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4/28/2020

CoVIP Program Evaluation: Technical Assistance Outcomes and Challenges

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B.S., Emory University, 2018

Thesis Committee Chair: Dawn Comeau, PhD, MPH

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Abstract

CoVIP Program Evaluation: Technical Assistance Outcomes and Challenges

By Selaem Hadera

Background: The COVID-19 Vaccine Implementation Program (CoVIP) has a need to understand the impact of their technical assistance (TA) of COVID-19 vaccine deployment toward the establishment of sustainable adult immunization programs around the world. The primary evaluation question is "What are the outcomes and challenges of TA provided by CoVIP?" The significance of conducting this evaluation is that as the program is wrapping up in most settings, it is important to take note of lessons learned and how to improve future programming.

Methods: A document review, online survey, and key informant interviews were conducted for the evaluation. The documents reviewed were from the TA consultants in the field sharing their progress and experiences. An online satisfaction survey was developed to gauge the outcomes of TA support from the perspective of in-country partners who have received direct technical assistance from consultants. Key informant interviews were conducted with a subset of survey respondents to provide deeper insight into what was found from the survey results. There were 7 areas of TA support examined: 1. Coordination; 2. Planning and implementation; 3. Monitoring and evaluation; 4. Data management; 5. Demand creation; 6. Workforce development; 7. Vaccine service delivery.

Results: Key takeaways included the following: 1. TA is need-based, engaged, and requires proactive communication. 2. TA support extended beyond CoVIP. 3. TA support areas are targeted and driven by country needs. 4. TA played a vital role in strengthening relationships and engaging with stakeholders. Not many challenges were mentioned; the ones noted were often not directly about the TA support itself.

Discussion: Based on the findings of the evaluation, the following recommendations were advised for future programming: 1. Disseminate and communicate findings of evaluations. 2. Clearly address issues identified in evaluations. 3. Clarify definitions for indicators used to evaluate programs over time. 4. Increase involvement of partners throughout the course of the TA period. Conducting evaluations such as this are critical to advance public health through evidence-based decision making and continuous improvement.

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Table of Contents

Chapter 1: Introduction

The COVID-19 Vaccine Implementation Program (CoVIP) is a program of the Task Force for Global Health (TFGH). The program started in 2021 during the COVID-19 pandemic to distribute vaccines to low- and middle-income countries. The two main ways that CoVIP achieves their mission is through financial and technical assistance (TA). Deployed consultants provide technical assistance to partner countries. Eighteen countries and regions were included in this evaluation (see Table 1). Areas of TA support provided by consultants include coordination, planning and implementation, monitoring and evaluation, data management, demand creation, workforce development and vaccine delivery.

Problem statement: CoVIP has a need to understand the impact of their technical assistance of COVD-19 vaccine deployment in order to improve future directions of the program toward the establishment of sustainable adult immunization programs around the world. Purpose statement: To evaluate the outcomes and challenges of the technical assistance provided by CoVIP to low- and middle-income countries. Evaluation question: What are the outcomes and challenges of technical assistance provided by CoVIP? The significance of conducting this evaluation is that as the program is wrapping up in most settings, it is important to take note of lessons learned and how to move forward for future programming.

Table 1. List of countries included in evaluation

Countries included in CoVIP TA Evaluation	
Middle East and North Africa (MENA)	The Democratic Republic of the Congo (DRC)
Egypt	Cameroon
South Sudan	Nigeria
Uganda	Ghana
Kenya	Sierra Leone
Tanzania	Eastern Europe and Central Asia (ECCA)
Zambia	Western Pacific Region (WPRO)
Eswatini	South-East Asia Region (SEARO)
Angola	Central America Region (CAR)

Chapter 2: Literature Review

Background

To effectively evaluate the technical assistance (TA) of the CoVIP program, it is crucial to understand the existing body of research related to similar programs and TA models. This literature review aims to provide an overview of relevant studies and frameworks of TA in COVID-19 vaccine deployment and other global outbreak responses in low- and middle-income countries (LMICs) that may be relevant to CoVIP. By examining previous research on TA implementation, outcomes, and lessons learned, this review will highlight key factors influencing program success and identify gaps that the current evaluation seeks to address. Understanding these elements is essential for informing a robust evaluation that can accurately assess the program's outcomes and challenges.

Overview of Technical Assistance

Technical assistance (TA) has been defined in many ways. In global health, TA is support provided in order to build capacity in a range of areas by an organization to a health system or community. It can be short- or long-term assistance delivered through multiple avenues of knowledge sharing. Typically the model of TA in a specific context is designed and overseen by an external funding organization. The aim of TA is to further advance a health initiative, program or system (Kanagat et al., 2021).

Other terms are used similarly to TA or TA provider such as facilitator, knowledge broker, coach, or consultant (Albers et al., 2020). While each of these concepts may have slightly different emphasis, they are largely overlapping. Albers et al. (2020) propose "implementation support practitioner" (ISP) be used to standardize the role across initiatives. They define the scope of ISPs as not being directly engaged in service delivery; ISPs would collaborate with leadership and staff to assist in the implementation of evidence-based practices, with an emphasis on sustainable impact.

Effectiveness of Technical Assistance

TA can be a useful framework to advance global health initiatives, but there are challenges that need to be addressed. Knittel et al. (2022) used a systems-based approach to examine development assistance models and found nine challenges, "1) reliance on external implementing partners undermines national capacity; 2) prioritizing global initiatives undercuts local programming; 3) inadequate contextualization hampers program sustainability; 4) decision-maker blind spots inhibit capacity to address inequities; 5) power asymmetries undermine local decision making; 6) donor funding structures pose limitations downstream; 7) program fragmentation impedes long-term country planning; 8) reliance on incomplete data perpetuates inequities; and 9) overemphasis on donor-prioritized data perpetuates fragmentation." All of the challenges suggest an imbalance of power among stakeholders, and thus a need for co-creation of solutions in TA models moving forward. Although TA is increasingly needed and utilized globally, there is a lack of systematic reporting and evaluation of its outcomes (Scott et al., 2022). In a systematic review of 125 studies on TA evaluation, Scott et al. (2022) concluded that, for the most part, the impact of TA services were not sustainable beyond the period of TA. In attaining sustainability, important factors highlighted were the amount of TA support and commitment of staff and leadership.

Another challenge of most TA models is that they are not grounded in a theory of change. Aldridge II et al. (2023) propose 10 core practice components grounded in social cognitive theory. They theorize it will help to draw a clearer line of relationships between behavior and change, and activities and outcomes. The model can be helpful in training TA providers to conceptualize and effect change. Similarly, Dunst et al. (2019) came up with 5 components and 25 core elements that seem to be consistent among TA models. However, further research is needed to explore what components or elements may be more salient when correlated with TA outcomes. Both Aldridge and Dunst models overlap in many ways in regards to preparation, planning, implementation, evaluation and sustainability of TA. The Strengthening Technical Assistance for Routine Immunization Training (START) approach in Uganda highlights the importance of nontraditional methods of knowledge sharing (e.g. mentorship) for capacity building of TA providers in routine immunization (Ward et al., 2019). Additional lessons learned from

START include the following threats to effective TA: competing priorities, resource allocation, and external accountability.

Lessons Learned from Past Outbreaks

There are many TA mechanisms that were not included in this literature review. Examples of past outbreaks were prioritized assuming they may have more similar conditions to COVID-19 related TA.

Polio

The eradication of polio can provide valuable lessons for advancing current and future global health efforts. A key achievement of the CORE Group Polio Project (CGPP) was their ability to reach remote populations and the non-governmental organization (NGO) community, in addition to top-down approaches (Losey et al., 2019). In India, key contributors to polio elimination were partnership and coordination (Awale et al., 2019). The takeaways from CGPP in India can inform prevention and disease control, notably when the disease is preventable by vaccine. Some of the engagement strategies implemented were community mobilization, community-based surveillance, and capacity building to address other needs (Perry et al., 2019).

Ebola

As was the case with polio, community engagement (CE) was a key factor in addressing the Ebola epidemic in Liberia. Multiple forms of CE were employed, with varying levels of significance, that contribute to a more resilient healthy system (Barker et al., 2020). Recommendations for using CE in future outbreaks is the importance of collaborative approaches that empower communities to act as active players in the health response and that it should be well-established before a crisis arises.

Influenza

The Partnership for Influenza Vaccine Introduction (PIVI) is a public-private partnership that supports vaccination programs via TA and vaccine donations in LMICs. Data from the initial years of PIVI suggest technical and financial support can lead to progress towards sustainable vaccination programs (Bresee et al., 2019). Part of the PIVI model is to provide TA to National Immunization

Technical Advisory Groups (NITAGs). A NITAG is a group of experts who provide evidence-based and context-specific guidance on national immunization efforts. Bell et al., (2019) studied the effectiveness of NITAGs in LMICs and concluded that effective advisory groups inspire country ownership over immunization, and that additional technical and financial assistance is needed to improve its quality in LMICs.

Furthermore, Ba-Nguz et al., (2019) concluded similar challenges faced by NITAGs regarding the need for more secure financial support and TA. There is a gap in access to peer-reviewed literature. This is necessary to address in order for NITAGs to operate to their fullest capability, as their policy recommendations should be informed by data.

Overview of COVID-19 Vaccination

As is the case with many other vaccines, the COVID-19 vaccine is lifesaving (Watson et al., 2022). However, there is insufficient vaccine access, especially in LMICs. Advancing COVID-19 vaccine equity requires a health systems and policy approach that is unique to this pandemic and to every context in which it unfolds (Van de Pas et al., 2022). Collaboration from external partners through technical and financial assistance is also needed to help with supply and service delivery. The inability to secure COVID-19 vaccines in LMICs in a timely fashion compared to higher income countries correlates to increased cases and mortality, underscoring the significance of not only equitable, but also timely access and delivery (Duroseau et al., 2022).

In an estimated cost analysis associated with deploying COVID-19 vaccines in LMICs categorized 8 areas of work for TA as: 1. Planning & coordination; 2. Supply chain, procurement, regulatory; 3. Cold chain, logistics; 4. Service delivery, training, supervision; 5. Health management information system (HMIS), data monitoring & evaluation; 6. Vaccine safety, adverse event following immunization (AEFI) surveillance; 7. Communication for development (C4D), demand generation, risk communication; 8. Administrative staff, assistant (UNICEF 2022).

As more countries attained access to COVID-19 vaccines through COVID-19 Vaccines Global Access (COVAX), the next step was to plan effective vaccine rollout. Tagoe et al., (2021) suggested the following strategies: leverage existing immunization structures, community mobilizers, government institutions, capacity building of expert and lay workforce, and funding opportunities. The Centers for Disease Control and Prevention (CDC) created the COVID-19 International Vaccine Implementation and Evaluation (CIVIE) program that advances vaccination efforts through partnerships and technical support to LMICs. Based on lessons learned from previous vaccine introductions, CIVIE selected 7 technical areas to take advantage of CDC's technical expertise in assisting in vaccine deployment and assessment. The 7 areas of TA outlined are vaccine policy development, program planning, vaccine confidence and demand, data management and use, workforce development, vaccine safety, and evaluation (Soeters et. al, 2022). Lessons learned can contribute to future, sustainable vaccination programs.

Kazemi et al., (2022) identified many challenges in vaccination in LMICs beyond access to vaccines, such as lack of resources needed for proper storage and administration. Another challenge of vaccine uptake is hesitancy. Incorporating vaccine confidence and demand within the scope of TA is crucial to address the myriad of attitudes towards and perceptions around vaccination.

Determining vaccine acceptance and strategies can help increase COVID-19 vaccination in LMICs. Gender, level of education, socioeconomic status and trust in government are some factors that influence hesitancy (Moola et al., 2021). By understanding each of these factors as it applies to a local context, stakeholders can strategize how to properly navigate them. A couple of years into the COVID-19 pandemic, there was improved supply of vaccines, but there was still a need to accelerate successful deployment. Funding and tailored TA support for countries may help progress toward global vaccination targets (WHO 2022).

Bhutan successfully vaccinated over 90% of their population within two weeks during the COVID-19 pandemic (Dorji & Tamang, 2021). This was attributed to their existing strongly rooted health and vaccination systems. In Serbia, their successful rollout was partly attributed to the availability of five COVID-19 vaccines. However, the rapid pace, coupled with the accessibility of data, prohibited NITAGs

from getting the evidence they needed to inform decision-making (Markovic-Denic 2022). Lessons learned across different contexts should be taken into account to guide future directions.

COVID-19 Integration

COVID-19 integration is incorporating COVID-19 vaccination into existing health structures such as national immunization services. The goal of integration is to enhance sustainability of vaccination programs through demand creation, vaccine coverage and equitable access (WHO 2022). When vaccines were first made available, there was a push to vaccinate as quickly as possible, and the effect of that is not sustainable in the long-term. A life-course approach would empower people and health systems to better prepare and respond to future needs.

Amani et al., (2021) conducted a case study of an integration mapping tool of COVID-19 vaccination in primary healthcare and routine immunization in Cote d'Ivoire. Part of the success was a result of the TA provided. Such mappings demonstrate the need for added TA inputs to guide recovery of routine immunization and integration of COVID-19. This included facilitation and implementation of the tool, guidance and expertise, fostering a collaborative environment, and open dialogue among stakeholders. The impact of the pandemic on routine immunization was huge. Routine vaccinations were disrupted, leading to the danger of future outbreaks (Shet et al., 2022). To prevent this from happening again, integration is the way forward.

Implications for future global health programs

Moving beyond the near-sighted, emergency state of the COVID-19 pandemic to long-term management, the WHO (2023) created an updated 2023-2025 strategy. The 5 core components include collaborative surveillance, community protection, access to countermeasures, safe and scalable care and emergency coordination. Lee et al., (2023) conducted a scoping review of emergency preparedness that are in agreement with the following 11 elements of the resilience framework for public health emergency preparedness (PHEP): collaborative networks, community engagement, risk analysis, communication,

planning process, governance and leadership, surveillance and monitoring, resources, workforce capacity, learning and evaluation, and practice and experience. Similarly, Forsgren et al., (2022) described practical strategies for building resilient health systems and asserted the importance of leadership, governance, surveillance and human resources. All of these features of a resilient health system require the kind of coordination and integration provided by TA in order to reap the benefits (Hasan et al., 2021).

Conclusion

In summary, the reviewed literature highlights several key themes related to the role and importance of TA in the COVID-19 pandemic and previous global outbreak responses in LMICs. While these studies provide valuable insights into TA models across the globe, they also reveal important gaps and limitations, such as the lack of consistency in TA definitions and measures. The CoVIP evaluation conducted aims to measure the outcomes and challenges of the TA provided by the program. This not only builds on the existing body of knowledge but also contributes new insights from the findings of the evaluation that may be applicable to future global health programs.

Chapter 3: Methods

Concurrent mixed methods of data collection were used for the evaluation. This approach collects both qualitative and quantitative data simultaneously to contribute to a more comprehensive analysis (Creswell, 2008). In evaluation, this is beneficial because it provides multiple perspectives, thus appealing to multiple stakeholders and adding credibility, and addressing the complex nature of the particular evaluation context (Mertens & Wilson, 2019). The methods include a document review, an online survey, and key informant interviews.

Document Review

A document review is an examination and analysis of relevant program documents. This is a simple and non-resource intensive way to assess what the program has set out to do and their progress toward that. The documents reviewed were PowerPoint presentations. The presentations were a guide for weekly, biweekly and monthly discussions between consultants in the field across many sites, the CoVIP management team at TFGH and donor organizations. The format of the presentations followed a template such that in each meeting, a consultant from one of the countries would update the group on their progress, outcomes, successes, challenges and lessons learned regarding activities related to COVID-19 vaccine implementation.

In order to organize and summarize the data collected from the document review, there were 7 areas of review. These were based on the CDC's 7 priority areas for TA in their program of COVID-19 International Vaccine Implementation and Evaluation (CIVIE), with a slight change (see Table 2). The changes made were to more comprehensively assess the metrics in this evaluation. For example, originally there were no explicit categories for implementation and coordination, so presumably those would be included in the program planning category. However for the purposes of this evaluation, program planning was separated out into two categories: coordination, and planning and implementation because those categories were often documented separately by consultants as seen in the review.

Table 2. List of CIVIE and CoVIP TA areas of review

CIVIE Priority TA Areas	CoVIP Evaluation TA Areas
1. Vaccine policy development	1. Coordination
2. Program planning	2. Planning and implementation
3. Evaluation	3. Monitoring and evaluation
4. Data management and use	4. Data management and strategic information
5. Vaccine confidence and demand	5. Demand creation and communication
6. Workforce development	6. Workforce development
7. Vaccine safety	7. Vaccine service delivery

Content analysis was used to assess the findings of the document review (Krippendorff, 2004). In this method, the evaluation question was used as a guide. The data extracted from the documents was categorized by the TA area of review under which it best fit. This was compiled into a matrix (see Appendix A). The overarching areas of review were: outcomes, consultants' support outside of COVID, challenges, new initiatives in support country, opportunities to improve COVID-19 vaccination, way forward and lessons learned. These were at the top of the matrix (columns), with the 7 areas of technical support being directly beneath them. The side of the matrix (rows) were for each document reviewed for the country or region. In total, more than 60 documents from over 15 countries and regions were reviewed between April 2022 and September 2023.

Online Survey

An online satisfaction survey was developed to gauge the outcomes of TA support from the perspective of in-country partner organizations who have received direct technical assistance from the consultants. The survey questions were co-created with the CoVIP management team. The survey had nine items, five of which were Likert scale questions and four were open-ended (see Appendix B). An example of one of the close-ended questions is "Overall, how satisfied are you with the technical assistance provided by CoVIP?" which was answered on a scale of 1 to 5 from very dissatisfied to very

satisfied. One of the open-ended questions is “What were the key outcomes that resulted from receiving technical assistance from CoVIP?” The survey was emailed out by CoVIP’s director of project implementation to in-country partner organizations as part of a larger annual CoVIP evaluation survey. Six surveys were completed. The Likert questions were analyzed by looking at the proportion of respondents that chose each level of satisfaction, while the open-ended questions were analyzed by looking at common patterns that arose across responses.

Key Informant Interview

Key informant interviews were conducted to provide deeper insight into what was found from the survey results. Key informant interviews differ from in-depth interviews in that they are conducted with individuals who are in roles of authority or influence, are meant to provide insight on a specific topic, and thus the questions are more structured and targeted. This is valuable in evaluation as it engages stakeholders, allowing for nuanced insight, as they are better positioned to identify key issues. The interview guide was created by the CoVIP management team and included the following topics: technical assistance outcomes, areas of support beyond COVID-19 vaccination, future considerations and general feedback (see Appendix C). Countries and regions were selected to participate by the CoVIP management team based on having more engagement with the program, for example in terms of the number of years they received TA support. Four interviews were conducted with CDC partners from Nigeria, the Middle East and North Africa region (MENA), Central America region (CAR) and Sierra Leone. Interviews took place via Zoom with one interviewer and one or two CDC staff working in or with the respective country or region. Interviews were approximately 20-30 minutes long. They were transcribed and later coded in MAXQDA using the same 7 categories as were used in the document review matrices.

Deliverable Creation

The culmination of the review resulted in an evaluation report for TFGH (see Results chapter). The deliverable included an executive summary, program summary, methods, findings, and discussion sections. The final report was presented to the CoVIP management team.

Chapter 4: Results/Deliverable

CoVIP Evaluation Report: TA Outcomes and Challenges

Executive Summary

The purpose of this report is to summarize the findings from an internal assessment of the COVID-19 Vaccine Implementation Program's (CoVIP's) technical assistance. Problem statement: CoVIP has a need to understand the impact of their technical assistance of COVD-19 vaccine deployment in order to improve future directions of the program toward the establishment of sustainable adult immunization programs around the world. Purpose statement: To evaluate the outcomes and challenges of the technical assistance provided by CoVIP to low- and middle-income countries. Evaluation question: What are the challenges and outcomes of technical assistance provided by CoVIP?

Program Summary

The COVID-19 Vaccine Implementation Program (CoVIP) is a program of the Task Force for Global Health (TFGH). The program started in 2021 during the COVID-19 pandemic to distribute vaccines to low- and middle-income countries. The two main ways that CoVIP achieves their mission is through financial and technical assistance (TA). Deployed consultants provide technical assistance to partner countries. Eighteen countries and regions were included in this evaluation (see Table 1). Areas of TA support include coordination, planning and implementation, monitoring and evaluation, data management, demand creation, workforce development and vaccine delivery. As the program is wrapping up, it's important to evaluate lessons learned and how to move forward.

Table 1. List of countries included in evaluation

Countries included in CoVIP TA Evaluation	
Middle East and North Africa (MENA)	The Democratic Republic of the Congo (DRC)
Egypt	Cameroon
South Sudan	Nigeria
Uganda	Ghana
Kenya	Sierra Leone

Tanzania	Eastern Europe and Central Asia (ECCA)
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Angola	Central America Region (CAR)

Methods

Concurrent mixed methods of data collection were used for the evaluation. The three methods used were document review, online survey and key informant interviews. The documents reviewed were PowerPoint presentations. The presentations were a guide for weekly, biweekly and monthly discussions between consultants in the field across many sites, the CoVIP management team at TFGH and donor organizations. The format of the presentations was such that in each meeting, a consultant from one of the countries would update the group on their progress, outcomes, successes, challenges and lessons learned regarding activities related to COVID-19 vaccine implementation.

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technical assistance from CoVIP?" The survey was emailed out by CoVIP's director of project implementation to in-country partner organizations as part of a larger annual CoVIP evaluation survey. Six surveys were completed. The Likert questions were analyzed by looking at the proportion of respondents that chose each level of satisfaction, while the open-ended questions were analyzed by looking at common patterns that arose across responses.

Key informant interviews were conducted to provide deeper insight into what was found from the survey results. The interview guide was created by the CoVIP management team and included the following topics: TA outcomes, areas of support beyond COVID-19 vaccination, future considerations and general feedback (see Appendix C). Countries and regions were selected to participate by the CoVIP management team based on having more engagement with the program, for example in terms of the number of years they received TA support. Four interviews were conducted with CDC partners from Nigeria, the Middle East and North Africa region (MENA), Central America region (CAR) and Sierra Leone. Interviews took place via Zoom with one interviewer and one or two CDC staff working in or with the respective country or region. Interviews were approximately 20-30 minutes long. They were transcribed and later coded in MAX Qualitative Data Analysis software (MAXQDA) using the same 7 categories as were used in the document review matrices.

Findings

Surveys

There were a number of different aspects of the TA that partners were asked to rate their satisfaction on. Areas of expertise covered, ability to meet evolving needs during the pandemic, and overall satisfaction with TA were rated by level of satisfaction on a scale of 1 to 5, from very dissatisfied to very satisfied. Then there were 2 statements that were rated by level of agreement on a scale of 1 to 5, from strongly disagree to strongly agree. The statements are "capacity for vaccine delivery improved as a result of TA", and "coordination among partners working on COVID-19 activities has improved due to TA". The quantitative results are summarized in Table 3, examining the proportion of partners who

responded one of the two highest response options (i.e. for agreement statements: strongly agree or somewhat agree, for satisfaction statements: very satisfied or somewhat satisfied). One of the open-ended questions on the survey asked respondents to list key outcomes that resulted from receiving TA. Their responses included strengthening relationships, stakeholder and local administration engagement, efficient use of funds, direct oversight of activities, development of training materials, and communication with ministries.

Table 3. Summary of quantitative data from survey

Survey item	Proportion of partners very or somewhat satisfied OR strongly or somewhat agree
Capacity for vaccine delivery improved as a result of TA	4 out of 6 (67%)
Coordination among partners working on COVID-19 activities has improved due to TA	5 out of 6 (83%)
Areas of expertise covered	6 out of 6 (100%)
Ability to meet evolving needs during the pandemic	6 out of 6 (100%)
Overall satisfaction with TA	6 out of 6 (100%)

Document Review: Outcomes

In the document review, many TA outcomes were documented. The areas of review were: coordination among multiple partners, design and implementation of plans on the ground, monitoring and evaluation of progress using standard tools, management of strategic data systems and tools, creation of vaccine demand through messaging and communications, workforce development through capacity-building, and vaccine service delivery through logistics and preparedness for vaccine-related events. TA outcomes by each area is summarized hereafter. In addition, Table 4 provides some quotes and examples to illustrate each category.

For coordination (1), outcomes included consultants contributing to and participating in coordination-related meetings. Consultants also coordinated meetings to work with multiple levels of partners including state offices, implementing partners, in-country teams, counties, ministries of health, and other partners. They also helped coordinate the implementation and replication of plans at different sites. Regarding planning and implementation (2) outcomes, consultants developed proposals, protocols, work plans, budgets, and communication plans in collaboration with partners. They implemented stakeholder engagement meetings to discuss topics such as target setting, sub-county and facility micro plans, partner mapping, enhanced vaccination for vulnerable populations, and feedback to improve future activities. In addition to planning, they also implemented rollout, review and follow-up of strategic plans and standard operating procedures. Monitoring and evaluation (3) outcomes from the TA support included documenting vaccine demand activities and good practices, end of campaign reports, and SWOT analyses. The consultants also shared findings and documentation with other teams. They conducted evaluations using formative and summative, qualitative and quantitative research design tools including COVID-19 vaccine post-introduction evaluations (cPIEs), post-campaign evaluations (PCEs), knowledge, attitude and practices (KAP) surveys, coverage surveys, and checklists. They assisted with internal review of program implementation and oversaw processes (e.g. coming up with monitoring indicators).

For data management and strategic information (4) outcomes, consultants supported data management through strengthening, planning, and implementing related trainings. They created guides and manuals for collecting and reporting data. In addition, they maintained weekly COVID-19 global, regional, and national updates dashboard. With respect to demand creation and communication (5) outcomes, consultants attended and presented at advocacy meetings, community dialogues, and stakeholder engagements with traditional leaders, local armies, etc. Mass media outlets (e.g. TV, radio, social media, SMS) were utilized to advance initiatives for social mobilization campaigns. Trainings were conducted, and supportive supervision and mentoring was used for community health workers and others to reduce vaccine hesitancy. In relation to workforce development (6) outcomes, consultants conducted on-the-job and formal trainings, continuing medical education (CMEs) opportunities, workshops for

community health workers, staff, volunteers, and students at different levels (state, county, province). There were capacity-building activities for supervisors, data collectors, and frontline health staff on data capture and reporting using resources such as Open Data Kit (ODK) and PowerBI. Consultants implemented multiple avenues for workforce development and learning including supportive supervision, mentoring, experience sharing and peer-to-peer learning. With reference to vaccine service delivery (7) outcomes, consultants supported targeted outreaches (e.g. target setting, micro planning, supervision). Consultants mapped out and established vaccine sites. Ultimately, the TA support led to increased vaccine coverage and intensified vaccination.

Table 4. Highlight of document review findings

Area of Review	Quotes and Examples
Coordination	*"The consultant did an excellent job bridging the gap between CDC and DNSP/MOH during the COVID-19 response and supporting the COVID-19 activities, including COVID-19 national response measures, situational analysis, COVID-19 vaccination planning, highest level reporting, implementation, monitoring, and evaluation."* (Angola)
Planning and Implementation	*"When I started working, I found a major disorder between [implementing partners and local government authorities]. We identified challenges together and developed mitigation together. This was resolved, and improved working relationship and trust [which] improved the planning of vaccination activities at the facility level. Initially, when I joined, there needed to be more planning of vaccination activities in terms of mapping areas, populations, and allocation of resources to support vaccination."* (Tanzania)
Monitoring and Evaluation	-Supportive supervision to support countries to understand successes and challenges, monitor progress, and address changing needs. -7 COVID-19 vaccine post-introduction evaluations (cPIEs) completed. -TA and financial support provided for evaluation activities in 17 countries.
Data Management	*"I conducted a data audit for 10 facilities in Lusaka province to determine how many people on ART were vaccinated…. [T]he coverage was very low, and…we set up vaccination sites at all ART clinics to ensure all clients coming for review are given the information on covid19 vaccination. [T]his has led to a good number of people living with [HIV being] vaccinated in [the] province. From 30%, we are now at 60%."* (Zambia)
Demand Creation and Communication	-Over 4.6 million people were reached by mass media. *-"In the development of the communication plan, the management of the infodemic was not well structured. Through my intervention, the plan was corrected to improve this management, which has an impact on confidence in the vaccine. The targets planned in the mass sensitization did not take into account vulnerable people, my intervention ensured that this category was considered"* (Cameroon)
Workforce Development	-Top priority topics are covered through virtual training conducted by CDC SMEs and the TFGH CoVIP coordination team. A total of 40-45 country-specific and regional consultants attended the training.

Vaccine Service Delivery	-Over 3.5 million vaccine doses administered via direct support in 15 countries. -Average 12% point increase in coverage among partner countries since the start of FY22, equating to over 250 million doses. -*"The deployment has improved vaccination coverage across multiple counties, including in special populations, for example, People Living with HIV."* (Kenya)

Document Review: Challenges

Challenges of TA support were also analyzed according to the 7 areas of review. (1) Coordination challenges identified by consultants include logistics challenges when coordinating with different types of partners. Partners such as ministries of health, immunization partners, TA partners and donor organizations would be difficult to coordinate with regards to appointment scheduling. (2) Planning and implementation challenges involve slow start up in some elements of implementation, as well as a lack of resources to conduct meetings and support implementation of the plan. (3) Monitoring and evaluation challenges were related to limitations of surveys administered such as not all counties being reached, inadequate supervision of data collectors, survey tool pretest not being done everywhere, and some sociodemographics not being included. (4) Data management and strategic information weaknesses consist of inadequate data officers, weak internet in rural areas hindering data entry, inadequate data bundles, data backlogs, low reporting of vaccination status of people living with HIV, and low demand for data at lower levels. (5) Demand creation and communication limitations were due to low confidence and high hesitancy of the COVID-19 vaccine. This manifested in the form of rumors, an infodemic, misconceptions, and misinformation attached to tradition, religion, and culture. (6) Workforce development constraints were surrounding having inadequate human resources. This consisted of non-permanent staff, high attrition rates, conflicting emergencies taking away qualified staff, exclusion of women on vaccination teams, and low capacity on communications. (7) Vaccine service delivery drawbacks had to do with vaccine supply issues, whether it was a shortage of homologous vaccines to enable timely completion of the COVID-19 cycle, the short shelf-life of vaccines leading to frequent vaccine expiries, or inadequate cold chain logistics. Across all the challenges identified in the document review, it is noteworthy that most of the limitations were outside of the realm of TA support. For

example, one of the challenges listed above was related to conflicting priorities in the support country. If there was a natural disaster or a new disease outbreak, then that would lead the country to divert resources, affecting consultants' efforts to advance workforce development.

Key Informant Interviews: Outcomes

There were a range of contributions made by consultants. In the key informant interviews, of the 7 overarching areas of review, the respondents most often referred to coordination, workforce development, and planning and implementation in the outcomes of TA support.

In terms of coordination, one respondent from the CDC Nigeria office points out that consultants played a vital role in strengthening relationships and partner engagements. This contribution is significant because it shows the effect that maintaining relationships has on making progress on the ground: "The very first [impact of the TA support or the consultants] is coordination and management of implementing partners... The consultants were very helpful in terms of leading the coordination of engagements with these partners and helping to make sure the work moved along." The respondent also goes on to describe how consultants were a part of designing, planning, and implementing programs. In addition to planning and implementation outcomes, they followed through by providing assistance on the ground through supportive supervision, which is a form of capacity-building and thus falls under workforce development:

> The second part I think was really in terms of planning design of the programs and implementation. So, they were involved in the ideation, supporting the process of service delivery, they designed the methodology, as well as actually going out to the field to provide supportive supervision and in-person support.

Another outcome within workforce development included providing expertise and a strong work ethic. Consultants added value to their support countries by being skilled and independent, able to identify needs and propose a plan to address them. A respondent from the CDC Sierra Leone office shared:

> [The consultants] have been enormously helpful. I think that most of the programs in Sierra Leone are very understaffed, and the ones that do have staff, they usually have like a handful of people I would say who are really, really well-qualified and capable. And they have a lot of other staff who can support some very directed workflows they are not really capable of identifying on their own what needs to be done… and proposing a plan. And I have to say that the support that we got has been actually really helpful.

A respondent from CDC headquarters conveyed her perspective on the TA support in Central America. Similar to the outcomes identified above by partners in Nigeria and Sierra Leone, she described the consultants' expertise and contribution to implementation. A new addition unique to Central America is because it is a region, it was beneficial to have consultants present in various countries facilitating what needed to be done according to each country and context:

> So going back to the earliest phases of the pandemic, with persons not able to travel, having on the ground, in-country support from the consultants was crucial to have those eyes on the ground and be able to report back, and I think throughout the time just having that extra pair of hands, extra set of knowledge and expertise to help with that on the ground implementation. And because we were dealing with 4 countries, each with different circumstances and different contexts, having someone in the region who could really move around and interact with the CDC regional office, interact with headquarters, and almost kind of like that third-party objective reviewer. I think those were all aspects that contributed to successful support of the partners and the ministry.

These findings across the interviews showed that there is both consistency and nuance in the outcomes of the TA support. There was agreement that the top 3 TA outcome areas were coordination, planning and implementation and workforce development, and there was also nuance in the effect of consultants for a regional area versus a single country.

Key Informant Interviews: Challenges

Not many challenges were reported in the interviews. The challenges that were reported were often not directly about the TA itself. The most relevant challenge noted was by a respondent from the CDC CAR regional office. The informant mentioned the challenge of integration and management of the consultant, specifically the challenge of the consultant not being able to access systems where documents and updates were shared:

> Having the consultant we worked with was in El Salvador, which was useful given that we don't have a regular staff there. However, it meant that our interaction with him was a little bit more challenging… The fact that he was not on the CDC system… CDC relies so much on shared documents now that are on like the Teams and MS365 SharePoint kinda thing that we would realize that "Oh shoot, he can't access this", and then so we gotta figure out how to get that to him, and so it limited the ability to be fully interactive… I know it's often difficult with consultants and contractors, but if there is a way of figuring out how to work out their access in some way to CDC email that would probably strengthen the ability to integrate the consultants with the country teams, and I think just figuring out really how to optimize their interaction with with the team so that we would fully take advantage of them.

The respondent acknowledged that the challenge of integrating and supervising the consultant could have been due to the fact that they were spread out across a whole region, as opposed to single country offices. She also asserted that integrating consultants should be equally the responsibility of both the country office and the consultant. The solution offered in this particular instance for the program side was to get consultants set up with the same systems, such as email address and shared documents, as the country office to which they would be providing assistance. Addressing this challenge would maximize the TA support instead of hindering it.

Impact Overall

In both the interviews and document review, there were achievements noted that went beyond COVID-19 and the CoVIP program. Some of these examples can be found in Table 5.

Table 5. Examples of TA support beyond COVID-19

Support Area	Quote
Flu	*"We just can't say enough about [consultants'] participation, not just in COVID-19, and then now flu surveillance and immunization it's now everything else that we can pull them into because their capacities in surveillance and immunization are broader than just the COVID-19 or flu…"* (MENA)
Measles	*"…We got a direct request from the ministry of health in Jordan… They requested help with essentially coming up with a measles surveillance guidelines. Because they don't have guidelines, and the physicians are not reporting a syndrome, they're reporting 'suspected' measles cases so that's why they're missing so many. And so we if we didn't have [consultant] to be able to support the coming up and writing the guidelines that have been developed for other countries because we don't have regional guidelines. We checked, there are none… Now we're just trying to figure out where to get funding for the actual workshop but at least we have [consultant] to be able to help us with the technical piece of it."* (MENA)
HPV	*"In addition to covid though… we did a combination campaign where we rolled out HPV with covid, and so they were very I would say just willing to help out and address what are the challenges around launching again HPV in a school-based vaccination program, and then how do we do that in conjunction with looking at vaccinating some of the kids who were 12 and older also at those same schools for covid, and so they were really helpful about thinking through logistical challenges but also behavioral and social issues, and so because they are Sierra Leonean, they already knew what we might encounter which was extremely helpful, and also what we should propose to address those upfront like how did we need to disseminate the information, what would be the best ways of engaging the community and getting their buy-in for this and to see this as an important vaccination for the kids to have… So they've been really great you know and willing to flex and stretch in their duties but all of these things I think are also- still remain part and parcel of the original intent of bringing them on."* (Sierra Leone)
Routine immunization	*"One of the things that the partners were able to help to do was integration of covid with routine immunization…They were able to support demand generation for routine immunization, integration of service delivery for RI as well as coordination of other partners within the landscape so it wasn't just covid partners, state actors, non-state actors, as well as other implementing partners in the space."* (Nigeria)
Future projects	*"Consultants [1, 2 and 3] and others around the world are really essential for not only the Task Force projects, but also they've been really essential in helping with other projects that aren't even necessarily totally involved with Task Force. So it's a wide net of support that they provide for all the projects… It's not only the projects currently, but also fleshing out a little bit of potential projects for the future that build on some of the projects that are underway right now."* (MENA)

Table 5 showcases the far-reaching impact the TA support had across different sites. The range of areas supported beyond COVID-19, from HPV to measles, is a testament to the value consultants brought to the support countries. Some of these topical areas were more relatable to the program than others, but the point remains that their expertise was applicable beyond the program, and that, in addition to their adaptability, allowed for even greater impact. Overall from the findings, it is clear that the TA support

contributions were highly appreciated by recipients of the support. A regional science advisor at the CDC MENA regional office nicely portrayed the overall impact of the TA support, emphasizing their role in strengthening relationships and the long-lasting impact it will have beyond the end of the program, even vocalizing her apprehension to the TA ending:

> I can't brag enough about how wonderful [the consultants] have been. And the health diplomacy they've been able to do and how politically correct they are in every country that they've been working in has just really strengthened our relationships. And I feel like it has also opened the door for other engagement with the ministries on other projects, not even related to immunization, so it's been really wonderful. I mean I'm really dreading the fact that the funding will run out, but I freak out about losing them because even if we don't have funding to fund specific activities, which will be a shame, if we have them, then we can find funding for these activities elsewhere, but losing the technical support is going to be a huge blow to this region.

This declaration of valuing TA even over the financial support speaks volumes to the high regard with which support countries viewed consultants. In summary, the results of the evaluation reveal achievements across many areas based on the documentation of consultants themselves and the satisfaction of support countries receiving TA as measured in the survey and interviews.

Discussion

The evaluation was conducted in order to measure the results of the TA provided by CoVIP. Now that the program has wrapped up, the findings of the evaluation will be useful for informing future programs of TFGH. Overall, the TA provided by CoVIP was successful in achieving its desired outcomes, in many ways such as partner satisfaction and contributing to increased COVID-19 vaccine deployment. The key takeaways and recommendations are summarized in Table 6. The takeaways are the highlights of TA contributions, as deeper explored in the results chapter. The recommendations, on the other hand, are actionable steps to consider in future programming based on this evaluation.

Table 6. List of key takeaways and recommendations from CoVIP evaluation

Key Takeaways	Recommendations
● TA is need-based, engaged, and requires proactive communication.	● Disseminate and communicate findings of evaluations.
● TA support extended beyond CoVIP.	● Clearly address issues identified in evaluations.
● TA support areas are targeted and driven by country needs.	● Clarify definitions for indicators used to evaluate programs over time.
● TA's role in strengthening relationships and engaging with stakeholders.	● Increase involvement of partners throughout the course of the TA period.

The first recommendation is to communicate evaluation findings to consultants and partners in a timely manner. CoVIP already had different evaluation/assessment periods (e.g. quarterly, annually); this was not the first evaluation conducted. This recommendation is to disseminate the findings soon after each assessment is conducted. It encourages consultants and partners to be vocal and ensures accountability for the program to improve. One step further is to address any issues identified in the evaluation. For example, if it was a quarterly report, clearly communicate that in the previous quarter, a particular challenge was highlighted, and then specify what steps were taken to address it. In addition to encouraging more people to take surveys or provide reports, this may also help people who are hesitant to share challenges or weaknesses of the program, because it shows that the program staff genuinely want to improve the program and that listing challenges won't affect their ability to engage in the program. Next is having clear definitions for indicators. The areas of review used were adapted from the CIVIE program, and most of the areas overlapped, but for the ones that didn't, the categories were not explicitly defined in the documents reviewed. This is important for reliability and replicability of data analysis. The final recommendation is to increase engagement of in-country partners throughout the course of the TA period, as discussed under challenges in the results section.

One strength of the evaluation was that the data was gathered from multiple perspectives and multiple sources. The document review included documents that were from the perspective of the

consultants themselves as well as from the CoVIP management team. The surveys showed the perspectives of in-country partner organizations who directly received TA support, and the interviews provided deeper insight from both in-country partners and partners at the CDC headquarters. Having the diversity in stakeholders represented and variety of methods used contributes to a more comprehensive understanding of CoVIP's TA model. Another strength is that there was a good sample size included in the document review. Approximately 22 countries and regions receive TA support and 18 of those were included in the content analysis matrix. One of the limitations of the evaluation is that it would have been nice to compare the program to similar ones to comparatively measure impact. Another limitation is that it may have been difficult for partners to provide criticism. As mentioned in the findings, not many challenges were shared by respondents. As the program was wrapping up at the time of data collection, many respondents mentioned that they would like any opportunity for the program to continue or to continue the partnership in some form, which may have affected their willingness to point out flaws of the TA.

For future directions, there could be more analysis done of the findings, especially regarding the document review. In the content analysis matrix (see Appendix A), there were many other categories of data collected beyond challenges and outcomes that were also related to TA support. Some categories include innovations and new initiatives in the support country, opportunities to improve COVID-19 vaccination, way forward, and lessons learned. Another interesting analysis would be to look for connections between the 7 themes, to see if maybe making progress in one area would influence another. For example, with regard to coordination and planning and implementation, one respondent alluded to a possible connection in that it was necessary to first strengthen coordination in order to make progress in planning and implementation. With more time and resources, these would be interesting to analyze because they are related to the impact of the TA and would allow for a more extensive review. Additionally, it would be interesting to examine the challenges and outcomes of the program by country and region and see if the TA "worked" better in some countries and regions, and if that was the case, then to understand the reason and how the TA could be better implemented in the future. In conclusion,

conducting evaluations such as this is critical to advance public health because it contributes to evidence-based decision making, continuous improvement, accountability and transparency, scaling successful interventions, and determining future priorities for research and interventions.

Chapter 5: Discussion

The evaluation was conducted in order to measure the results of the technical assistance provided by CoVIP. Now that the program has wrapped up, the findings of the evaluation will be useful for informing future programs of TFGH. Overall, the TA provided by CoVIP was successful in achieving its desired outcomes, in many ways such as partner satisfaction and contributing to increased COVID-19 vaccine deployment. The key takeaways and recommendations are summarized in Table 4. The takeaways are the highlights of TA contributions, as deeper explored in the results chapter. The recommendations, on the other hand, are actionable steps to consider in future programming based on this evaluation.

Key Takeaways	Recommendations
● TA is need-based, engaged, and requires proactive communication.	● Disseminate and communicate findings of evaluations.
● TA support extended beyond CoVIP.	● Clearly address issues identified in evaluations.
● TA support areas are targeted and driven by country needs.	● Clarify definitions for indicators used to evaluate programs over time.
● TA's role in strengthening relationships and engaging with stakeholders.	● Increase involvement of partners throughout the course of the TA period.

Table 4. List of key takeaways and recommendations from the evaluation

The first recommendation is to communicate evaluation findings to consultants and partners in a timely manner. CoVIP already had different evaluation/assessment periods (quarterly, annually, etc.); this was not the first evaluation conducted. This recommendation is to disseminate the findings soon after each assessment is conducted. It encourages consultants and partners to be vocal next time and ensures accountability for the program to improve. One step further is to address any issues identified in the evaluation. For example, if it was a quarterly report, clearly communicate that in the previous quarter, a particular challenge was highlighted, and then specify what steps were taken to address it. In addition to

encouraging more people to take surveys or provide reports, this may also help people who are hesitant to share challenges or weaknesses of the program. It shows that the program staff genuinely want to improve the program and that listing challenges won't affect their ability to engage in the program. Next is having clear definitions for indicators. The areas of review were adapted from CDC, and most of the areas overlapped, but for the ones that didn't, the categories were not explicitly defined in the documents reviewed. This is important for reliability and replicability of data analysis. The final recommendation is to increase engagement of in-country partners throughout the course of the TA period, as elaborated upon in the results chapter.

One strength of the evaluation was that the data was gathered from multiple perspectives and multiple sources. The document review included documents that were from the perspective of the consultants themselves as well as from the CoVIP management team. The surveys showed the perspectives of in-country partner organizations who directly received TA support, and the interviews provided deeper insight from both in-country partners and partners at the CDC headquarters. Having the diversity in stakeholders represented and variety of methods used contributes to a more comprehensive understanding of CoVIP's TA model. Another strength is that there was a good sample size included in the document review. Approximately 22 countries and regions receive TA support and 18 of those were included in the content analysis matrix. One of the limitations of the evaluation is that it would have been nice to compare the program to similar ones to comparatively measure impact. Another limitation is that it may have been difficult for partners to provide criticism. As mentioned in the findings, not many challenges were shared by respondents. As the program was wrapping up at the time of data collection, many respondents mentioned that they would like any opportunity for the program to continue or to continue the partnership in some form, which may have affected their willingness to point out flaws of the TA.

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Appendices

Appendix A - Document Review Matrix

Link to document review matrix:

https://docs.google.com/spreadsheets/d/1fIES8rIPSMG0pfv4MK2sZcbrR3yL49KWZvwy8FjGMZk/edit?usp=sharing

Appendix B - Online Survey Questionnaire

1. Please indicate to what extent you agree or disagree with the following statements: [Capacity for vaccine delivery has improved as a result of the technical support received from TFGH].
2. Please indicate to what extent you agree or disagree with the following statements: [Coordination among partners working on vaccine activities has improved as a result of the technical support received from TFGH].
3. Please indicate your level of satisfaction with the technical support provided by TFGH consultants in regard to each of the areas below: [Areas of expertise covered].
4. Please indicate your level of satisfaction with the technical support provided by TFGH consultants in regard to each of the areas below: [Ability to meet evolving needs during the pandemic].
5. Please indicate your level of satisfaction with the technical support provided by TFGH consultants in regard to each of the areas below: [Overall satisfaction with technical support received].
6. What were the key outcomes that resulted from receiving technical assistance from TFGH consultants?
7. How did the technical assistance provided by TFGH contribute to the overall COVID-19 vaccine rollout in your country or region?
8. How would you propose to improve technical assistance provided by TFGH in the future?

9. How should TFGH continue meeting the technical needs of countries in the post-emergency transition period?

Appendix C - Key Informant Interview Guide

1. What has been the impact of TFGH consultants' support, from your perspective? In what areas have the consultants had the most impact (coverage, system building/strengthening, bridging partnership/communication gap) in your country?
2. What areas of support are provided by TFGH consultants other than COVID-19 vaccination-related activities? (e.g., RI system strengthening, Outbreak /emergency response, Demand creation for other vaccines, VPD surveillance, AEFI management, workforce development) Any practical examples?
3. If the TFGH would like to redeploy consultants in your country, what considerations would you suggest to address the changing needs in your country related to COVID and life course vaccination (e.g. number, range of technical areas, national vs. international consultants)?
4. If TFGH would like to continue collaborating in the future, what would be the possible collaboration and technical support areas (if any)?
5. Any other considerations, suggestions, or questions?