Guidance on the use of digital solutions to support the COVID-19 national deployment and vaccination plans

Prepared by the COVAX Innovation to Scale Working Group

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DICE Digital Health Centre of Excellence

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Acronyms

AEFI	Adverse Events Following Immunization
ANC	Antenatal Care
API	Application Programming Interface
BMGF	Bill & Melinda Gates Foundation
C19RM	COVID-19 Response Mechanism
CCE	Cold Chain Equipment
CDC	US Centre for Disease Control
CEPI	Coalition for Epidemic Preparedness Innovations
CHAI	Clinton Health Access Initiative
CHW	Community Health Worker
CSO	Civil Society Organization
DHIS2	District health Information System 2
DICE	Digital Health Center of Excellence
DIIG	Digital Implementation Investment Guide
DPPA	Digital Pandemic Preparedness Assessment
EDIT	Early Stage Digital Health Investment Tool
EIR	Electronic Immunization Record
eHealth	Electronic Health
eLMIS	Electronic Logistics Management Information System
EPI	Expanded Programme on Immunization
EUM	End User Monitoring
FDCO	The Foreign, Commonwealth & Development Office
GIS	Geographic Information System
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
HRH	Human Resources for Health
ICC	Interagency Coordinating Committee
ICT	Information and Communications Technology
IHRIS	Human Resource Information System
ITN	Insecticide-Treated Bed Nets
IVR	Integrated Voice Response
LLIN	Long-lasting Insecticidal Net
M&E	Monitoring and Evaluation
MoH	Ministry of Health
MoICT	Ministry of Information, Communications and Technology
NDVP	National Deployment and Vaccination Plans
NLWG	National Logistics Working Group
NCD	Noncommunicable Diseases
NSO	National Service Organization
ODK	Open Data Kit
PHC	Primary Health Care
PNC	Post Natal Care
RCCE	Risk Communication & Community Engagement
RTM	Real Time Monitoring
ToR	Terms of Reference

TSS	Target Software Standards
TWG	Technical Working Group
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VPD	Vaccine Preventable Diseases
WG	Working Group
WHO	World Health Organization

Introduction

COVAX, the vaccine pillar of the ACT Accelerator, is co-led by CEPI, Gavi, UNICEF, and WHO, and will facilitate the equitable access and distribution of vaccines to protect people in all countries through the values framework endorsed by the WHO SAGE on immunization. As countries, through their Interagency Coordinating Committee (ICC) and their logistics advisory sub-groups (the NLWG) are preparing their National Deployment and Vaccination Plans (NDVP) for COVID-19 vaccines and preparing funding proposals to Gavi, Global Fund, the World Bank and other donors, there is an opportunity to identify areas where digital solutions and innovations can amplify the efforts, while producing actionable data.

As per the Gavi CDS guidelines (pg 6), countries are encouraged to include innovative activities that support COVID-19 vaccine delivery in their CDS needs based funding requests where possible. For the CDS needs based funding requests, Gavi defines innovation broadly, as the use of practices, products, or services new to COVID-19 vaccine delivery in a country. In this guide, we have provided an overview of the most evidence based and promising digital innovations and procedures that can be deployed at different times during vaccine planning, distribution and scale in low- and middle-income settings, using the NDVP framework. The proposed actions presented complement broader guidance and make strategic references to the WHO Digital Implementation Investment guide (DIIG), and the UNICEF digital health guidance for COVID-19 response.

Key considerations for introducing a new vaccine and leveraging digital solutions to support its deployment

Introducing any new vaccine – especially with new target populations, through potentially new delivery strategies is challenging. Ensuring acceptance and uptake of COVID-19 vaccination at country level presents a unique set of difficulties but is key to successful reduction of transmission and containment of the pandemic. To ensure acceptance and uptake of COVID-19 vaccination countries will need to adopt an integrated approach that:

- starts with listening to and understanding target populations, to generate behavioral and social data on the drivers of uptake and to design targeted strategies to respond.
- builds a supportive and transparent information environment and addresses misinformation through social listening and assessments that inform digital engagement initiatives.
- builds trust and acceptance of the vaccines through engagement of communities by civil society organizations, particularly for vulnerable target populations.
- provides health workers with the requisite knowledge of COVID-19 vaccines as first adopters, trusted influencers, and vaccinators, giving them the skills to communicate effectively and persuasively with target populations and communities; and
- prepares countries to respond to any reports of adverse events following immunization (AEFI) and have planning in place to mitigate any resulting crises of confidence.
- strives for equity in vaccine access as a guiding principle for all countries to adequately protect groups experiencing greater burden from COVID-19 disease.
- ensures that the planning team is representative of the Governments eHealth and digital transformation structures, rather than sits within disease verticals. This often requires EPI, Community Health, M&E, Planning, ICT and other key stakeholders within the MoH, and sometimes external stakeholders (MoICT, ICT Authority, Communications Commission, etc.).

Once a planning team has been formed, they should be convened together with any important additional stakeholders to articulate a common understanding of the main goals of the health programme and how they align with your country's national digital health strategy (if there is one). The team should also review core programme documents, data and assessment reports that describe the programme's goals and objectives, including how it has performed to date (see DIIG pg. 22).

- Review Health Sector Development Plan, National Vaccine Deployment plan, eHealth strategy, etc.
- Ensure that national coordination structures (eHealth TWGs, donor coordination WGs, etc) are all engaged and consulted.
- Pinpoint specific health programme processes and articulate the bottlenecks that you seek to improve, which will set the stage for selecting appropriate digital health interventions. (DIIG pg 29)
- As you analyze existing processes, challenges – or bottleneck – should emerge. These are areas where failures in service delivery occur, where health workers experience frustrations or even where patients may be lost to follow-up. Bottlenecks are the specific gaps that prevent personas from reaching their goals of success and achieving positive health outcomes. Then conduct a root cause analysis, which may reveal situations where a digital health intervention may not be warranted or ideal.
- At this point, focus on describing the highest priority bottlenecks using a common vocabulary, so you can link them to possible interventions. WHO developed a classification for health system challenges (WHO Guideline: Recommendations on digital interventions for health system strengthening Pg xv - xxii) that standardizes the categories of common bottlenecks experienced at various levels of the health system. This classification provides a consistent method for grouping the diverse ways that various participants, from patients to health workers to decision-makers, have for expressing very granular, programme-specific bottlenecks and their root causes (DIIG pg 36-38).

The next step involves identifying and selecting digital health interventions that addresses the prioritized health systems challenge. This includes taking the following steps:

- If digital health interventions are appropriate, select one or more digital health intervention(s) to address the prioritized health system challenge(s). Select interventions that have demonstrated effectiveness and determine how these interventions can address your health system challenges.
- Determine whether the enabling environment can support the selected digital health interventions. This includes understanding the ecosystem and absorptive capacity of the environment in which the interventions will be implemented to ensure their feasibility.
- Define what key functionalities and features the digital health interventions should have based on end-user needs and stakeholder expectations.
- Determine if existing digital health applications can be leveraged to support your health system challenge. This will help you understand how your proposed implementation can integrate with or use the functionality of existing digital health applications and shared services. (DIIG pg 46)
- Explore if existing systems can already meet these needs. If not, explore whether existing systems can be augmented or expanded to meet these needs. If not, only then consider introducing a new system or platform (DIIG pg. 56-59).

    - The Map & Match project, DPPA and Digital Health Atlas are all good tools that can be used to make assessments of existing systems in your country.
    - The Digital Square summary of digital tools supporting vaccine deployment or the Digital Public Goods Alliance report on Health DPGs for Immunization Delivery Management can be used as

references to identify open source digital public good solutions specifically designed for vaccine deployment.

- The Inter-American Development Bank, Digital Impact Alliance, and the US Centers of Disease Control and Prevention have also developed useful guidance and product catalogues for COVID-19 surveillance, diagnosis, prevention and treatment.

Determine whether the enabling environment can support the selected digital health interventions. This includes understanding the ecosystem and absorptive capacity of the environment in which the interventions will be implemented to ensure their feasibility.

- Digital health interventions are delivered through digital health applications, which ideally are linked to a supportive digital health platform comprising shared services and enabling components (in cases where there are multiple applications); together with the people, processes and policies that support and use them to deliver health services to clients, these applications and platform make up the digital health enterprise. Successful deployment of digital health applications requires a thorough knowledge of the ecosystem where the interventions will be deployed and whether they can be supported in that environment. Understanding this context can inform the feasibility of implementing the digital health enterprise, as well as demonstrate where system integrations will be required.
- Use globally recognized and standardized assessment tools like Digital Health Index, the EDIT, and /or the Digital Pandemic Preparedness Assessment tool (DPPA) to help prioritize and cost the way forward
  - Resources will be the core of the effort to deploy and use COVID-19 vaccine monitoring solutions. It is therefore important that these costs are estimated within available general government and MoH resources (domestic and external resources).
  - As economic repercussions of COVID-19 impact government budgets, it is important that a digitally enabled COVID-19 vaccine strategy is an integral part of the general government response and reflected in budgets. The same should be considered for essential health services including the routine immunization budget.

It is important to understand the national policies and regulations that may apply and explore relevant global best practices when national policies are lacking. These could include regulations for hosting data and using personally identifiable information, processes for informed consent, relevant standards, and linkages with other systems. A successful digital health implementation plan will assess the current policy environment, adapt the design to that environment and ensure that policies are sufficiently implemented.

Country Technical Support via the Digital Health Centre of Excellence (DICE)

The Digital Health Center of Excellence (DICE) is a coordinated, standardized support to Governments, initially responding to support requests for preparation and deployments of mature digital technologies to support health service delivery in the context of the COVID-19 pandemic. DICE can provide support to countries on the use of digital solutions, many of which are mature and already integrated into national systems, and help expanded these to provide substantial support to the COVID-19 pandemic using a health system strengthening lens; from planning distribution of commodities and vaccines, tracking supplies, surveillance and case detection, monitoring coverage of services, and communicating to generate demand and reduce misinformation. Currently DICE is supporting countries around digital solutions to support COVID-19 vaccine deployment, specifically related to:

- Service delivery planning and microplanning
- Logistics and inventory management
- Vaccination registration and adverse events reporting
- Vaccination status and digital certificates
- Coverage monitoring
- Counterfeit detection and traceability
- Remote health worker learning
- Community mobilization
- Health service delivery and integration with routine immunization and PHC

DICE aligns with Donor agencies and supports governments to identify and apply for funding for deployments using costed investment cases:

- Coordinate between donors and development partners at Regional and Global level
- Review Concept Note, TORs, Business Requirements and Proposals
- Provide Guidance & support Implementation of assessment tools
- Advise on existing Digital Global Goods, including existing evidence and plans to scale/institutionalize
- Provide recommendations /support in contracting technical experts and partners
- Support capacity building, training and knowledge exchange

Contact the DICE secretariat to request technical assistance: contact@digitalhealthcoe.org. Support requests should be from or endorsed by Government and have been going through existing technical/donor coordinating mechanisms. TA should be aligned with National Deployment and Vaccination Plans (NDVPs) and leverage existing Global Fund (C19RM), Gavi and other assistance mechanism. Support will be provided through existing regional and country structures, including Government, UN, and DICE consortium partners. The DICE is a consortium of partners, including BMGF, GIZ, the CDC, the European Commission, The Global Fund, FCDO, Gavi, USAID, Digital Square and the World Bank. It is co-hosted by a UNICEF-WHO virtual secretariat that will be managing day-to-day activities and coordination with consortium members and other technical partners like the CHAI. DICE is currently funded by donations from the BMGF, BMZ, Gavi, and GIZ.

Table 1. Summary of prioritized activities by NDVP programmatic area and examples of relevant digital processes and interventions		
NDVP programmatic area	**Prioritized activities**	**Relevant digital interventions**
Regulatory preparedness	▪ Developing or updating tools and regulatory procedures for registration of new vaccines and expedited import approvals. ▪ Supporting National Regulatory Authorities to effectively communicate with communities on safety of vaccines. This may include building confidence in the registration processes of new vaccines, vaccines safety profiles and AEFI reporting channels.	• Consider development or update of tools and regulatory procedures for vaccine registration and certification • Review existing digital health opportunities / tools to facilitate communication between national regulatory authorities and beneficiary communities on vaccine areas including safety and access. • Support the assessment of country readiness using established maturity model tools to facilitate a discussion between Government staff and national stakeholders around the building blocks that will inform the selection, design and investments needed for sustainable scaling digital health solutions for vaccine roll-out. Areas to assess include: o Human Capacity o Standards and Interoperability o Governance and Policy o Data Capture and Use o Investments and Funding o Infrastructure
Planning, coordination, and simulation exercises	▪ Planning and coordination meetings for COVID-19 vaccine deployment at national and sub-national levels ensuring representation from CSOs, including community and faith-based organizations, women's groups and other marginalized high-risk groups. ▪ Identifying optimal vaccine delivery models based on community perspectives using Human-centered design. ▪ Enhancing programme management and coordination capacities at all levels. ▪ Updating micro plans as needed.	• Review and assess the ecosystem to identify digital health opportunities including initiatives that strengthen near real-time data collection and monitoring for coordination of vaccine deployment at national and sub-national levels. • Review and assess the ecosystem to the geospatial update of microplans, including availability and governance of core datasets (health facilities, human settlements, health areas), existing technical capacity and governance (eventually link with geospatial regulatory agencies such as NSO, National Spatial Data Infrastructure committees).

	▪ Mapping opportunities for reaching target groups in marginalized/missed communities with integrated interventions including routine immunization and COVID-19 vaccination. ▪ Mapping opportunities and defining pathways for integrating COVID-19 vaccination with routine immunization and other health interventions such as PHC across the life course.	• Identify and scale digital solutions that support optimal vaccine distribution models based on community perspectives and human centered design. • Map geographic coverage of existing service delivery infrastructure at national level, combined with target population estimates to assess gaps in supply and human resources versus target population.
Costing and funding: ensuring funds reach the point of delivery	▪ Updating budgets and costing of COVID-19 vaccine delivery as needed. ▪ Resource mapping for COVID 19 vaccine delivery.	• Explore the use of digital payment platforms and services • Update budgets and costing for COVID-19 vaccine delivery to include digital platforms and services, using a Total Cost of Ownership tool. • Based on country readiness assessments, develop costed investment cases that can be included in resource mobilization efforts presented donors and partners.
Identification of target populations	▪ Defining and identifying priority target groups in missed communities and the appropriate vaccine delivery. strategies as well as opportunities for integration with routine immunization and other essential services.	• Strengthen existing electronic patient/beneficiary registries to identify priority target populations and develop strategies for outreach, specifically by creating lists of frontline health and social workers, elderly, and other risk groups such as those with pre-existing conditions. • Establish or update national HRH registries and advocate for inclusion of all frontline health workers across the health system, including CHWs, and register their age, gender, contacts, catchment area, tasks, capacity, etc. • Leverage digital solutions for frontline health workers to register and map eligible people during community mobilization activities, to allow the creation of priority lists. • Update national lists of human settlement location, potentially making use of satellite-derived information products on population households, settlements and demographic data to strengthen such lists and improve spatial information on distribution of target population.

Vaccination delivery strategies	▪ Establishing and operating vaccination sites (depending on local context fixed, mobile or outreach services) while ensuring security of the health workforce.
	▪ Implementing integrated strategies for under-vaccinated or underserved priority populations.
	▪ Developing and implementing plans for COVID-19 vaccination quality assurance and improvement.
	▪ Integrating vaccine delivery into primary healthcare services that are used and trusted by the communities. and marginalized groups such as NCD and TB/HIV Clinics.
	▪ Updating national vaccination policies and guidelines to include adult vaccination.
		• Monitor information channels, such as social and traditional media, to analyze misinformation circulating in your community to inform creation and sharing of information that is accurate and clear and easy-to-find, using websites, social media, chatbots and other places your audience looks for health information.
		• Develop and use social listening tools (which access online and offline data streams), establish two-way 'channels' for targeted community and public information sharing hotlines (text and talk), health workers, responsive social media, and radio shows.
		• Support governments to adopt open-source messaging solutions like chatbots and translate these into local language.
		• Update national digital health strategies to adopt national vaccination information policies and strategies.
		• Strengthen existing data collection and monitoring systems (e.g., for routine immunization and PHC) to accommodate for the COVID-19 vaccine modules.
		• Strengthen data visualization dashboards for analysis, reporting and use of data for action and decision-making.
		• Use RTM approaches and digital solutions for immunization planning, readiness assessments and implementation, by leveraging systems and platforms currently in place whenever possible.
		  ○ RTM approaches may be deployed for refining immunization strategies and plans, ensuring immunization resources are distributed and used optimally, reduce vaccine hesitancy by timely action taken to address misconceptions, improved service delivery and ensure the appropriate use of funds, resources and timely distribution of incentives.
		  ○ Real time approaches may also support supply & logistics, including supply and logistics cold chain, stocks, wastage rates, etc.

		○ Real time digital data collection tools with protocols make data available more frequently (e.g., daily) and is used with real-time analysis of data to help detect and remediate issues as they occur, e.g., for re-distribution of vials or mobilization of community members or identification and follow up of AEFIs. • Review of the mapping or readiness assessment results to identify digital solutions with potential to support supply chain management, specifically forecasting when facilities will need supplies and submit, track, and ensure orders are safely delivered. • Develop, test and scale-up innovative service delivery models, including differentiated vaccine delivery strategies to effectively reach population groups with low coverage. • Strengthen Master Facility Lists/Registries and HRH Registries, and provide these as services within national Health Information Systems. • Integrate spatial data on the location of populations and health resources to strengthen the microplanning process by informing planning of delivery strategies (i.e., fixed, outreach, mobile, mass campaigns) cognizant of population physical accessibility to vaccination points, optimization of location of vaccination delivery points to optimize coverage, and logistics of community-based outreach activities. Consider re-use and adaptation of spatial microplans from other programs (polio campaigns, Malaria LLIN/ITN campaigns).
Preparation of supply chain and management of health care waste	▪ Supporting use of existing systems or introduce new systems (TSS qualified eLMIS), tools to improve availability of precise and accurate data on vaccine stocks, wastage, temperature excursions, available CCE capacity and functionality at all levels of the supply chain.	• Conduct a cold chain assessment using digital data collection tools, for example using smart phone/tablet-based data collection tools or SMS (specifically for low bandwidth settings). • Assess the public supply chain to understand its operational, strategic capabilities and availability of resources to inform the way forward across all areas of the

	▪ Supporting deployment of systems and tools for vaccine forecasting, data triangulation of stock /coverage data, and use of data for action at all levels of the supply chain.
	▪ Supporting robust Supply & Logistics planning and implementation vis-a-vis optimal storage, temperature monitoring and control, distribution and redistribution planning, and waste management.
	▪ Supporting establishment/integration of vaccine accountability and reporting systems into the COVID-19 response.
	▪ Supporting identification of waste management needs for COVID-19 vaccine products and develop mitigation plans.
	▪ Supporting regular review of SC&L performance, at national and sub-national levels, as well as triangulation with service delivery data (considering data use barriers and mitigating them) and iterative course correction.
	▪ Take established systems for forecasting, stock management and vaccine accountability to scale across all EPI vaccines (routine and campaign)
		immunization and COVID-19 vaccine supply chains utilizing the UNICEF Maturity Model.
		• Stress test the immunization supply chain to understand if it's fit for purpose and create different logistical scenarios that would inform the deployment of COVID-19 vaccines in the shortest possible time using the Supply Chain Analysis and Intelligence Tool (SCANIT).
		• Consider establishing digital systems for vaccine management information, such as for remote temperature monitoring, fridge functionality and electricity.
		• Strengthening immunization supply chain management using digital solutions and eLMIS that are compliant with the TSS:
		  ○ Strengthen existing, or introduce new eLMIS to accommodate COVID-19 vaccines and related commodities/equipment, including dashboards visualizing and mapping stock availability
		  ○ Explore fuller integration of serialized routine immunization and COVID-19 vaccines into LMIS / eLMIS for fuller 'track and trace' capability
		• Explore remote temperature monitoring devices to manage the performance of the cold chain.
		• Supporting scaling-up GS1 enabled COVID-19 vaccine verification to reduce the risk of falsified products in legitimate supply chains with a vision towards end-to-end traceability for all vaccines, medicines and health products, which can be linked with the newly established Global Trust Repository (GTR) to store traceability data for use by national regulatory authorities.
		• Supporting waste management system optimization including innovative waste management techniques/equipment.
		• Conduct EUM to assess and measure availability, quality, utilization and distribution of COVID-19 vaccines at service delivery points and identify areas of improvements in supply chain models to ensure sustainable access to

		vaccines using tablet-based data collection tools or computers.
Human resource management and training	▪ Developing and implementing surge capacity to deliver high volumes of COVID-19 vaccines while maintaining routine immunization. This can include recruitment, remuneration, training, and supervision of temporary staff at all levels. ▪ Supporting expenses associated with vaccine delivery including staff allowances/Per diems and fuel for outreach and vaccine transportation ▪ Conducting training, mentorship, and supportive supervision	• Establish or update national HRH registries using e.g., iHRIS, and advocate for inclusion of all frontline health workers across the health system. • Adopt and conduct innovative learning and supervision approaches such as digital knowledge sharing, training, and performance management. • Adopt and deploy available and digitally formatted health worker training content by localizing and validating it for the appropriate country context, and disseminating it using digital communications platforms. • Identify opportunities to digitize supportive supervisory visits during vaccine monitoring using electronic supervision checklists and other performance management tools. • Invest in "digital dexterity", i.e. the training and capacity needed to build the competencies required among government staff to effectively adopt and sustain digital public goods for vaccine management. • Strengthen Master Facility Lists/Registries and HRH Registries, and provide these as services within national Health Information Systems. • Consider adoption of digital tools with geotagging capabilities, such as ODK, for monitoring and targeting of HR supervision visits.
Vaccine acceptance and uptake (demand)	▪ Systematically collecting, analyzing, understanding, and acting on the drivers and barriers of vaccine acceptance and uptake at population level, including health and front-line workers ▪ Developing systematic approaches for social listening for immunization and broader health to help identify and mitigate risks and rumors related to COVID-19 vaccine	• Strengthen existing data and monitoring systems (immunization and public health) to accommodate for the COVID-19 vaccines. Strengthen data collection, analysis, reporting and use of data for action and decision-making, as well as the understanding of the information eco-system among different priority groups to inform demand strategies.

	▪ Designing behaviorally informed interventions/ complementary RCCE and social listening approaches with strong linkages with each other
	▪ Conducting community mobilization and developing communication materials to combat vaccine hesitancy and build confidence in COVID-19 vaccines and in the health workers delivering them and also counter hesitancy for routine immunization, wherever prevalent
	▪ Community engagement approaches in partnership with CSOs to reach marginalized and vulnerable groups, especially in under-served areas and use it as an opportunity to improve uptake of routine immunization
	▪ Holistic and human centered communication interventions harnessing the power of available mediums and platforms.
	▪ Quick learning assessments to ensure quality, reach and cost effectiveness of demand interventions.
	▪ Tackling gender barriers to COVID-19 vaccine deployment
	▪ Work with religious leader's networks to counter and address misinformation around vaccines
	▪ Scale up behavioral interventions that promote vaccine confidence amongst health care workers to get vaccinated and recommend communities to take the vaccines.
		• Consider systematic approaches for gathering qualitative insights in addition to more formal survey data, from communities through digital ethnography.
		• Consider establishing social listening and engagement strategy which consolidates digital (media, social media, U-report etc) and offline data feeds into single system from which an analyst provides regular actionable insights to RCCE teams.
		• Consider adopting the digital documentation of COVID-19 certificates shared architecture to verify vaccination status of individuals using both digital (e.g., smart phone) and analog (e.g., paper Yellow Card, ID cards) to support continuity of care, opening of business and cross-border travels.
		• Use generated insights to develop digital content to promote demand use/adapt and scale up digital solutions and approaches:
		  ○ Invest in national data science capacity, including using GIS mapping to triangulate and help identify target populations and mapping of missed and vulnerable communities
		  ○ Identify digital solutions that utilize SMS, IVR and mainstream social media for information sharing to increase knowledge and demand for vaccines and to identify gaps in information/ detect misinformation. These may also include two-way messaging platforms (chatbots) that are harnessing artificial intelligence through natural language processing for social monitoring on vaccine hesitancy and why.

Vaccine safety monitoring, management AEFI and injection safety	▪ Enhancing AEFI surveillance including enhancement of the reporting system, awareness of health care workers on AEFI reporting, AEFI data management.	• Explore the ability of existing health management information systems to do digital tracking and tracing of AEFI reporting. • Consider using community-level digital communication tools for safety monitoring.

	▪ Understanding and addressing vaccine safety and pharmacovigilance challenges	• Digitalization of Case Based Surveillance AEFI management system to strengthen active AEFI monitoring. • Consider linking AEFI reporting to global pharmacovigilance processes, such as to the Uppsala Monitoring Center using VigiFlow. • Consider adoption of digital tools with geotagging capabilities, such as ODK or DHIS2 mobile capture, for linking AEFI identification to GIS for visualization and monitoring.
Immunization monitoring systems	▪ Strengthen data collection, validation, reporting and monitoring of COVID-19 programme implementation progress and equitable access. This could include the collection, validation, reporting and use of national and subnational data across priority disaggregation, such as gender, priority population groups, age, occupation, and co-morbidities. ▪ Strengthen reporting of data to regional level (such as regional dashboards) and global level (such as through WHO-UNICEF COVID-19 monthly Joint Reporting Form module) ▪ Establish or strengthen community-based monitoring systems to measure data on availability, accessibility, acceptability, equity, and quality of COVID-19 vaccination services received ▪ Integration of COVID-19 into existing health management information / vaccination related data systems	• Use, adapt and scale up digital solutions to enable real-time analytics to track vaccine delivery, track rates of missed appointments and loss-to-follow-up, and ensure critical segments are vaccinated first: o Real/near real-time data on vaccination coverage ▪ Strengthen the health management information system to provide disaggregated data at country level and aggregated data for regional level (such as regional dashboards) and global level (such as through WHO-UNICEF COVID-19 monthly Joint Reporting Form module) ▪ Explore opportunities to update surveillance information flows within any existing laboratory information systems. ▪ Invest in expansion of existing DHIS2 capacity, where already deployed, to support vaccination coverage monitoring. ▪ Invest in national data science capacity, including using GIS mapping to triangulate and help identify target populations and mapping of missed and vulnerable communities o Real time monitoring for planning, implementation (including supply, logistics, etc) and reporting ▪ Leverage digital data collection tools and systems with protocols to make more detailed

		disaggregated data available more frequently (e.g., daily instead of weekly/monthly) ▪ Conduct real-time analysis of data to help detect and remediate issues as they occur, e.g., for planning, preparedness, re-distribution of resources and supplies or mobilization of community members ○ Registration of individuals or vaccination events ▪ If seen as a priority, explore the use of a web portal or mobile phone based self-registration functions with eligibility checks and scheduling of vaccine or test appointments. ▪ Explore feasibility, sustainability and readiness for deployment of EIRs that facilitate the monitoring of individual immunization schedules and the storage of individual immunization histories, which can facilitate understanding of coverage gaps, track multi-dose vaccine dropouts, and direct communication (e.g., text message) on recalls or reminders to clients. EIRs can be useful for COVID-19 immunization activities to provide real-time coverage feedback. ▪ Using EIRs or individual vaccination data, generate dashboards to monitor performance by provider, and embed immunization decision support to assist health care workers ensure that families return at the right time for their next immunization. ▪ Digital registries like EIRs can also be developed for pregnant women (ANC/PNC) visits and linked with newborn infants for healthy child visits and routine immunization as a follow-up ▪ Consider adopting the Digital Documentation of COVID-19 Certificates shared architecture to verify vaccination status of individuals using both digital (e.g., smart phone) and analog (e.g., paper cards)

		to support continuity of care, opening of business and cross-border travels • Leverage the agreed-to standards for data exchange, authentication, security and invest in interconnectivity between different data monitoring systems to allow insights in subnational- or district- level dashboards across areas of response, e.g., COVID-19 vaccine coverage mapping, facility stock data, and COVID-19 case surveillance data. • Strengthen Master Facility Lists/Registries and HRH, and provide these as services within national Health Management Information Systems.
COVID-19 surveillance	▪ Integrating COVID-19 surveillance in existing VPD surveillance systems. ▪ Support COVID-19 disease surveillance	• Leverage digital solutions to conduct monitoring and response for frontline health workers to register COVID-19 cases. • Leverage the agreed-to standards for data exchange, authentication, security; API for distributed vaccine registers, and invest in interconnectivity between different data monitoring systems to allow insights in subnational/district dashboard across areas of response, e.g. COVID-19 vaccine coverage mapping, facility stock data, and COVID-19 case surveillance data. • Integrate COVID-19 surveillance into integrated VPD electronic surveillance systems.
Evaluation of COVID-19 vaccine introduction	▪ Conducting programmatic evaluation and learning activities, such as COVID-19 post-introduction evaluations, Intra-Action Reviews, case studies, operations research, syntheses, and other efforts.	• Explore and review design requirements for digital health initiatives to include programmatic evaluation and learning activities, such as COVID-19 post-introduction evaluations, Intra-Action Reviews, case studies, operations research, syntheses, and other efforts. • Conduct implementation research to evaluate the implementation and scale-up of digital innovations.

Annex – guidance for each NDVP pillar

NDVP pillar 1 - regulatory preparedness

Digital health processes and interventions related to regulatory preparedness

- Consider development or update of tools and regulatory procedures for vaccine registration and certification
- Review existing digital health opportunities / tools to facilitate communication between national regulatory authorities and beneficiary communities on vaccine areas including safety and access.
- Support the assessment of country readiness using established maturity model tools to facilitate a discussion between Government staff and national stakeholders around the building blocks that will inform the selection, design and investments needed for sustainable scaling digital health solutions for vaccine roll-out. Areas to assess include:
    - Human Capacity
    - Standards and Interoperability
    - Governance and Policy
    - Data Capture and Use
    - Investments and Funding
    - Infrastructure

Knowledge Management Resources / Global Goods / Use cases

Key resources

- Digital Pandemic Preparedness Tool to provide a systematic methodology to identify needs for digital tools that integrate with countries' existing digital ecosystem, while modernizing their overall pandemic preparedness, response and vaccination roll-out planning and execution.
- Map and Match Tool to understand the landscape of existing, adaptable software tools used at scale in countries, and subsequently match those tools with potential use cases for COVID-19.
- UNICEF Country Mapping tool of relevant Digital Health tools and technologies that can be leveraged to support countries' health initiatives and other sectors, for their response to COVID-19.

Other resources

- Early-Stage Digital Health Investment Tool
- Digital Health Atlas
- Digital Implementation Investment Guideline (DIIG) – Chapter 4

NDVP pillar 2 - Planning and coordination

Digital health processes and interventions related to planning and coordination

- Review and assess the ecosystem to identify digital health opportunities including initiatives that strengthen near real-time data collection and monitoring for coordination of vaccine deployment at national and sub-national levels.
- Review and assess the ecosystem of the geospatial updating of microplans, including availability and governance of core datasets (health facilities, human settlements, health areas), existing technical capacity and governance (eventually link with geospatial regulatory agencies such as NSO, National Spatial Data Infrastructure committees).
- Identify and scale digital solutions that support optimal vaccine distribution models based on community perspectives and human centered design.
- Map geographic coverage of existing service delivery infrastructure at national level, combined with target population estimates to assess gaps in supply and human resources versus target population.

Knowledge Management Resources / Global Goods / Use cases

Key resources

- Use cases/Understanding the benefit of geospatial technologies: Improving Immunisation Coverage and Equity through the Effective Use of Geospatial Technologies and Data
- Assessing the geo-enabling environment: Guidance on the Use of Geospatial Data and Technologies in Immunization Programs
- Planning and Budgeting for Implementation**:** Leveraging Geospatial Technologies and Data to Strengthen Immunisation Programmes
- GIS Technical support: Using geospatial data and digital technologies, including geographic information systems (GIS), to support the planning and monitoring of service delivery at the local level of health facility and health district.

Other resources

- Planning for an Information Systems Project – A toolkit for public health managers
- Digital Implementation Investment Guideline (DIIG) – Chapter 5
- Global Goods Maturity Model for evaluating solutions
- The Global Healthsites Mapping Project
- Mapping Geographic access to health care tools and use case
- WHO & UNICEF GIS Working Group for COVAX Innovation

NDVP pillar 3 - Costing and funding: ensuring funds reach the point of delivery

Digital health processes and interventions related to costing and funding

- Explore the use of digital payment platforms and services.
- Update budgets and costing for COVID-19 vaccine delivery to include digital platforms and services, using a Total Cost of Ownership tool.
- Based on country readiness assessments, develop costed investment cases that can be included in resource mobilization efforts presented donors and partners.

Knowledge Management Resources / Global Goods / Use cases

Key resource

- Digital implementation investment guide (DIIG) – Chapter 7
- Dimagi Total Cost of Ownership model

Other resources

- Country COVID-19 funding mapping

NDVP pillar 4 - Identification of target populations

Digital health processes and interventions related to identification of target populations

- Strengthen existing electronic patient/beneficiary registries to identify priority target populations and develop strategies for outreach, specifically by creating lists of frontline health and social workers, elderly, and other risk groups such as those with pre-existing conditions.
- Establish or update national HRH registries and advocate for inclusion of all frontline health workers across the health system, including CHWs, and register their age, gender, contacts, catchment area, tasks, capacity, etc.
- Leverage digital solutions for frontline health workers to register and map eligible people during community mobilization activities, to allow the creation of priority lists.
- Update national lists of human settlement location, potentially making use of satellite-derived information products on population households, settlements and demographic data to strengthen such lists and improve spatial information on distribution of target population.

Knowledge Management Resources / Global Goods / Use cases - Identification of target populations

Key resource

- WHO & UNICEF GIS Working Group for equitable COVID-19 vaccine deployment

- Digital Global Goods developed to support vaccine deployment
- Use cases/Understanding the benefit of geospatial technologies for population mapping: Improving Immunisation Coverage and Equity through the Effective Use of Geospatial Technologies and Data
- Planning and Budgeting for population mapping: Leveraging Geospatial Technologies and Data to Strengthen Immunisation Programmes

Other resources

- EIR – Practical considerations for planning, development and evaluation
- iHRIS Implementation Toolkit
- Introduction to the Health workforce registry
- Open spatial demographic data (Global)
- Geographic, population and demographic data (Africa)

NDVP pillar 5 - Vaccination delivery strategies

Digital health processes and interventions related to vaccination delivery strategies

• Monitor information channels, such as social and traditional media, to analyze misinformation circulating in your community to inform creation and sharing of information that is accurate and clear and easy-to-find, using websites, social media, chatbots and other places your audience looks for health information**.**
• Develop and use social listening tools (which access online and offline data streams), establish two-way 'channels' for targeted community and public information sharing hotlines (text and talk), health workers, responsive social media, and radio shows.
• Support governments to adopt open-source messaging solutions like chatbots and translate these into local language.
• Update national digital health strategies to adopt national vaccination information policies and strategies.
• Strengthen existing data collection and monitoring systems (e.g.**,** for routine immunization and PHC) to accommodate for the COVID-19 vaccine modules. Strengthen data visualization dashboards for analysis, reporting and use of data for action and decision-making.
• Use RTM approaches and digital solutions for immunization planning, readiness assessments and implementation, by leveraging systems and platforms currently in place whenever possible.
  ○ RTM approaches may be deployed for refining immunization strategies and plans, ensuring immunization resources are distributed and used optimally, reduce vaccine hesitancy by timely action taken to address misconceptions, improved service delivery and ensure the appropriate use of funds, resources and timely distribution of incentives.
  ○ Real time approaches may also support supply & logistics, including supply and logistics cold chain, stocks, wastage rates, etc,
  ○ Real time digital data collection tools with protocols make data available more frequently (e.g.**,** daily) and is used with real-time analysis of data to help detect and remediate issues as

they occur, e.g., for re-distribution of vials or mobilization of community members or identification and follow up of AEFIs.

- Review of the mapping or readiness assessment results to identify digital solutions with potential to support supply chain management, specifically forecasting when facilities will need supplies and submit, track, and ensure orders are safely delivered.
- Develop, test and scale-up innovative service delivery models, including differentiated vaccine delivery strategies to effectively reach population groups with low coverage.
- Strengthen Master Facility Lists/Registries and HRH Registries, and provide these as services within national Health Information Systems.
- Integrate spatial data on the location of populations and health resources to strengthen the microplanning process by informing planning of delivery strategies (i.e., fixed, outreach, mobile, mass campaigns) cognizant of population physical accessibility to vaccination points, optimization of location of vaccination delivery points to optimize coverage, and logistics of community-based outreach activities. Consider re-use and adaptation of spatial microplans from other programs (polio campaigns, Malaria LLIN/ITN campaigns).

Knowledge Management Resources / Global Goods / Use cases

Key resources

- UNICEF Rapid Guidance on Digital Health and digital engagement for COVID-19 preparedness and response
- Digital Global Goods developed to support vaccine deployment
- Informing RCCE with equitable social listening
- Using digital technologies for real-time monitoring of supplementary immunisation activities
- Leveraging Geospatial Technologies and Data to Strengthen Immunisation Programmes
- Improving in campaign efficiency through the use of digital tools
- Vaccine Misinformation Management Guide for addressing a global infodemic and fostering demand for immunization
- Guidance for national and district planners and managers on the analysis and use of health facility data
- Master facility list Resource package: Guidance for countries wanting to strengthen their Master Facility Lists
- Portfolio of geospatial technical offerings to support COVID-19 vaccine delivery
- Use case: From paper maps to digital maps enhancing routine immunisation microplanning in Northern Nigeria

NDVP pillar 6 - Preparation of supply chain and management of health care waste

Digital health processes and interventions related to supply chain and management of health care waste

- Conduct a cold chain assessment using digital data collection tools, for example using smart phone/tablet-based data collection tools or SMS (specifically for low bandwidth settings).
- Assess the public supply chain to understand its operational, strategic capabilities and availability of resources to inform the way forward across all areas of the immunization and COVID-19 vaccine supply chains utilizing the UNICEF Maturity Model.
- Stress test the immunization supply chain to understand if its fit for purpose and create different logistical scenarios that would inform the deployment of COVID-19 vaccines in the shortest possible time using the Supply Chain Analysis and Intelligence Tool (SCANIT).
- Consider establishing digital systems for vaccine management information, such as for remote temperature monitoring, fridge functionality and electricity.
- Strengthening immunization supply chain management using digital solutions and eLMIS that are compliant with the TSS:
    - Strengthen existing, or introduce new eLMIS to accommodate COVID-19 vaccines and related commodities/equipment, including dashboards visualizing and mapping stock availability
    - Explore fuller integration of serialized routine immunization and COVID-19 vaccines into LMIS / eLMIS for fuller 'track and trace' capability
- Explore remote temperature monitoring devices to manage the performance of the cold chain.
- Supporting scaling-up GS1 enabled COVID-19 vaccine verification to reduce the risk of falsified products in legitimate supply chains with a vision towards end-to-end traceability for all vaccines, medicines and health products, which can be linked with the newly established Global Trust Repository (GTR) to store traceability data for use by national regulatory authorities.
- Supporting waste management system optimization including innovative waste management techniques/equipment.
- Conduct EUM to assess and measure availability, quality, utilization and distribution of COVID-19 vaccines at service delivery points, and identify areas of improvements in supply chain models to ensure sustainable access to vaccines using tablet-based data collection tools or computers.

Knowledge Management Resources / Global Goods / Use cases

Key resources

- UNICEF Maturity Model to identify strengths/gaps across all areas of the supply chain.
- Supply Chain Analysis and Intelligence Tool (SCANIT) to develop scenarios and identify if the supply chain is fit for the purpose of reaching all intended beneficiaries.
- The System digitalization planning and investment portal, an interactive tool for partners and countries to track ongoing health digitalization initiatives and inform future investments. Useful to understand which eLMIS to scale up/modify to address C-19 identified needs.
- Preventing in-country stock-risky situations through prescriptive analytics, a methodology that allows in-country supply chain managers to identify and prevent stock-outs and over-stock.

- UNICEF Supply Chain Maturity Model Online Training course, Learn how the UNICEF Supply Chain Maturity Model can be used as part of a national supply chain strengthening journey.
- Strengthening national data systems, an approach to review and strengthen national information systems of public supply chains.
- Guidance for Countries Selecting a Logistics Management Information System - Sourcing & Management of Health Products
- Concept note global trust repository and COVID-19 vaccine verification solution
- TechNet-21: eLMIS
- Digital Health Centre of Excellence (DICE) YouTube Channel on eLMIS vendors

Other resources

- EUM (tool to be launched soon as it is finalizing pilot stage)

NDVP pillar 7 - Human resource management and training

Digital health processes and interventions related to human resource management and training

- Establish or update national HRH registries using e.g., iHRIS, and advocate for inclusion of all frontline health workers across the health system.
- Adopt and conduct innovative learning and supervision approaches such as digital knowledge sharing, training, and performance management.
    - Adopt and deploy available and digitally formatted health worker training content by localizing and validating it for the appropriate country context, and disseminating it using digital communications platforms
    - Identify opportunities to digitize supportive supervisory visits during vaccine monitoring using electronic supervision checklists and other performance management tools.
- Invest in "digital dexterity", ie. the training and capacity needed to build the competencies required among government staff to effectively adopt and sustain digital public goods for vaccine management.
- Strengthen Master Facility Lists/Registries and HRH Registries, and provide these as services within national Health Information Systems.
- Consider adoption of digital tools with geotagging capabilities, such as ODK, for monitoring and targeting of HR supervision visits.

Knowledge Management Resources / Global Goods / Use cases

Key resources

- Digital Learning Solutions to Support Community Health Workers in the COVID-19 Response (incl Vaccine Roll-out)
- Overview of topics, courses and content ready for deployment on digital communication platforms

- COVID-19 Digital Classroom Course Series
- COVID-19 Vaccine Courses from Open WHO

Other resources

- Using Facebook messenger for digital communication: use cases
- iHRIS Implementation Toolkit
- Introduction to the Health Worker registry

NDVP pillar 8 - Vaccine acceptance and uptake (demand)

Digital health processes and interventions related to vaccine acceptance and uptake (demand)

• Strengthen existing data and monitoring systems (immunization and public health) to accommodate for the COVID-19 vaccines. Strengthen data collection, analysis, reporting and use of data for action and decision-making, as well as the understanding of the information eco-system among different priority groups to inform demand strategies.
• Consider systematic approaches for gathering qualitative insights in addition to more formal survey data, from communities through digital ethnography.
• Consider establishing social listening and engagement strategy which consolidates digital (media, social media, U-report etc) and offline data feeds into single system from which an analyst provides regular actionable insights to RCCE teams.
• Consider adopting the digital documentation of COVID-19 certificates shared architecture to verify vaccination status of individuals using both digital (e.g., smart phone) and analog (e.g., paper Yellow Card, ID cards) to support continuity of care, opening of business and cross-border travels.
• Use generated insights to develop digital content to promote demand Use/adapt and scale up digital solutions and approaches:
  ○ Invest in national data science capacity, including using GIS mapping to triangulate and help identify target populations and mapping of missed and vulnerable communities
  ○ Identify digital solutions that utilize SMS, IVR and mainstream social media for information sharing to increase knowledge and demand for vaccines and to identify gaps in information/ detect misinformation. These may also include two-way messaging platforms (chatbots) that are harnessing artificial intelligence through natural language processing for social monitoring on vaccine hesitancy and why.

Knowledge Management Resources / Global Goods / Use cases
Key resources • Vaccine misinformation management field guide • Understanding the infodemic and misinformation in the fight against COVID-19 • Vaccination demand hub - Digital Information Environment

- Digital documentation of COVID-19 certificates: vaccination status: technical specifications and implementation guidance, 27 August 2021 (who.int)
- COVID-19 and Risk Communication resources

NDVP pillar 9 - Vaccine safety monitoring, management of adverse events following immunization (AEFI) and injection safety

Digital health processes and interventions related to vaccine safety monitoring, management of adverse events following immunization (AEFI) and injection safety
• Explore the ability of existing health management information systems to do digital tracking and tracing of AEFI reporting. • Consider using community-level digital communication tools for safety monitoring. • Digitalization of Case Based Surveillance AEFI management system to strengthen active AEFI monitoring. • Consider linking AEFI reporting to global pharmacovigilance processes, such as to the Uppsala Monitoring Center using VigiFlow. • Consider adoption of digital tools with geotagging capabilities, such as ODK or DHIS2 mobile capture, for linking AEFI identification to GIS for visualization and monitoring.

Knowledge Management Resources / Global Goods / Use cases
Key resources • Module: Responding to adverse events following COVID-19 immunization (AEFIs) • AEFI Training Material for DHIS2 • VigiFlow management system for recording, processing and sharing reports of adverse effects • After Vaccination Health Checker by CDC **Other key resources** • Establishing surveillance systems in countries using COVID-19 vaccine • Webinar recording: The use of DHIS2 for real-time planning, implementing and monitoring of vaccination campaigns

NDVP pillar 10 - Immunization monitoring systems

Digital health processes and interventions related to immunization monitoring systems
• Use, adapt and scale up digital solutions to enable real-time analytics to track vaccine delivery, track rates of missed appointments and loss-to-follow-up, and ensure critical segments are vaccinated first: ○ Real/near real-time data on vaccination coverage

        - Strengthen the health management information system to provide disaggregated data at country level and aggregated data for regional level (such as regional dashboards) and global level (such as through WHO-UNICEF COVID-19 monthly Joint Reporting Form module).
        - Explore opportunities to update surveillance information flows within any existing laboratory information systems.
        - Invest in expansion of existing DHIS2 capacity, where already deployed, to support vaccination coverage monitoring.
        - Invest in national data science capacity, including using GIS mapping to triangulate and help identify target populations and mapping of missed and vulnerable communities.
    - RTM for planning, implementation (including supply, logistics, etc) and reporting
        - Leverage digital data collection tools and systems with protocols to make more detailed disaggregated data available more frequently (e.g. daily instead of weekly/monthly).
        - Conduct real-time analysis of data to help detect and remediate issues as they occur, e.g. for planning, preparedness, re-distribution of resources and supplies or mobilization of community members.
    - Registration of individuals or vaccination events
        - If seen as a priority, explore the use of a web portal or mobile phone based self-registration functions with eligibility checks and scheduling of vaccine or test appointments.
        - Explore feasibility, sustainability and readiness for deployment EIRs that facilitate the monitoring of individual immunization schedules and the storage of individual immunization histories, which can facilitate understanding of coverage gaps, track multi-dose vaccine dropouts, and direct communication (e.g. text message) on recalls or reminders to clients. EIRs can be useful for COVID-19 immunization activities to provide real-time coverage feedback.
        - Using EIRs or individual vaccination data, generate dashboards to monitor performance by provider, and embed immunization decision support to assist health care workers ensure that families return at the right time for their next immunization.
        - Digital registries like EIRs can also be developed for pregnant women (ANC/PNC) visits and linked with new born infants for healthy child visits and routine immunization as a follow-up.
        - Consider adopting the Digital Documentation of COVID-19 Certificates shared architecture to verify vaccination status of individuals using both digital (e.g. smart phone) and analog (e.g. paper cards) to support continuity of care, opening of business and cross-border travels.
- Leverage the agreed-to standards for data exchange, authentication, security and invest in interconnectivity between different data monitoring systems to allow insights in subnational- or district- level dashboards across areas of response, e.g. COVID-19 vaccine coverage mapping, facility stock data, and COVID-19 case surveillance data.
- Strengthen Master Facility Lists/Registries and HRH Registries, and provide these as services within national Health Management Information Systems.

Knowledge Management Resources / Global Goods / Use cases

Key resources

- DHIS2 resources:
  - Improving National Immunization Program Impact with DHIS2
  - DHIS2 COVID-19 Vaccine Delivery Toolkit
  - Metadata Package Downloads - DHIS2

- Digital documentation of COVID-19 certificates: vaccination status: technical specifications and implementation guidance, 27 August 2021 (who.int) (including annexes)
- Using digital technologies for real-time monitoring of supplementary immunization activities
- Adapting FHIR Immunisation Resources for Interoperability & Information exchange

Other resources

- Improving the quality and use of immunization and surveillance data: Summary report of the Working Group of the Strategic Advisory Group of Experts on Immunization
- A Realist Review of What Works to Improve Data Use for Immunization Evidence from low- and middle-income countries

NDVP pillar 11 - COVID-19 surveillance

Digital health processes and interventions related to COVID-19 surveillance

- Leverage digital solutions to conduct monitoring and response for frontline health workers to register COVID-19 cases.
- Leverage the agreed-to standards for data exchange, authentication, security; API for distributed vaccine registers, and invest in interconnectivity between different data monitoring systems to allow insights in subnational/district dashboard across areas of response, e.g COVID-19 vaccine coverage mapping, facility stock data, and COVID-19 case surveillance data.
- Integrate COVID-19 surveillance into integrated VPD electronic surveillance systems.

Knowledge Management Resources / Global Goods / Use cases

Key resources

- Digital Solutions for COVID-19 Response - An assessment of digital tools for rapid scale-up for case management and contact tracing
- Adapting FHIR Immunisation Resources for Interoperability & Information exchange

Other resources

- Leveraging Digital Solutions to Fight COVID-19: Lessons from ASEAN Countries
- Digital technologies for exposure notification in times of pandemic (Spanish)

NDVP pillar 12 - Evaluation of COVID-19 vaccine introduction

Digital health processes and interventions related to evaluation of COVID-19 vaccine introduction

- Explore and review design requirements for digital health initiatives to include programmatic evaluation and learning activities, such as COVID-19 post-introduction evaluations, Intra-Action Reviews, case studies, operations research, syntheses, and other efforts.
- Conduct implementation research to evaluate the implementation and scale-up of digital innovations.

Note: For UNICEF AMC countries this section refers to the section "Post Introduction Evaluation"

Knowledge Management Resources / Global Goods / Use cases

Key resources

- Monitoring and Evaluating Digital Health Interventions: A practical guide to conducting research and assessment
- Implementation Research for Digital Technologies and TB (IR4DTB)
- COVID-19 vaccine post-introduction evaluation (cPIE)
- Guidance for conducting a country COVID-19 intra-action review (IAR): Addendum 1

Other resources

- Boost Community
- The Geneva Learning Foundation
- TechNet-21