REPUBLIC OF LEBANON
MINISTRY OF PUBLIC HEALTH

COVID-19 Vaccination Program
Post Introduction Evaluation

Lebanon

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Contents

EXECUTIVE SUMMARY

Lebanon was able to establish a strong COVID-19 vaccination system despite the current financial situation. This system was able to provide the vaccination service effectively and efficiently to reach out to not only the Lebanese people, but also to the two million refugees living in the country.

The COVID-19 post-introduction evaluation (cPIE) was conducted using the World Health Organization (WHO) guidelines and questionnaires after being adapted to the country context by the Ministry of Public Health (MoPH). Data was collected by the teams formed from the MoPH and Connecting Research to Development (CRD). Collected data was analyzed and indicators of each technical area were calculated. Recommendations were built on the information resulted from the analysis of the collected data. These recommendations were segregated into long term and short term according to the urgency of the need to this recommendation.

The technical committee at MoPH did the registration and authorization of different types of COVID-19 vaccines. The COVID-19 vaccine national coordinating committee was able to lead the planning, coordination, and implementation of COVID-19 vaccine introduction. The Communicable Diseases and Preventive Health Department was able to manage and lead the national vaccine deployment plan. The cost of COVID-19 vaccine introduction is estimated to be 16,172 million USD; this cost was financed by the government, with the support from other organizations including the World Bank, development banks, COVAX, bilateral agreements with other countries, and the WHO.

The country was able to upgrade their cold chain capacity to cover the storage needed to store the COVID-19 vaccine, also they were able to secure the ultra-cold chain equipment needed to store the Pfizer and Moderna COVID-19 vaccines. Pfizer is the only COVID-19 vaccine is being used currently in Lebanon.

Despite the high turnover among healthcare workers, the government was able to secure the human resources needed to complete the COVID-19 vaccine introduction including one physician, one registration officer, two vaccinators per vaccination site.

MoHP developed a risk communication and community engagement (RCCE) plan as a part of the strategic plan for vaccine introduction. A series of community engagement and social mobilization activities have been implemented since the introduction of the COVID-19 vaccine.

MoHP was able to use the strong Adverse Events Following Immunization (AEFI) system that was developed for routine immunization for notifications of COVID-19 AEFI cases. The use of the direct notification being done by vaccinees who have COVID-19 AEFI was a success story.

All recommendations added at the end of this report are the areas for improvement to reinforce this good COVID-19 vaccination system.

INTRODUCTION AND BACKGROUND

Lebanon hosts about 7 million inhabitants, with more than 2 million refugees (Palestinians and Syrians) and expatriates. The already overstretched health care system by the increased number of beneficiaries and the tremendous loads caused by the COVID-19 pandemic is presently beholding an unprecedented financial and sociopolitical crisis. Meanwhile, the government has committed to the Sustainable Development Goals (SDGs), and to "leaving no one behind". The MoPH has also committed to ensuring Universal Health Coverage, with a focus on the most vulnerable population.

Lebanon's healthcare system revolves around the healthcare providers, predominantly working in the private sector. the public-private non-for-profit network traditionally covering the most vulnerable and marginalized inhabitants, has expanded its coverage and reach during the economic turmoil to include a large proportion of the population, historically insured through other schemes. The public-private partnership progressed steadily over the last decades and has proven its efficacy in the primary health clinics' (PHC) networking and in many vertical programs, such as the Expanded Program for Immunization (EPI).

Negative impacts of the economic crisis on the health sector include: (i) protracted delays in government payments of its share to hospitals; (ii) a dollar shortage along with unregulated restrictions on depositors' access to their funds, hindering the import of essential medical equipment, medicine and supplies; (iii) an upsurge in unemployment rates and non-adherence of employers to the national labor law, all leading to an increase in the number of uninsured citizens requiring MoPH assistance to access health services. (iv) horrendous devaluation of the local currency and dollarization of the market putting more than 60% of the population under the poverty line and subsequently hindering their access to basic needs.

Support of the international society to the health sector was remarkable with many United Nations (UN) agencies (UNICEF, WHO…), governments and other international non-governmental organizations (INGOs) providing multiple layers of direct and indirect assistance. Such support brought moderate relief and improved the resilience of the health system and the sustainability of the offered package of services.

Since the first case of COVID-19 was diagnosed on February 21, 2020, the epidemic in the country has started to progress relatively slowly due to the restrictive lockdown measures, however, it started to increase significantly since August 2020. The country experienced an unprecedented peak in cases during the first two weeks of January 2021 which was paralleled by the highest witnessed peak in both positivity rate and mortality rate. This surge overstretched the country's response capacity and saturated regular and intensive care unit (ICU) bed occupancies across the country.

The introduction of COVID-19 vaccines at country level on February 14th, 2021, after being authorized on December 16th, 2020, was paralleled by a no decrease in COVID-19 cases with both the positivity and mortality rates dropping below 1% in June 2021. Towards the end of June, the delta variant was first detected and reported in Lebanon, and this was complemented by a slight surge in COVID-19 cases with documented positivity rate at 6.85% and mortality rate at 1.7 per 100,000 during August. In recent weeks, regular bed occupancy has averaged around 30% while the average ICU bed occupancy has been around 40%.

Several vaccines, Pfizer, Moderna, Janssen, Sinopharm, Sinovac, AstraZeneca and Sputnik Light have been deployed and administered to Lebanese since its introduction, as of August 30th, 2022. 5.7 million doses have been administered with 35% of population fully vaccinated and 40% of the

population received at least one dose of a COVID-19 vaccines with 9 % of the population received their booster dose.

Low uptake of vaccines has been realized in the last few months because of several reasons, possibly preferentiality of some vaccines, over others, lack of full understanding the benefit of vaccine in preventing severe forms of diseases rather than preventing infection, emerging new variants with escape of immunity or vaccine hesitancy in general. The ministry is proactively addressing this low uptake by engaging the community and providing risk communication materials to the public.

COVID-19 cPIE tool is designed to provide an external and systematic method for evaluating a COVID-19 vaccination program with aim of identifying challenges needing corrective action and highlighting strengths and lessons for strengthening national immunization system and for sharing with other countries.

The objectives of the cPIE were:

1. Describe COVID-19 vaccine rollout and implementation strategies and activities that went well and those that have had challenges.
2. Provide recommendations, for both national and subnational levels to optimize the reach and impact of COVID-19 vaccination and
3. Highlight the opportunities that COVID-19 vaccine deployment brings for strengthening the overall national immunization system and health security (e.g., prevention of vaccine preventable diseases).

METHODS

Methods for this exercise largely followed WHO recommendations for conducting cPIEs (WHO cPIE guidelines[2]; however, the context in Lebanon required tailoring of methods which are noted in this section.

Evaluation teams collected data via structured interviews using WHO cPIE data collection forms (DCF). Seven DCFs were adapted to the Lebanon context (Box) and covered the established topic areas[1].

Field teams did vaccination session observation and vaccine storage observation at each health facility (HF) they visited.

In case there was no one to be vaccinated at the HF, field teams requested vaccinators to start a role play to assess the technical performance during vaccination sessions.

Data collection took place at national and service delivery levels (hospitals and health centers). Sub-

Box X. Lebanon Data Collection Forms (DCF)

1. National-level MoPH interview on covering all evaluation topic areas
2. National-level partners/stakeholders focusing on partner roles and perspectives
3. Health facility interview –covering all evaluation topic areas except planning & coordination, costing, regulatory and surveillance sections.
4. Health facility observation - cold chain storage
5. Health facility observation - vaccination session
6. Beneficiary interview - Health care worker

[1] Regulatory preparedness, Planning and coordination, Service delivery, Costing and funding, Supply chain and waste management, Human resources and training, Vaccine demand, advocacy, and communication, Vaccine safety and AEFI reporting, Monitoring and evaluation, Surveillance.

national health offices were not included as the national level coordinated directly with service delivery levels.

7. Beneficiary interview - other priority groups

For efficiency purposes, the national-level DCF was first completed by MoPH with support by WHO and then external evaluators reviewed the responses and posed follow-up questions via email, virtual calls, and an in-person interview with MoPH (Annex 1). Local staff collected service delivery level data and reported back to experts during a debriefing workshop (see timeline).

Evaluation Roles and Teams

The evaluation planners and participants included:

- A planning team held weekly calls two months before the cPIE implementation and consisted of participants from MoPH, CRD, Task Force for Global Health (TFGH), WHO (country office, Eastern Mediterranean Regional Office [EMRO]), US Centers for Disease Control (CDC), and MM Global Health consulting (MMGH).
- External PIE coordinators (TFGH, MMGH) were responsible for guiding the overall planning and implementation of the evaluation.
- Technical guidance and report writing was provided by WHO EMRO, TFGH, and MMGH.
- Data management and analysis were supported by US CDC, TFGH, and MMGH.
- Six field teams of 12 persons (MoPH and support from CRD) conducted site visits (Annex 2).
- External evaluators were from WHO EMRO, TFGH and MMGH served as topic leads. They were responsible for consolidating key findings from national and governorate presentations for their assigned topic (Annex 3). An external evaluator was assigned to the national level to lead MoPH and stakeholder interviews and consolidate national level findings and recommendations from interviews and reports (Annex 1).

Field Sites

A total of 27 service delivery sites including house ware in all 8 governorates were selected for field visits in consensus with the MoPH department of preventive medicine (See Map in Annex). Hospitals and health centers, public and private facilities, and in urban, peri-urban, rural settings.

Data Management and Analysis

- The field-level DCFs were programmed in an ODK platform (https://opendatakit.org) and exported to Microsoft excel for creating core analytics and sharing raw data with topic leads for their reviews.
- The field teams were instructed to clean and finalize data from field visits (including to input any notes made in hard copy into the ODK platform) and submit them each day.
- An interim analysis of data submitted was conducted to provide feedback to the field team on any key questions that were being skipped or appeared to be inconsistent.

Report-Back and Debriefing

A 3-day debriefing workshop was organized to consolidate and synthesize data and observations from the field. A final high-level debriefing was held to present the evaluation's key findings and recommendations.

OUTCOMES AND FINDINGS

Regulatory and Preparedness

Lebanon does not have a fully independent drug regulatory authority; however, MoPH via its technical committees review and provide authorization for medication and vaccine registration, entry to the Lebanese market. MoPH was able to put in place a special committee for emergency approval and expedited fast track regulatory pathway for COVID-19 vaccines based on a number of documentation requirements. The decisions of this special committee are reliant on existence of WHO prequalification, stringent regulatory authorities (Like FDA, EMEA) and WHO Emergency Use Listing (EUL). More detailed and in-depth review was given to vaccines from non-reference countries (with no WHO EUL) in coordination with the national vaccine committee. The AEFI cases are entered directly into the national web-based report management system and through the national pharmacovigilance shared with the VigiFlow database.

The MoPH issued an "Emergency Use Authorization" (EUA) for seven different vaccines (Pfizer, Moderna, Sputnik, Sinopharm, Sinovac AstraZeneca and Janssen). The Pfizer vaccine received EUA on December 16th, 2020, AstraZeneca manufactured in South Korea on March 2nd, 2021, AstraZeneca manufactured in Italy on April 24th, 2021, AstraZeneca all approved sites by WHO on September 27th, 2021, Sputnik V on February 8th, 2021, and Sinopharm on March 1st, 2021, with condition to be used for age group 18 years to 64 years without existence of chronic condition, Johnson & Johnson on November 24th, 2021, Sputnik light November 24th, 2021.

Planning, Coordination, and Service Delivery

On February 21st, 2020, Lebanon prime minister headed an inter-ministerial Emergency COVID-19 response committee following the declaration of the pandemic and in parallel, a National Emergency Task Force was established. The Task Force meets weekly to assess the epidemiological situation and inform public health and social measures with the objective of enhancing whole-of-society coordination mechanisms to support preparedness and response, including but not limited to, health, transport, travel, trade, finance, security, and other sectors. A national communicable disease committee composed of experts and relevant MoPH staff gave technical advice as the advisory for the COVID-19 preparedness and response.

Concordantly, a COVID-19 Vaccine National Coordinating Committee (NCC) was established on November 6th, 2020, for the successful planning, coordination and implementation of activities related to the vaccination plan and was responsible to identify the target in Lebanon.

The Department of Communicable Diseases and Preventive Health of the MoPH are responsible of the deployment and administration of COVID-19 vaccines as part of adult vaccination program. The national development vaccination plan has been developed and adopted in February 2021 followed by the development of an action plan with standard operating procedures (SoPs) and vaccination guide for health care workers. Vaccination is affordable to all population free of charge as other vaccine provided by the MoPH. The first vaccine was administered on February 16, 2021, initially available to adult population of 18 years and above and later with availability of more vaccine and specific pediatric doses of Pfizer, the vaccines was available for administration for all population of 5 years and above

Special interest was given to high risk and specific population namely health care workers, elderly population of 65 years and above as well as patients with comorbidities. Other special population were also included in the national deployment vaccination plan which were supported by International Organization for Migration (IOM) as refugees, internally displaced persons (IDPs) and migrants. The MoPH has also paid attention to special group of people especially long-term care facility residents and teachers, Military members have also been considered for group vaccinations. All pregnant women are eligible to receive vaccination, but practices for vaccination of pregnant women varied slightly at the health facility level due to perceptions of unsafety.

The strategy of vaccination was built mainly on access to health care facilities and hospitals. Private health sectors have been involved in vaccination delivery in private hospitals while affording the service free of charge based on supply of vaccines from the MoPH. Hospitals were seen as convenient fixed locations in case of AEFIs and to take advantage of the high trust of health care workers (HCWs) amongst the community. Where there was low density of hospitals, PHCs were used as vaccination sites. “Marathons” were day-long mass vaccination events in the early stage of COVID-19 vaccination which were successful for accelerating vaccination coverage. Now, walk-in vaccination is available which has helped facilitate vaccine access. Mobile clinics were held in rural areas, special care centers, nursing homes, and schools for high-risk groups in difficult to reach areas.

Practices that enabled effective vaccination included well-spaced, organized facilities with majority of infection prevention control (IPC) measures in place. However, only 50% of health facilities had vaccination sites separated from curative services. Nurses were highly effective in communicating with beneficiaries about follow-up doses, side effects, and contraindications during vaccination sessions. There were no formal incentives in the workplace for vaccination of HCWs though all HCWs in the field sample were vaccinated. The vaccination process requires that all recipients of COVID-19 vaccination register using the IMPACT platform. This platform streamlined vaccination information for beneficiaries in one, centralized location including appointment times, proof of vaccination (electronic vaccination certificate), and SMS reminders for subsequent doses. Due to fuel costs and funding shortage to support vaccination sites, there were fluctuations in the number of operating vaccination sites. Rabies and travel vaccination (i.e. yellow fever) program were leveraged to target the same adult priority groups as COVID-19, but routine immunization programs were not integrated with COVID-19 vaccination. The different brands of COVID-19 vaccines administered in health facilities throughout the course of the pandemic was difficult for beneficiaries to navigate, though the Pfizer-BioNTech is the only vaccine administered now. 54% of surveyed health facilities reporting offering COVID-19 for 5 or 6 per week, but stakeholders consistently reported that the number of days vaccines are offered is typically now 2-3 days weekly due to decreased demand for the vaccine. Some challenges related to the strict implementation of the standard operating procedures at health service delivery sites were observed.

Costing and Financing

Budget development for Lebanon was supported by the World Bank together with other partners mainly UNICEF and WHO as part of the vaccine readiness assessment tool. The main elements considered in the budget estimate were

1. The quantity of vaccine needed initially to cost at least 35 % of the population with an estimated budget of the one of the vaccines which is Pfizer to be procured through COVAX at a price of USD 10.55 per dose considering two doses per individual.
2. Human resource cost, initially estimated to cover 50 vaccination sites.

3. Vaccine related supplies.
4. Additional cost as the procurement of personal protection equipment (PPE), communication, Training cost etc.

The total cost was estimated to be USD 16.172 Million, partly supported by the government as well as from other sources mainly, the World Bank, development banks, COVAX, bilateral agreement with other countries and WHO has supported the operational cost at health facility level and also satisfying the cost of 6 ultra cold freezers for Pfizer vaccines.

In 2021, the World Bank has approved additionally USD 34 Million under the existing Lebanon Health Resiliency Project for COVID-19 vaccines procurement.

The MoPH intends to rely on the contributions of development partners, some institutions and readily available resources to reduce operational cost.

Various development partners have been supporting COVID-19 vaccine deployment preparedness in Lebanon.

IOM has been supporting the transportation of migrants and support vaccination in IDPs, the European Union (EU) has contributed in supporting some of the funding requirements of COVAX for vaccine procurement, UNICEF has provided all communication materials as a part of its support to advocacy, communication, and social mobilization, as well as its role in vaccine procurement from COVAX, all partners have been contributing to procurement of personal protective equipment.

Although UNICEF has provided to the MoPH a funding support of USD 4.4 Million for COVID-19 response, which was not planned to be used for vaccine introduction, yet with some flexibility, yet a small proportion was used in the beginning of the pandemic for vaccine procurement and cold chain maintenance.

Lebanese Pharma group have also supported the rolling out of COVID-19 vaccination program with Syringes, needles, and refrigerated vehicles for vaccine transportation.

Supply Management and Cold Chain

At the time of the evaluation, Pfizer COVID-19 vaccine was the only vaccine used in the country. Field teams visited twenty-six vaccine storage rooms at healthcare facilities in eight governorates and the national COVID-19 vaccine store. Four in Beirut governorate, four in South governorate, four in Nabatieh governorate, four in Mount Lebanon governorate, three sites in Bekaa, three in Baalbak-Hermel, two in Akkar, and two in North-Lebanon governorate.

At the national store, six refrigerators, two freezers, and five ultracold freezers were inspected by the field teams. Passive containers were available at the national COVID-19 vaccine store. At the health facility level, all healthcare facilities visited had one or more refrigerators and five of them had freezers. Of the sites visited, one had ultralow temperature storage equipment (Tripoli governorate hospital) and another had (Nabatieh governmental hospital) had a cold room. A total of 14 healthcare facilities had passive containers dedicated to COVID-19 vaccination, the other 12 HCFs reported to borrow vaccine carriers from other departments to transfer vaccines from the national store. All the COVID-19 vaccine storage equipment were clean and well maintained.

Almost all of the visited healthcare facilities showed evidence of a temperature monitoring chart (25 of 26 facilities). Among those, 16 HCFs monitored temperatures of the cold chain twice daily, 3 monitored three times daily, 5 monitored once daily, and 1 had an irregular mode of monitoring.

Visited HCFs monitored cold chain temperature during weekends. HCF-level temperature monitoring was done using different types of devices including electronic temperature monitoring, freeze indicators, and data loggers. HCFs used one or more methods to monitor temperatures.

Most of the visited HCFs have an adequate vaccine storage capacity, yet not all of them showed enough evidence that vaccine wastage was adequately calculated. Most of the visited HFs did not have any COVID-19 vaccine expiration during the last six months. Most of the visited HFs did not report any COVID-19 vaccine stock-out. Almost all HCFs visited reported that they did not have any power supply interruptions during the last six months (25 of 26). Generators were the main source of power in most of the visited HCFs. Most of the visited HCFs did not have vaccine wastage due to compromised due to temperature excursion or other mishandling during transport or storage.

Human Resource Management and Training

Lebanon's national deployment and vaccination plan (NDVP) clearly established vaccination teams' composition and roles including: 1 physician per site, 1 register nurse for 2 vaccinators, at least 8+ vaccinators per site, non-clinical observer/ security officer (2 per site), administrative clerks/data operators (2 per site), center director (senior administrator or physician). With the introduction of pediatric vaccination, guidance was updated to include a pediatrician on-site.

The most challenging component of human resource management was the high turnover and shortage of staff (reported by 43% of the visited facilities) in view of the currency devaluation, the scarcity of resources and lack of motivation. Staff were reported to be highly dedicated, covering multiple tasks, working on weekends and carrying self-learning COVID-19 technical information. However, they were overworked and underpaid (largely due to the devaluation of currency).

Most of the central and governorate level and was done virtually, with some in-person training. Training of service delivery level was also mixed and was well-planned and timed (conducted shortly before vaccine introduction). Product managers from Pfizer and AstraZeneca were engaged and supporting training activities. From the surveyed beneficiaries' perspective, the most frequently reported strength of the COVID-19 vaccination effort was: 'organization of the vaccination session & that staff were well trained'. Stakeholders confirmed training was well implemented, especially at the start but ongoing training and provision of technical updates were less consistent as time passed. HCWs reported to be successfully trained in most areas except for: (1) vaccine side effects and vaccine efficacy, (2) AEFI management, (3) communication skills and messages related to responding to vaccine hesitancy.

Overall training resulted in good knowledge and practice; however, a few gaps were identified including that among surveyed HCW, 19% reported that vaccination is not safe for pregnant women and another 7% reported they didn't know if vaccination was safe. Educational materials have been developed and training has been conducted but the messages on vaccine benefits and safety do not appear to have taken hold. Observation showed adequate vaccination sessions process, although, recapping of the syringes for dilution was seen in minute instances.

There were no job aids developed at national level to serve as quick reference for vaccination teams; yet 57% of HCW respondents reported receiving job aids as a resource, indicating local initiative to facilitate good knowledge and practice.

MoPH partnered with the International Federation of Red Cross and Red Crescent Societies (IFRC) to implement and with the World Bank to fund -- a systematic approach for monitoring vaccination sessions (they also monitored vaccine arrival and distribution). A total of 18 project

staff were trained and rotated to monitor all COVID-19 vaccination sites at least once a week. Data and reports were generated to trigger corrective actions; for example, to correct the practice of mixing supplies (vaccine with other medication), to replenish supplies, and develop technical updates. All health facilities surveyed reported that they received supervisory visits since COVID-19 vaccination started.

Vaccine Acceptance and Demand

As a part of COVID-19 response planning and National Vaccination Strategy, Lebanon developed a risk communication and community engagement plan, to guide the implementation of vaccine demand and communication activities. This plan was developed in collaboration and consultation with various stakeholders and partners involved in the response. In this regard, such coordination and collaboration with main partners such as UNICEF, WHO, IOM and UN High Commissioner for Refugees (UNHCR) and increased the risk communication and community engagement capacity to be able to reach different segments of the population through different communication channels and platforms, by also enhancing the reach of and engagement to key messages and information.

Following the introduction of the COVID-19 vaccines, a series of public communication activities were conducted under the leadership of the national COVID-19 committee, the MoPH and UNICEF . These included mass media communication, social media campaigns and community engagement to increase awareness and demand for vaccination. Particularly, the “Marathon” campaigns, which were targeting easy access to vaccines, were significantly effective to increase the vaccine demand.

On the other hand, an infodemic around COVID-19 and COVID-19 vaccination, has been one of the major challenges due to circulation of misinformation and disinformation contributing to vaccine hesitancy. For example, in almost all governorates and health facilities visited, interviewees reported that they were either exposed or had to counteract mis/disinformation. The common rumours reported revolved around i) effectiveness of different vaccine brands ii) safety and side effects of different vaccine brands, and iii) expiry date or shelf-life of vaccines (at the later stages of the pandemic).

One of the prominent findings of the evaluation was the role, impact, and capacity of health care workers in vaccine demand. Around 90% of health care workers reported that they believe they have adequate interpersonal skills to communicate with patients/caregivers about vaccination. 81% of the healthcare workers received trainings on “how to communicate “COVID-19 vaccines and 59% of the healthcare workers received communication trainings on communication with their clients/patients about COVID-19 vaccines, addressing questions or hesitancy, which may have helped increase confidence of health care workers when they are communicating about vaccination. Healthcare workers reported that refresher trainings on regular bases would enable them follow and update their knowledge related to recent evidence, scientific developments during progress of outbreaks.

The beneficiaries indicated that they were aware about COVID-19 vaccination recommendations through family members, community organizations/leaders and health care workers as a result of comprehensive advocacy, community engagement and mobilization efforts of stakeholder. The findings also show that engagement of key influencers to promote awareness and vaccine uptake through massive campaigns conducted by primary stakeholders in communication such as UNICEF, was an effective intervention.

Finally, 85% of the healthcare workers highlighted that their patients/clients expressed concerns about getting the COVID-19 vaccines or barriers that have prevented them getting it. The top three

main reasons and barriers were i) “do not think the vaccine is safe/ concern about the side effects”, ii) “do not think vaccine is effective” and, iii) “did not think it was needed”.

Vaccine Safety

Most of the HCFs visited were able to provide the AEFI guidelines and acknowledged the presence of completed AEFI forms covering the last 12 months, yet the AEFI report was not handy as it was not requested prior to the field visit. Healthcare facilities’ microplan included an AEFI component and training on AEFI was carried out adequately. Knowledge regarding the AEFI surveillance system was not universal among all health workers. Surveyed health workers reported having access to experts in case of severe AEFI with a vibrant referral mechanism; however, the occurrence of a serious COVID-19 Adverse effect was uncommon.

Most of the vaccination sessions observed showed proper handling and storage of COVID-19 vaccines. Shortage of 0.3 AD syringes in HCFs was reported, anon surprising finding already declared by WHO as a global shortage and WHO approved the use of 1 ml syringe, supplied in sufficient quantities by the MoPH. MoPH in collaboration with Pfizer was able to conduct a training for all healthcare workers on the proper use of this 1 ml syringe in COVID-19 vaccination.

Monitoring and Evaluation

The country uses complementary online software platforms; IMPACT for pre-registration, follow up and PHENICS for tracking and timely reporting of vaccination activities. The PHENICS system permits tracking of the type of vaccine product, the number received and administered doses, the expired vials, the cumulative AEFI cases, and can calculate the wastage of vaccines. There is provision of QR code vaccination cards electronically to the beneficiaries.

58% of the visited facilities used electronic reporting while the rest used a mixed electronic and paper based. A total of 69% of the health facilities entered data in real time during the vaccination session while 27% did it at the end of the vaccination session. 88% of the HCFs had the COVID-19 vaccination reports available at the time of the visit and it included bulletins, vaccine coverage, drop-out and wastage**.**

54% of the health facilities experienced challenges with the electronic reporting system including glitches in the software, internet access, online connectivity. The vaccinees were informed on when to come for follow-up doses through electronic messages i.e., SMS, WhatsApp or other similar applications (27%), during their in-person vaccination visit (35%), or mixed electronic and in-person approach (38%). The findings revealed a lack of defaulter tracking system and dropouts; 77% of the health facilities have no defaulter tracking system in place and 88% of the health facilities do not calculate dropouts between the first and second doses. Most of the health facilities did not have enough capacities to perform their own data analytics on vaccine supplies and uptake.

COVID-19 Surveillance

COVID-19 surveillance is structured similarly to all other communicable disease surveillance apart of the Epidemiological Surveillance Program (ESU). Core surveillance activities are well-organized including monitoring of morbidity and mortality trends, data collection for disease burden and testing capacity, and genomic surveillance of variants of concern (VOC). Rapid surveillance of COVID-19 morbidity and mortality was implemented, and surveillance reports are updated daily on the MoPH webpage. Important disease burden indicators in online surveillance

reports include % of ICU beds occupied incidence rate, mortality rate, and Polymerase Chain Reaction (PCR) positivity rate. Dashboards of cases by governorate, district, and municipality are publicly accessible on the IMPACT platform, and priority group-specific coverage data is available for people with co-morbidities, humanitarian populations, teachers, healthcare workers, and older adults. National coverage is based on the total number of vaccinated individuals of those eligible to receive each dose.

The case definition for confirmed cases is adapted from WHO guidelines; nucleic acid amplification tests (RT-PCR) and professionally administered SARS-CoV-2 antigen tests in reporting health facilities are used to determine the number of confirmed COVID-19 cases. Suspected cases are not accounted for in surveillance data collection. Hospitals and health facilities, private labs, and municipal public testing sites are the main sources for data collection. The District Health Information System Version 2 (DHIS2) reporting system was leveraged for COVID-19 case reporting at all levels of the health system. COVID-19 surveillance was integrated with influenza sentinel surveillance through severe acute respiratory infections (SARI) sites.

Case investigation and contact tracing is ongoing with the support of external public health investigators. Additional staff were hired to increase capacity but pivoting of staff to COVID-19 response temporarily affected other communicable disease surveillance. Best practices for case investigation included detailed recording of vaccination status, number and brand of dosed received, and timing/date of doses. Contact tracing was strengthened with an expanded workforce that includes NGO volunteers. Contact tracing is performed for subsets of positive cases which allows for minimizing severity of disease. Reporting of cases and deaths at the municipality-level were helpful for contact tracers when conducting follow-up with individuals on their needs and when checking for compliance with quarantine and isolation guidelines.

RECOMMENDATIONS

Regulatory Preparedness

1. Ensure the creation of an independent national regulatory authority to support the Ministry in decision making for vaccines approval.

Planning, coordination, and funding:

Short term

2. Revisit NVDP to refocus on high-risk priority groups namely health care workers, elderly and population with co-morbidities.
3. Ensure availability and updating of microplans in all health facilities.
4. Urgently plan the use of 20,000 doses of Pfizer vaccine to avoid expiry of the vaccine and ramping up the population vaccination coverage with special emphasize on high-risk groups.

Service Delivery

Short term

5. Ensure vaccination services are separated from the curative services areas.

6. Solicit support to improve access to facilities through a subsidizing scheme for the transportation of beneficiaries.
7. Increase the number of mobile units to prisons, long-term care facilities and elderly homes to overcome barriers of reaching vaccination site.

Long term

8. Ensure sustainability, integrating COVID-19 vaccination within designated existing PHC centers.

Human Resource Management and Training

Short term

9. Retrain/refresh in the following areas: (1) vaccine efficacy & safety (especially around pregnancy), (2) injection safety, (3) Pharmacovigilance and AEFI management, (4) enhancing communication competencies, (5) effective vaccine management.
10. Develop Job Aids as a quick resource for vaccination teams and cold chain focal points.
11. Explore alternatives to ensure future supervision plans.
12. Develop a comprehensive/updated training resource for on-boarding of new staff.
13. Provide a form of recognition (certificate of appreciation or token) for front-liners who supported the COVID-19 vaccination effort.

Long term

14. Identify modalities to retain staff until a strategic scaling back of sites or integration into routine EPI services is achieved.

Monitoring and Evaluation

Short term

15. Ensure decentralization of data analysis i.e., vaccine logistics and supplies, vaccine uptake, priority use groups, vaccine wastage.
16. Improve the estimation on denominators at sub-national level for planning, evaluation and data for action purposes.
17. Proactively follow up on defaulters for the second and booster/additional doses.

Long term

18. Update and streamline the different existing complementary online tools available for inter-operability.
19. Strengthen M&E system through additional technical human resources and M&E framework.
    - Maintain regular supervision and monitoring plans.
    - Conduct regular staff training on how to use the electronic recording / reporting system
    - Build defaulter tracking as a part of the vaccine delivery and reporting system
    - Streamline data entry to avoid duplication.
    - Revisit regularly target population/denominator

20. Periodically monitor and validate data – outsource with external monitors – local NGOs, independent monitors.

Vaccine Acceptance and Demand

Short term

21. Increase the number of qualified staff dedicated to communication.
22. Update the national risk communication and community engagement action plan based on lessons learned and best practices.
23. Increase the infodemic management capacity both at national and local levels. Triangulation of formative research findings and social listening insights to translation into action a systematic approach for demand and communication activities.
24. Engage the community on the importance of taking follow-up vaccine doses.

Long term

25. Integrate of behavioural sciences' insight to risk communication and community engagement.

Vaccine safety

Short term

26. Mandate monthly AEFI report on different levels even it is zero report.
27. Disseminate:
    - Safe injection instructions including to emphasize not to recap needles
    - AEFI guidelines to all HCFs

Cold chain

Short term

28. Disseminate cold chain SOPs including unified system for temperature monitoring and methodology of open and close vial wastage calculation.
29. Create of annual maintenance plan.

Surveillance

Short term

30. Expand case definition to include suspected and probable cases to reduce potential underreporting of total cases.

Long term

31. Ensure consistent staff capacity to track COVID-19 and any resurgence of other infectious diseases/VPD.

ANNEXES

Lebanon cPIE Health Care Workers Questionnaire Analysis, September 2022

1. Total sample interviewed			27	
2. Position	Nurse / midwife	Administration/ support staff	Other	Other clinical positions
	22	1	3	1
3. Age		Median 34, Range 22-56		
		Male	Female	
4. Sex (Total 27)		3 (11%)	24(89%)	
5. Education	Bachelor	Higher than bachelor		Other
Total 26	14 (54%)	6 (23%)		6 (23%)
6. COVID-19 vaccination status		Vaccinated	Not vaccinated	
Total 27		27 (100%)	0 (0%)	
Booster dose status	Received	Not received	Do not know	
	24 (89%)	2 (7%)	1 (4%)	
Number of doses received	Two doses	One dose	Three doses	Four doses
Total 25	8 (32%)	7 (28%)	7 (28%)	2 (8%)
7. Did you pay for vaccine or visit?		Did not pay any	Paid for vaccine	Paid for the visit
		23 (85%)	1 (4%)	3 (11%)
8. Flu vaccine status (last season)		Yes	NO	
Total 27		16 (59%)	11 (41%)	
9. Will you receive Flu and COVID vaccine this year		Yes	No	
		16 (62%)	10 (38%)	
10. Why not?				
No need for this vaccination		5		
This vaccination is not provided by the facility		4		

11. Persuasive factors to get COVID-19 vaccine (Total 104)	
• Protecting myself	19 (18%)
• Protecting my family	17 (16%)
• Protecting patients	14 (13%)
• I have COVID-19 risk factors	11 (11%)
• A recommendation of my job	10 (10%)
• Mandated by my job	9 (9%)
• Vaccine is safe	7 (7%)
• government policy to vaccinate health workers as a priority group	6 (6%)
• Vaccine is effective	6 (6%)
• Other	4 (4%)
• Essay to get vaccine	1 (1%)

12. Did you receive the second dose	Yes	No
	26	1

13. Why not?

Had a negative experience with a previous vaccination (non-COVID-19 vaccine)

14. Are you vaccinated against	Flu	Hep B	Tetanus/Diphtheria	Prevenar
	11	17	9	1

16. Do you think COVID-19 vaccination should be mandated	Yes	No
	22 (81%)	5 (18%)

17. Do you think COVID vaccine protect?	Very well	Somewhat well	Not well
	17 (63%)	8 (30%)	2 (7%)

18. How important do you think it is for people to be vaccinated against COVID-19?	Very important	Somewhat	Not important
	23 (85%)	3 (11%)	1 (4%)

19. What do you think is the best way to inform people about COVID-19 VACCINE? Total 92

The media (e.g. TV, radio, newspapers)
18 (20%)
Doctors should talk to them about it
16 (17%)
Nurses or other health care workers should talk to them about it
14 (15%)
Community announcements or meetings
12 (13%)
social networks / internet
9(10%)
printed information available in the clinic (e.g., posters, leaflets, etc.)
9 (10%)
Public figures and VIPs should endorse it
7 (8%)
Religious/faith leaders should endorse it
5(5%)
Other
2(2%)

20.Have your patients/clients expressed any concerns about getting the COVID-19 vaccine or barriers that have prevented them from getting it? Total 27	Yes	No	Do not know
	23 (85%)	3 (11%)	1 (4%)

21. What was the most common reason? Total 89	
Do not think the vaccine is safe/concern about side effects	16 (18%)
Do not think the vaccine is effective	13 (15%)
Did not think it was needed	11 (12%)
Afraid of needles/injections	9 (10%)
Do not want to get any vaccines during pregnancy	9 (10%)
Did not have transportation to vaccination site	6 (7%)
Other	5 (6%)
Difficult making an appointment/signing up	4 (4%)
Spouse of other relative said not to get vaccinated	3 (3%)
Vaccine was not available	2 (2%)
Was not told by health care provider to get COVID-19 vaccine	2 (2%)
Had a negative experience with a previous vaccination (non-COVID-19)	1 (1%)
Vaccination would cost and didn't want to pay	1 (1%)
Religious objections	1(1%)

22. Which high risk groups for COVID-19 do you advise to receive the COVID-19 vaccine? Total 115	
People with comorbidities	22 (19%)
Older adults	21 (18%)
Care workers and support staff of the LTFs	15 (13%)
Residents of prisons and closed institutions	12 (10%)
Refugees or other groups in need of humanitarian aid	11 (10%)

Special job categories	10 (9%)
Residents of long-term care facilities (LTCFs)	10 (9%)
Sociodemographic risk groups	9 (8%)
Other	5 (4%)

23.Do you think COVID-19 vaccines are safe for pregnant women?	Yes	No	Do not know
	20 (47%)	5 (19%)	2 (7%)

24. Why do you think it is safe for pregnant?	
The large number vaccinated without serious AEFI	9
Doctors are advising getting the vaccine	5
The vaccine is effective	5

25. Why do you not think it is safe for pregnant?	
The vaccine is new and no enough data available	2
The vaccine has side effects on the fetus	2
The vaccine is not safe during the first trimester	1

26. Do you think vaccine is safe throughout pregnancy?	Yes	Only in certain trimesters	Do not know
Total 20	11 (55%)	5(25%)	4 (20%)

27.Do you think COVID-19 vaccines are safe for breastfeeding?	Yes	No	Do not know
Total 27	22 (81%)	2 (7%)	3 (11%)

30.Did you receive training specific to the characteristics of the COVID-19 vaccine and how to communicate with vaccine recipients about it?	Yes	No
	22 (81%)	5 (19%)

31. Did you receive training specific to the procedures for COVID-19 vaccination of clients/patients?	Yes	No
	23 (85%)	4 (15%)

32.Did you receive job aides to help you during a vaccination session?	Yes	No	Do not know
	13 (57%)	9 (39%)	1 (4%)

33. Following your training, and the supportive supervision you have received, do you feel you have adequate knowledge in the listed areas?

	Total	Very adequate	Somewhat adequate	Rather not adequate
COVID-19 vaccine implementation program	23	18	5	
Rationale/ background for the COVID-19 vaccine phased introduction	21	16	3	2
Eligibility for COVID-19 vaccination (target population, timing of 2nd dose)	23	21	2	
Contraindications	23	18	3	2
COVID-19 vaccine characteristics, logistics and storage conditions	23	18	5	
Organizing a vaccination session	20	16	4	
Administration of the COVID-19 vaccine	23	20	2	1
Preparing vaccine (using diluent, measuring vaccine dose, etc.)	23	22		1
Maintaining COVID-19 measures during vaccination (social distancing, handwashing, use of face masks, etc.)	23	20	3	
Communication of key messages to vaccinees	23	21	2	
Observation of vaccinees following immunization	23	19	4	
Monitoring of Adverse Events Following Immunization (AEFI)	22	18	4	
Monitoring of Adverse Events of Special Interest (AESI)	18	14	2	2
Management of mild or moderate AEFI (fever, malaise, sore injection site)	22	17	3	2
Management of severe AEFI	23	17	3	3
Recording and reporting vaccine doses administered (in vaccination cards/certificates and in tally sheets or electronic information system)	23	19	4	
Communications with the community	21	17	4	

34. Do you feel confident in AEFI diagnosis and reporting?	Yes	No	Do not know
Total 25	21 (84%)	2 (8%)	2 (8%)

35.Did you receive any training updates or refresher trainings on the COVID-19 vaccine and vaccination of clients/patients for new vaccine products made available? Total 26	Yes	No
	17 (65%)	9 (35%)

	Yes	No

36. do you feel you received sufficient updates on the COVID-19 vaccine? Total 17	16 (94%)	1 (6%)

37. Did you receive any training on communicating with clients/patients about COVID-19 vaccines, addressing questions, concerns, or hesitancy?	Yes	No
	16 (59%)	11 (41%)

38. Do you feel confident in your ability to communicate with clients/ patients, address their questions and concerns about COVID-19 vaccines?	Yes	No	Do not know
	24 (89%)	2 (7%)	1 (4%)

Lebanon cPIE Beneficiary questionnaire analysis, September 2022

1. Total sample interviewed: 78

2. Demographic characteristics:

2.1Sex	Total answers	male	Female
n(%)	77	41(54%)	36(46%)

2.2. Beneficiary group:

Total answers	Adults	Elderly	Adolescents	Comorbidities	Elderly and comorbidity	Pregnant	Frontline	Children	Other
81	54)69%)	10(13%)	5(6%)	3(4%)	1(1%)	1(1%)	2(3%)	1 (1%)	1(1%)

3.COVID-19 medical and vaccination history

3.1. COVID-19 positive test	Yes	No	Do Not Know
Total 78	35(45%)	42(54%)	1(1%)

3.2. Timing of COVID-19 positive test	Before getting the vaccine	After getting the vaccine
Total 33	28(85%)	5(15%)

3.3. Hospitalization because of COVID-19	Yes	No
Total 35	0(0%)	35(100%)

3.4. COVID-19 vaccination (Total 78)	Yes	No
	67(86%)	11(14%)

3.5. COVID-19 vaccination certificate (Total 64)	Seen 46(72%)	Not seen 18(28%)

	Two	One	Three	Four
3.6. COVID-19 vaccination number of doses received (Total 67)	36(55%)	17(25%)	13(19%)	1(1)

3.7. Different types of COVID-19 vaccine receiving Total : 66	Yes 9 (14%)	No 57 (86%)

3.8. Did you receive 2nd , 3rd , 4th dose on time? Total 67	Yes 56(84%)	No 3(4%)	In the interval period 8(12%)

3.9. Did you receive the 2nd dose on time? Total 56	Yes 51(91%)	No 4(7%) The median delay to the recommended time is 225 days	Do not know 1(2%)

4. Receiving recommendations to get the vaccine	Yes	No	Do not know
Total 76	36(47%)	37(49%)	3(4%)

4.1. Who did recommendation	Family member	Community organization / Leader	Healthcare worker	Work colleague	Friend / neighbor	other	religious org/leader
Total 42 (More than one source was applicable)	15(36%)	8(19%)	8(19%)	5(12%)	4(10%)	2(5%)	0(0%)

5. Persuasive factors to receive the vaccine
Total 122 (More than one factor was applicable)

Protecting myself	Protecting my family	Believe in vaccination	Mandated by job	Vaccine is safe	Other	Mandate for residence	Do not know
28 (23%)	20 (16%)	18(15%)	12 (10%)	11 (9%)	9 (7%)	6 (5%)	6 (5%)

Effective vaccine	HCP recommended	Recommended by others	Vaccination is free	Protect others
4 (3%)	3(2%)	2(2%)	2 (2%)	1(1%)

6. Causes of not receiving the second dose Total 17	other	Do not know	Did not have time	Vaccine not available
	7 (41%)	6 (35%)	3 (18%)	1(6%)

7. Causes of not receiving COVID-19 vaccine	wanted vaccine but could not access it	Vaccine available but he declined the opportunity
Total 8	2 (25%)	6 (75%)

8. Registration method Total 66	Telephone	Computer application	HCWs	Waiting in lines in HCFs	other
	35 (53%)	16 (24%)	7 (11%)	4(6%)	4(6%)

8.1. Registration difficulty	Easy	Difficult
Total 67	67 (100%)	0 (0%)

8.2. Waiting period between registration and appointment	< 1week	< 1month	2-3 months	>3 months
Total 78	38 (49%)	23 (29%)	2 (3%)	3 (4%)

9. Vaccination experience	
9.1. Total vaccination time	Within one hour
	66(100%)

9.2. Was the waiting time too long	No
	67 (100%)

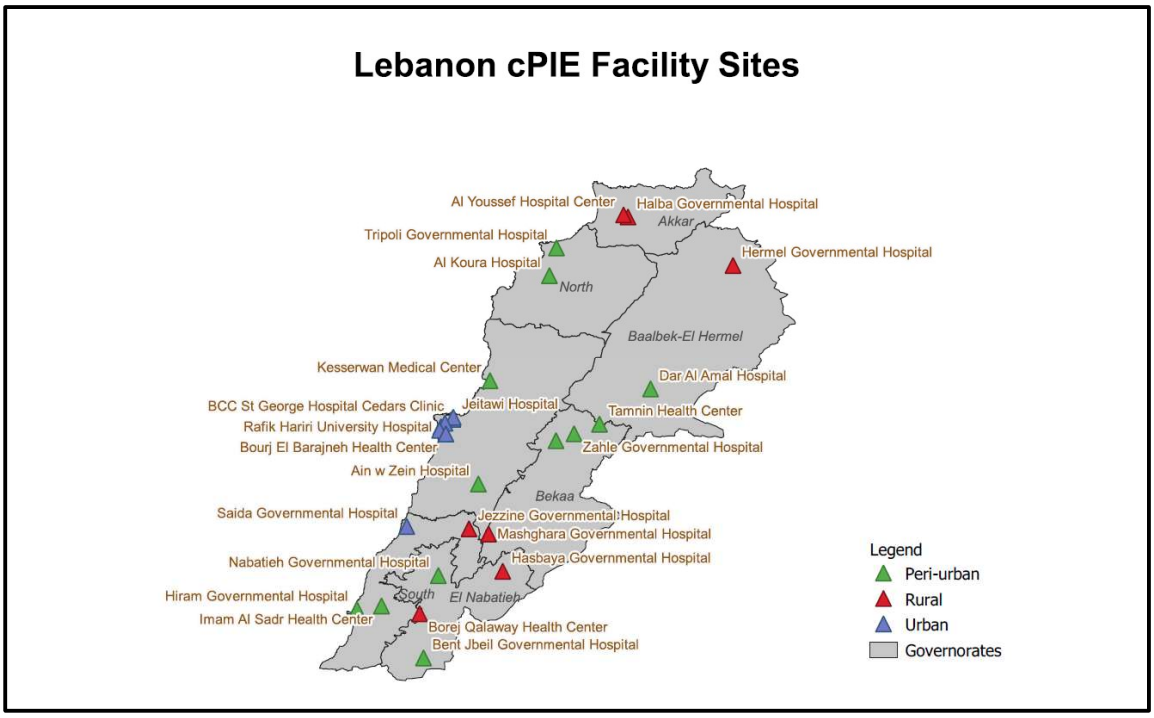
10.1. What has worked well:

1. The organization of vaccination session and staff well trained
   7
2. Easy registration process
   2
3. Counseling and explaining side effects
   2
4. Duration of vaccination process
   1
5. Easy access through walk in
   1

10.2. What hasn’t worked?

1. Absence of awareness campaigns especially for adolescents (3)
2. No monitoring after the first dose (1)
3. Vaccination center was very crowded (1)
4. They couldn't get the second doses of the vaccine at school because of the school strike (1)
5. Registration was difficult

1- Map of Selected Governorates and Sites



2- List of Independent Evaluators and Affiliation

Organization	Evaluator	Email Address
CDC	Margaret McCarron	dme8@cdc.gov
	Chelsey Griffin	qqp1@cdc.gov
	Noha Farag	iym0@cdc.gov
	Seth Ferrey	tgz1@cdc.gov
	Sanam Shaikh	qqp1@cdc.gov
WHO	Santosh Gurung (HQ)	fahmyk@who.int
	Kamal Fahmy (EMRO)	gurungs@who.int
	Racha Hamra (Country Office)	hamrar@who.int
MMGH	Carsten Mantel	mantelc@mmglobalhealth.org
	Karen Hennessey	hennesseyk@mmglobalhealth.org
TFGH	Tony Mounts	tmounts@taskforce.org
	Dora Curry	dcurry@taskforce.org
	Lindsay Saber	lsaber-consultant@taskforce.org
	Cara Tupps	ctupps@taskforce.org
	Ihab Basha	ebasha-consultant@taskforce.org
	Beste Sultan Gülgün	bgulgun-consultant@taskforce.org
	Naisa Rahman	nrahman@taskforce.org
CRD	Ziad Mansour	mansourz@crdconsultancy.org
	Racha Said	saidr@crdconsultancy.org
MoPH	Atika Berri	aberrymd@gmail.com
	Fatima Awada	dr.fatima.awada@outlook.com
	Hajar Samaha	hajarsamaha@hotmail.com

3- Field Team Members and Affiliation

Organization	Field Team Member
MoPH – Preventive Medicine Department	Antoine Sarkis Dalia Allam Fatima Awada Hajar Samaha Karam Mansour Mahdi Mawla Mohamed Noureddine Nour Dakroub
CRD	Diana Karim Fatima Diab Israa Zorghali Jana Tarhini

4- Health Facilities Visit Schedule

Health Facility	Governorate	Field Team	Date of Visit
Timnine Health Center	Baalbak-Hermel	Jana Tarhini Fatima Diab	August 30, 2022
BCC St George Hospital Cedars Clinic	Beirut	Mohamed Noureddine Antoine Sarkis	August 30, 2022
Makassed Hospital	Beirut	Dalia Allam Mahdi Al-Mawla	August 30, 2022
Nabatieh Governmental Hospital	Nabatieh	Nour Dakroub Karam Mansour	August 30, 2022
Al Youssef Medical Center	Akkar	Jana Tarhini Fatima Diab	August 31, 2022
Rafik Hariri University Hospital	Beirut	Dalia Allam Fatima Awada	August 31, 2022
Jezzine Governmental Hospital	South	Israa Zorghali Diana Karim	August 31, 2022
Dar Al Amal Hospital	Baalbak-Hermel	Jana Tarhini Fatima Diab	September 1, 2022
Jeitawi Hospital	Beirut	Mohamed Noureddine Antoine Sarkis	September 1, 2022
Zahle Governmental Hospital	Bekaa	Hajar Samaha Karam Mansour	September 1, 2022
Hasbayah Health Center	Nabatieh	Fatima Awada Mahdi Al-Mawla	September 1, 2022
Bent Jbeil Governmental Hospital	Nabatieh	Nour Dakroub Dalia Allam	September 1, 2022
Imam Al Sadr Health Center	South	Israa Zorghali Diana Karim	September 1, 2022
Halba Governmental Hospital	Akkar	Jana Tarhini Fatima Diab	September 2, 2022
Mashghara Governmental Hospital	Bekaa	Hajar Samaha Fatima Awada	September 2, 2022
Kesserwan Medical Center	Mount Lebanon	Karam Mansour Antoine Sarkis	September 2, 2022
Saida Governmental Hospital	South	Israa Zorghali Diana Karim	September 2, 2022
Ain w Zein Hospital	Mount Lebanon	Fatima Awada Mahdi Al-Mawla	September 3, 2022

Hermel Governmental Hospital	Baalbak-Hermel	Jana Tarhini Fatima Diab	September 5, 2022
Central Warehouse	Beirut	Mohamed Noureddine Mahdi Al-Mawla	September 5, 2022
Hiram Governmental Hospital	South	Israa Zorghali Diana Karim	September 5, 2022
Kalaway Health Center	Nabatieh	Nour Dakroub Mohamad Noureddine	September 6, 2022
Al Koura Hospital	North	Karam Mansour Antoine Sarkis	September 6, 2022
Al Nakaa Health Center	Mount Lebanon	Mohamed Noureddine Mahdi Al-Mawla	September 7, 2022
Bourj El Barajneh Health Center	Mount Lebanon	Dalia Allam Mahdi Al-Mawla	September 8, 2022
Tripoli Governmental Hospital	North	Karam Mansour Antoine Sarkis	September 8, 2022
Chtoura Hospital	Bekaa	Hajar Samaha Fatima Awada	September 9, 2022

5- Timeline of Lebanon cPIE Activities

Date	Activity
Trainings	
August 24, 2022	Virtual training of field teams
August 29, 2022	In-person training of field teams
Data Collection	
August 30 - September 9, 2022	Fieldwork
Debriefing Workshop	
September 11, 2022	Meeting of International participants
September 12, 2022	Field team presentation for each governorate
September 13, 2022	Topic workgroups and plenary presentation
September 14, 2022	Finalize findings and recommendations Prepare debrief PowerPoint presentation
Final Debriefing Meeting	
September 15, 2022	Final debrief presentation

6- Roles and Responsibilities

Field Teams	Topic Lead	National Lead
• Attend 2 trainings	• Attend trainings	• Attend trainings
At each site, • Introduce the activity and purpose of the visit • Complete the 5 different data collection forms (DCFs)	• Conduct a brief desk review on assigned topic(s)	• Familiarize with country context
• Daily, finalize any pending fields in the DCF and send the data to the ODK team	• Synthesize findings on assigned topics from field team reports (day 1 of debriefing workshop)	• Conduct validation of national questionnaire

• Daily, update findings in the governorate PPT template	• Prepare a PPT on topic that includes field synthesis and data tables related to topic for day 2 of workshop - including proposed recommendations	• Conduct stakeholder interviews
• Present the governorate PPT on day 1 of the debriefing workshop	• Facilitate a break-out group discussion and finalize PPT and recommendations	• Serve as topic lead as needed
	• Give topic presentation to plenary • Finalize slides to be used for final briefing	• Participate and contribute to all topic discussions - especially in terms of reflecting the national findings
	• Draft a 3–5-page topic report	• Support the preparation and presentation of the final debriefing presentation • Present the final debrief
	• Support the preparation and finalization of the final cPIE report	• Support the preparation and finalization of the final cPIE report

7- Agendas of Trainings and Final Debrief Session

Virtual Training Agenda				
Date: August 24, 2022			**Chair/Organizer:** Mrs. Racha Said	
Participants:			MoPH Field team (12) cPIE planners	
Agenda Item	**Time**	**Minutes**	**Topic**	**Presenter/ Facilitator**
1	9:00	10	Welcome & Introduction	Mrs. Racha Said
2	9:10	15	Overview COVID-19 Deployment	Mrs. Hajar Samaha
3	9:25	15	cPIE Objectives & Methods	Dr. Karen Hennessey
4	9:45	15	Q&A	Mrs. Racha Said
5	10:00	60	Health Facility Form	Dr. Ihab Basha Dr. Karen Hennessey
6	11:00	30	Vaccination Session Form	Dr. Ihab Basha
7	11:30	30	Cold Chain Form	Dr. Ihab Basha
8	12:00	30	Beneficiary and HCW Forms	Dr. Ihab Basha
9	12:30	30	Wrap-up and Final Remarks	All

In-Person Training Agenda				
Date: August 29, 2022			**Chair/Organizer:** Mrs. Racha Said	
Participants:			Field team (12)	
Agenda Item	**Time**	**Minutes**	**Topic**	**Presenter/ Facilitator**
1	11:00	10	Welcome & Introduction	Mrs. Racha Said
2	11:10	15	Recap of Methods & Roles and Responsibilities	Mrs. Racha Said
3	11:25	20	Demo of ODK	Mrs. Racha Said

4	11:45	60	Hands on Practice on Tablets	Field Teams
5	12:45	10	Logistics & Admin	Mrs. Racha Said
9	12:55	5	Wrap-up and Final Remarks	All

Final Debrief Agenda				
Date: September 15, 2022			**Chair/Organizer:** Dr. Kamal Fahmy, WHO-EMRO	
Participants:			MoPH Evaluators Stakeholders Partners	
Agenda Item	**Time**	**Minutes**	**Topic**	**Presenter/ Facilitator**
1	11:00	20	Welcoming Speech & Introduction	MoPH DG – Mr. Fadi Snan
2	11:20	35	cPIE Evaluation Findings and Recommendations	Dr. Kamal Fahmy
3	11:55	30	Discussions	MoPH and Partners
4	12:25	5	Closing Remarks	Dr. Kamal Fahmy

8- Snapshots of Field Teams PowerPoint Presentations

COVID PIE: Vaccine demand, advocacy & communication

Strengths/Best Practices	✓ One of the facilities collaborated with UNHCR to promote awareness and address false rumors as a means of enhancing vaccine demand. ✓ The nurses perform outreach activities on a personal level to spread awareness about the importance and safety of the COVID19 vaccines. ✓ The facilities spread awareness through social media platforms and collaborations with municipalities and religious leaders.
Challenges	✓ The fear and spread of false rumors resulted in a lack of vaccine demand and concerns among the community. ✓ Low demand on vaccines was prominent in all facilities.
Prioritized Actions (maximum 2-3)	**a) For immediate implementation:** ✓ Organize mass media campaigns to promote the importance and safety of COVID19 vaccines. As well as to encourage people to get the booster dose. ✓ Advocate transparency in vaccine usage and expiry dates as a means of enhancing trust between the community and the health officials. **b) For mid to longterm implementation to improve the response to the ongoing COVID19 vaccination:** N/A

Akkar – Vaccine Demand, Advocacy, & Communication

COVID-19 PIE: Service delivery

Strengths/Best Practices	✓ The nurses are well trained and respect safety guidelines (using face masks, gloves, social distancing, etc..). ✓ The nurses informthe vaccinees on the precautionary measures to be taken after the vaccination session and the possible side effects that may occur ,and how to report these effects using the MOPH'S hotline (1214). ✓ The nurses inform the vaccinees with the date of the upcoming dose. ✓ The syringes are immediately disposed in a safety box and not recapped.
Challenges	✓ Some people are always in a rush and refuse to wait for 15 minutes to be monitored for any adverse side effects. ✓ Some people have a fear of needles which can be a bit challenging and time consuming for the nurses.
Prioritized Actions (maximum 2-3)	**a) For immediate implementation:** ✓ Abiding by the 15 minutes rule to monitor vaccinees and make sure that they do not have any adverse events following immunization. ✓ Restriction methods: Not giving the vaccination card and the personal ID of the vaccinees before abiding by the previous rule. **b) For mid to longterm implementation to improve the response to the ongoing COVID19 vaccination:** ✓ Provide awareness campaigns in schools and other facilities to promote COVID-19 vaccine uptake. ✓ Provide the Healthcare staff with necessary trainings on how do deal with people who have a fear of needles.

Baalbak-Hermel – Service Delivery

COVID-19 PIE: Vaccine Safety & AEFI/AESI

Strengths/Best Practices	• Patients were told to wait to be observed for 15 minutes after vaccination session. • High hygiene levels were performed during vaccination to ensure safety. • AEFI kit was in all centers with a check list with expiry dates.
Challenges	• Some patients refused to stay after vaccination. • Most centers didn't know what are AESI measures and didn't apply these measures.
Prioritized Actions (maximum 2-3)	**a) For immediate implementation:** • Training on AEFI & AESI measures. **b) For mid to long-term implementation to improve the response to the ongoing COVID-19 vaccination:** • Continuous training. • Active vaccine safety surveillance system.

Beirut – Vaccine Safety & AEFI/AESI

COVID-19 PIE: Human resource managementand training

Strengths/ Best Practices	• Training sessions for vaccination teams and supervisors were carried out managed by Pfizer company & MOPH (vaccine management…) • A qualified team has been designated to oversee the vaccination process.
Challenges	• Shortages of health workers at vaccination Centers • Low rate of the salary
Prioritized Actions (maximum 2-3)	**a) For immediate implementation:** • Recruitment of additional health workers(Nurses, physicians, administrative clerks..) • Financial incentives to health workers. **b) For mid to long-term implementation to improve the response to the ongoing COVID-19 vaccination :** • Regular refresher trainingsabout COVID 19 vaccine, IPC, AEFI.

Bekaa – Human Resource Management and Training

COVID-19 PIE: Monitoring & Evaluation

Strengths/Best Practices	- Vaccination data directly entered on the system - Staff well trained on how to use electronic recording / reporting system - Vaccinees taking first dose are informed on when to come for second dose
Challenges	- Electricity shortage➔ trouble with recording vaccination data - Defaulters not able to be tracked - No system to follow-up with defaulters
Prioritized Actions (maximum 2-3)	**a) For immediate implementation:** - Conduct sessions to inform community on importance of taking follow-up doses - Regular trainings for staff on how to use the electronic recording / reporting system **b) For mid to long-term implementation to improve the response to the ongoing COVID-19 vaccination:** - Buildup a system to track defaulters and follow-up with them

Mount Lebanon – Monitoring and Evaluation

COVID-19 PIE: Supply chain & waste management

Strengths/Best Practices	Centers have adequate cold chain including backup generator and solar panels system . Alsovisit adhere to the standards for sorting waste and handing it over to the relevant companies.
Challenges	Sustainabilityof solar power during cloudy days and at night. Lack of regular transportation means (vehicles and fuel). Compromised vaccines due to electricity shortage (one center)
Prioritized Actions (maximum 2-3)	**a) For immediate implementation:** Vaccines must be delivered to all centers by the responsible authority, or transportation costs must be covered. **b) For mid to long-term implementation to improve the response to the ongoing COVID-19 vaccination :** Behavior changes, awareness and proper education

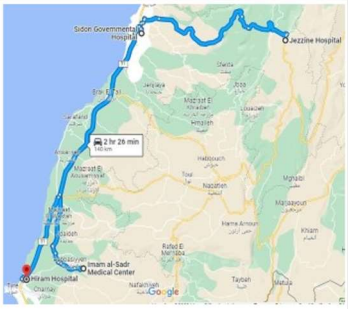
Nabatieh – Supply Chain & Waste Management

COVID-19 PIE - Summary

Key achievements including best practices (max 3) -Audit check lists -People education
Most important areas to improve (max 3): -Continuous education and training sessions concerning the importance of strict observation and monitoring post vaccine administration -Respect Cold chains vaccinations observations
What is needed to make improvements (actions or resources)? -Regular fuel provision

North – Summary

Sites visited & data collected

Sites (Forms completed)	**Map of sites visited**
Site 1: Jezzine Governmental Hospital Site 2: Imam Al Sadr Health Center Site 3: Saida Governmental Hospital Site 4: Hiram Hospital 5 cold stores 4 COVID-19 vaccination sessions 10 COVID-19 beneficiaries 7 COVID-19 HCW beneficiaries	

South – Sites Visited and Data Collected

9- National Interviews Conducted

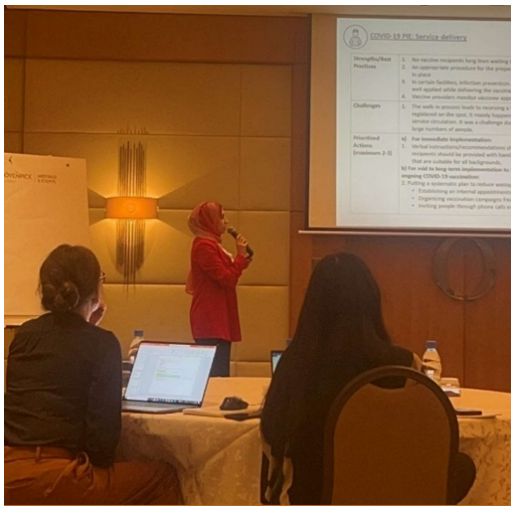
Organization	Name	Role	Date of Interview
National Validation Interviews			
MoPH	Dr. Atika Berri	Head of the Preventive Medicine Department Head of the Communicable Diseases Department	August 30, 2022
WHO - Country Office	Dr. Rasha Hamra	National Professional Officer	August 30, 2022
Stakeholders' Interviews			
World Bank	Dr. Sherin Varkey	Public Health Expert and Strategist	September 12, 2022
	Mrs. Farah Asfahani	Health Specialist	September 12, 2022
	Mrs. Hiya Mahmassani	Human Development Analyst	September 12, 2022
	Mr. Ronald Eduardo Gomez Suarez	Economist	September 12, 2022
IFRC	Mrs. Najlaa Sanjaq	Head of Management Unit	September 12, 2022
WHO - Country Office	Mrs. Hala Habib	Demand & Communication Officer	September 14, 2022
Topic Leads' Interviews			
MoPH	Dr. Fatima Awada	Pharmacist	September 13, 2022
	Mrs. Hajar Samaha	PMD Staff	September 13, 2022
	Mr. Hicham Fawaz	Chief of Hospitals Department	September 13, 2022
	Mr. Mario Baakliny	Surveillance Officer	September 13, 2022
	Mrs. Zeinab Berri	Demand & Communication Officer	September 13, 2022

10-List of Participants of Final Debrief

Organization	Position	Name
MoPH	Director General	Mr. Fadi Snan
	Head of Preventive Medicine Department	Dr. Atika Berry
	Pharmacist	Dr. Fatima Awada
	Head of Quality Assurance of Pharmaceutical Products Program	Dr. Rita Karam
	Pharmacovigilance Program Clinical Manager	Dr. Abeer Zeitoun
	Advisor to Minister of Public Health for COVID-19 Vaccination	Ms. Alicia El Araigi
	Advisor to Minister of Public Health for Planning and Health Systems	Dr. Bahig Arbid
	Chief of Hospitals Department	Mr. Hicham Fawaz
Lebanese Society of Infectious Diseases and Clinical Microbiology	President	Dr. Madonna Matar
General Inspection - IMPACT Platform	IT Manager	Dr. Charbel Nehme
World Bank	Health Specialist	Ms. Farah Asfahani

UNHCR	Assistant Public Health Officer	Ms. Carmen Karim
UNICEF	Immunization Specialist	Dr. Bhrigu Kapuria
	Health & Nutrition Specialist	Ms. Rima Chayya
IOM	National Medical Officer	Dr. Joseph Zgheib
Lebanese Red Cross	Disaster Risk Reduction Director	Mr. Kassem Chaalan
	Vaccination Coordinator	Mr. Dory Nakhle
WHO - Country Office	Epidemiologist	Mr. Moubadda Assi
WHO - EMRO	Medical Officer	Dr. Kamal Fahmy
WHO - HQ	Technical Officer	Dr. Santosh Gurung
MMGH	Epidemiologist	Dr. Karen Hennessey
TFGH	Regional Consultant	Dr. Ihab Basha
	Demand Consultant	Dr. Beste Sultan Gülgün
	Consultant	Ms. Naisa Rahman
CRD	CEO	Dr. Ziad Mansour
	Head of Research Unit	Ms. Racha Said
	Director of Programmes	Ms. Jinan Arab
	Admin Assistant	Ms. Thea Noun

11- Photos of Field Teams Debrief Session



12- Photos of Final Debrief Session

REFERENCES

1-Mansour, Ziad, Randa Hamadeh, Alissar Rady, M. Danovaro-Holliday, Kamal Fahmy, Racha Said, Lina Brandt, Ramy Warrak, and Walid Ammar. "Vaccination coverage in Lebanon following the Syrian crisis: results from the district-based immunization coverage evaluation survey 2016." *BMC Public Health* 19, no. 1 (2019): 1-11.

2-New Vaccine Post-Introduction Evaluation (PIE) Tool, World Health Organization