	**Estimate requirements**	Estimating requirement of COVID-19 vaccines, ancillary products and other logistics based on target estimates; and calculating total vaccine volume to facilitate planning for their storage
3.	**Plan vaccine storage**	Measuring cold chain storage capacity available for different temperature ranges; developing vaccine storage plan; developing contingency plan for vaccine storage; developing plan to store ancillary products; allocating budget for hiring storage facilities and remunerating personnel; and developing maps showing storage facilities to guide vaccine and logistics transportation plan
4.	**Identify and manage human resources**	Assessing available immunization workforce for service delivery and demand generation in the catchment area; mapping of workforce in the non-government sector for need-based deployment; developing plan for trainings for different cadres of staff on COVID-19 vaccination; and allocating budget for hiring/ deploying additional vaccinators and other personnel and organizing trainings
5.	**Plan service delivery**	Identifying appropriate service delivery strategies for different high-risk groups and vulnerable individuals (including defaulter tracking and second/subsequent doses); preparing service delivery plans and associated communication needs; estimating requirement for vaccine and ancillary products for vaccination sites; and developing vaccine transportation and waste management plans
6.	**Generate demand & ensure communications**	Developing data-driven, evidence-based, tailored plans for demand generation and risk communication and community engagement for different high-risk groups (including health workers); and allocating budget and resources for implementing planned activities
7.	**Monitor implementation**	Identifying supervisory personnel from health and other relevant departments and stakeholders; developing monitoring and supervision plan for different stakeholders; allocating budget for transportation and remuneration to supervisory staff from other departments and stakeholders; and preparing maps showing supervisor catchment areas
8.	**Re-evaluate plan**	Reviewing and updating various components of the microplan when new/different COVID-19 vaccine is supplied, if the coverage targets or equitable access are not met or if available resources change

The conceptual framework should be reviewed and updated regularly as more COVID-19 vaccines with different characteristics are introduced and supplied, if vaccination targets are not being met or as monitoring detects additional needs for resource delivery and improving vaccine uptake among high-risk groups and vulnerable individuals.

Fig.2. Conceptual framework for COVID-19 vaccination microplanning



Step 1
Determine target

KEY POINTS

- Planners, immunization programme managers and major stakeholders should coordinate to identify high-risk groups in their catchment areas, estimate their numbers and identify appropriate service delivery strategies for each of them.
- Obtain accurate estimates of targeted high-risk groups to define strategies, allocate resources, ensure vaccine availability, undertake rollout planning and measure vaccination coverage.
- Assess types and number of target population groups two to three months in advance of the anticipated receipt of the vaccine(s) so that required supplies of vaccines can be ordered and logistics arranged to ensure timely delivery.
- Compare national estimates with locally available data or sources and adjust if necessary to ensure realistic planning.
- When estimating the numbers of high-risk population groups and individuals, minimize the double counting of people belonging to more than one target group (for example, an older individual who also has cancer or other underlying health condition). This can be done by triangulating estimates/lists from different sources. However, the risk of underestimating high-risk populations should outweigh the risk of double counting.
- Immunization programme managers from neighboring health care facilities should mutually confirm their catchment area boundaries to ensure that all settlements and populations are included, and none are double counted.

Operational guidance

The biological, social and occupational characteristics associated with increased risk of severe disease or death from COVID-19 have been well established (see Annex 2). WHO SAGE recommends prioritizing these high-risk groups according to the vaccine supply and the status of COVID-19 transmission in high-risk areas.

Countries are advised to follow the WHO SAGE's recommendations for prioritizing target groups on using available vaccines, taking into consideration national contexts.

The decision-making process should be led nationally by NITAG or technical advisory groups, in wide consultation with stakeholders (NDVP, Pg 15).

- Follow the guidance provided by the national and/or provincial government for selecting and prioritizing high-risk groups and individuals for phased vaccination roll out.
- Depending on the local context, the degree of equity and any situations calling for a humanitarian response, inform and seek guidance from responsible and respected local authorities and stakeholders for selecting and prioritizing high-risk population groups.
- Discuss and agree on significance and criteria for prioritizing specific population groups with the concerned district- and higher-level authorities before including them in the priority list for COVID-19 vaccination.

1.1 Prioritize high-risk groups and vulnerable individuals

- **List all high-risk population groups residing in the catchment area.**

  TOOL: Use planning format 1 for listing high-risk groups (refer to Example A on page 47 of this document). The suggested format includes some pre-defined high-risk groups based on WHO SAGE recommendations. Planners and programme managers can adjust these groups or add/remove depending on the local context.

- **Prioritize each of these population groups according to the national guidance for various stages of vaccination depending on vaccine availability.**
  These stages are – (1) vaccine available for 1–10% of population; (2) vaccine available for 11–20% of population; and (3) vaccine available 21–50% of population.

1.2 Estimate the population of each targeted high-risk group

- **Identify the number of individuals to be vaccinated in each identified high-risk group.**

  Estimate the population of high-risk groups locally using in-country or publicly available data sources such as electoral records, service data and departmental records. Utilize all existing and feasible data sources, both within and outside of immunization programme for making realistic estimates. In some areas, mapping will be required to locate different communities before making estimates about their population. More details on various field-based and estimated sources of population data are given in Annex 3.

- Consider and triangulate various data sources, such as GIS technology (for more rural or dense urban areas) and local population counts (for mobile/nomadic groups) for making realistic population estimates. Use the best possible data available; this might include informally surveying personnel on the ground to get estimates. Availability of real-time data or realistic estimates about the size of high-risk population groups is important both strategically and operationally. This facilitates:
  - ✔ evidence-informed decision-making regarding vaccine and logistics requirement
  - ✔ planning and monitoring of vaccine availability
  - ✔ monitoring and tracking of vaccine uptake.

It is important for countries to obtain accurate estimates of relevant target populations to facilitate allocation of resources, vaccine procurement, deployment planning and to measure vaccination coverage achievements (NDVP, Pg 31).

- **Prepare a list of targeted individuals**

  Prepare a **name-based list** of health workers, high-risk individuals having underlying health conditions and other essential workers (where possible). This will help in:
  - prioritization for vaccination based on individual level of risk
  - facilitate name-based tracking for complete vaccination
  - identifying trained health workers for engaging them in COVID-19 care related activities.

  In settings where enumeration and preparing name-based lists are not feasible, a general estimate can be made based on the information about the number of these targeted individuals.

  Health workers. All health workers (including community health workers who come in direct contact and may be at risk of being exposed to individuals with COVID 19), irrespective of their cadres, sector (public or private) or professional qualification (qualified, informal practitioners and those practicing traditional medicine) should be considered for vaccination depending on their level of risk.

  People with underlying health conditions. In areas with capability to pre-register for allotting and scheduling specific vaccination dates, individuals with underlying health conditions should be prioritized. If data on people with underlying health conditions are unavailable, programme managers in these areas can use regional projections on disease burden to make an estimate.

  Ideally, denominators should be based on country-level data, but in-country sources can be triangulated with and compared with publicly available data at global/regional level.

  In areas where the health system is poor, health facility data is incomplete/unavailable and in hard-to-reach areas, robust social mobilization can help identify these individuals. Reaching out will also require targeted, continuous communication activities to generate awareness in communities. Additional efforts are also required for individuals living in fragile settings and conflict-affected areas.

  Essential workers. Individuals working in essential jobs including education, municipalities, police and the army, also comprise a priority group for vaccination. Data on such essential workers should be organized by department.

  TOOL: Use planning format 2 (provided at the end of document) for preparing the list of health workers and individuals with underlying health conditions.

1.3 Compile the target population of different high-risk groups

- Compile the population of all targeted high-risk group according to the stage of vaccination.

  Compiled population figures will facilitate calculation of requirements for vaccines and ancillary products according to stage of vaccination and for planning service delivery.

  TOOL: Use planning format 1 for compiling the target population of each sub-group (see Example B).

  Plans can be made to vaccinate the remaining population consisting of individuals who do not belong to any targeted high-risk group after all prioritized groups have been covered (depending on vaccine availability) or after integration of COVID-19 vaccination with routine immunization, when applicable. Programme managers should also estimate this remaining population by catchment area and compile it in the same planning format.

Allocate budget for

- meeting expenses for stakeholder discussions based on number of participants, travel, location (urban, peri-urban, rural) and allowances (where applicable)
- remuneration to local community members for enumerating people in population groups such as high-risk groups affected by inequities or those in humanitarian settings
- cost of preparing name-based lists including remuneration and travel expenses involved in visiting long term care facilities, medical institutions and other settings
- developing GIS maps of the catchment area

COMPILE ITEM-WISE SUMMARY IN PLANNING FORMAT 16

Prepare maps

GIS and/or local hand-drawn maps showing boundaries of the catchment area, terrain, road connectivity and locations of specific high-risk groups, long-term care facilities and communities in difficult to reach geographies.

Step 2
Estimate requirements

KEY POINTS

- Early planning, with regular monitoring and adjustments, is key for success.
- Consider vaccine-specific recommendations for dose schedule, use of booster/subsequent doses, vaccination of children and pregnant women, rates of vaccine wastage and requirements for buffer stock while calculating vaccine requirements.
- Use experiences from annual influenza vaccination (where applicable) and other mass vaccination campaigns for context-specific guidance on estimating ancillary products.
- Ensure safety plans to safeguard stocks of vaccines and ancillary products at district and sub-district level stores and during their distribution.
- Follow guidelines on infection prevention and control and immunization waste management while estimating logistics requirements.

2.1 Estimation of vaccine requirement and total vaccine volume

Requirements for COVID-19 vaccines should be calculated in number of doses. This will depend on the number of individuals targeted in different stages of vaccination, and the total number of doses required depending on the vaccine characteristics (vaccination schedule and need for booster/subsequent doses). *(14)*

TOOL: Use planning format 3 for calculating vaccines doses required and their vaccine volume.

2.2 Estimation of ancillary products and logistics

Requirement of ancillary products and other logistics will depend on the number of individuals to be vaccinated; number of service delivery sessions/sites; available vaccination staff; and whether they are consumable or non-consumable.

Make estimates of ancillary products and other logistics separately for different stages of vaccination, considering product-specific wastage rates and buffer stock requirements. This will ensure availability in different stages and matching of the stock with available storage space. Estimates for requirements and available stock should be monitored and updated on a regular basis.

Table 2. Details of the logistics required for COVID-19 vaccination

Type of item	Rationale for estimation	Details
Injection syringes (for vaccine administration and reconstitution, if required)	Individuals vaccinated (doses)	Number required will depend on the presentation – single unit syringes, or syringes and needles (where supplied separately). The type of syringe, its graduation and the size of the needle will depend on the vaccine characteristics. Only syringes supplied for COVID-19 vaccination should be used. Syringes designated for other immunizations should not be used for COVID-19 vaccination. Estimates of injections required for COVID-19 vaccination should be done separately from routine immunization.
Masks	Sessions organized	Types of masks (and based on context, other personal protective equipment) to be used by the vaccinators and other team members will be according to the national guidelines for COVID-19 infection prevention and control (IPC). It is important to factor replacement of masks (and other PPE) as required in cases of spatters, defective items, etc. Inclusion of social mobilizers and community health workers in the cost estimates for masks and sanitizers is important.
Bags or safety boxes for segregating immunization and other waste	Sessions organized	Types of bags/safety boxes to be used at the COVID-19 vaccination sites will be according to the national guidelines for waste management.
Registration and vaccination cards	Individuals vaccinated (doses)	To be designed and developed at the national level, with considerations for areas with poor internet or communications access. One vaccination card (or card with counterfoil) will be required for each person vaccinated as his or her personal record. As appropriate, a registration card can be used for provider record. *(15)*

Type of item	Rationale for estimation	Details
Infection prevention and control supplies	On need basis (or depending on the number of sessions in areas with limited supply)	This includes -soap (liquid or cake); hand sanitizer (gel or spray) with recommended alcohol content and cotton swabs for cleaning the injection sites
Stationery (for reporting etc.)		Vaccination cards, tally sheets, recording registers, AEFI reporting formats
Communication material		Behaviorally informed messaging and identification of locally available optimal channels to reach priority groups (such as radio/television/social media/ loudspeakers and/or community-based media, mobilization of CSOs and CBOs or other influencers, continuous interpersonal communication, display banners, handouts etc.)
Waste handling		Safety boxes, bins, garbage and waste management bags (and transport of waste, as applicable)
Cold chain equipment		Cold boxes, vaccine carriers, coolant packs
AEFI kit		Content of the kit should be standardized at the national level.
Manuals		COVID-19 vaccination manual/guidelines/frequently asked questions

Allocate budget for

- syringes, if not supplied from national/provincial stores
- purchase of supplies for infection prevention and control and waste management, if not supplied from national/ provincial stores
- purchase/maintenance of cold chain equipment (cold boxes, vaccine carriers, coolant packs)
- printing of stationery (vaccination cards, tally sheets, recording reporting formats, manuals/guidelines) and communication material for use at session sites, facility level and for dissemination
- development of kits for managing adverse events following immunization (AEFI) and organizing training on their use.

COMPILE ITEM-WISE SUMMARY IN PLANNING FORMAT 16

Step 3
Plan vaccine storage

KEY POINTS

- Ensure updated data about storage space required and available and vaccine-specific requirements to facilitate rapid storage planning in case of unanticipated vaccine deliveries.
- Store different COVID-19 vaccine products in separate cold chain equipment if feasible. If not feasible, ensure that the different vaccine products are physically separated from each other, clearly marked and do not get mixed together in storage, during transportation, and at time of administration.
- Plan and acquire required vaccines on weekly, bi-weekly, or monthly basis depending on the availability of storage space, distance from district/ provincial/regional store, time lapse in receipt/distribution and the shelf life of vaccine product.
- In case of outsourced vaccine storage (and transportation), establish independent monitoring procedures and robust contracting processes to guarantee compliance with guidelines and vaccine quality.

Operational guidance

All available COVID-19 vaccines must be stored at recommended temperatures at designated cold chain facilities. The recommended storage temperature range varies for different COVID-19 vaccines. Furthermore, immunization programme managers must ensure undisrupted continuation of routine immunization and other essential health services after COVID-19 vaccination rollout. Vaccines and temperature-sensitive pharmaceuticals used in routine immunization and health services also must be stored at cold chain points under recommended temperature conditions. Planners and programme managers must consider these factors while planning for storage of COVID-19 vaccines, according to vaccine specific requirements as their storage shifts from colder to warmer temperatures.

Ensure availability of the following information before planning for storage of COVID-19 vaccines:

- available (and functional) cold chain equipment and infrastructure at government and non-government facilities and institutions of the catchment area.
- storage temperature range in the available equipment and facilities (+2 to +8 °C, -20 °C and -80°C to -60°C or as per product characteristics of available COVID-19 vaccines and well-communicated guidance)
- cold chain space required for storing routine immunization vaccines and temperature sensitive pharmaceuticals.
- replenishment and supply of coolant packs.

3.1 Compile information on cold chain facilities and equipment

Most health facilities have information regarding available cold chain facilities and equipment either as part of their departmental record/inventory; in microplans for the immunization programme and other vaccination campaigns; or from recent national cold chain inventories. Planners and programme managers should review information on available storage temperature range and space after excluding routine immunization vaccines and temperature sensitive pharmaceuticals for planning storage of COVID-19 vaccines. *(16)* The institutions to be covered during assessment include hospitals, drug stores, pharmacies, blood banks, medical and nursing institutions.

TOOL: Use planning format 4 for compiling up-to-date information on the available cold chain infrastructure in the catchment area.

In addition to keeping up to date the information on available storage space in the power-operated cold chain equipment (such as refrigerators and freezers), programme managers should also update inventory for temporary containers such as vaccine carriers and cold boxes. Inventory records or tools used to collate information during other vaccination campaigns and/or routine immunization can be used for this exercise. This information is critical for planning transportation of vaccines and for storing them in emergency situations such as equipment or power failure or any other contingency.

3.2 Develop vaccine storage plan

Development of the COVID-19 vaccine storage plan should be based on triangulation of the following three data elements:

- **required storage space** based on the estimated vaccine requirement (planning format 3)
- **available storage space** for COVID-19 vaccines **in government and non-government sectors** after excluding space required for storing routine immunization vaccines and other medical supplies (planning format 4)
- **vaccine specific information –** number of doses in supply or supplied, shelf life/date of expiry and the recommended storage conditions.

TOOL: Use planning format 5 to analyze the above information and plan for storing COVID-19 vaccines.

NOTE: When planning for vaccine storage, include at least 25% additional storage space to accommodate surge capacity. **Given the erratic and unpredictable supply of COVID-19 vaccines at this time, programme managers will have to update the vaccine storage plan every time vaccine is supplied and align this in advance with the anticipated doses to be received, type of vaccine and available space.** Consider including security measures for handling specific COVID-19 vaccines and cold chain equipment. Ensure availability of recommended measures such as gloves, goggles, respirator mask, and other required tools (when handling UCC and dry ice). *(17)*

Table 3. Actions and considerations for planning storage of COVID-19 vaccines

Situation	Action	Order of considerations
When vaccine supply is received (or expected)	• Determine the recommended storage temperature for vaccine. • Check availability of storage space in recommended temperature range in government facilities. • Plan to transfer vaccine to the identified government facility with storage space in the recommended temperature range.	• available storage space (also include temporary storage using passive containers) • location and connectivity • situation of power supply • availability of alternate power sources. • security of vaccines during storage and transportation
If sufficient storage space is not available or is insufficient in government facilities	• Check availability of storage space in recommended temperature range at non-government facilities/institutions. • Plan for storing vaccine in identified non-government storage facilities.	• cost of leasing • available budget • distance of the facility • power supply and alternate power sources • security of vaccines during transportation and storage
If vaccines remain even after transfer to non-government facilities or due to other reasons	If adequate storage space is not available in the catchment area to store all remaining vaccines, consider transferring (or returning) the remaining vaccine to adjoining catchment area or district store.	• adjacent catchment area/health facility that has adequate storage space • district/regional store

3.3 Prepare contingency plan for vaccine storage

Contingency plans for equipment failures, power outages, severe weather conditions or natural disasters should be included in microplanning. All personnel in districts and sub-district level facilities responsible for vaccine storage should be aware of standard operating procedures for such situations to prevent damage to vaccines, particularly given the shorter shelf life and limited supply of COVID-19 vaccines. Recommended steps to be followed in such emergency situations are as follows:

- Arrange power supply to the cold chain equipment using alternate power sources.
- Shift the vaccines to other functional equipment with the same storage temperature or to the temporary cold chain devices (cold boxes, vaccine carriers or other insulated containers) with adequate coolant packs, dry ice or other recommended packaging material.
- Transport the vaccines to the nearest storage point with adequate storage space and recommended temperatures.
- Inform and seek guidance from the concerned authority.

The following information should be displayed at all vaccine storage sites

- **Up-to-date contact information with address and phone number for**
  - designated coordinators for COVID-19 vaccination in district and catchment area
  - managerial and technical staff to assist in emergency situations
  - nearby storage facilities (both government and private)
  - power distribution company (public or private, as applicable)
  - service providers for maintenance/repair of:
    - refrigerators and freezers (and non-electrical equipment)
    - temperature monitoring devices
    - alternate power sources (generator, batteries, solar panels)
  - transporters or providers of rented vehicles (refrigerated and non-refrigerated).

- **Protocols for (for available COVID-19 vaccine products)**
  - monitoring vaccines during a power outage
  - packing vaccines for emergency transport
  - transporting vaccines to and from an alternative vaccine storage facility
  - assessing whether vaccine can be used after an emergency.

3.4 Prepare plan for storing ancillary products

Ancillary products required for COVID-19 vaccination, such as syringes and safety boxes, should be stored under recommended conditions to prevent them from damage and theft. Key actions required for planning adequate storage for ancillary products are as follows:

- **Identify and prepare a list of government warehouses and storage facilities** in the catchment area that can store COVID-19 vaccine related supplies and temperature/humidity sensitive items under the recommended conditions.

- **Identify and enlist warehouses and storage facilities in the non-government sector,** along with the cost of hiring. These non-government facilities can be hired in cases of bulk supply or in areas where government warehouses are not available or are insufficient.

- **Evaluate identified storage facilities** for the quality of maintenance, trained staff in adequate number to handle/manage large quantities of supplies, monitoring systems to ensure recommended storage conditions and security systems to prevent entry of unauthorized persons.

Allocate budget for

- Maintenance and repair of cold chain equipment and alternate power supply sources.
- Hiring cold chain storage space as well as warehouses in the non-government sector.
- Monitoring and safety of stored vaccines and ancillary products (additional cost to strengthen security).
- Remuneration to private staff for maintaining and monitoring storage facilities.

COMPILE ITEM-WISE SUMMARY IN PLANNING FORMAT 16

Prepare maps

Maps showing cold chain storage facilities and warehouses in government and non-government sectors to facilitate development of storage and transportation plans.

Additional resources

Immunization supply chain sizing tool. Supply chain tools. World Health Organization. 2021 (https://www.who.int/teams/immunization-vaccines-and-biologicals/essential-programme-on-immunization/supply-chain/supply-chain-tools, accessed 9 October 2021)

COVID-19 vaccination: supply and logistics guidance: interim guidance. Geneva: World Health Organization; United Nations Children's Fund. 2021 (https://apps.who.int/iris/bitstream/handle/10665/339561/WHO-2019-nCoV-vaccine_deployment-logistics-2021.1-eng.pdf, accessed 9 October 2021).

Step 4
Identify and manage human resources

KEY POINTS

- Consider the availability of health staff, responsibilities and workload of existing staff, and additional work required for COVID-19 vaccination before assigning them to COVID-19 vaccination teams.
- Assess the potential need for recruiting additional staff or qualified volunteers, such as retired health workers or medical/nursing students and social mobilizers.
- Initially budget for staff recruitment and training for a short-term basis with focus on COVID-19 vaccination. Integrate this later with overall budgeting for longer-term COVID-19 vaccination expansion and with immunization programme and health system strengthening plans.
- Take the opportunity of COVID-19 vaccination rollout to build on or scale up innovative systems, such as digital tools for training and supportive supervision, social listening and community feedback mechanisms.
- Consider implementing innovative strategies for strengthening capacity of the workforce using virtual platforms such as: online self-learning modules, webinars, use of digital smartphone-based applications, ready reckoners, and social media platforms to share short videos and infographics. The usefulness of this approach will depend on the ability of staff to use the platform.

Operational guidance

COVID-19 vaccination requires a trained and supported workforce with experience in administering injectable vaccines and aware of operational aspects such as maintaining cold chain, recording vaccination, tracking and mobilization of beneficiaries and monitoring and ensuring uptake. In addition to this, staff involved in COVID-19 vaccination should be sensitized on handling and storage requirements of different COVID-19 vaccines; managing multiple product presentation and schedules; targeting wide age-groups; managing multiple product presentations; and ensuring proper infection prevention and control measures at the vaccination sites. Above all, planning and continuous operational funding for human resources should be ensured to prevent disruptions in delivery of essential healthcare and routine immunization services.

Before planning for health staff engagement, it is important to assess (in discussion with them) their current workload and how many hours and days they can manage for COVID-19 vaccination or support activities. COVID-19 vaccination requires a team approach with number and types of team members depending on service delivery strategy, target population and socio-geographic characteristics of the catchment areas. *(18)*

Immunization programme managers should plan for multi-disciplinary and multi-cadre teams comprised of:

- vaccinators
- recorders
- auxiliary personnel to support organizing sessions, manage supplies and ensure infection prevention and control measures and crowd management
- personnel for advocacy, communications and community mobilization
- supervisory staff
- support staff for transportation, security and other needs.

4.1 Determine size and capacity of the immunization workforce

Determine the number, workload and capacity of the health workforce available at the government health facilities in the catchment area.

TOOL: Use planning format 6 to compile the details of personnel identified for COVID-19 vaccination-related activities. The listing of health workers in planning format 2 will facilitate this assessment.

Discuss with the health staff and relevant stakeholders the following

- number of vaccination sites based on the target and vaccination strategy
- number of days/hours required for service delivery and its related aspects such as communications, site monitoring, and follow up etc.
- adequacy of existing government staff

- number of social mobilizers
- gap between the existing staff and rational human resource requirements for vaccination
- need for hiring/contracting additional personnel and associated costs for their active involvement.

4.2 Map additional workforce in non-government sector

Map and identify health staff and other cadres from non-government institutions and facilities and categorize them according to their educational levels, skills, trainings received, current position and workload and possibility to take up additional work to support COVID-19 vaccination.

Consider involving retired staff and personnel with a diverse mix of skills (from private healthcare facilities, pharmacies, medical colleges, nursing institutions, professional associations, non-government organizations, health facilities managed by civil society and faith-based organizations). Task shifting and simplifying accreditation criteria (in line with national regulations) can also help fill personnel gaps. Also consider and list out the volunteers (for example from youth groups) to help in specific roles such as crowd control and site monitoring.

TOOL: Use planning format 6 to compile the details of personnel identified from the non-government sector for engaging in COVID-19 vaccination-related activities.

4.3 Plan and organize trainings for the identified personnel

Designate a focal person

- The focal person will be responsible for finalizing the mode of training for different cadres of workers; developing/adapting and finalizing the training material, including for refresher training or adjustments based on new vaccine products; identifying trainers, facilitators and trainees; organizing, tracking and monitoring training activities; and coordinating post-training follow-up, mentorship and supervision.
- The focal person should preferably be from the health department and have experience in organizing and conducting immunization trainings, preferably on new vaccine introduction or vaccination campaigns. Depending on the context, the focal person can also be identified from another department/ institution.

Identify the mode of training

- Three options for organizing trainings on COVID-19 vaccination are online training using digital content; in-person training; and blended training, in which a group of health workers receives training using online digital content with facilitation by a trainer. More details about online and in-person trainings are provided in Annex 4.
- Mixed methods can be adopted for different staff requirements. Adaptation and translation of available training material may be needed for different cadres and rounds of training.

Identify trainers/facilitators

- For in-person trainings, trainers may be selected from health or other departments with demonstrated communication skills and experience of facilitating trainings for routine immunization and/or vaccination campaigns.
- Trainers and/or facilitators may also be selected from nursing institutions, NGOs, CSO and healthcare providers from the non-government sector.
- District and national/provincial experts and trainers should be invited to deliver sessions for representatives from other departments and organizations, leaders, influencers and other stakeholders.

Identify venues

- Depending on the mode of training selected, internet connectivity, audio-video devices and adapted seating arrangements may be needed.

TOOL: Use planning format 7 for selecting groups for in-person and blended trainings. Information compiled in planning format 6 about the personnel identified for COVID-19 vaccination can be used to identify participants.

Allocate budget for

- hiring/contracting health workers from the non-government sector
- adapting, translating and printing training material
- organizing trainings – venue, audio-video system, refreshments etc.
- travel and other allowances to trainers and participants.

COMPILE ITEM-WISE SUMMARY IN PLANNING FORMAT 16

Additional resources

COVID-19 vaccination training for health workers provides key information and job aids for vaccinators on how to safely and efficiently administer vaccines. (https://openwho.org/courses/covid-19-vaccination-healthworkers-en, accessed 9 October 2021).

COVID-19 vaccine introduction toolkit. Geneva: World Health Organization; 2021 (https://www.who.int/tools/covid-19-vaccine-introduction-toolkit, accessed 9 October 2021).

Guidance on developing a national deployment and vaccination plan for COVID-19 vaccines: interim guidance, 1 June 2021. Geneva: World Health Organization. 2021 (https://apps.who.int/iris/handle/10665/341564, accessed 9 October 2021).

COVID-19 vaccine specific resources. World Health Organization. (https://openwho.org/courses/COVID-19-vaccines, accessed 9 October 2021).

Aide-memoire: Infection prevention and control principles and procedures for COVID-19 vaccination activities. Geneva: World Health Organization. 2021 (https://www.who.int/publications/i/item/who-2019-ncov-vaccination-IPC-2021-1, accessed 9 October 2021).

Step 5
Plan service delivery

KEY POINTS

- Public acceptance, uptake and continuation of COVID-19 vaccination depends on how well service delivery is tailored to the population.
- Create vaccination sites that are accessible to high-risk groups. Listen to community concerns and perceptions about vaccines and use the evidence to inform community engagement and communications.
- For COVID-19 vaccines requiring two doses (or subsequent doses), plan repeat sessions according to the recommended interval and preferably using the same service delivery strategy and vaccination team.
- In the context of limited supply of COVID-19 vaccines, every wasted dose represents a missed opportunity for vaccination.
- Incorporate tracking, reporting and follow up of adverse events following immunization (AEFI) as part of the overall service delivery plan.
- Operational level costing should be developed for a relatively short period and revised periodically based on the latest updates on vaccines and recommended strategies.

Operational guidance

Relatively few facilities have experience with vaccination for *adult populations* compared to those accustomed to implementing childhood immunization. Four commonly employed service delivery approaches are fixed vaccination sites at hospitals and health centers; community-based outreach vaccination sites; mobile team (or clinic) or transit team strategy; and mass vaccination centers or camp approaches. *(19)*

Planning for vaccination sites at strategic locations and implementing context- specific service delivery strategies help in fostering trust. For COVID-19 vaccination, access and acceptance among certain targeted high-risk groups who have never been approached for vaccination require collaboration across programmes within the health system including primary health care, health communication and communicable and non-communicable diseases and across sectors beyond the health system, including social welfare, education, pensions and transport.

Selection of the service delivery strategy (and location of vaccination sites) should depend upon:

- availability and characteristics of different COVID-19 vaccine products
- level of acceptance or hesitancy and characteristics of targeted population groups
- feasibility of using vaccines in some groups based on benefit-risk assessment
- context-specific factors such as overall COVID-19 transmission scenario and local disease burden
- capacity of local health system to deliver vaccination safely and effectively
- geographic area, population density and corresponding phases of the vaccination roll-out
- budgetary resources.

5.1 Identify service delivery strategies and plan for vaccination

Planners and immunization programme managers should use a bottom-up localized approach to identify appropriate service delivery strategies and outline resource needs. This should be based on the findings of social listening and community feedback mechanisms, surveys, focus groups, local and respected influencers and community meetings. Based on the identified strategies, plans for service delivery should be developed in discussion with supervisory staff and other relevant stakeholders. Recommended strategies for defined high-risk groups and vulnerable individuals, potential vaccination sites for maximizing access and key considerations in implementing the strategy are described in Annex 5.

TOOL: Use planning formats 8, 9 and 10 for planning vaccination activities at fixed sites, outreach sites and with mobile teams, respectively.

5.2 Estimation of vaccine and other supplies for vaccination sites

Estimation of COVID-19 vaccine requirements and ancillary products at session sites should be based on realistic estimates or other available and reliable data sources. Immunization programme managers should follow the guidelines from the national and/or provincial (or equivalent) government for distributing vaccine doses to session sites.

At fixed sites and mass vaccination sites, an estimate of the number of individuals to be vaccinated can be made depending on the overall population of the area; the number of individuals approaching or mobilized to the session site, willingness in the community to get vaccinated; availability of vaccines; and the timing of session.

For community-based outreach sessions and for areas planned for mobile teams, these estimates can be made based on the name-based lists developed by health workers, local mobilizers or head count surveys, and enrollment data at long-term care facilities, prisons or other residential facilities.

Major considerations while making estimates and distributing vaccines are as follows:

- **Vaccine availability:** In the context of limited supply of COVID-19 vaccines, understocking and frequent stock-outs are expected. Operationally, vaccine distribution should focus on priority groups, including people who may not frequent local facilities.

- **Vaccine wastage:** Some vaccine wastage is expected, especially for vaccines that are presented in multi-dose vials.

- A mechanism should be in place for making **population estimates**.

- **Distance from the vaccine storage facilities and the shelf life** of vaccines.

Pre-registration of individuals is an important approach to make near-realistic estimates of the targets. In some instances, there may be over-estimation of vaccine requirement because not all individuals registered turn up for vaccination. Immunization programme managers should consider tracking of registered individuals who do not turn up at the immunization sites.

In areas with good internet connectivity, registration and tracking can be done through online portals. Text messages are another alternative as is manual recording by frontline workers (in collaboration with community mobilizers).

Distribution of ancillary products, especially the supplies for infection prevention and control, should be based on the number of staff in vaccination and monitoring teams.

5.3 Prepare the vaccine transportation plan

The vaccine transportation plan includes details about vaccination sites, quantities of the vaccines to be delivered, means of transportation and the names of the personnel responsible for distributing and collecting. Depending on the context, resources and funds, the transportation plan may also incorporate the following provisions:

- travel of mobile teams, including special teams to areas having poor connectivity and tough field conditions such as mountainous land barriers or dense urban neighborhoods where vehicle access is limited
- return of unused, partially used and empty COVID-19 vaccine vials for appropriate storage, to prevent any misuse and for tracking in case of an adverse event
- removal/transfer of immunization waste from session sites to identified facilities for disposal.

Follow the steps below to ensure that planning covers relevant vaccine transportation needs.

Prepare a list of available means of transport

- Identify and list transport vehicles available, by their characteristics.
- Include vehicles that can be arranged from the institutions, local governments, and strategic partners (private sector, faith-based institutions, NGO, or international agencies) to address gaps.
- Routine immunization supply chain and logistics data can be useful to characterize location of the sites and the terrain. In many settings, experience from previous vaccination activities or other programmes can also be used to identify transportation needs for reaching certain locations and high-risk population groups.

Designate vehicles for specific vaccination session sites, depending on:

- volume of vaccine (volume of total packed doses)
- number and capacity of thermal containers (insulated/passive), and coolant packs
- volume and weight of vaccines, syringes and logistics to be transported
- number of team members to be transported
- type of vehicle, distance to be traveled and terrain
- frequency of travel to vaccination sites.

One vehicle may be able transport vaccines to different site along the same route. GIS mapping can facilitate identification of session sites falling on the same route and will help save funds and resources.

TOOLS: Use planning format 11 for listing the transport facilities and format 12 for preparing the plan. Service delivery plans for different vaccine delivery strategies (planning formats 8, 9 and 10) will feed into the development of a vaccine transportation plan.

5.4 Prepare a plan for immunization waste management

Proper segregation of immunization waste at the session sites followed by its storage and disposal as per specified procedures (reverse logistics) is important and requires attention. Planners and immunization programme managers should ensure compliance with their country's legislation and guidelines.

Follow the given steps for waste management planning:

Identify and list waste management facilities

- Identify waste management facilities in the catchment area and/or in the adjoining areas/district according to the methods used for waste treatment.
- Compile information about the address of the facility; contact details of the concerned authority; sector (government or non-government/NGO); contracting procedure and cost involved.

Identify staff for handling waste

- From the list of personnel compiled in planning format 6, identify the workers who can handle waste at session sites until it is disposed.
- Explore the need to recruit additional staff or to outsource for management and safe disposal, given increased volume of waste (such as at mass vaccination sites).
- Identify training needs and ensure training of existing and newly recruited staff on waste handling and management guidelines.

Ensure required logistics

- Ensure availability of waste handling and storage equipment (gloves, bags, etc.)

Analyze available options

- Make an estimate about volume of waste to be generated.
- Identify waste management facilities for transportation from different session sites in the catchment area.
- Identify alternative options for collection, transport, storage, management and disposal.
- Depending on the context and availability of suitable options, consider outsourcing waste transportation and its management.

5.5 Anticipating time needed for accessing funds

Operational level costing should be developed for a relatively short period and revised regularly based on the latest updates on vaccines and recommended strategies. *(20)* Good understanding and continuous monitoring of budget execution and spending modalities are necessary for timely deployment of funds and reallocation or advanced notice for needed additional funds.

Spending authorization rules

Multilayered spending authorization may slow the flow of funds and can cause delayed transfers to district/sub-district levels and purchasing agencies. Therefore, medium-term policy actions should include:

- adjusting modalities to allow funds to be disbursed more easily upon appropriation (such as fast-track authorization for vaccine-related expenditures) with clear accounting mechanisms
- simplifying spending procedures for budgetary transfers to entities in charge on vaccination delivery
- adjusting and/or introducing budget formulas to account for variations in regional or community health needs.

Procurement rules

Emergency procurement rules may not allow direct contracting and advance payment. General procurement procedures may also be cumbersome. Medium-term policy options should include refining the regulations to allow fast-track procurements procedures for the purchase of vaccines and non-vaccine items, while maintaining financial transparency requirements.

Provider contracting modalities

It is important to be vigilant about personnel recruitment and contracting policies, especially for temporary vaccinators, as policies may be rigid and complex. There may also be rigid frameworks for contracting private providers or none may be in place. Medium-term policy action includes revising regulatory frameworks to make it easier through emergency mechanisms to contract temporary and/or private providers for COVID-19 vaccine deployment and to ensure that private providers are held accountable for outputs.

Payment and incentives

Incentives may be inconsistent and not favor effective vaccine roll-out by providers. Consider revising payment methods to support effective service delivery (such as introducing an additional fee to capitation payment rate).

Rules for resource use by health service providers

Access to operational funds by front-line workers is not always granted or authorization and reporting rules against resource use may be cumbersome. Updating public financial management (PFM) frameworks to allow front-line workers to receive and manage public funds directly (such as for operational costs linked to the vaccine roll-out) should be considered as a policy option.

Allocate budget for

- mobilizing local resources, particularly to assist with continuous service delivery operational needs, local communications, and community monitoring.
- organizing mass vaccination sites and mobile teams
- recruiting drivers and/or support staff for vacant positions or additional transport needs
- vaccine transportation - servicing and maintenance of government vehicles, hiring cost of vehicles from the non-government sector, fuel needs based on the average consumption per vehicle and the daily distance traveled
- subnational price variations in the fuel cost, as well as road and field conditions that affect mileage
- purchase of equipment and training of staff involved in waste segregation and handling, contracting with the waste management facilities and additional waste collectors, including transportation of waste from the session sites
- social mobilization and updating communications for different rounds of vaccination because the vaccine may not be available at the same location at the appointed time

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Prepare maps

- showing vaccination sites, terrain and road conditions to prepare realistic transportation plans. GIS-based maps can be easily updated on a routine basis.
- Use GPS tracking of transport vehicles to prepare backup plans in case of excess or insufficient vaccine supply at session sites.

Additional resources

Water, sanitation, hygiene, and waste management for SARS-CoV-2, the virus that causes COVID-19 – interim guidance. World Health Organization; United Nations Children's Fund. 2020 (https://www.who.int/publications/i/item/WHO-2019-nCoV-IPC-WASH-2020.4, accessed 9 October 2021)

Management of waste from injection activities at district level: guidelines for district health managers. Geneva: World Health Organization. 2006 (https://www.who.int/management/quality/ManagementWasteInjections.pdf?ua=1, accessed 9 October 2021)

Overview of technologies for treatment of infectious and sharp waste from health care facilities. World Health Organization. 2019 (https://apps.who.int/iris/handle/10665/328146, accessed 9 October 2021)

Appropriate disposal of immunization waste platform. United Nations Children's Fund. 2020 (https://www.technet-21.org/en/library/main/6388-appropriate-disposal-of-immunization-waste-(adiw)-platform, accessed 9 October 2021)

Waste Management during the COVID-19 Pandemic - From Response to Recovery. The United Nations Environment Programme. 2020 (https://wedocs.unep.org/bitstream/handle/20.500.11822/33416/WMC-19.pdf?sequence=1&isAllowed=y, accessed 9 October 2021)

Step 6
Generate demand and ensure communications

KEY POINTS

- Use trusted channels to keep communities well-informed about who will be vaccinated; and when, where and at what times; especially when there are supply-related changes and to mitigate misinformation.
- Identify and engage key influencers such as religious leaders, community leaders and local celebrities to motivate high-risk groups for vaccination. Use social media, radio and announcements, as appropriate to the context.
- Involve stakeholders such as local civil society organizations and community-based organizations (CSOs/CBOs) to foster demand planning and participate in risk communication, confidence building, social mobilization and designing behaviorally informed and tailored strategies for high-risk groups.
- Apply a gender lens to address any gaps, particularly among vulnerable populations such as in camps for internally displaced persons and fragile settings.
- Inform and engage communities through face-to-face activities in a small groups, maintaining physical distancing and use of masks.
- Support health workers to address their own concerns about COVID-19 vaccination.

Operational guidance

COVID-19 vaccine uptake among high-risk groups and vulnerable individuals depends on many complex and context-specific factors apart from vaccine supply. Continuously implementing demand and risk communication and community engagement (RCCE) activities helps to increase awareness, confidence, trust and demand by communicating about the safety and benefits of COVID-19 vaccines and addressing COVID-19 vaccination-related myths, rumours and public concerns. Demand generation and RCCE activities should be well-integrated with interventions designed to improve service quality, supporting a positive experience at the point of contact and willingness to return. Achieving this requires planning of tailored and data-driven strategies with close involvement of implementing partners, key community and civil society representatives and local CBOs and influencers.

For communication and community engagement activities to build demand successfully, they should be integrated in broader technical plans from the beginning, including needs assessment and microplanning (NDVP, Pg 53).

The demand generation and communication strategy for COVID-19 vaccination should be led nationally by the implementing ministry or health promotion unit in alignment with the delivery strategy. This will include high-level advocacy and canvassing; evidence-based demand planning; behaviorally informed messaging and interventions; publication and distribution of informational and promotional material; and engaging and monitoring mass-media and social-media.

At the district and sub-district levels, planners and immunization programme managers should operationalize context specific demand and RCCE related activities in accordance with the national strategy and with focus on the high-risk population groups.

Establishing open and regular two-way communication channels -including feedback mechanisms through engaging local inputs and resources (such as such as local influencers, religious and community leaders, youth groups, CBOs, etc.) – will ensure that district and sub-district level leadership and the communities they serve are informed and accountable on progress. Different channels should be identified and resourced to reach out and communicate with priority groups regarding vaccine availability; how to register; where to go for vaccination; and to promote and monitor confidence, trust and uptake. Listening to and addressing community concerns and perception about vaccines (particularly of women and vulnerable groups) are critical for promoting vaccine uptake.

6.1 Prepare plan for demand generation and RCCE

Follow the steps below to ensure planning and implementing context-specific demand and RCCE activities.

Designate a spokesperson

- Identify a staff member from the health department, other relevant government department or respected health professional as spokesperson.
- The spokesperson should be credible and trusted by the public and have communication skills and experience with the immunization programme. Ensure that the spokesperson is sensitized on planned activities and addressing queries and concerns.
- The immunization programme managers should engage spokesperson as a primary channel for communication regarding COVID-19 vaccination with the media and the public, particularly in cases of adverse event and vaccine related concerns and rumours.

Constitute a communication team

- Comprised of coordinating authorities from the health department, key stakeholders and representatives from different intersectoral departments and organizations, and officials from higher administrative levels.

- Engage the team in planning service delivery strategies and site locations for reaching out to high-risk groups and vulnerable individuals; coordinating with stakeholders; and developing culturally and linguistically accessible key messages and materials for COVID-19 vaccination.

Train and empower health workers and frontline workers

- All health workers and frontline workers should be trained by the district health management team and health facility staff in prioritizing eligible vaccine recipients, tailoring messages and approaches to reach diverse community contexts, conducting interpersonal communications and engaging in community dialogue to build confidence and trust and address/prevent rumours, misinformation, and vaccine hesitancy.

- Since health workers are usually early recipients of vaccines, it is important to understand and address their concerns about vaccines and build their trust, to empower them to motivate and mobilize high-risk individuals to be vaccinated.

The integrated approach for vaccination acceptance and uptake has four inter-related strategic elements:
(a) social listening, digital engagement and misinformation management;
(b) risk communication and community engagement;
(c) empowering frontline health workers; and
(d) crisis communication.
(NDVP, Pg 54)

- Ensure integrating the health worker's capacity building needs into trainings and monitoring, including skill building for interpersonal communication skills; and rapid data collection and use of social and behavioral data at the health center and community level for social accountability.

- Sensitize community health workers on key messages related to vaccine safety and efficacy and reporting of side effects and adverse events.

- Where data is not yet available, conduct research on health workers' perceptions, biases and behaviours to inform tailored interventions to boost their confidence.

Strengthen the capacity of healthcare professionals to have empathetic vaccine conversations, effectively address myths and common questions about vaccine safety and efficacy, provide tailored vaccine information to clients and community, and use motivational interviewing techniques when needed.

Map, train and engage stakeholders and influencers

- Identify stakeholders and influencers who are well accepted and respected by the local community, targeted high-risk groups and vulnerable individuals.

- Involve these stakeholders and influencers in generating demand and implementing RCCE communication in their respective communities.

- Potential stakeholders include:
  - political leaders, members of local administrative bodies and elected representatives
  - officials from other government and social sector departments (such as community development offices; education officials including teachers)
  - religious and community leaders (for community mobilization and addressing rumours)

- faith leaders and faith-based institutions/networks (for informing communities and building trust and acceptance to address any possible religious concerns vis-à-vis science-related issues underlying vaccines)
- professional associations and private healthcare providers (for resource mobilization and trust-building)
- civil society organizations (CSO) and community-based organizations (CBO) for gaining access to high-risk vulnerable groups
- local influencers in traditional/tribal areas, migrant and refugee groups
- local celebrities - artists, athletes, etc.
- NGOs, livelihood alliances, self-help groups, and groups working for people suffering from HIV/AIDS, cancers, thalassemia, tuberculosis or other conditions to mobilize individuals with underlying health conditions
- journalists for working with print, electronic, and social media
- frontline workers, youth and women's networks, representatives of vulnerable groups such as migrants and other potential non-traditional strategic partners.

- Organize small meetings at the facility and/or within the community to brief key stakeholders and influencers about COVID-19 vaccination and its importance in high-risk groups, vulnerable individuals and communities overall. Selected stakeholders should also be informed about prioritization criteria and rollout plan (notably given phased vaccination and product availability).

- Coordinate efforts among various stakeholders to ensure consistency of strategies, dialogue and delivery of aligned messages.

Engage and address concerns of the community

- Ensure that community engagement activities are aligned with the overall national communication strategy and plan and guidance from the national/provincial level.

- Gather social data and community feedback using the Behavioral and Social Drivers of Vaccination framework to inform evidence-based, context specific, and tailored activities and messaging for community engagement. *(21)*

- Depending on the context, convey information on a regular basis regarding COVID-19 vaccines and vaccination to local communities through media, service providers and other community-accepted means. Conduct periodic team visits by the vaccination team and a supervisor along with trusted community stakeholders before COVID-19 vaccination rollout for communicating with the community and its representatives.

- Establish localized community social listening, feedback and accountability mechanisms to routinely capture and include community insights to understand changes/trends; address misinformation, concerns and rumors; and elicit communities' perceptions, experiences, issues, opinions, and complaints in relation to COVID-19 vaccines.

- Work with relevant groups, cited earlier, to develop key messages in local languages, culturally appropriate formats and tailored to different populations. **Participation of stakeholders and community in planning can improve services and ensure equitable vaccination uptake by removing barriers.**

- In areas/institutions covered by mobile teams, engage frontline workers and local authorities to establish communication with local communities to build their trust and acceptance and inform them about the visit schedule.

- Plan tailored activities for approaching specific high-risk groups and vulnerable individuals. These activities may include community gatherings, focus group discussions and media campaigns and should focus on building trust, acceptance, and demand; addressing conflicting information from media, friends, family, community leaders and other sources; and responding to questions around prioritization criteria or concerns with the vaccine delivery.

TOOL: Use planning format 13 to plan community engagement activities.

Allocate budget for

- organizing capacity building activities for training of health workers and local influencers.
- allowance for volunteers and community influencers for maintaining their engagement, especially in resource-constrained areas.
- community engagement activities such as community meetings, media group performances, rallies, talk shows, miking announcements, road shows
- technical assistance for evidence generation, social listening, social data analysis and strategic planning to inform behavioral interventions
- conducting rapid surveys to understand public perceptions
- monitoring and supervision.

COMPILE ITEM-WISE SUMMARY IN PLANNING FORMAT 16

Additional resources

Generating acceptance and demand for COVID-19 vaccines. World Health Organization (https://www.who.int/initiatives/act-accelerator/covax/covid-19-vaccine-country-readiness-and-delivery/acceptance-and-demand, accessed 9 October 2021)

Vaccine safety events: managing the communications response. Copenhagen. WHO Regional Office for Europe. 2013 (https://www.euro.who.int/__data/assets/pdf_file/0007/187171/Vaccine-Safety-Events-managing-the-communications-response.pdf, accessed 9 October 2021)

Crisis Communication related to vaccine safety: technical guidance. Washington, D.C.: Pan American Health Organization; 2020 (https://iris.paho.org/bitstream/handle/10665.2/53221/9789275123126_eng.pdf?sequence=5&isAllowed=y, accessed 9 October 2021)

Acceptance and demand for COVID-19 vaccines: communications plan template (Excel spreadsheet). World Health Organization. 2021 (https://apps.who.int/iris/handle/10665/339463, accessed 9 October 2021).

Conducting community engagement for COVID-19 vaccines – interim guidance. World Health Organization; United Nations Children's Fund. 2021 (https://apps.who.int/iris/handle/10665/339451, accessed 9 October 2021)

COVID-19 vaccines - misinformation management guide. New York. United Nations Children's Fund. 2020 (https://vaccinemisinformation.guide/, accessed 9 October 2021)

RCCE collective service 10 steps to community readiness. Global Outreach Alert and Response Network; International Federation of Red Cross and Red Crescent Societies; United Nations Children's Fund; World Health Organization. 2020 (https://www.rcce-collective.net/rcce-10-steps/, accessed 9 October 2021)

Data for action: achieving high uptake of COVID-19 vaccines. World Health Organization; United Nations Children's Fund. 2021 (https://www.who.int/publications/i/item/WHO-2019-nCoV-vaccination-demand-planning-2021.1, accessed 9 October 2021)

Step 7
Monitor implementation

KEY POINTS

- Monitor uptake, efficacy and safety of COVID-19 vaccines, especially in areas where new COVID-19 vaccines are introduced or where multiple vaccine products are used simultaneously.
- To maximize results, monitoring of COVID-19 vaccination should be integrated with monitoring of vaccine supply and vaccine safety (such as reporting of AEFI cases).
- Engage supervisory staff and frontline workers in listening to community concerns and perceptions and identifying approaches to address concerns in their service areas, especially among hard-to-reach areas or sub-groups lacking easy access to vaccination sites.
- Conduct supportive supervision of health workers to improve knowledge, skills and motivation for direct impact on the quality of COVID-19 vaccination service delivery and vaccine uptake.
- Ensure active involvement of relevant stakeholders in field-based supervision, especially on aspects such as social mobilization and awareness generation.
- Triangulate reports, observations and voices from the community to guide corrective actions and re-evaluate microplans.

Operational guidance

Monitoring is a critical aspect of operational microplanning for COVID-19 vaccination to provide insights on vaccine uptake over time by high-risk groups, geography, and type of vaccine; extent of implementation of the planned activities in reaching targeted population groups; and actions required for addressing barriers and improving programme effectiveness. The supervisory cadre is an essential part of the vaccination team to validate and monitor roll-out of the microplan and provide updates on the status and challenges of implementation in targeted high-risk groups.

Validation of the COVID-19 vaccination microplan involves more than reviewing information for completeness and correctness. It also means assessing additional indicators such as population estimates, resources required, selection of vaccination sites and times, selection of influencers and other stakeholders, and boundaries of the catchment area. Supervisors should validate plans before rollout of COVID-19 vaccines and review them on an ongoing basis to identify and recommend corrective actions including re-evaluation of the microplan in cases where vaccination targets or equitable access are not met, or if available resources change.

Monitoring the COVID-19 vaccination process and outcomes can be done by actively visiting vaccination sites to review service delivery; interacting with targeted population groups and communities to assess acceptance and/or reluctance for vaccines; and continually reviewing data and indicators generated from records and reports. Depending on the context and overall setting, monitoring should also consider adopting methods from the polio vaccination campaign such as "Rapid Convenience Monitoring" by:

- identifying high-risk population groups with low uptake of vaccination and explore underlying reasons (for example, by asking clients at a dialysis center or a diabetes clinic if they have been vaccinated)
- asking a non-random sample of people from high-risk and non-high-risk target groups about their vaccination status, reasons for non-vaccination, and/or their attitudes/intentions regarding vaccination
- conducting exit interviews of clients leaving vaccination sites to ask about time spent in getting vaccinated, what they remember of counselling, attitudes of staff and other views.

Officials from health and other relevant departments and stakeholders should regularly visit vaccination sites to review the process, guide and encourage vaccination teams and engage with community to address any misconceptions regarding vaccines. The feedback from the supervisory visits should be reviewed and discussed at the end of the day (or as feasible) with programme managers and staff members (including vaccination teams) to identify concerns and challenges, including findings from social listening/social data and community feedback. These should guide any needed corrective actions.

In some instances, existing monitoring systems will be limited for by use by public health administrations and may not be flexible enough to be applied to other institutions providing COVID-19 vaccination such as residential care facilities or private practitioners. In such cases, programme managers should rely on the systems for data flow that are already in place.

Tools for monitoring and supervision

Tools for monitoring and supervision and indicators to measure progress and quality of COVID-19 vaccination are developed at the national (or provincial) level in discussion with the expert groups. These should include inputs from operational levels. The tools may be paper based, digitized (such as electronic immunization registries (EIR) or App-based supervision checklists) or a mix of the two and ensure uniformity across all regions and districts of the country. Depending on the available facilities, planners

and immunization managers should consider using mobile data collection to facilitate uploading of monitoring and supervision data from vaccination sites to enable rapid synthesis, visualization and guiding corrective actions or other responses. The tools should also integrate communication and community engagement components.

In many instances, these tools are adapted from those used in the immunization programme (for children, adolescents, and adults) and/or other programmes targeting specific at-risk population groups (such as people in certain occupational categories, older adults and people with underlying disease). The multi-agency COVID-19 Digital Health Center of Excellence (DICE) is co-led by UNICEF and the World Health Organization (WHO) to provide coordinated technical assistance to national governments and partners on COVID-19 vaccine delivery. The aim is to support sustainable and scalable deployment of carefully chosen digital health solutions that support COVID-19 pandemic response plans with a focus on strengthening health systems. *(22)*

WHO has developed a checklist for supportive supervision of COVID-19 vaccination for use during field visits. *(23)* It can be adapted for use based on context-specific requirements. More details on various indicators to be used for monitoring COVID-19 vaccination is provided in annex 6.

In addition to specifically designed supervision and monitoring tools, other available data sources to facilitate evidence generation at the district and sub-district levels include:

- home-based vaccination records: paper-based or digital vaccination cards available to beneficiaries (for their own records and as reminders for subsequent doses, as relevant)
- facility-based records: provider records, vaccination registers, consultation registers, medical records or EIR
- daily reports: tally sheets used at vaccination sites
- periodic reports: weekly or monthly administrative reports.

Uses of monitoring data

- measure uptake and coverage of available COVID-19 vaccines over time by geography, population groups (including sex disaggregated data) and risk groups by type of vaccine
- assess the extent of implementation of the operational plan in vaccinating high-risk population groups and vulnerable individuals in the catchment area
- ensure that targeted population groups are monitored for the full course vaccination (for multi-dose vaccines) and reduce the incidence of drop-outs and left-outs
- provide information required for course corrections in planning and service delivery.

7.1 Develop a supervision and monitoring plan

Identify relevant participants

- Identify staff members from the health department or other relevant government department (such as teachers) and stakeholders (such as NGO staff) as supervisors and monitors.
- Identify local leaders, influencers and stakeholders from respective communities to supervise activities such as community engagement and mobilization, and risk communication.

Familiarize supervisors assigned to outreach teams with the area and community leaders.

Define roles and responsibilities

Key responsibilities of supervisory staff are:

- field validation of operational microplan and catchment areas maps
- planning for team members and scheduling the sessions
- training and onsite support for team members
- timely delivery and availability and utilization of vaccines and logistics
- resolution of queries by team and community members
- assessment of the completeness and quality of records and reports
- interaction with community influencers and local leaders to understand vaccine-related concerns.

Organize trainings of supervisors

- Identified staff and other personnel should be trained on various aspects of COVID-19 vaccines and vaccination rollout to facilitate resolution of queries from team members and the community.

TOOL: Use planning format 14 for preparing a field visit plan for monitors and supervisors

Allocate budget for

- developing on-the-job training and communication tools for use by the supervisors
- training of the supervisory staff and stakeholders
- transportation and communication costs for monitors and supervisor
- remuneration for stakeholders and members from the community for engaging as supervisors.

COMPILE ITEM-WISE SUMMARY IN PLANNING FORMAT 16

Prepare maps

- Show distribution across the area for different supervisors and their route plan.

Additional resources

Monitoring COVID-19 vaccination – considerations for the collection and use of vaccination data. Interim guidance. World Health Organization; United Nations Children's Fund. 2121 (https://www.who.int/tools/covid-19-vaccine-introduction-toolkit#Data%20and%20monitoring, accessed 9 October 2021)

Operational guidance: COVID-19 vaccination data and information management, including monitoring of vaccine effectiveness. Copenhagen: WHO Regional Office for Europe. 2021 (https://apps.who.int/iris/handle/10665/338856, accessed 9 October 2021)

COVID-19 vaccines safety surveillance manual. Geneva: World Health Organization. 2020 (https://www.who.int/publications/i/item/10665338400, accessed 9 October 2021)

Supportive supervision for COVID-19 vaccination. Geneva: World Health Organization. 2021 (https://www.who.int/publications/m/item/supportive-supervision-for-covid-19-vaccination, accessed 9 October 2021)

Step 8
Re-evaluate plan

KEY POINTS

- Anticipate and plan to implement different, new or a mix of different COVID-19 vaccines in respective catchment areas as field lessons accumulate.
- Evaluate and revise operational microplans in cases of supply of new or different COVID-19 vaccine, poor vaccine uptake, variations in acceptance or confidence, inequitable access/distribution of services or a change in available resources.
- Regularly update information regarding available storage space, immunization workforce, vaccination status of targeted high-risk groups and service delivery strategies to facilitate revision of operational plans.

Operational guidance

COVID-19 vaccines have different presentations, handling and storage requirements, shelf life (or expiry date), wastage factor, dose schedule, mode of administration and associated precautions and contraindications. Furthermore, new vaccines will differ from the existing ones. Considering the limited supply of vaccines, multiple vaccine types may be required to cover all geographic areas and vaccinate targeted high-risk groups. Available evidence on inter-changeability of vaccines and heterologous vaccination schedules is limited.

Allocation by the national level of specific COVID-19 vaccine products to particularly geographies should be clearly articulated as soon as product availability is known, to help subnational levels adapt their plans accordingly.

Planners and immunization programme managers should understand the complex vaccine landscape and anticipate and prepare to factor in and implement multiple COVID-19 vaccines for high-risk population groups and vulnerable individuals in their respective catchment areas. This will require re-evaluation and revision of the operational microplan and its specific components, depending on vaccine-specific characteristics. Re-evaluation of operational plans will also be required if coverage targets or equitable access are not met, or if there is any change in the available resources.

Specific aspects to be considered while revising the plans are as follows:

- assessing the current landscape with a compilation of information regarding the most recent vaccine stock, uptake and disease burden information *(24)*
- using recommended guidance to define localities and target groups to prioritize for vaccine distribution by distributing available vaccines in defined geographic areas or specific high-risk population groups to prevent administration of different vaccines to the same individuals in case of multi-dose schedules
- ensuring operational readiness for handling and administering the allocated vaccine products
- avoiding wastage of available vaccine by ensuring timely utilization within recommended shelf life or before expiry
- preventing and addressing delays in administering subsequent doses of any vaccine to individuals who have received one dose (in case of erratic supply) *(25)*
- fostering acceptance by the community, in cases of reluctance or hesitance because of misconceptions regarding safety or based on cultural or political reasons.

8.1 Compare vaccines to assess feasibility for use

As soon as programme managers receive information regarding supply of COVID-19 vaccines, compare the characteristics and recommendations for each vaccine to assess feasibility of its use in the catchment area and its targeted population groups. This will include review of its storage and handling requirements vis-à-vis available infrastructure, dosage and mode of administration, capacity of available vaccinators and community preference and contraindications and precautions. Engage concerned authorities and relevant stakeholders in assessing the feasibility of using the vaccine and contingency planning.

Should the required infrastructure, capacity or resources not be available to introduce the new vaccine, communicate the concern in advance to authorities at district and higher levels to divert the supply. If it is feasible to use the vaccine, adapt the microplan and take required actions.

TOOL: Use planning format 15 to compare available COVID-19 vaccines and those anticipated to arrive to assess feasibility for use and identify required actions.

8.2 Revise plans to meet the unique requirements of each COVID–19 vaccine

To re-evaluate and revise the microplan:

- **Identify localities and/or targeted high-risk groups in which COVID-19 vaccination has not been implemented.** Introducing new COVID-19 vaccines to a new target population group and/or to new localities will prevent the likelihood of administering a different vaccine to the individuals scheduled for a subsequent dose. If any locality or high-risk groups have not yet introduced COVID-19 vaccination, consider appropriateness for deploying the new vaccine product. Implementing different vaccines in different localities will also prevent their mixing while in storage, during transportation or at the time of vaccination.

- **Calculate vaccine doses required** for the estimated number of people in the location and high-risk groups identified for implementing new vaccine. **Match requirement with the allocated supply.** If the supply is less than required, reduce the number of localities identified for implementing the new vaccine.

- Based on the estimated requirement and/or allocated supply, **calculate the storage space required in recommended temperature conditions. Match space required with the space available** after adjusting for the space occupied by other COVID-19 vaccines, routine immunization vaccines and other medical supplies requiring refrigeration.

- If available space is less than required, plan for other available cold chain facilities in the government or non-government sectors. If not possible, inform concerned authorities at higher administrative levels about the need to reduce the number of doses supplied or arrange alternative storage space.

- Ensure that there is clear demarcation while storing different types of COVID-19 vaccines to prevent their mixing at the time of supply to vaccination sites.

- **Plan for vaccination activities** (fixed/outreach/mobile) in the identified localities and high-risk groups using guidance provided on page TK on planning service delivery.

- Ensure recording and tracking by type of vaccines supplied to each area to prevent any mixing.

- **Organize trainings of vaccinators, supervisors and social mobilizers** (and other team members, as relevant) about the new vaccine, its characteristics, any contraindication or precautions, localities and high-risk groups identified for vaccinating and the revised vaccination strategy/plan.

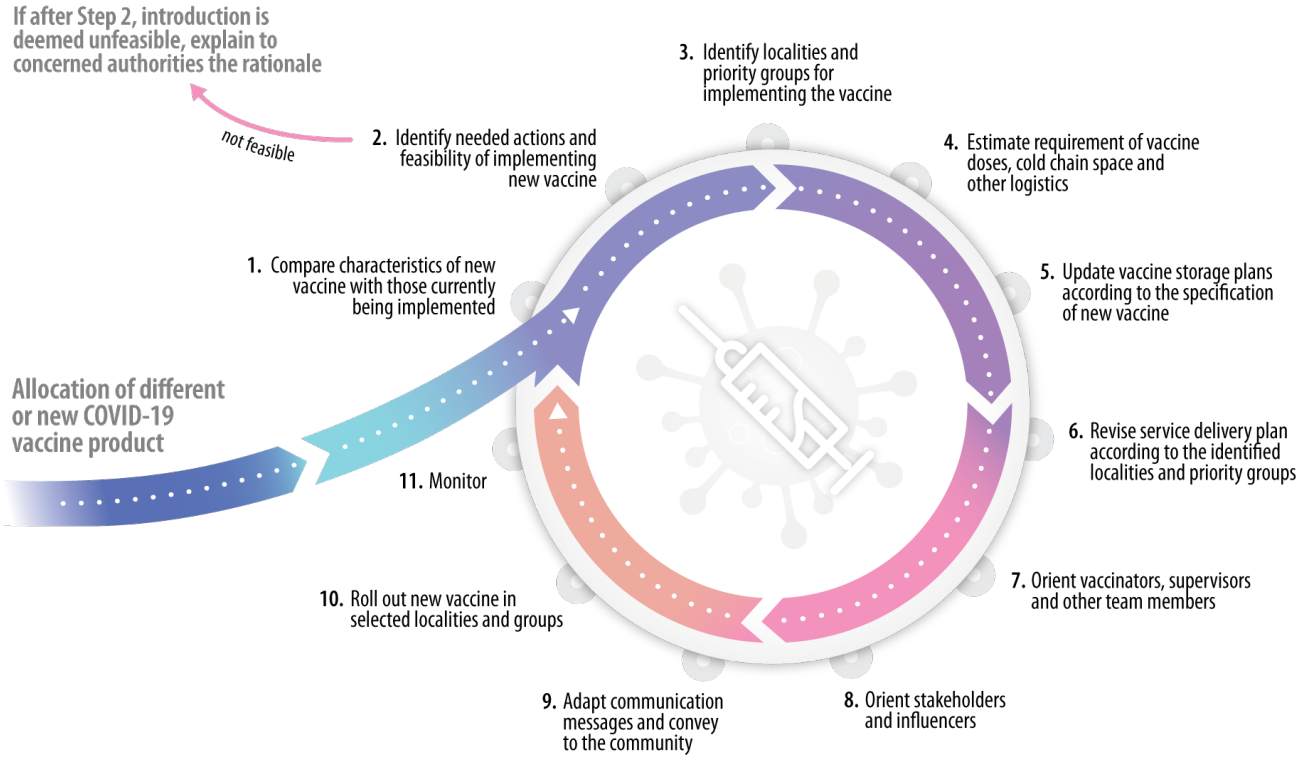
- Advise all vaccinators to double-check and confirm at time of administration that the correct vaccine is given to each individual.

- **Train all stakeholders and influencers** regarding the new vaccine and localities and priority groups identified for implementation. Ensure that the message is conveyed to affected communities to prevent any misconception or reluctance regarding the use of new vaccine.

- **Adapt and tailor communication messages and approaches** based on the evidence generated from social listening and social data. Engage mass communication and local resources to convey information regarding the schedule and location, targeted population groups and benefits of the new vaccine.

- Monitor implementation and take corrective actions, as required.

Fig.3. Steps to be taken when different or new vaccine is supplied to a catchment area



Planning Format 1: Listing of high-risk population groups and estimating their size

Example A: Prioritizing target groups in order of stage of vaccination

#	Priority target groups	Stage of vaccination #			
		1	2	3	Others
1	Older people (aged 60 years and over)	Yes			
2	Health workers* – high or very high risk	Yes			
3	Health workers* – low or moderate risk	Yes			
4	People with underlying health conditions	Yes			
5	Residents of long-term care facilities	Yes			
6	Care and support staff of long-term care facilities	Yes			
7	Other essential workers – police		Yes		
8	Other essential workers – government officials		Yes		
9	Other essential workers – military and security forces		Yes		
10	Other essential workers – teachers		Yes		
11	Other essential workers – others		Yes		
12	High-risk - residents of prisons and closed institutions			Yes	
13	High-risk - Homeless			Yes	
14	High-risk - Minorities or specific ethnic groups			Yes	
15	High-risk - Refugees			Yes	
16	High-risk - Internally displaced populations			Yes	
17	High-risk - Persons in humanitarian settings			Yes	
18	Others (remaining communities and groups)				Yes

Example B: Compiling the estimated number of beneficiaries

#	Priority target group	Stage of vaccination #			
		1	2	3	Others
1	Older people (aged 60 years and over)	3200			
2	Health workers* – high or very high risk	180			
3	Health workers* – low or moderate risk	460			
4	People with underlying health conditions	810			
5	Residents of long-term care facilities	60			
6	Care and support staff of long-term care facilities	15			
7	Other essential workers – police		730		
8	Other essential workers – government officials		225		
9	Other essential workers – military and security forces		650		
10	Other essential workers – teachers		85		
11	Other essential workers – others		110		
12	High-risk - residents of prisons and closed institutions			32	
13	High-risk - Homeless			20	
14	High-risk - Minorities or specific ethnic groups			45	
15	High-risk - Refugees			10	
16	High-risk - Internally displaced populations			10	
17	High-risk - Persons in humanitarian settings			12	
18	Others (remaining communities and groups)				28 500
	Stage wise total targeted population	4725	1800	129	28 500

* Including community health workers

Stages of vaccination as per vaccine availability: stage 1 – vaccine available for 1–10% of population; stage 2 – vaccine available for 11–20% of population; stage 3 – vaccine available 21–50% of population; Others – vaccine available for all remaining population.

Planning Format 2: Name-based list of health workers (government and non-government sectors) and individuals with health conditions

#	Name	Designation/ cadre	Department/ sector	Level of risk	Age	Sex	Address	History of COVID-19	Co-morbidity (if any)	COVID-19 vaccination details			
										First dose		Second dose	
										Vaccine	Date	Vaccine	Date
A	B	C	D	E	F	G	H	I	J	K	L	M	N

Guidance for using the planning format:

1. In columns A and B, enter the serial number (or employee ID or any other identification number) and name of health worker (or individual with underlying health condition).
2. In column C, enter the designation/cadre of the worker (such as nurse, doctor, lab technician etc.). For listing individuals with underlying health conditions, replace designation/cadre with name of underlying health condition.
3. In column D, enter the department (health or other) or sector (public, private, NGO etc.) to which the health worker belongs. For listing individuals with underlying health conditions, replace department/sector with grade/severity of underlying health condition.
4. In column E, enter the level of risk of acquiring infection - very high risk, high risk, medium risk and low risk.
5. In columns F, G and H, enter age (in years), gender and communication address (residence or office) with contact details of the health workers
6. In column I, specify whether health worker has had COVID-19. Enter the month and year of getting diagnosed.
7. In column J, specify if health worker has any underlying health condition and specify the disease. This information is required for prioritizing vaccination as recommended for specified health conditions in case of limited vaccine supply.
8. In columns K, L, M and N, enter details about the vaccine doses administered, including the type of vaccine and date of administering first and second doses of vaccine. This information is important to track the health worker for complete vaccination.

Planning Format 3: Requirement of vaccines doses and vaccine volume by stages of vaccination*

Stage of vaccination	Targeted population	Doses required (Population × Number of doses required)	Required vaccine vials	Total vials required considering wastage	Total vaccine volume (based on volume per dose)
A	B	C	D	E	F
Stage 1	4725	9450	945	1050	21 000 cm^3
Stage 2	1800	3600	360	400	8000 cm^3
Stage 3	129	258	26	29	580 cm^3
Others	28 500	57 000	5700	6330	126 600 cm^3

* Example given in this format is based on estimates as calculated under format 1 (example B). Calculations done here are for vaccine product with 10 doses per vial, a wastage rate of 10%, having packed vaccine volume per dose of 2 cubic cm, with recommended storage temperature +2-+8 OC, and requiring two doses to complete the schedule.

Guidance for using the planning format:

1. In Column A, specify the stage of vaccination as defined in previous steps.
2. In column B, populate the total number of people from different sub-groups prioritized to be vaccinated in respective stages of vaccination.
3. In column C, calculate and mention the number of doses required to vaccinate the targeted population (number of doses required to complete the schedule).

   Total vaccine doses required = targeted population X number of doses required
4. In column D, calculate and mention number of vials required during each stage. This will depend on the number of doses in each vaccine vial and will be calculated per following formula.

   Required number of vials = Total number of vaccine doses required by stage / number of doses in a vial
5. In column E, calculate and mention vials required considering the wastage rate. This will depend on the number of doses per vial and the set wastage rate.

   Total vials required considering wastage= (Required vaccine vials / (100-wastage rate)) × 100
6. In column F, calculate and mention total vaccine volume or the storage space required. This will be calculated based on packed vaccine volume per dose. *(26)*

   Total vaccine volume = (total vials required considering wastage × number of doses per vial) × vaccine × packed vaccine volume per dose

NOTE: For certain COVID-19 vaccines, packed vaccine volume per dose provided by manufacturer may need adjustment depending on the cold chain equipment to be used.

Planning Format 4: Enlisting of cold chain storage facilities in the government and non-government sectors

Name of institution with cold chain facility	Sector (government or private)	Address and contact details	Total storage capacity by temperature*		Space used for vaccines and medical supplies*		Space available for COVID-19 vaccines*		Cost of leasing
			+2 to +8 °C	-20 °C	+2 to +8 °C	-20 °C	+2 to +8 °C	-20 °C	
A	B	C	D	E	F	G	H	I	J
		TOTAL							

* Planners can add columns for other temperature ranges (such as -80°C to -60°C) based on vaccine specifications.

Guidance for using the planning format:

1. In column A, specify the name of institution with facility for vaccine storage in cold chain conditions.
2. In column B, specify the sector to which the institution belongs – government or private.
3. In column C, mention the address and contact details of the institution.
4. In columns D and E, give details of total storage space by temperature (+2 to +8 °C, -20 °C and 80°C to -60°C) available at the facility. This will be calculated from storage space of all equipment (including Ice Lined Refrigerator, Deep Freezer, Walk in Cooler, Walk in Freezer, Ultra low temperature freezers etc.) available at the respective facility.
5. In columns F and G, specify the storage space by temperature ranges (out of total available) that is used for storing routine immunization vaccines and other medical supplies.
6. In columns H and I, calculate and mention the space (by temperature ranges) remaining after storing other vaccines and supplies which can be made available for storing COVID-19 vaccines.
7. In columns J, specify the cost of leasing cold chain space from the private sector or as applicable.

Planning Format 5: COVID-19 vaccine storage plan (with example)*

Name of institution with cold chain facility	Sector (government or private)	Available storage space[a]		Whether currently storing COVID-19 vaccines	If yes	Vaccine doses to be transferred	Cost of leasing
		+2 to +8 °C	-20 °C		Name of vaccine product		
A	B	C	D	E	F	G	H
AAAA	Government	11 500		No	—	11 500	—
BBBB	Government		2000	No	—	—	
CCCC	Government	6000		No	—	6000	—
DDDD	Private	1000		Yes	WWW	—	
EEE	Private	5000		No	—	3500	$$$
FFF	Private		20 000	No	—	—	—

* Same example as in planning format 3. As calculated earlier, total 1050 vaccine vials are required in stage 1 with total vaccine volume being 21,000 cm^3. This situation is planned here in this format for a new vaccine product namely 'VVV' required to be stored at +2-+8 OC temperature. Another vaccine by name 'WWW' was supplied previously.

[a] Planners can add columns for other temperature ranges (such as -80°C to -60°C) based on vaccine specifications.

Guidance for using the planning format:

1. In column A, mention the name of facility followed by its sector in column B. Include all cold chain storage facilities having space for storing COVID-19 vaccines (as per planning format 4).
2. In columns C and D, specify available storage space for COVID-19 vaccines in respective temperature ranges after excluding space booked/occupied for routine immunization vaccines or other medical supplies.
3. In column E, specify whether COVID-19 vaccines are currently stored at the facility. In column F specify the name of vaccines stored. These three columns will help in ensuring different vaccine types are not stored at the same facility (preferable only when there are other facilities).
4. In column G, mention the number of vaccine doses supplied that can be stored considering all the factors of preference.
5. In column H, specify the cost of leasing (applicable for private sector).

In the given example, vaccines are stored at the facilities that shave storage space available in the recommended temperature range, preferably at government facilities and not at the facilities which already have stores of other COVID-19 vaccine product.

Planning Format 6: Details of personnel identified for COVID 19 vaccination activities

Employee unique ID	Name of staff member	Designation, cadre	Contact details	Department, organization	Sector (public, private, CSO)	PRIVATE Estimated cost of recruiting/ deploying	GOVERNMENT Number of hours/days for COVID-19 vaccination	Role in COVID-19 vaccination	COVID-19 vaccination status (none/ at least one dose/ complete schedule)	Training on COVID-19 vaccination		Remarks
										Received (Yes/No)	Mode (online/in person)	
A	B	C	D	E	F	G	H	I	J	K	L	M

Guidance for using the planning format:

1. In column A, mention employee ID or any other identification number of the person followed by name in column B.
2. In column C, specify the designation or cadre of the person such as nurse, laboratory technician, pharmacist etc.
3. In column D, mention the contact details (contact number, residential address, or address of the department).
4. In column E, specify the department/institution/organization (e.g., health, social welfare, municipality, etc.) where the person is employed.
5. In column F, specify the sector to which the person belongs such as government, private, civil society, etc.
6. In column G, specify the cost of recruiting or deploying the person. This applies to the staff from the private sector as well as from other government departments other than health who will be paid remuneration for the services received.
7. In column H, specify the number of hours or days the government health worker will be able to provide for COVID-19 vaccination.
8. In column I, specify the exact role of the identified person in COVID-19 vaccination such as vaccinator, recorder, mobilizer, supervisor, etc.
9. In column J, mention the COVID-19 vaccination status of the person. This information is important for tracking and getting the person vaccinated.
10. In columns K and L, specify whether the person has received any training on COVID-19. This will help in tracking until the person is trained. Also specify mode of the training – whether it was digital/online or in-person training.
11. In column M, specify any other relevant information related to the person, like any spoken language that can be helpful in any particular area or with any ethnic group. Planners may add an additional column to specify the group selected for training.

Planning Format 7: Plan for trainings of health workers on COVID-19 vaccination

Batch No.	Date and day	Time	Venue for training	Mode of training	Names of trainers	Total participants	Logistics required	Budget required
A	B	C	D	E	F	G	H	I

Guidance for using the planning format:

1. In column A, enter the batch number of the training. Planners may add an additional column in format 6 (for compiling details of the personnel identified for COVID-19 vaccination) and specify the training batch number.
2. In columns B and C, specify the planned date (and day) and time for the training.
3. In column D, mention the name of the venue where the training is to be organized. Identified venue should be well equipped logistically and easily accessible to the scheduled participants.
4. In column E, specify the mode of training (whether it is in-person or blended). This will help in ensuring the required logistics.
5. In column F, specify the name/s of trainers for that batch.
6. In column G, specify the total number of participants. While fixing the number, ensure proper social distancing and other preventive measures to prevent COVID-19 transmission.
7. In column H, specify the logistics required such as number of training kits, food packets, audio-visual equipment etc.
8. In column I, mention the budgetary requirement for conducting respective batch of training. This should be itemized, including cost for hiring venue, travel allowance to trainers and participants, training kits, food and refreshments, overnight stay (if required), hiring of audio-visual equipment and other costs incurred depending on area specific requirement (such as cost of mobilization for in-person contact with community leaders, transportation to book venue etc.).

Planning Format 8: Planning for vaccination activities at fixed sites

Name of facility identified for vaccination site	Sector	Concerned authority	Supervisor	Weekdays	Vaccination time	Vaccination team			
						Vaccinator	Recorder	Support staff	Other staff
A	B	C	D	E	F	G	H	I	J

Guidance for using the planning format:

1. In column A, specify the name of health facility (or other venue) where fixed site sessions will be organized
2. In column B, specify the sector – whether the facility (venue) belongs to government or private sector or to any NGO/other organization
3. In column C, mention the name of concerned authority (with contact details) responsible for organizing and coordinating vaccination
4. In column D, mention the name of supervisor (with contact details) to provide on-site support to vaccination team
5. In column E, specify the weekdays (Monday to Saturday or Sunday) when sessions will be organized followed by session timings in column F.
6. In columns G to J, specify the names of members in the vaccination team (vaccinator, recorder, support staff and any other staff member). These details will be taken from planning format 5.

Planning Format 9: Planning for vaccination activities at community-based outreach sites

Name of village, locality or habitation	Address of vaccination site	Estimated target population	Nearest health facility			Date and day of organizing session	Session timings	Vaccination team			Name of supervisor	Name of mobilizer or local influencer
			Nearest health facility	Distance from the session site	Contact person			Vaccinator	Recorder	Support staff		
A	B	C	D	E	F	G	H	I	J	K	L	M

Guidance for using the planning format:

1. In column A, specify the name of the locality (villages, urban dwellings etc.) where outreach session will be organized.
2. In column B, mention the address of the location where session is planned in the respective locality. For example, community center, pharmacy.
3. In column C, specify the estimated target population of the locality. This information can be based on Census data, head count or any other survey, or departmental records of frontline workers and government departments etc. This information will help in planning for vaccines and logistics to be supplied to the session site. It will also help in rationalizing the suitability of the venue depending on injection load.
4. In columns D, E and F, mention the name of nearest health facility, its distance from the locality and contact person at the facility. This information is important for referring cases of adverse events. Based on contextual requirement, information about near cold chain storage facility can be replaced/added (to support planning for vaccine transportation).
5. In column G, specify the date (and or the weekday) planned for organizing the session followed by session timings in column H. This information should be agreed on with and conveyed to the local mobilizers and influencers to ensure mobilization of target population for vaccination on the scheduled date.
6. In columns I, J and K, specify the names of team members (vaccinator, recorder and support staff) followed by details of supervisor in column L and of local mobilizer, influencer and/or stakeholders in column M. These details will be taken from planning format 5.

Planning Format 10: Planning for mobile vaccination teams

Name of the location	Address of the site	High risk group targeted	Estimated high-risk population	Nearest health facility			Date and day of organizing session	Details of transport facility (vehicle no.)	Vaccination team			Name of supervisor	Name of mobilizer or local influencer
				Nearest health facility	Distance from the session site	Contact person			Vaccinator	Recorder	Support staff		
A	B	C	D	E	F	G	H	I	J	K	L	M	N

Guidance for using the planning format:

1. In columns A and B, specify the name of the area to be visited and address of the site where vaccination will be organized, respectively. In areas where GIS mapping is done to show the location of session sites, geo-spatial coordinates can also be mentioned to locate the sites using smartphone-based mapping applications.
2. In column C, specify the priority or high-risk group population group to be vaccinated followed by an estimate of its population in column D. This information should be based on the head count data or estimates from any other source. This information will help in planning for vaccines and logistics to be supplied to the session site.
3. In columns E, F and G, mention the name of nearest health facility, its distance from the locality and contact person at the facility. This information is important for referring cases of adverse events.
4. In column H, mention the date and weekday for visiting the site to vaccinate the target population.
5. In column I, mention the details of transport facility to be used by the mobile team. A dedicated transport vehicle is recommended for mobile teams.
6. In columns J, K and L, specify the names of team members (vaccinator, recorder and support staff) followed by details of supervisor in column M and of local mobilizer, influencer and/or stakeholders in column N. These details will be taken from planning format 5.

Planning Format 11: Listing of available vehicles for vaccine transportation

S. No.	Type of vehicle	Registration No. or as applicable	Condition	Sector	Carrying capacity	Fuel used	Mileage (km/ liter of fuel)	Hiring cost or as applicable	Name and contact details of driver	Name and contact details of support staff
A	B	C	D	E	F	G	H	I	J	K

Guidance for using the planning format:

1. In column B, mention the type of vehicle (car, jeep, van, truck, motorbike, bicycle, etc.). In column A, specify the serial number sequentially.
2. In column C, specify the registration number of the vehicle (or as applicable depending on the context).
3. In column D, specify the working condition of the vehicle – whether it is functional, require servicing (major or minor), or non-functional (with reason). Budgetary support will be required if the vehicle requires any kind of servicing (the amount can be mentioned in this column, which can be aggregated in the budget compilation sheet in planning format 16).
4. In column E, specify the sector to which it belongs – whether it is from government department (mention department) or from the private sector.
5. In column F, mention the carrying capacity. In simple terms, describe the number of vaccine carriers or cold boxes and/or persons the vehicle can carry.
6. In column G, specify the type of fuel used (petrol, diesel, gas, battery etc.) and in column H, its mileage i.e. kilometers/miles for every liter of fuel.
7. In column I, mention the daily/periodic hiring cost of the vehicle belonging to private sector (or government as per the context). Information in column G, H and I will be used for budgetary planning for transportation.
8. In columns J and K, mention the name and contact details of driver and support staff (or assistant driver/cleaner) respectively. Specify in case the position is vacant at time of planning.

Planning Format 12: Vaccine transportation plan

Vehicle type and number	Details of driver or contact person	Supervisor responsible for the vehicle	Route plan (nearest site to be first in order)					Other sites to be visited (waste management, warehouse etc.)	Total estimated distance covered
				Site 1	Site 2	Site 3	Site 4		
A	B	C	D	E	F	G	H	I	J
			Location						
			Staff to deliver						
			Time of delivery						
			Time of return						
			Location						
			Staff to deliver						
			Time of delivery						
			Time of return						

Guidance for using the planning format:

1. In column A, mention the type of vehicle and its registration number.
2. In column B, mention the contact details of driver or the contact person. In column C, mention the details of the supervisor responsible for vaccine transportation by this vehicle. Supervisor assigned to the teams can also serve as vehicle supervisor and can travel in the same vehicle.
3. Columns E to H are for the details of sites to which vaccines will be transported by the vehicle. The number of sites can be added/removed depending on the route and distance between the sites. Specify location of each site, name of member of the vaccination team responsible for collecting vaccines, and a tentative time of delivery before the session starts and of collecting after the session ends.
4. In column I, mention other sites to be visited by the vehicle such as a warehouse to collect logistics and to a waste management facility for transporting waste for disposal.
5. In column J, specify an estimate of total distance to be traveled by the vehicle. This will facilitate planning and allocating budget for fuel.

Planning Format 13: Planning for demand, risk communication and community engagement activities

Name of locality	Targeted population group	Activity planned	Date and time	Responsible staff member	Other team members		Name/s of stakeholder	Budgetary requirement
					1	2		
A	B	C	D	E	F	G	H	I

Guidance for using the planning format:

1. In column A, mention the name (and/or address) of the locality (village, slum, community dwelling, etc.) or any institution for a defined priority or high-risk group in which activity is planned.
2. In column B, specify the priority or high-risk group targeted for the activity such as residents of long-term care facility, prison, or a group of refugees, etc. This will facilitate focused planning and delivery of tailored message to the target group.
3. In column C, specify the type of activity planned. For example, community meeting, road show, street play, home visit, seminar, press briefing etc.
4. In column D, mention the date and time when the activity is scheduled.
5. In column E, mention the name (and contact detail) of staff member responsible for organizing the activity.
6. In columns F and G, specify the names (and contact details) other staff members who will support in organizing the activity.
7. In column H, include the name/s and/or status of the stakeholders (such as health volunteer) who will participate and/or support the activity.
8. In column I, specify an estimated budgetary requirement for organizing the activity. Budget may be required for arranging logistics such as furniture, tents, transportation, remuneration to volunteers etc.

Planning Format 13: Planning for demand, risk communication and community engagement activities

Name of locality	Targeted population group	Activity planned	Date and time	Responsible staff member	Other team members		Name/s of stakeholder	Budgetary requirement
					1	2		
A	B	C	D	E	F	G	H	I

Guidance for using the planning format:

1. In column A, mention the name (and/or address) of the locality (village, slum, community dwelling, etc.) or any institution for a defined priority or high-risk group in which activity is planned.
2. In column B, specify the priority or high-risk group targeted for the activity such as residents of long-term care facility, prison, or a group of refugees, etc. This will facilitate focused planning and delivery of tailored message to the target group.
3. In column C, specify the type of activity planned. For example, community meeting, road show, street play, home visit, seminar, press briefing etc.
4. In column D, mention the date and time when the activity is scheduled.
5. In column E, mention the name (and contact detail) of staff member responsible for organizing the activity.
6. In columns F and G, specify the names (and contact details) other staff members who will support in organizing the activity.
7. In column H, include the name/s and/or status of the stakeholders (such as health volunteer) who will participate and/or support the activity.
8. In column I, specify an estimated budgetary requirement for organizing the activity. Budget may be required for arranging logistics such as furniture, tents, transportation, remuneration to volunteers etc.

Planning Format 14: Preparing supervisory visit plan

Date and day	Name of supervisor	Designation	Department	Contact number	Details of sites to be visited				Remarks
					Site 1	Site 2	Site 3	Site 4	
A	B	C	D	E	F	G	H	I	J

Guidance for using the planning format:

1. In column A, specify the date and day of visit. This should correspond to the service delivery plan for fixed and outreach sites.
2 In column B, mention the name of supervisor followed by designation, department and contact number in columns C, D and E respectively.
3. In columns F to I, specify the names and location of vaccination sites scheduled to be visited by the supervisor. Depending on context, sites may be added or deleted.
4. In column J, mention any other details regarding the visit. For example, activity to be done at any site such as validation of the microplan, follow up with local influencer, or reviewing health worker skill etc.

NOTE: Visit plan should be prepared so that supervisors meet their vaccinator teams before start of activity to brief them and after the session is completed to debrief about the day's progress and required actions.

Planning Format 15: Comparing the vaccine characteristics for re-evaluating microplan

Example:

Characteristics	Vaccine in use	New vaccine	Required action
A	B	C	D
Name (type) of vaccine	Pfizer/BioNTech	AstraZeneca	
Presentation	multidose vial and diluted before use	Multi dose vial, liquid	
Doses per vial	6	2 or 10	
Vial size			
Required temperature – storage	-70 ^{0}C	2-8 ^{0}C	Ultra-cold chain
Storage temperature	UCC up to expiry date; -20°C for 2 weeks; 2-8^{0}C for 31 days	2-8^{0}C up to expiry date	
Handling precaution	Requires dilution after thawing; Non-standard injection volume 0.3 ml/dose Should not be shaken	No dilution or reconstitution required	
Shelf life	No more than 2 hours at room temperature		
Guidance on using open vials	No VVM	No VVM	
Recommended age group	16+ years	18+ years	
Doses required (for a person)	2 doses (0.3 ml/ dose),	2 doses (0.5 ml)	
Difference in two doses	3-4 weeks apart	8-12 weeks apart	
Route of administration	Intramuscular	Intramuscular	
Contraindication (if any)	Allergic to vaccine		

Guidance for using the planning format:

1. Column A has list of different vaccine characteristics to be considered while planning. Planners may add or remove characteristics depending on applicability and relevance.
2. In column B, specify the characteristics of COVID-19 vaccine currently being used in the catchment area. Planners may add more columns to include other vaccines that were implemented earlier.
3. In column C, specify the characteristics of a different or new vaccine allocated or being supplied for use in the catchment area.
4. In column D, identify the needed actions to fulfill the requirements of new vaccine.

Planning Format 16: Summary of budgetary requirement for COVID-19 vaccination related activities

S. No.	Programme area	Activity	Total budget required		Budget source		Responsible authority	Detailed plan developed
			Short term	Mid term	Primary	Secondary		
A	B	C	D	E	F	G	H	I
	Training	Material						Yes
		Venue						No
		Other logistics						
	Hiring vaccinators							
	Vaccine transportation							

Guidance for using the planning format:

1. In column A, enter the programme areas and activities under them in serial numbers (example: programme area 1, activity 1.1, 1.2 etc.)
2. In column B, mention the broad programme area for which budget is compiled. For example, training, hiring vaccinators, vaccine transportation, managing waste, etc.
3. In column C, specify different activities under the programme areas mentioned in column B. For example, under training various activities may include – developing training material, hiring venue, arranging other logistics, etc.
4. In columns D and E, specify budgetary requirements for short and mid-term activities. For some activities such as training, budget will be required only during the initial period and later it can be integrated with immunization programme budget or health system strengthening budget. Planners and programme managers must identify specific activities depending on the context and develop comprehensive budget layout.
5. In columns F and G, specify primary and secondary sources of budget for specified activities. For example, primary source for hiring vaccinators from health department and secondary source from some other department/stakeholder. Inclusion of these columns depends on the context and guidelines issued from the national (or provincial) level.
6. In column H, specify the name and details of the concerned authority from the implementing department to oversee budget allocation and utilization.
7. In column I, specify in Yes or No if detailed breakup of specific activities have been prepared.

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Annex 1
Background data required for COVID-19 vaccination microplanning

1.	**Communities and settlements**	• Names and addresses of settlements (geo-location, if available) • Type: rural, urban, temporary (migrants, refugees, nomads, religious gathering), tribal, etc. • The population of the settlement – the age-wise proportion • Distance from the main health facility (or equivalent institution) • Distance from nearest health facility/cold chain storage point • Connectivity: motorable, non-motorable, hilly, riverine, forest, etc. • Seasonal factors or any specific challenge related to access, acceptance (based on the experience of previous health activities)
2.	**Residential facilities for older people and those with underlying health conditions**	• Names of facilities and their addresses of old age homes, long-term residential treatment facilities, prisons, hostels, orphanages, etc. • Number of inhabitants – breakdown by type or age • Number of staff, by cadre • Distances from the health facility/cold chain storage point • Geo-locations • Contact details • Any specific challenge
3.	**Health infrastructure**	• Names and addresses of government health facilities (hospitals, PHC, subcenters, urban health posts, etc.) • Names addresses of private hospitals and clinics (with contact details) • Distances from the health facility/cold chain storage point • Geo-locations • Whether it can serve as a vaccination site? (Yes or no) • Contact details
4.	**Vaccine logistics storage and transportation facilities**	• Available cold chain points with address (and geo-locations), number of functional equipment (electrical and non-electrical), and total storage capacity • Temperature ranges available for vaccine storage • The storage capacity available for COVID-19 vaccines (after deducting space required for routine immunization vaccine and other essential drugs requiring refrigeration) • Dry storage areas with address (and geo-locations) and total storage capacity • Alternate storage points in government and private sectors. • Available vehicles (refrigerated and non-refrigerated) – 4-wheelers, 2-wheelers, other modes of travel
5.	**Human resource**	• Number of staff from government health department (cadre wise and health facility wise) – doctors, pharmacists, cold chain handlers, vaccinators, nursing staff, supervisors, data managers, ancillary staff • Health workers from the private sector that can be deployed for COVID-19 vaccination or support activities (cadre wise with contact details) • Names (and contact details) of leaders (political and religious), influential persons, recognized teachers, officials from education department and doctors, community level influencers, etc. • Details about NGOs', CSO, Faith Based Organizations (FBO) and Community Based Organizations (CBO) active in the area

6.	**Standards for making estimates and budgeting** *COVID-19 vaccine Introduction and deployment costing tool (CVIC). Geneva: World Health Organization; United Nations Children's Fund. 2021 (https://www.who.int/publications/i/item/who-2019-ncov-vaccine_deployment_tool-2021.1, accessed 9 October 2021)*	• Vaccine: doses per vial, temperature for storage and transportation, shelf life, wastage factor (open vial and closed vial wastage) • Other logistics: requirement (per person, per day, per dose, etc.), conditions for storage and transportation, wastage factor • Cold chain: doses (or vials) that can be stored per unit cold chain space, dead space, cost of hiring (per day/per unit volume) • Human resource: vaccinators and staff required per team/session site; population base per session; number of vaccinations per team per day; number of teams per supervisor; rates of honorarium (where applicable) • Vaccine delivery: fuel consumption (per km/km per liter) for different types of vehicles, other expenses related to maintenance, hiring charges • Training: cost of venue, training material, honorarium to resource persons, per diem to participants and support staff, etc. • Communications and social mobilization requirements for continuous reach to populations (including various channels, social media, advocacy efforts)

Annex 2
Priority groups for vaccination

Group	Description
Health workers	• Health service providers such as doctors, nurses, midwives, public health professionals; laboratory-, technicians (medical and non-medical); personal care workers; community health workers; and healers and practitioners of traditional medicine. • Health management and support workers such as cleaners, drivers, hospital administrators, district health managers and social workers, and other occupational groups involved in health-related activities. • People employed in long-term care, public health, community-based care, social care and home care and other occupations in the health and social work sectors.
Older people	People of 60 years and over are considered as priority group for COVID-19 vaccination due to their higher risk of developing severe disease or death. Nationally, the age-based vulnerability and risk from COVID-19 is decided by the NITAG/expert group depending on the available evidence on differential mortality by age. Accordingly, national governments will take decisions to prioritize any other age group or lower than the recommended age group for vaccination.
People with underlying medical conditions	People with co-morbidities, irrespective of their age, are at greater risk of developing severe COVID-19. Major underlying medical conditions that increase the risk are - cardiovascular diseases; chronic kidney disease; chronic respiratory disease; chronic neurological disorders; chronic liver disease; cancers with direct immunosuppression; cancers with possible immunosuppression caused by treatment; diabetes; HIV/AIDS; tuberculosis (active); sickle cell disorders; tobacco smoking; severe obesity (BMI $\geq$40); and hypertension. An estimated 22% of the global population, are affected by at least one underlying condition that puts them at increased risk of severe COVID-19 (ranging from <5% of those younger than 20 years to >66% of those aged 70 years or older).
Other essential workers	• People critical for implementing important services to keep societies running and who frequently come in contact with the general public are at a higher risk of acquiring and transmitting SARS-CoV-2. These include teachers and school staff, police, childcare providers, agriculture and food workers, government workers essential for functioning of key departments and not covered by other categories, military and security forces, rescue workers, fire-fighters, port/courier service providers, transportation workers, utility service providers, municipal workers, etc. • Social groups and employment groups, people living or working in prisons and other detention facilities, incarcerated people, dormitories, informal settlements or urban slums who cannot maintain effective physical distance are also at elevated risk of acquiring and transmitting infection. • Low-income people in dense urban neighborhoods; homeless people; military personnel living in tight quarters; and people working in certain occupations such as mining and meat processing.
Due to inequities and humanitarian settings	These include: • socially disadvantaged or marginalized group based on their ethnic, racial, gender, religious and sexual background • refugees, internally displaced people, asylum seekers, populations in conflict settings or those affected by humanitarian emergencies • stateless people, nomadic populations and people living in areas under the control of any non-state armed group • people living with disabilities and in detention and living in institutionalized settings (long term care facilities) • Low-income migrant workers, vulnerable migrants in irregular situations, and people living in poverty, the homeless and those living in informal settlements or urban slums • Hard-to-reach population groups such as indigenous people and those in rural and remote areas

Annex 3
Sources of data for estimating people in priority population groups

Priority group	Sources of field-based data	Sources of estimated data
Health workers	• Departmental staff registers for details about different cadres of health workers in health and other government departments and private institutions (hospitals, clinics, pharmacies, etc.) • NGO registration bureaus • Information about health workers such as individual practitioner collected from social welfare department or other local offices.	• National Health Workforce Accounts contain estimated numbers of health workers in WHO Member States *(27)*
Older people	• Census-based population data • Civil registration system • National bureau of statistics (for estimates by occupational categories) • Population registers and databases • Head count survey data collected by frontline workers of different departments • Service data and departmental records • Electoral records and data • Life course vaccination action plans and data such as influenza vaccination programme	• Population projections based on national data • Demographic sample surveys • The World Population Prospects 2019 (national estimates) *(28)* • Demographic Year Books (national estimates) *(29)* • World Bank *(30)* and Eurostat data *(31)*
People with underlying health conditions	• Institutional patient records or registries from hospitals, clinics, and health centers • Data available with health workers/staff • Registers from long term care facilities, residential care facilities, specialized medical facilities and practitioners • NGOs working on specific disease conditions	• National bureau of statistics • Data from clinical research *(32, 33)* • Global estimates • Demographic sample surveys • Non-communicable diseases country profiles (WHO) *(34)*
Other essential workers	• Staff registries • Departmental records of the concerned departments • NGO data and registries • Professional associations	• Demographic sample surveys
Due to inequities or humanitarian settings	• Population registers and databases • Population surveys	• ILO Global Estimates on International Migrant Workers *(35)* • UN Department of Economic and Social Affairs, International Migrant Stock 2020: Age, sex and destination *(36)* • UNHCR Refugee Statistics *(37)* • Global Internal Displacement Database *(38)* • IOM Global Data Portal *(39)*

Annex 4
Attributes of online and in-person trainings

Attribute	Online digital training	In person instructor led training
Individuals can participate at any place and time	Yes, self-paced	No, only at specified venue and time
Suitable for places where it is not possible to travel to a central training location or meet people in groups (with mask-wearing and social distancing)	Yes	No
Standard training content leading to uniform understanding among staff members	Yes	May vary
Training of large number of staff at the same time without compromising their respective job functions	Yes	No, work compromises
Requires affordable access to a laptop computer, tablet or smartphone	Yes	No (or minimal)
Requires reliable internet connection, either via live stream or download	Yes	No (or minimal)
Available in different languages	Yes	No, translation required
Faces issues related to availability of trainers and trainees, quality of logistics and training material	No	Yes
Saves time and resources required for developing and publishing training material, recruiting trainers and organizing trainings	Yes	No

Annex 5
Target groups, potential service delivery strategies and key considerations

Strategy	Target group	Vaccination site		Key considerations
Fixed sites	• Health workers • Older adults • Persons with underlying medical conditions	• Primary health care facilities • Out-patient clinics in hospitals (government and private) • Private clinics • Long term care facilities • Day care centres		• A centralized service delivery approach enabling the vaccination of masses, especially in the urban areas. • Should be considered during the first stage of vaccination with limited vaccine supply to prevent vaccine wastage due to less uptake and/or transportation. • Should be deployed at strategically selected areas to ensure logistical arrangement and immediate management of any adverse event. • Health centres and hospitals should serve as the primary venues and may remain open after the daily working hours on weekdays. • Using platforms such as private medical clinics should follow country specific regulations and guidelines. • Disease focused interventions such as building capacity of anti-retroviral therapy (ART) clinic staff and promoting vaccination of people living with HIV at these centres to avoid stigma.
Outreach sites	• Older adults • Persons with underlying medical conditions	• Community care centres • Village designated health outreach sites and habitations • Urban settlements such as slums		• A decentralized strategy enables reaching out to and vaccinating targeted sub-groups in the catchment area. • Should be considered in second or third stages of vaccination when supply of COVID-19 vaccines increase. • Suitable for settlements located at distance from the health facilities. • The sites can be planned at prominent and convenient places with enough space for adult beneficiaries to wait before and after the vaccination. • The sites, weekdays and timings of vaccination should be finalized in discussion with community leaders and elder members. The number of vaccinator teams and number of session days can be decided based on the number of beneficiaries. • A health facility must be designated, and transport facility provided for referral of any case of adverse event. • Driver unions working with sub-district health care delivery as "emergency" support group can be involved in planning for transport during adverse event.
Mobile teams or clinics	• Older adults • Persons with underlying medical conditions • Area-specific high-risk groups *(Such as disadvantaged socio-demographic groups, low-income migrant workers, refugees and stateless persons, IDP/ asylum seekers, population in conflict and in emergency and humanitarian settings)*	• Pharmacies and private health facilities • Home visits • Workplaces • Parks and drive-through • Dormitories • NGOs' • Special strategies for insecure areas - access negotiation and transit points		• A decentralized strategy deploying temporary vaccination sites to reach and vaccinate populations or communities facing specific challenges and requiring additional access to vaccinations. • This strategy is important in communities and sub-groups with: – a high social vulnerability (rural or resource-scarce communities) – a sizable population of people with low literacy – inability to travel due to lack of public transportation – mobility issues or disabilities, such as among residents in care homes – limited access to medical providers or covid-19 vaccination clinics – racial/ethnic disparities – difficult reach to critical infrastructure or health staff – lack of vaccine confidence or vaccine hesitancy – unavailability of affordable internet access for pre-registration • A thorough needs assessment should be conducted to identify barriers to vaccination before planning for mobile teams. • Focus should be given to minimize vaccine wastage when teams are planned for remote and sparsely populated areas with lesser number of beneficiaries. In such cases, two or more closely located sites can be planned on same day. • These should be deployed at strategically selected areas to ensure logistical arrangement and immediate management of any adverse event.
Mass campaigns	• Older adults • General population	• Large settlements • Public and private establishments • Educational institutions • Marketplaces		• More than one team and team of support staff should be deployed to manage large number of people and stakeholders approaching, accessing and leaving the vaccination site. • A team of medical professionals should be deputized to manage adverse events and for providing other health promotion services. • Banners and posters should be strategically displayed to draw attention to the site. Local volunteers, social mobilizers and frontline workers of different departments and local groups must actively mobilize the beneficiaries to the session site.

Annex 6
Indicators for monitoring COVID-19 vaccination

1. COVID-19 vaccination uptake indicators

1.1 Vaccine uptake (or vaccination rate)

Targeted number of beneficiaries and the number of people vaccinated with a specified dose of the vaccine during a specified period

Uptake expresses vaccination activity over time

It is expressed as an absolute number or as the proportion of a target population.

1.2 Vaccination coverage

The proportion of target population that is vaccinated

Coverage expresses the vaccination status and resulting protection among a population

It is expressed as a percentage of a population target, i.e., the total population in a catchment area or priority group, rather than as a percentage of an operational target. For example, if a country that plans to vaccinate 10% of its population may consider it has a 100% implementation rate if it reaches that target, but population coverage will still be only 10%.

1.3 Disaggregated data on uptake and coverage

This is used to monitor implementation of prioritization policies and equitable distribution of vaccines.

Dimensions to be used for disaggregating COVID-19 vaccination data are as follows:

i. **Vaccine product** – by uptake/coverage of last recommended dose for each vaccine product in use in a catchment area. It also monitors safety of different vaccine products.
ii. **Geography** – by dwellings and community groups etc.
iii. **Sex**
iv. **Age groups**
v. **Occupation** – such as health workers
vi. **Other risk factors** – such as people with underlying health conditions
ivi. **Context** – such as people living in residential care facilities, prisons, hostels, etc.
viii. **Equity and humanitarian dimension** – such as people belonging to socio-economic, ethnic, linguistic, religious, and socially disadvantaged groups or underserved and deprived communities.

2. Vaccine delivery monitoring indicators

2.1 Vaccines allocated

Vaccine doses allocated to a certain area as a percentage of the total population, or the percentage of people eligible at a certain phase in the vaccine roll-out, divided by the number of doses in the schedule.

Facilitates monitoring of vaccine sufficiency and fair distribution of vaccines.

2.2 Vaccines delivered

Percent of doses distributed during a time-period out of total doses allocated doses for the same period.

2.3 Vaccines administered

The number of doses administered during a time-period. This number can be compared with delivered vaccines to assess the efficiency of the vaccination process by facility, area or district.

3. Coverage and equity indicators

3.1 Progress over time

Vaccine uptake disaggregated by different dimension against targets (for example, 80% coverage among the general population), or milestones (vaccinate 50% of all people over 60 by June).

3.2 Uptake by priority groups

To monitor justified differences in immunization outcomes. For example, to assess to what extent older people or health workers are vaccinated ahead of the general population.

3.3 Inequities in uptake

To monitor unjustified differences in immunization outcomes. For example, differences between males and females, between regions of a country or between ethnic groups.

4. Vaccine safety indicators

4.1 Incidence of minor and major side effects

4.2 Incidence of severe adverse events following immunization

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