

COUNTRY CASE REPORT

GHANA



BEST PRACTICES and Human Centered Stories in Immunization

Lessons from

Global Polio Eradication Initiative, Measles&Rubella Initiative, Covid-19 vaccines rollout

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Showing a continental immunization leadership

ABBREVIATIONS & ACRONYMS

AEFI	Adverse Events Following Immunization
AFP	Acute Flaccid Paralysis
BCG	Bacille Calmette-Guérin
CDC	Center for Disease Control
CHPS	Community Health Planning and Services
CHPW	Child Health Promotion Week
CHW	Community Health Workers
CSO	Civil Society Organization
cVDPV2	Circulating Vaccine-Derived poliovirus type 2
DDPH	Deputy Directors of Public Health
EOC	Emergency Operations Centre
EOC	Emergency Operations Centre
EPI	Expanded Program on Immunization
EU	European Union
FDA	Food and Drugs Authority
GAVI	Global Alliance for Vaccines and Immunization
GES	Ghana Education Services
GHS	Ghana Health Service
GIS	Geographic Information System
GPEI	Global Polio Eradication Initiative
GPS	Global Positioning System
HC	Health Center
HCS	Human Centered Stories
HD	Health District
HepB	Hepatitis B Vaccine
Hib	Haemophilus influenzae type b
ICC	Inter-Agency Coordinating Committee
IHR	International Health Regulations
IMCC	Interministerial Coordinating Committee
Jhpiego	Johns Hopkins Program for International Education in Gynecology and Obstetrics
JSI	Jhon Snow Research & Training Institute
KAP	Knowledge, Attitude and Practices
MCV	Measles Containing Vaccine
MenAfriVac™	Vaccine against Neisseria meningitidis A
MoH	Ministry of Health
MoH	Ministry of Health
MR	Measles/Rubella

NGO	Non-Governmental Organization
NIDs	National Immunization Days
NITAG	National Immunization Technical Advisory Group
nOPV2	Novel Oral Poliovirus type 2
NTCC	National Technical Coordinating Committee
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
ODK	Open Data Kit
OPV	Oral Polio Vaccine
QGIS	Quantum Geographic Information System
TWG	Technical Working Group
Unicef	United Nations International Children's Emergency Fund
USAID	United State Agency for International Development
VAM	Vaccine Accountability Monitors
VAO	Vaccine Accountability Officers
VPI	Injectable Polio Vaccine
WHO	World Health Organization

INTRODUCTION

Ghana is a West African country on the Gulf of Guinea, with a population of almost 31 million, 57% of whom live in urban areas. Classified as a middle-income country, the Ghanaian economy, which despite some turbulence enjoyed a period of remarkable growth over the decade, has experienced significant difficulties as a result of the Covid-19 pandemic.

Health indicators are steadily improving resulting in a life expectancy at birth of 64 years. Vaccination coverage for the various Expanded Program on Immunization (EPI) vaccines is generally between 90% and 98%. Given its economic performance, the country was among those likely to graduate as early as 2015 as in transition to vaccine independence in the GAVI process. In terms of immunization, Ghana has played the role of continental pioneer in certain respects. In 2012, the country was the first to introduce the MCV2 vaccine, during the 18-month visit, into its RI schedule. It will become the first to introduce the Covid-19 vaccine through the Covax initiative.

Like other economic sectors, the health sector has made significant progress, boosted by strategic changes and technological innovations that have produced fairly satisfactory results. With regard to the fight against and eradication of poliomyelitis, the performance of the vaccination program has enabled us to maintain our status as a country free from the type 2 environmental source poliovirus since 1999. The same applies to measles, which has remained at a manageable level. Despite a few cases, the disease has not been an insurmountable concern for either the population or the healthcare system. As already mentioned, with a total of 171,889 cases in April 2024, the Covid-19 pandemic hit Ghana significantly more than many other countries in the West African region. The authorities' response to the challenges posed by the disease has propelled the country to the forefront of the international stage.

All these health problems and the strategies adopted to manage them are sources of inspiration and lessons that can guide actions in countries of the region. Similarly, situated in a region with specific difficulties and likely to suffer from certain problems affecting countries with which it shares borders, populations and socio-cultural realities, Ghana could also benefit from the experiences of other countries in the region in a process of exchange and mutual reinforcement. This report focuses on a few best practices relating to the Polio Eradication Initiative, measles/rubella partnership activities and covid-19 vaccine deployment. Areas as diverse as training, planning, leadership and program implementation are covered. Individual experiences in terms of Human Centered Stories accompany the evaluation reports to make the challenges of immunization and the efforts of the players more visible.

OBJECTIVES OF THE DOCUMENTATION

- Select and document the best strategies, activities, processes, challenges, innovations, platforms and partnership mechanisms at global, regional and national levels, and the mobilization and use of resources that have contributed to the results achieved.
- Produce human-centered narratives that make visible the problems, concerns, achievements and motivation to achieve of the actors involved.

METHODOLOGY

Sampling of programs and respondents

The interventions

The interventions to be analyzed had been selected through a preliminary document review. However, the final selection of interventions to be included and the determination of good practices to be documented were made essentially by actors and respondents from Unicef, EPI, WHO and partner NGOs. In some cases, the respondents' choices were in line with the consulting team's initial choices. These choices were complemented by more in-depth literature and document review activities. Unicef reports were used to link some of these choices to specific interventions, particularly those with the potential for instructive and promising elements and results in terms of good practice. Majority of the interviews were conducted online.

Respondents

For data collection in Ghana, the identification and inclusion of respondents was facilitated by Unicef. Several respondents were identified at the strategic plan workshop held in July 2024, to which the consultant was invited. This facilitated data collection at country level. For the group interviews, a main respondent was identified. The main respondent decided whether the answers to the various questions required the presence of employees. In this case, he or she identified the employee(s) who could act as informant(s). For the Human Centered Stories, both people met during the workshop and people present in the structures visited were selected for interviews. For community-level respondents, we selected users of immunization services who were present during our visit.

Data collection

Preliminary data collection

As planned at the start of the activity, the preliminary questionnaire/submission form was available online and the link was shared with all immunization teams in country offices and selected Unicef focal points. In Ghana, the use of this tool by key informants was very limited. Only two interventions to be documented were proposed through this channel. The information provided did, however, contribute to the organization of subsequent activities, notably individual and group interviews.

Document and literature review

Various sources were used for document selection. These were the preliminary list of documents drawn up by the consultant, the documents shared through the share point created by the Unicef regional office, and the documents provided by respondents following the interviews. For scientific articles bibliographic databases were consulted in order to extract publications that could contribute to respond to our documentation questions. The review was structured according to a document analysis grid previously designed for the activity. In addition to the consultant, two support staff contributed to the work. Online sources were used to supplement the document review with data and information deemed relevant. As initially planned, scientific articles of peer reviewed journals have also been used to document achievements of some interventions. In some cases these articles proposed the best practices and lessons learned from the interventions.

Summary of results

The trip followed by data collection in Ghana took place from June 17 to July 10 (22 days). We worked on documenting six interventions including: 1) Coordination and leadership during covid-19 vaccine deployment, 2) Geo enabled micro-planning, 3) Micro-planning before covid vaccine introduction 4) Digital payment for Polio activities, 5) Mop up campaign for measles vaccine coverage improvement, 6) Polio Accountability Management. Four group interviews were conducted with EPI, WHO, UNICEF and the Directorate of education. Three individual interviews were also conducted with respondents from Unicef and JSI. For the Human Centered Stories, six (6) individual interviews were conducted, and field visits were made to health centers and clinics.

Analysis and reporting

Preliminary analysis and reporting were carried out at the same time as data collection. Various approaches were used to process the information, analyze the data and organize the results. Following thematic analysis procedures, interview data were processed individually, interview by interview. As for the documentary data, and part of the data from the literary review we used to illustrate the procedures and represent the results. In addition to Unicef reports, other sources of data and information were used. In some cases, we have reported directly on the tables and figures proposed by the authors of the reports. In other cases, however, Excel and Free Office software were used to produce tables and figures from report data or other sources.

Limitations

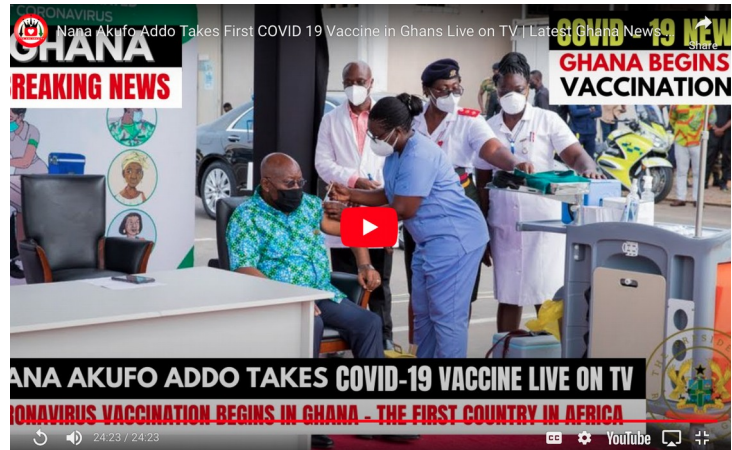
Some difficulties encountered during the documentation process may have affected the results presented here. First, there was a lack of precision in terms of respondents' referrals. Indeed, in some cases, the respondents directed the interviews towards the realization of interventions but provided more documentation on training. Similarly, we noticed that the documents made available to the team, notably information from Unicef reports, provide little information on interventions and their implementation. As far as interviews are concerned, recordings of interviews planned and recorded at Unicef level could not be made available to the team. Some practices, such as the digitization of payments for participation in vaccination campaigns, were not accompanied by reports, making documentation impossible. In some cases, the players involved in immunization activities do not draw up reports on these activities, which are not their main area of activity.

Coordination and presidential leadership for Covid-19 vaccine deployment in Ghana

INTRODUCTION

On the 12th of March 2020, Ghana became the sixth country in West Africa to report a case of Covid-19. The country gained later much recognition in the implementation of its pandemic response activities by being the first to receive vaccines through the COVAX initiative.

The image of the President Nana Akufo Addo receiving an injection of Covid-19 vaccine remains a symbol of Ghana immunization leadership, and one of the communication actions that have received the greatest response across Africa and the world. Unicef not only provided technical support for the coordination of the response to the disease but also contributed to the process of the deployment of vaccines and in achieving an outstanding leadership and coordination performance.



As a result of a strong collaboration with partners like Unicef, WHO, European Union (EU) and the World Bank, Ghana has established institutional frameworks for a safe and effective deployment of vaccines. The introduction of new vaccines is mainly managed by technical groups, notably the Inter-agency National Technical Coordinating Committee (NTCC) and the Emergency Operations Centre (EOC), all working to ensure the success of related campaigns. Generally, there is strong coordination between the regulatory mechanisms that exist in the country contributing to deciding how immunization delivery is organized. The introduction plan, the related communication plan and communities' engagement plan determine the orientation of the efforts to be made. The overall architecture, vaccine logistics and process elements to be implemented and monitored for new vaccines deployment are therefore fairly well known.

As far as Covid-19 vaccines are concerned, the specificity and scale of the pandemic, which has become a major global uncertainty, have given special perspectives to the preparation and support from stakeholders in Ghana. The creation of an inter-ministerial committee chaired by the President of Ghana provided the tool to support the Ministerial Advisory Board of the Ministry of Health. The power of many entities like NTCC was improved with the advent of the Inter-Ministerial Presidential Taskforce. The introduction of vaccines, to be the expected relief, was contingent in Africa on factors like the effectiveness of the international partnership, the leadership of decision-makers and internal acceptability. The time lag between the availability of vaccines and their delivery to African populations highlighted the importance of two factors: coordination and leadership of authorities. These aspects considered of great relevance need to be documented according to those in charge of the Expanded Program on Immunization in Ghana.

IMPLEMENTATION

Organization of coordination and the expression of presidential leadership

Partners involved

A stakeholder analysis would provide a more comprehensive overview of the range of stakeholders of Covid-19 vaccine deployment. However, those involved in coordination and leadership have been identified. The specific coordination framework in the Covid-19 vaccine deployment process was the Interministerial Coordinating Committee (IMCC). As its name suggests, it brought together the heads of all the ministries involved in implementing the vaccination. Chaired by the President of the Republic in person, it included ministries such as the health, finance and environmental ministries. Coordination also involved structures and bodies such as the National Immunization Vaccine Safety Group and the Food and Drugs Authority (FDA), Surveillance Department, and other departments of the Ghana Health Service, WHO, the Technical Working Group (TWG) and immunization champions. Ministries of Health, Information, Interior, Communication, Education, Local Government, Trade and Industries, Environment and Sanitation, Environment Science and Technology, and Aviation were all assigned specific tasks in the national COVID-19 response effort. Unicef was a key actor in this partnership.

Planning: *Training, mapping of needs and raising funds*

The IMCC was responsible for making the big decisions and forming other committees. Program-level committees were also formed which were made up of departmental heads. The TWG designed thematic areas of training for health staff ensuring that it did not cause distortions to information that is already in the system. Safety surveillance training, vaccine administration training and cold chain training were some of the thematic areas of training. The TWG worked on crafting tailored information that carries what the health service wants the population to know. This was done based on a Knowledge, Attitude and Practices (KAP) survey to identify where knowledge was lacking and what kind of information to give. Another important activity was raising funds and mapping out what was needed and where. A cold chain inventory was done in the country from the sub-district level to the national level to identify the support needed.

Rollout organizational context and contributions

The National Immunization Vaccine Safety Group was helpful in the initial choice of vaccines and the target population as well as providing other guidance which was very critical in the initial take-off of the vaccination campaigns. With the evolving epidemiology of the disease, they reviewed the available data and directed the program and the Ministry of Health accordingly with their recommendations. When it comes to the regulatory mechanisms, the robust Food and Drugs Authority (FDA), which is at the maturity level three had the WHO recognized authority for it. The FDA was able to help in granting emergency authorization to obtain the vaccines and set up a technical advisory committee that met every two weeks to review the data on vaccine safety that was generated in the country. FDA also monitored the safety of the vaccines, although not in real-time, the periodic updates published with safety data on the use of the vaccine in the country, helped change the confidence that the public had in the COVID-19 vaccines, and so for that matter also, ensure that the people are receiving the vaccine. This also helped curb the rampant misinformation about the vaccine that was going on in the country. In Ghana, EPI is always working with the FDA by using its structures and expertise to support the program. FDA is always updated on what is done at EPI. In Ghana, the surveillance department also

with the other Ghana Health Service (GHS), is looking at the risk of the disease with its associated mortality. Also, when a vaccine cuts across another department, for example, the malaria vaccine being linked to the National Malaria Control Program, EPI collaborate with that program to ensure a successful implementation. In addition to all this, the functionality of the TWG was also a good practice for the rollout of the COVID-19 vaccination campaign. The TWG together with other stakeholders helped to make the campaign a success.

Coordination

Regarding Covid-19, the issue of coordinating all the vaccine deployment efforts has required the establishment and collaboration of various entities. For the EPI, the Inter-Agency Coordinating Committee (ICC) for immunization plays a high-level oversight role. To avoid duplication of effort and roles, the committee coordinates technical and material contributions to the program, reinforces technical coordination, and ensures that technical, material and financial resources are used efficiently to achieve greater impact. The Inter-Ministerial Coordination Committee (IMCC) and the GHS Emergency Operations Centre (EOC) are the main coordination points for preparedness and response to COVID-19 in Ghana. The National Immunization Technical Advisory Group (NITAG) is responsible for providing independent, evidence-based advice to policymakers and the EPI program on policy issues related to the roll-out of the COVID-19 vaccine.

In the COVID-19 vaccine deployment process, the ICC provides technical and management support and leads the resource mobilization campaign. It participates in the immunization program's planning, monitoring and evaluation mechanisms, and makes recommendations when necessary. To support the activities of the Ghana Health Service Directorate General, the Technical Working Group (TWG) for the preparation and deployment of the COVID-19 vaccine has been set up. This group is responsible for the planning and deployment of COVID-19 vaccines. The TWG has seven sub-committees responsible for the following aspects: coordination and resource mobilization, training and service delivery, regulation and safety, data management, logistics and waste management, communication, research and surveillance.

Coordination of prevention and preparedness was an important element of the Covid-19 national vaccine deployment plan. In view of the many cost implications of coordination, it has been duly considered in financial planning. This makes it possible to support the various aspects of coordination between ministries and sectoral agencies.

Presidential leadership

The National Immunization management team considers the presidential leadership as the principal and most effective ingredient to the success of Covid-19 vaccine deployment and uptake in the country.

Presence: The presence of the President in decision making spaces by chairing the inter-ministerial committee was remarkable. By being present, the President made it almost impossible for other actors to miss the coordination meetings. This was also an agile approach to make all participants accountable and obliging them to provide the needed results at each session. In addition to his presence at decision making levels the President was also widely present in the media for regular updates on the disease and on related policy actions. Finally, the President was present on the field to support the effort of health workers and partners.

Communication: As to communication, the President's communication covered many aspects of the fight against the disease. In terms of crisis communication, the President was able to present the situation and the magnitude of the danger. The consequences of the disease in many countries were used to present the context as an exceptional moment requiring specific policy measures. This effort was instrumental in justifying all regulations and restrictions imposed on the population. The President

was also involved in risk communications that help in raising awareness as to the danger. The effort of the country leader for action motivation, altruism building and managing disinformation was obvious. As the leader of the committee, the President used to give on national television concerning COVID-19 and this improved the drive for vaccination with the periodic updates. His effort kept the COVID-19 vaccination on the front page. More than just encouraging people to go for vaccination, the President was involved in managing and combatting misinformation.

Action: As already mentioned, Ghanaian President acted at both international and national levels. The President was instrumental in finding the appropriate procedures that would ensure that his country and the population is not left out when vaccines will be available. His implication contributed to building the appropriate partnership and signing funding agreements with partners like the World Bank and European Union. To convince the population as to the safety of the vaccine, the President was the first to be injected. The President was also active in suggesting local production of vaccines to put the country out of all situations of international shortage.

Resources used for implementation

Resources are mainly donor-funded through the support of partners such as GAVI and UNICEF. Stakeholder meetings are held to engage partners and map out what is needed and identify which partner will support what according to the interest of the donors. The main source of financial support for immunization activities in the country is GAVI, although other partners contribute from time to time. The government of Ghana also contributes to the resources needed for a successful campaign. The health staff used during the vaccination rollout are employed by the government who is responsible for their salaries. The government also funded the tracing of contacts of people who had contracted COVID-19. The government procured some cold chain equipment needed for the campaign and procured some COVID-19 vaccines. Some administrative delays, however, sometimes give the impression to the donors that funds allocated for COVID-19 vaccination are not absorbed fully, although, in the country, the funds are used.

RESULTS

Results 1: The lifting of lockdowns and travel bans was a happy moment for everyone in the country, and this was made possible by the proper coordination during the rollout of the vaccine, which helped increase the uptake of the vaccine, reduce the morbidity and mortality of the infection, and return life to normalcy. This best practice really helped ensure that life, as it was before the COVID-19 era could return quickly.

Results 2: The coordination also brought on some new partners to support with the COVID-19, and the partners are still engaged in supporting other activities due to the proper coordination of activities.

Results 3: The construction of new cold rooms at the national level and in some regions is another good result to show for the proper coordination during the COVID-19 vaccine rollout.

Results 4: the President's regular updates helped largely to reach the target population. It also became clear when the vaccination uptake started dwindling when the president's periodic updates were reduced.

Results 5: The high vaccination coverage of the COVID-19 vaccine is also a positive result of good coordination, with over 28.5 million doses of the vaccine administered as of December 2023.

Table 1: Result of the coordination and presidential leadership in the Covid-19 vaccine deployment

Area of result	Specifics	Period
Quality of life	Returning to pre-covid era	20/05/2023
Timeliness	Timeliness in knowledge transfer from analysts and policymakers Timeliness in policymaking, development of policies and legislative instruments. Rapid implementation of the policy decisions.	Regularly
Partnership	New, renewed and intensified partnership established for immunization activities ¹	Ongoing
Equipment	New cold rooms and more than 6000 tablets	When required
Confidence	President address had positive impact on uptake of Covid-19 vaccines	Lasting effect
Coverage	28.5 million doses of the vaccine administered	12/ 2023.

Compared to neighboring countries Ghana succeeded in achieving a good Covid-19 vaccine coverage with 43.7% of the eligible population having received at least 1 dose of the Covid-19 vaccine.

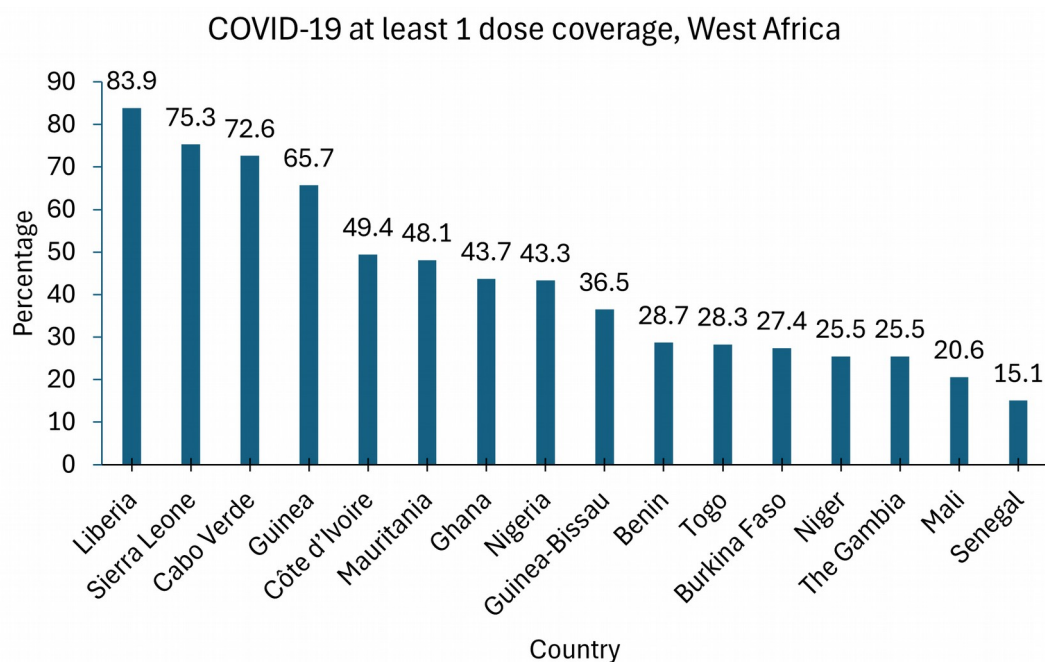


Figure 1: Covid-19 vaccine coverage in West Africa (at least 1 dose)

BEST PRACTICES

Best Practice 1: The interministerial committee role in financial resources mobilization: The strong coordination of the interministerial committee was very crucial in having a successful COVID-19 vaccination rollout. Because the committee consisted of the heads of all stakeholders and was chaired by the President of the country, it was easy to provide the resources required for the rollout and the subsequent vaccination exercises without going to several bureaucracies. Without the support from this interministerial committee, the rollout would not have been very successful. During the lockdown period, it was very easy to obtain passes for health workers who still needed to leave their homes and provide health services. Mobilization of funds for activities was also smooth as all the stakeholders frequently met at one table and did not require going through several processes.

Best Practice 2: Provision of resources for social mobilization activities: Without the interministerial committee's strong coordination and frequent meetings, the system would have encountered several delays in acquiring the resources and support that were needed. Social mobilization activities relied on the vans of the Information Ministry and other departments for public announcement and transportation. Without this committee, there would have been delays as it would have required the health Ministry to move to the information Ministry for their support. The response to misinformation and other issues that needed quick reactions would have been delayed, having the team go through some bureaucracies. This in turn would have increased vaccine hesitancy, reduced the coverage rates of the vaccine, increased the morbidity and mortality burden as well as delayed the country's return to normal activities.

Best Practice 3: Reinforcing vaccine logistics and infrastructure: The functionality of the Technical Working Group (TWG) was also a good practice for the rollout of the COVID-19 vaccination campaign. The TWG together with other stakeholders helped to make the campaign a success. There was proper coordination with partners to provide cold chain equipment during COVID-19, as it increased the country's cold chain capacity requirement. New cold chain storage equipment like ultra-low freezers and walk-in cold rooms were obtained with the support of partners like UNICEF.

Best Practice 4: President's leadership in the rollout and in vaccine uptake communication.

As already mentioned, on the 3rd of March 2021, President Nana Akufo Addo was vaccinated through a public event with a high level of media coverage. This was not only to show his full commitment to promoting immunization as the means to fight the disease but also to show accountability as to the issue. From March 2020 to May 2023, the President had delivered 29 presidential "updates"ⁱⁱ. By so doing he impacted his population perception and motivated many of his fellow citizens for vaccination. As already mentioned, uptake of the vaccine was positively correlated to the appearance of the President in the media. However, the Best Practice to be reported is not only about the presence of President and the airtime. The words and content of the speech were also of good consideration. The President in his effort in the battle against Covid-19 took the position of a warrior considering the pandemic as the enemy to defeat.

Best Practice 5 There was also the use of "immunization champions" who are prominent figures in the country and various communities such as media personnel, community leaders and religious leaders to support the advocacy and community engagement for the COVID-19 vaccination. The chiefs and assembly members in the communities were also involved in the community engagement as well as the community sensitization on the COVID-19 vaccines. In the cold chain department too, there was strong coordination. Several partners were involved in supporting the purchase of cold chain equipment and storage space for the equipment.

Best Practice 6 The use of technology (ODK/Kobo Collect) to assess the preparedness of the agencies for the vaccine rollout, using the technology to track coverages in real-time and make decisions on data was also a good practice. The ability to adapt already existing data collection, monitoring and supervision tools for use in the COVID-19 vaccination rollout was another good practice. It must be noted that all these tools were electronic and did not require any printout, saving trees in the process. The electronic data collection, monitoring and supervision tool also ensured that reports were submitted near real-time, and analysis was far simpler, as opposed to the use of printout where it took months for districts to submit reports after an activity, also accounting for some data loss.

Best Practice 7: Coordination, leadership, and timely knowledge transfer and use for decision making: As reported in the outcomes, the Interministerial committee also includes scientists from different institutes who provide decision makers with up-to-date information. International knowledge was collected and reviewed and brought to the panel by researchers. In addition, through electronic data collection, analysis was almost available as early as needed for decision-making. Decisions about changes and improvements to be made were made and feedback was channeled from the center till the peripheral areas. This helps to ensure timely and evidence-based policymaking, policy development of and legislative instruments. Rapid implementation of the policy decisions was promoted.

LESSONS LEARNT

Lessons learnt 1- Early engagement of stakeholders around the same table is crucial as it helps drive the spirit and commitment of the stakeholders and improves immunization uptake and coverage levels. Decision time is cut down as the decisions are taken with them rather than given to them. It helps also to operationalize existing or new laws and regulations, support coordination among sectoral ministries and agencies, and support the MoH on the caring of health and other frontline personnel involved in pandemic control activities with IPC measures and psychosocial support when distressedⁱⁱⁱ.

Lessons learnt 2- The safety of vaccines is a major drive for vaccine uptake and so the regulatory and safety framework or mechanisms are also strengthened so that regular and periodic assessment of cases is also strengthened. Vaccine safety data should be used for decision-making and be made transparent so that the population trust the vaccines.

Lessons learnt 3- Information given on vaccines should be tailored to answer the questions of the population. Pre-rollout service should be prepared to address all concerns that have been reported regarding the vaccine. It is important that misinformation and misconceptions are seriously addressed to reduce hesitancy.

Lessons learnt 4 - There is the need to always map stakeholders' support to prevent duplication of the support. Stakeholder analysis and donor management are important domains for success. Donors' management requires building donor data base and maps using appropriate user-friendly tools. Duplication of support may happen when donors provide support along their capacity but not according to the needs of the partner.

Lessons learnt 5- Coordination of actors with common goals and a clear task division is important. Each actor participating is assigned an area of contribution where he can contribute to the best of his capacity. Coordination helps also keep all partners at the same level of information.

Lessons learnt 6 – Above all, leadership was proved to be the most effective ingredient. The active involvement of the President and his presence during the activities made the difference. In being around the table, he did not only oblige national actors and heads of programs to be present, but he also ensures the implication of all international partners of the country to be there. His actions proved that leadership is an essential factor in the success of immunization programs and specifically in new

vaccines introduction activities. The effect of this leadership could even be monitored through the uptake of the vaccine. It was documented that when the number of interventions of the President in the media decreased the uptake of the vaccines also went down.

Possibility of replication

Immunization has become a political and paradigmatic issue. World leaders have different perceptions and attitudes regarding vaccines and specifically Covid-19 vaccines. In addition, leadership is related to knowledge and personal engagement and transforming political leadership to immunization leadership relates more to will and interest. Thus, replication of the immunization leadership as experienced in Ghana, while possible, will remain contingent to political interest of the leader. Replicating and organizing a more efficient and effective coordination is easier to succeed. Factors and components related to both structure and mechanism can be identified redesigned and implemented if adequate resources are available. This does require more effort in resource mobilization and use. Recognition of the effectiveness of Ghana's approach prompted requests for experience sharing from neighboring countries such as Côte d'Ivoire^v, which ended up with higher vaccination coverage than Ghana.

CONCLUSION

The practice of strong coordination and leadership in the COVID-19 vaccination rollout in Ghana was a result of good partnership and collaboration. Unicef contribution in both resources mobilization and coordination contributed to the process and to the outcome. With this practice Ghana was successful in securing funds for an adequate response to the pandemic, improving communication and decision-making. This contributed in motivating populations to seek for vaccines and prevent the disease. The social and economic context was improved. There is a need to maintain this political engagement and extend it to the whole EPI. The decision to build local vaccine production infrastructures to address international uncertainties as to vaccine availability should be operationalized with a regional perspective. The coordination and leadership effort as experienced in Ghana can be replicated and improved with the application of the documented lessons learnt. An approach to motivating decision-makers needs to be designed for advocacy targeting country leaders at regional level. However, it is important indicate that the presence of the Civil Society Organization (CSO) remains very helpful to echo leaders' communication for successful social mobilization and demand generation vaccination. There is a strong intersectoral collaboration in the Ghana Health Service, which promotes health services, including vaccination and most recently, the COVID-19 vaccination campaign during the outbreak. The EPI in Ghana has been robust for several years but faces some challenges now, however, plans are in place with the support of Unicef to help improve EPI in Ghana.

Mr. Simon Adu-Poku experience with political and Presidential leadership

Mr. Simon Adu-Poku is a Senior Public Health Officer currently working in the Okere district in the Eastern Region. Actively engaged in health and immunization activities for the past 15 years as a disease control officer, he has a lot of experience on the issue to share. Simon's engagement with immunization activities is built on this unshakable truth he takes as mantra that `` vaccines save life``.



His personal family history led him to strengthen his dedication to immunization.

``...I lost a sister when we were kids. In fact, a younger sister who was twins but one departed because measles cleared her from the system which is very sad. So, growing up my mother used to tell me that you need to give birth to many people so that when some of these measles and other conditions killed some of them, some will still survive. In the early stages we thought that it was due to some spiritual thing, but growing up knowing that it was as a result of measles which can be prevented, I decided to make myself available not because of the money involved but because of the passion and zeal to save the lives of an individual through vaccinations, and lucky

enough for Ghana and developing countries, the partners are supporting us with the tools which is the vaccine, so ours is just to move to the community especially, the hard to reach, underserved communities and make the vaccines available and that is the passion I have.``

Simon was not member of the central leadership and coordination group during the rollout of the Covid-19 vaccines. However, his responsibilities and involvement in surveillance activities, cold chain management for vaccines and the actual vaccination campaigns was a position where he could learn more on many issues. This position helped him to see the real meanings including the value but also the precautions to observe when it comes to political engagement as expressed in our documentation of the Presidential leadership.

``During the introduction (of the Covid-19 vaccines), there were a lot of misconceptions, and a lot of people were misinformed. Due to social media, some people thought that it was a kind of chemical and several ascriptions were made. So, it made it very difficult for people to participate and take the vaccines. Others also ascribe to some political connotation that the vaccine is associated with a particular government or a particular leader. We talk about political engagement because politicians can also support as they are major stakeholders and they support, so when the politician supports the

activity or vaccination campaign, some people understand that these politicians have peculiar interests and because of that they either do not take it or because of that they take it.``

The substantial meaning of his message is that raising strong engagement of political leaders as a fundamental is not always true. In some cases, it can produce the opposite result. However, Simon does recognize that leaders' engagement is important.

...the COVID-19 vaccination exercise ... most of us were taking it in public just for them to see, so once we take the vaccine, they realize is not harmful because if it's harmful we will not be taking it. This is a practice that was also done by our political leaders including our president who was the first to take the COVID-19 jab, and a lot of people realize that once the president has taken it, then we can take it so I think all these approaches are effective and has worked for us.

As to Mr. Adu-Poku, leaders' engagement is not only for the population but also for the co-workers. Leaders and the helpful working environment that they create are the driving forces of the immunization activities, said Simon as he explained where he takes his own motivation.

..The first one (motivation) is the support that I derive from superiors. My district director is such a person that is always on their field, having the aspiration and giving us the directive. As a leader, she will push you to work, so that is one of my sources of motivation. The enabling environment created by leaders is one of the things that motivates me, as we have communities in my district that are not accessible with cars, but motorbikes are made available to reach them, creating some motivation to work...``

For Simon, teamwork, leadership, availability of vaccines and the enabling environment are some of the things that motivate to succeed. He thinks that communities are not that difficult, but they need continuous engagement of media men, traditional leaders and religious leaders. To him, political commitment of both central and decentralized levels for an uninterrupted supply of vaccines, for pushing the vaccination agenda and providing enabling environment and transport are important to improve immunization activities.

Training in micro planning at health units before Covid-19 vaccine rollout.

INTRODUCTION

Planning is an essential component of immunization activities. Jhpiego, an extending partner of the Ministry of health and Ghana Health Service, is engaged in immunization activities and contributes to training and implementation at various levels of the health system. During the Covid-19 pandemic, the organization provided support in logistics and data collection. Activities at health services, specifically at peripheral levels, are difficult to undertake without a well-organized and a functional system. This requires not only the engagement of workers but also knowledge about how all activities will be organized. At peripheral levels, workers were ill equipped and had limited knowledge when it comes to micro-planning. Consequently, despite efforts from the Ministry of health, many health services lack adequate plans. In the health regions of intervention of *Jhpiego*, many health workers had difficulties when Covid-19 arrived, not only was the disease new to them but also, they were not prepared in advance.

Bottle necks that motivated the intervention were the context of health crisis and the emergency related to it. Workers had limited knowledge and did not get refreshment trainings. Challenges also include the fact that many of these areas are remote settings with limited opportunities for regular training sessions. The result is the poor management of health services and specifically immunization activities. This usually affects performances regarding health delivery to rural populations at individual facilities but consequently at district and region levels. Micro-planning is a process that can improve all activities at immunization services including routine immunization and campaigns. This documentation integrates information from an interview with respondents from Jhpiego regarding experiences in the Volta region and results from the report of the Micro-planning training activity organized at Great Accra health region

IMPLEMENTATION

Identification and collection of existing documents: Various documents exist for micro-planning activities. Training health workers on micro-planning requires choosing among these variety sources in relation to the level of the actor to be trained. Training for trainers and training community level actors use different documents. Equipment, reporting tools, data and information on different issues at health services need to be reviewed before planning the training.

Updating of documents: As training is done on specific contexts and purposes, it is important to update the documents along with the needs. At both document collection and updating steps, some partners can contribute. This was the case for the training sessions initiated by Jhpiego; a collaboration between Ghana Health Service and John Hopkins University was established.

Organization and Consensus building meeting with region

To discuss the scope, objectives and work plan of the training projects, a preparatory meeting is held with a high-level team from the Greater Accra Regional Health Directorate. This enabled the selection of priority districts (10) to be supported and the determination of the number of participants in the micro-planning training.

Training-of-trainers workshop for district teams

Although only 10 priority districts had been selected, the regional team requested that all 29 districts in the region be trained in complete micro-planning for COVID-19 vaccination deployment. A two-day, training-of-trainers workshop was organized for health staff from all 29 districts in the region. The training focused on ensuring uniformity in micro-planning. A total of 120 participants were trained. Various professional categories, such as district directors, EPI coordinators, health promotion and health information coordinators, public health nurses, disease control officers, etc., were considered. Participants developed training plans for sub-district levels. Schedules for micro-planning training at these levels were proposed. The actors drew on the knowledge gained and the micro-planning framework they had received as part of the field training.

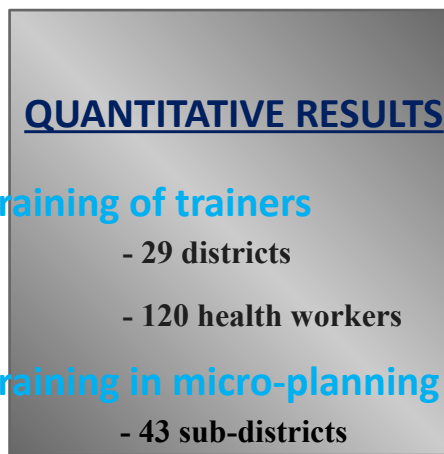
Micro Planning workshop for sub- district teams

For micro-planning training of sub-district teams, the cascade approach was chosen by the district training teams. A workshop involving only the program's 10 priority districts was organized. For this level of actor, a total of 360 executives from different health professional backgrounds were trained in the development of quality micro-plans. These included community health nurses, medical assistants, midwives, disease control managers, health promotion managers, registered nurses and public health nurses. These training courses were monitored and supported by the RISE team.

RESULTS

The achievements reported here come both from the respondents of the interview and from the report provided

- **Training of trainers:** At regional level, 29 districts received training-of-trainers in micro-planning. A total of 120 health workers participated in training-of-trainers' sessions.
- **Training in micro-planning:** a total of 43 sub-districts received the training in micro-planning. From all districts and sub-districts 360 health workers were trained in micro-planning and had their capacities improved.



-360 health workers

QUALITATIVE RESULTS

Health workers' appreciation

- Good perception of workers
- Improvement in workers confidence

Effect of the training

- Data-based planning
- Successful vaccine deployment

- **Health workers' perception:** Health workers had a good perception of the process. The training improved their confidence in projecting their needs, monitoring AEFI, and managing supplies. Subdistrict teams were able to map out geographically inaccessible communities and had accurate and adequate estimation of target populations and vaccines for campaigns.

- **Effect of the training:** The result was good mapping of hard-to-reach communities, adequate social mobilization plans, good provision of resources and vaccines, all based on appropriate estimates of the target population. No vaccine was wasted. Micro-planning training contributed to the successful deployment of Covid-19 vaccines.

BEST PRACTICES

Training-of-trainers for more districts: As mentioned, although initially planned for 10 priority districts, the training of trainers in micro-planning was provided to up to 29 districts. Such a commitment is a major contribution to capacity building for the whole region. It provides other districts with the human resources they need to improve the micro-planning skills of all their workers. The result is a critical mass of trainers capable of supporting other regions of the country.

Training-of-trainers and Micro-planning training for a variety of health workers: Most of training activities are organized for workers of specific health services. In many cases head of units or those responsible for the specific service (in this case immunization) are included. Training a great diversity of workers is helpful in raising abilities at all levels of the local health system or units. All the required changes and their implications for the work are understood by all the actors at the same time. This approach can improve collaboration and team building for future activities.

Cascading training and harmonization: The cascade approach to training all levels of workers is often used for improving efficiency, however it has also some disadvantages. The main advantages are the need for the higher level to master the subject before being able to train at lower levels. Similarly, the strategy reduces training costs and organization time, while improving collaboration and internal ownership at team level. The most common risk is the dilution and loss of training quality from the highest to the lowest levels. The decision to implement harmonization processes ensures that quality is maintained.

LESSONS LEARNED

- **The link between successful campaigns and micro-planning:** Different campaigns have a variety of implications in terms of actors and resources. There is a need to always adjust the resources to the campaign and to the context. Organizing and following all the requirements can improve the quality of

the campaigns. However, the success of campaigns can be greatly influenced by the quality of the micro-planning done upstream.

- **The need for retraining and refreshing for actors:** Given the time lag between two consecutive campaigns, most of the details of workers' micro-planning knowledge and abilities can be lost. It is therefore necessary to carry out regular refresher training sessions for all agents, at appropriate times.

- **Adapting tools:** micro-planning training courses generally relate to specific activities or campaigns. Logistical issues, actors and their responsibilities may differ from one campaign to another. Existing tools are usually general or specific, based on previous activities. Similarly, training in micro-planning for child immunization may differ from micro-planning for adult immunization. In view of all these considerations, micro-planning training always needs to be adapted to new needs.

- **The importance of resources:** Micro-planning training requires consideration of various aspects, including coordination and human resources, target population estimates, mapping of hard-to-reach communities and means of accessing them, social mobilization plans, logistical needs estimates, and the deployment of substantial resources. The mobilization of resources must be substantial to cover all aspects of training. Similarly, given the number and diversity of participants, resources must be planned to take care of all those involved.

REPLICATION

Resources were provided by Jhpiego, some given to the Ministry of health for updating activities of the training documents. Replication of the training is possible for another pandemic if necessary. It can be adapted to any other emergency.

CONCLUSION

Training in micro-planning enabled better targeting of populations and better inclusion of hard-to-reach populations. It also improved campaign implementation and the availability of resources and vaccines for the population. Organizing training-of-trainers beyond the minimum requirements, the training of a wide range of actors and the approach to harmonizing training at all levels ensured that the health system had adequate micro-planning skills. The organization of such training requires substantial resources, as well as appropriate data. The training for micro-planning at health units was a learning process for all those involved in this activity. It was helpful in showing the gap in the health system, and the gaps in health workers levels of preparedness for the pandemic and for adult and mass vaccination. Planning for rapid response to the pandemic including resource mobilization was improved. Health workforce capacity building is a continuous process and regular refreshing activities are needed. The benefits of this training can be easily expanded to new workers to improve immunization activities across the country. The existing tools need to be widely distributed.

Training and implementation of Geo-enabled microplanning for immunization planning and demand generation (Polio, Covid-19, Measles/Rubella)

INTRODUCTION

Although the level of detail and completeness may differ from what is done now, planning activities have always existed in health services. Micro-planning at health units usually precedes all immunization activities and campaigns with due consideration of the intervention context. However, previous plans had considerable limitations like lack of precision of catchment areas, low community implication, movement of immunization teams only in some areas, sub-optimal staff distribution in some cases, with vaccinators overworking and acting beyond the boundaries of their catchment area. Mapping is central to the planning process, but previous maps of communities and catchment areas were hand drawn by health workers and other stakeholders, making them inaccurate. Hence, since 2018, the Geographic Information System (GIS) in Ghana has been training all levels of health staff from the regional level to the sub-district level on the use of Geo-spatial technology to draw maps using coordinates recorded with the technology.

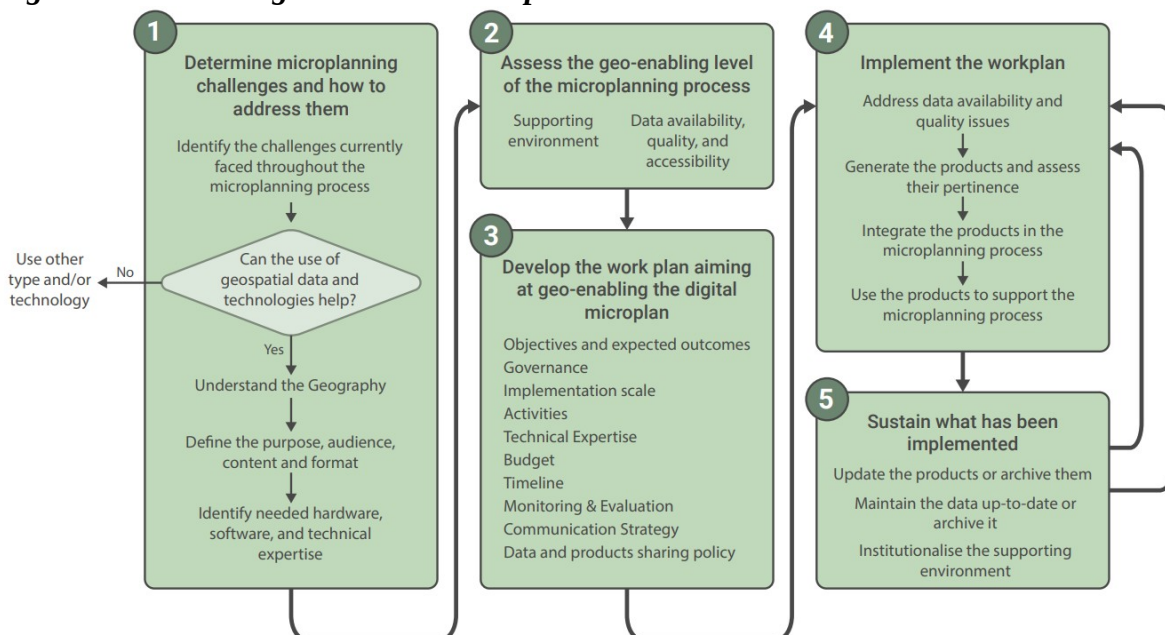
Geospatial technology plays a significant role in enhancing health outcomes including micro-planning for immunization activities in Ghana. Geo-spatial tools create precise maps of communities, health facilities, and populations. This helps in identifying areas with low immunization coverage. Visualization of geographical data also aids in the efficient allocation of resources such as vaccines, healthcare workers, and cold chain equipment. Geo-spatial data helps to identify hard-to-reach and underserved areas, ensuring that immunization campaigns target these locations effectively. The use of Geo-spatial technology also helps with the involvement of communities in the microplanning process and enables regional teams to identify movement of vaccination teams.

Mobile technology such as KoboCollect and ODK integrated with geo-spatial tools allows for real-time data collection and monitoring. This helps in tracking immunization progress and identifying all issues promptly. It also helps in organizing targeted awareness campaigns by identifying areas with low awareness about immunization benefits. In 2024, JSI contributed to the training of health workers in Ghana in geo-enabled micro-planning.

IMPLEMENTATION OF THE PRACTICE

In practical terms geo-enabled microplanning is a process of five steps including 1) the identification of challenges in microplanning and determining the relevance of geospatial data and/or technologies to address them 2) The assessment of the current geo-enablement level of the Health Information System and of the programme 3) Development of the workplan 4) the implementation of the workplan 5) Sustaining what has been implemented (Figure 1).

Figure 1- Process to geo-enable a microplan



Source: WHO/UNICEF (). Geo-Enabled Microplanning Handbook A product of the WHO-UNICEF COVAX GIS Working Group

In Ghana, the implementation of the geo-enabled microplanning was made possible by two convergent and favorable processes. The first is the Ghana's digital transformation policy which aims to unlock the huge potential of digital economy; the second is the interest of EPI in the use of maps for planning. The implementation process involved the identification of relevant stakeholders including the Ministry of Health, Ghana Health Service (GHS), local government authorities, international organizations (e.g., WHO, UNICEF, USAID), and community leaders. Meetings and workshops to discuss the objectives, benefits, and implementation plan of using geo-spatial technology for immunization were conducted at various levels of implementation. These stakeholders' meetings and trainings were done simultaneously. Support systems were established to assist with technical issues and troubleshooting. Data was collected on population demographics, including age, sex, and location of residents. All health facilities, including clinics, hospitals, and outreach posts were mapped, along with their capacities and resources. Geographical data such as road networks, topography, and climate information were obtained. Community members were involved in mapping exercises to ensure accuracy and inclusiveness. Geo-reference was done on important landmarks, residences, and other relevant locations. The technology was then deployed using QGIS, a geographic information system that is free and open source. The technology was deployed on GPS enabled devices. Currently, GIS supports three districts in the Greater Accra region with the use of geo-enabled microplanning for EPI activities. The districts are Kpone Katamanso district, Ga South district and

Ashaiman district. The practice is fully funded by donors such as GAVI and USAID. Some training manuals and GPS-enabled devices were given to regions and districts for implementation. The EPI also has a standardized training manual for country-wide rollout.

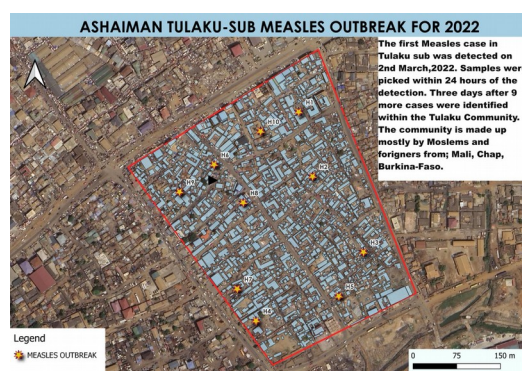
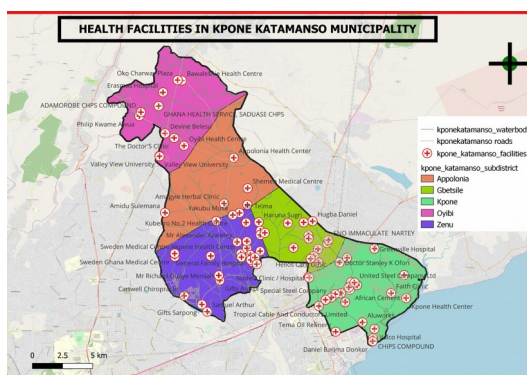
RESULTS

The implementation of geo-spatial technology for microplanning immunization activities in Ghana has led to several notable achievements.

- The initiative trained 39 people, including 20 women and 19 men. Participants had different profiles including public health nurses, community health nurses, disease control officers, health information officers, health promotion officers, physical planning officers, medical assistants, nutrition officers, public health officers and health service directors.
- Hard-to-reach and underserved areas have been accurately identified and targeted, ensuring access to these communities. Resources such as vaccines, healthcare workers, and transportation (motorbikes) have been allocated more effectively, ensuring that all regions, districts and sub-districts, especially those previously neglected, received adequate attention.
- The use of geo-spatial data has enabled better planning and monitoring, helping to minimize vaccine wastage and improve the management of cold chain equipment.
- The implementation also provides real-time data collection and mapping, ensuring accurate and up-to-date information on immunization activities, aiding in better decision-making.
- It also ensures continuous monitoring and evaluation for timely interventions and adjustments, ensuring the immunization campaigns remain on track. The practice again provides detailed data which analysis helped identify gaps and areas needing improvement, facilitating a more targeted approach in future campaigns.
- Participatory mapping and feedback mechanisms have increased community engagement and trust in the immunization process as well as making recommendations on communities that exist and those who do not exist. Targeted awareness campaigns based on geo-spatial data have helped educate communities about the importance of immunization, leading to higher participation rates. GHS's use of geo-spatial tools to create detailed microplans for immunization has resulted in a more systematic approach ensuring all target populations are reached.
- Partnerships with organizations like Gavi, WHO, and USAID provided technical and financial support, enhancing the effectiveness of the geospatial interventions. Overall, integrating geospatial technology in immunization microplanning in Ghana has demonstrated substantial improvements in coverage, efficiency, and health outcomes, serving as a model for similar initiatives in other regions and countries.

Samples of maps generated with the GIS

The pictures below are maps generated by training participants. The picture on the left is a sample map of health facility mapping in the Kpone-Katamanso municipal by a participant and the picture on the right is a sampled map of point and polygon creation on Google Earth Pro in the Ashaiman Tulaku sub for a measles outbreak by a participant during the training.



Source: Geo-enabled digital micro plan for COVID-19 vaccination training report, April 2024

BEST PRACTICES

Integration of geo-enabled microplanning is the best practice that can be adopted in many health systems and immunization programmes. It comes with several specific best practices. These specific issues are related to the results

☐ ***Training of actors of different backgrounds and positions:*** An important approach to training adopted by healthcare managers is the inclusion of players from different levels and backgrounds. Planning is a collective process and a team effort. Changes and innovations must involve all stakeholders. This approach makes it easier to implement the change.

☐ ***Adequate determination of catchment area:*** As already noted, the use of manual maps by health teams had many limitations. The use of geo-enabled microplanning was adequate in the identification of hard-to-reach and underserved areas and in easing access to those communities. The relevant resources are then planned for and made available. This approach promotes data-based procedures that are more robust in terms of accuracy and completeness.

☐ ***Identification of additional partners:*** One limitation of manual maps is the only inclusion of structures within the boundaries of the health zone. The use of geo-enabled micro-planning including google map helped health teams in finding the neighboring institutions that can be considered as appropriate collaborators including private health facilities for the implementation of their plans.

☐ ***Good community involvement and cocreation:*** the geo-enabled microplanning, as implemented in Ghana, has contributed to community engagement. In addition to the presence of physical infrastructure, the actual presence of communities in the identified areas was confirmed or denied by community representatives. This helped to make the micro plans more useful in terms of resource allocation.

☐ ***The development of a standardized manual by the EPI:*** To facilitate the organization of training sessions and the implementation of microplanning, the EPI has designed a manual for this purpose. This approach facilitates the replication and adaptation of the practice in different contexts and is a good practice for sharing experience.

LESSONS LEARNT

A participatory process: The co-creation approach used in the geo-enabled microplanning process helped improve the usefulness of the plans. Involving all stakeholders and accepting their input from the beginning to the end was a big win for the practice. Also adopting approaches that make sure the

people accept the practices was helpful. A robust technical infrastructure and support systems needs to be put in place to handle geo-spatial technology effectively and provide extensive training programs for all stakeholders to ensure proficiency in using geo-spatial tools and interpreting data.

Intersectoral Collaboration: Successful implementation of digital micro plans requires collaboration across multiple sectors, including healthcare, technology, and local governments. These initiatives can foster partnerships between government agencies, private sector stakeholders, and community organizations, leading to more comprehensive and coordinated responses to public health challenges.

CONCLUSION

The integration of geo-spatial technology into immunization microplanning in Ghana has proven to be a transformative intervention, yielding significant benefits for the population. By leveraging precise mapping, real-time data collection, and efficient resource allocation, this approach has enhanced the effectiveness and reach of immunization campaigns, leading to substantial improvements in public health outcomes. The ability to identify and target hard-to-reach and underserved areas has resulted in higher immunization rates. Communities that were previously neglected due to logistical challenges are now receiving the necessary vaccines, reducing the risk of vaccine-preventable diseases. With more children immunized, the incidence of diseases such as measles, polio, and hepatitis B has decreased, leading to healthier communities and lower healthcare costs.

Geo-spatial technology has allowed for the optimal use of resources. Vaccines, healthcare workers, and transportation are allocated based on accurate data, ensuring that every resource is used efficiently. The implementation of geo-spatial technology represents an innovative approach to addressing the challenges of immunization. Its success in Ghana serves as a model for other countries looking to improve their immunization efforts. The methods and tools used in Ghana can be scaled and adapted to different contexts. The principles of accurate mapping, real-time data collection, and efficient resource allocation are universally applicable, making this approach replicable in various settings.

Countries or settings looking to replicate this practice need to accept the importance of geo-planning and digitalization policy. The playbook (summary of steps of implementation) by GIS Ghana can be adopted to ensure a successful implementation.

Dr John Eleeza confidence in Planning and geo-enabled micro-planning

Dr John Eleeza is a retired Director of the Ghana Health Service the position he had and the continuous help and sharing of experience he provides to immunization activities in the country led us to take him as a key member of what we call the Council of Elders of the immunization program. Listening to his testimony, it is obvious that Dr Eleeza is eager to give back to the community and to the health system the benefit he obtained from smallpox vaccinators when he was still a child.



“The specific moment from my personal life that was decisive in my future choice that led to my involvement with vaccinations and putting myself in the forefront was the firsthand experience with smallpox vaccination. As a child, receiving a smallpox vaccine from health workers who had travelled to my community to help protect us from a disease was impactful. Although I did not know much about vaccination at the time, that memory in my adult medical life helped me appreciate the effort of the health workers then and motivated me to be at the forefront of vaccination activities. Looking at data from the past, the morbidity and mortality rates of smallpox at the time, I now appreciate the smallpox shot some health workers gave me, ensuring that I did not become a statistic in the smallpox data.”

Dr Eleeza has some concerns he considers a major challenge for immunization activities that is the inability of the vaccination activities to reach all the target groups, some always been left out. Some of the reasons for this challenge are hard-to-reach communities in the country and the way this classification is conceived. To his experience, there are some populates living in areas not classified as hard to reach, but there are no health facilities and health workers in those areas to provide health services including immunization. Another influential factor he pointed out as exacerbating the problem is the lack or low motivation among health workers to carry out the activities when vaccines are readily available. The problem-solving approaches he proposed for improving immunization activities are mainly related to planning.

“Amid vaccines and health staff availability, there needs to be deliberate efforts to reach the populations in the hard-to-reach communities. There needs to be proper planning to visit the hard-to-reach communities such as the islands and scattered communities. When plans are in place to visit places like the islands, plans must be made to acquire a safe boat, ensuring there is enough fuel for the trip, as well as safety equipment for the health staff such as life jackets. The food for the health staff during their stay on the island during service provision has to be allocated also. Without proper planning, this activity will not be successful as it is quite costly. During my time as a district director in Kpando, I used to send staff to the island communities to provide health services. Proper planning was always made to ensure that safe boats from WHO were available, as well as fuel for the trip. Plans were also made for food and water for the health staff while on the island, as well as tents for camping as they usually spend a week in the island communities. This proved very beneficial in improving vaccination coverage and minimizing the risk of outbreaks. This is a very good way of reaching

communities on the islands, and although this strategy is usually costly, it is doable, and the benefits outweigh the costs involved.``

As to his experience, proper planning can contribute to reducing the impact of many problems including limited accessibility, low frequentation of health and immunization services, bad infrastructures. Promoting integration of services and organizing supplementary immunization activities can help cover the remaining children who are still missed. Dr Eleeza worries about some actors and even some directors' knowledge and interest in EPI and immunization activities. For him, the knowledge of the health staff needs to improve, on the immunization policy, as they need to have a grip on what exactly the policy says. His reason is that some health staff are not very familiar with the policy and think once a child misses a vaccine that is it over for the child, and the child can no longer take the vaccine again. Health staff need training and sensitization on the policy, so that they become aware of the minimum age and maximum age for each vaccine. Based on those cases and on his own experience, he calls for training on immunization policy, forecasting and micro-planning.

``... I'll recommend that health staff on different levels be trained on proper microplanning for immunization activities. Although GIS Ghana has trained some staff on Geo-enabled microplanning, there needs to be further training for all staff at all levels to ensure that immunization activities are effective and efficient. This training needs to be done by national and regional teams at the district and sub-district levels. This is because training done at the regional level for district teams who are supposed to train sub-district level staff (Training of Trainers) is not usually effective, sometimes due to small resources allocated to the training.``

Dr Eleeza thinks that Methodical Technical planning is key for any successful EPI activity. To have a strong EPI system, stakeholders need to plan at the beginning of every year and make sure the resources required are made available or have proper plans of making them available when needed. These resources include the vaccines and the appropriate cold chain system to maintain the vaccines. Proactiveness in forecasting at all the relevant levels to avoid vaccine shortages, good transportation and resources allocation and liaising with local stakeholders like district assembly are necessary to make good use of the full potential of the reliable health workforce of the country.

Further reading

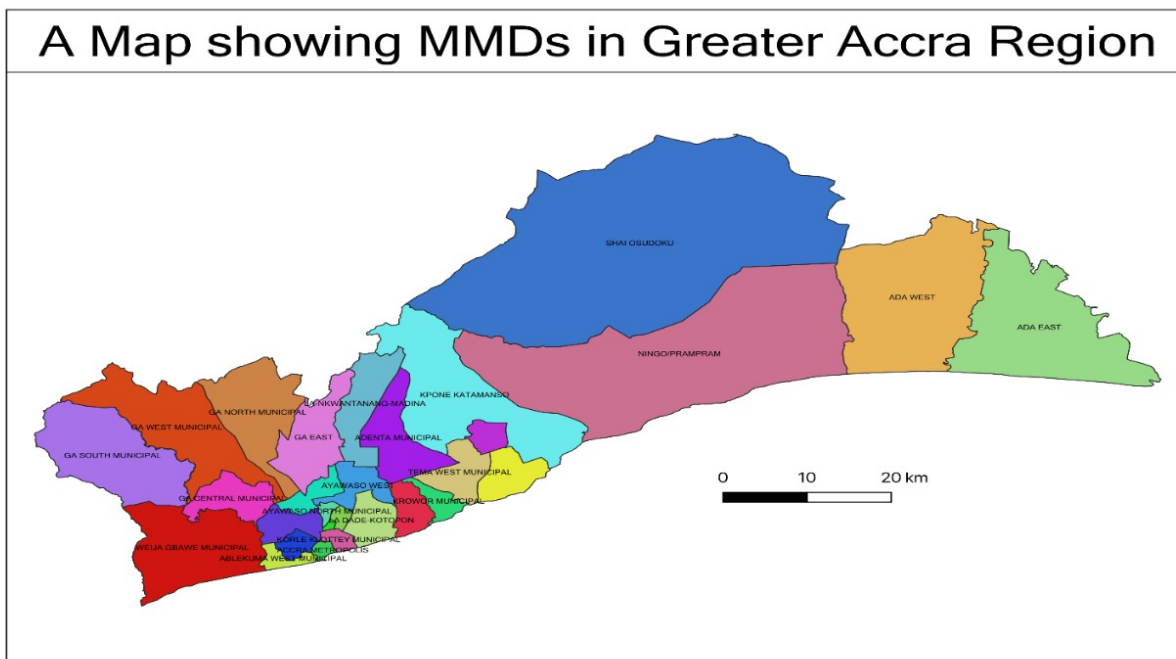
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Organizing mop-up activities on immunization and the effect on Measles/rubella vaccine coverage in Ghana - The Greater Accra Region

INTRODUCTION

Mop-up campaigns are door-to-door immunizations conducted in specific areas where infections are known or suspected to be circulating. Priority areas include those where polio cases have been found over the previous three years and where access to health care is challenging. Other criteria include high population density, poor sanitation, and low routine immunization coverage. The Greater Accra Region conducted a 5-day routine EPI and vitamin A mass vaccination campaign across all 29 districts. These mop-up efforts bolster herd immunity by raising the overall immunity level within the community. This defensive barrier is crucial as it stops disease transmission, thereby indirectly protecting individuals who cannot receive vaccinations due to several reasons.

These mop-up vaccination campaigns in Greater Accra started in 2023. It was typically used to ensure broader coverage of vaccination efforts. These campaigns are especially important in reaching populations that may have been missed during initial vaccination drives. In the Greater Accra region of Ghana, the low immunization rate poses a significant threat to child health. A 2023 Ghana Health Service (GHS) report identified a critical issue: over 7,000 children in the Greater Accra Region missed the MR2 vaccination (second dose of Measles/Rubella vaccine). This intervention aimed to increase immunization rates and coverage by mobilizing communities and addressing issues such as vaccine hesitancy and the impact of COVID-19 recovery on immunization. Additionally, the growing population has hindered the results of immunization activities. Vaccination efforts are crucial in protecting children from preventable illnesses such as polio, measles, and yellow fever. Implementing best practices in immunization helps improve coverage and outcomes, with activities including vaccination campaigns and mop-up activities. Ghana's mop-up campaign aims to extend the public health system into the homes and workplaces of at-risk populations. In Accra, the campaign, tagged "Vaccines Work," has successfully discovered previously missed children and ensured mothers are up to date on their children's immunizations, indicating effective education efforts.



GREATER ACCRA REGIONAL MAP WITH DISTRICT

Figure 1: Ghana and the Greater Accra Region medical districts

Note: this map shows the various districts in Greater Accra for mapping purposes, you can visualize the region using geospatial data files.

PLANNING AND IMPLEMENTATION

The planning of mop-up campaigns involved collaboration among various organizations, including stakeholders, private sector support, and the district assembly. A significant tool used was the ODK data collection tool, designed, which enabled geo-enabled digital micro-planning. This tool was crucial for tracing defaulters and unvaccinated children across sub-districts and Community Health Planning and Services (CHPS) zones.

- a) ***Securing Funding Support:*** Identifying and securing funding was a critical component of the campaign. The Essential Service Support Fund from the Greater Accra Regional Health Services provided vital financial resources. This support enabled the execution of extensive mop-up activities across the region. (*Expanded Programme on Immunization (EPI) – Ghana Health Service, n.d.*)
- b) ***Micro-Planning Meetings:*** Micro-planning meetings with staff and community members were conducted to identify gaps and plan social mobilization activities. These meetings utilized a template to ensure comprehensive coverage of all necessary aspects, ensuring no gaps were left unaddressed and that micro plan is being done to get new strategies to get the children to be vaccinated.
- c) ***Enhanced Supervision and Monitoring:*** Improving the quality of services was a priority to be achieved through the strengthening of supervision and monitoring mechanisms. Daily feedback from field activities ensured real-time adjustments and continuous improvement in service delivery.
- d) ***Integration with Other Health Programs:*** The mop-up activities were integrated with other child health-related programs such as Child Health Promotion Week (CHPW), Integrated Maternal and Childhood Health, and Polio National Immunization Days (NIDs). This integration ensured a holistic approach to child health and maximized resource utilization.
- e) ***Training in Data Generation and Use:*** Training sessions were conducted to enhance data generation and usage for decision-making. Tools such as the ODK were used by supervisors to complete checklists electronically for every team supervised, conducted both inside and outside of house assessment, facilitating accurate and timely data collection and analysis.
- f) ***Strengthening Lower-Level Planning:*** Training in micro-planning was provided to lower-level staff, empowering them to create effective and efficient plans tailored to their specific areas. This localized planning approach ensured that strategies were relevant and practical.
- g) ***Collaboration with Stakeholders:*** Strengthened collaborations with stakeholders were essential for improving surveillance performance. Engaging with community leaders, such as assembly men and chiefs, fostered community support and participation in the mop-up activities.
- h) ***Performance Feedback:*** Regular feedback on performance was provided to reporting institutions. This practice ensured transparency and accountability, allowing for continuous improvement and recognition of achievements.
- i) ***Capacity Building for Cold Chain and Vaccine Management:*** Capacity-building activities focused on cold chain and vaccine management were supported across all districts. Ensuring the

integrity of vaccines was paramount, and these activities helped maintain the required standards for vaccine storage and handling.

The quarterly mop-up campaigns were organized in selected districts of the Greater Accra region. Specifically, areas with low coverage, densely populated areas, and hard-to-reach locations were targeted. The campaigns included the introduction of school vaccinations in districts like Kpone and Katamanso. Weekend vaccination programs were held across all districts in Accra, including Ga South municipality, Adenta municipality, and Ashaiman.

Funding for these immunization programs primarily came from the Essential Service Support Fund of GHS and EPI. Micro-planning meetings were pivotal in identifying and addressing gaps in immunization activities. The data collection tools, developed with GIS assistance, included a Google template for efficient on-site data collection. The program was also funded by the regional health service of Greater Accra, driven by the need for COVID-19 recovery and addressing vaccine shortages. The regional director of health services played a key role in securing funding for the mop-up activities. Additionally, the private sector significantly contributed to the financial support, especially during critical immunization campaigns in Ghana.

RESULTS

Mop-up vaccination campaigns in Ghana achieved significant results, demonstrating the effectiveness of the implemented strategies, the acceptance of communities and the dedication of all involved stakeholders. These efforts of mop-up activities in the Greater Accra region resulted in a significant increase in second year-of-life vaccination coverage, particularly for the measles-rubella vaccine. There was an improved vaccine acceptance rate in communities with positive feedback from the community members.

Reach and Coverage

Communities Reached: A total of 322 communities were targeted and successfully reached during the mop-up vaccination campaign.

The quarterly mop-up activity by the Greater Accra region was effective in region children who have missed vaccines. The 4th quarter mop-up campaign in 2023 in the Greater Accra region vaccinated 6678 and 7559 children for measles/rubella (MR) dose one and dose two respectively. This represented a mean coverage of 10.3% for MR1 (ranging from less than 1% in Krowor district to 173.2% in Ada East district) and a 9.3% coverage for MR2 (ranging from less than 1% in Tema West district to 358.8.2% in Ada East district) in the 2023 4th quarter mop-up campaign alone.

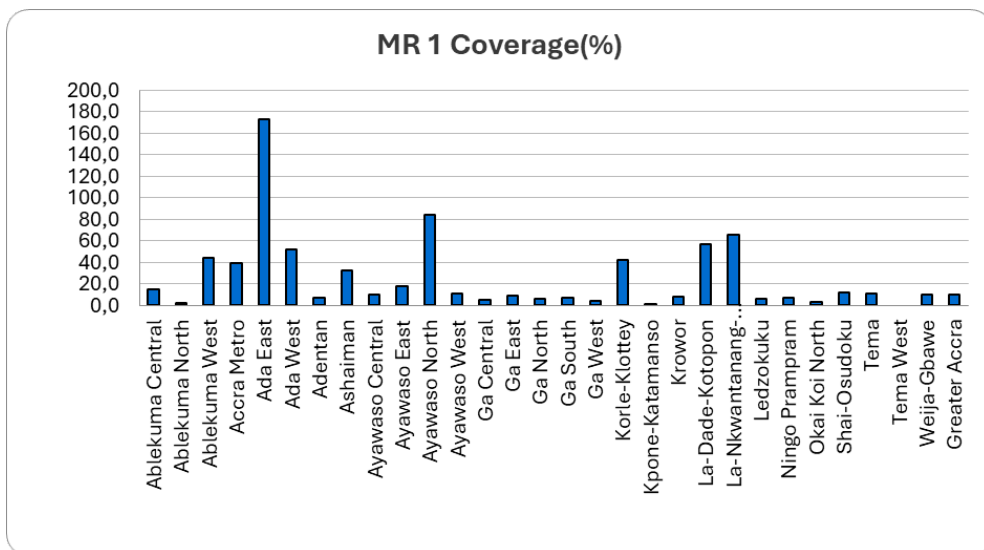


Figure 2: Coverage of first dose measles/rubella vaccine in districts after mop-up campaign

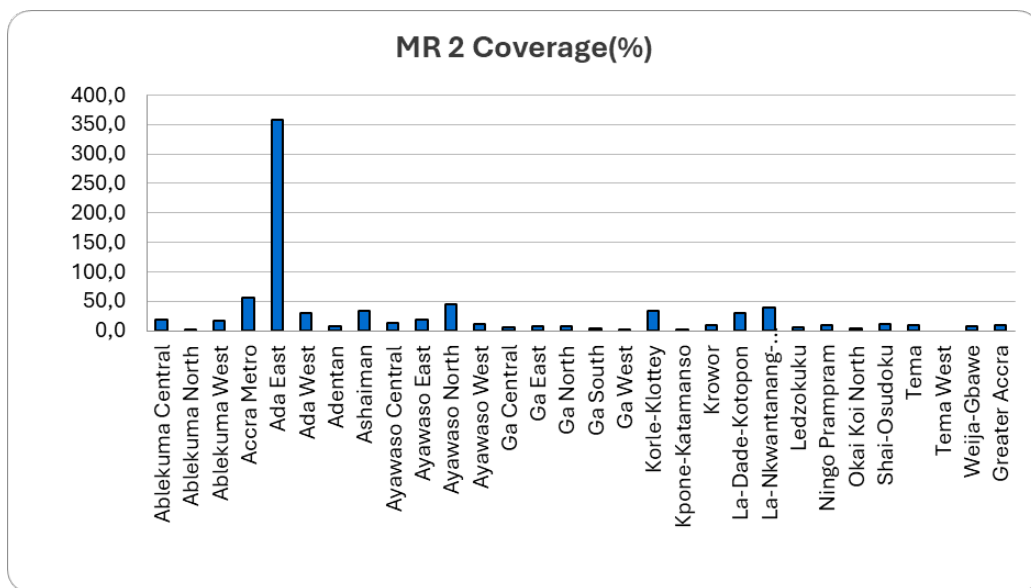


Figure 3: Coverage of second dose of measles/rubella vaccine in districts after mop-up campaign

Another mop-up campaign organized in the second quarter of 2024 also had good coverage, with MR1 achieving 10.4% coverage (6703 children) and MR2 achieving 9.1% coverage (7376 children).

Achieving Vaccine Equity

Significant strides were made toward achieving vaccine equity, ensuring that more districts reached higher immunization coverage levels. This effort reflects the campaign's success in reaching underserved and hard-to-reach populations, thereby enhancing overall public health outcomes.

BEST PRACTICES

This improvement in immunization coverage was attributed to effective coordination and supportive supervision of the EPI activities in the region. Multiple specific best practices were reported:

Instant data monitoring and analysis:

The tools used during campaign implementation provided instant information on team performance and coverage trends. The results that could be observed through different figures indicated the extent of the efforts to be made. The analysis of the data recorded during the campaign and the integration of the data from the files and evaluation of the various EPI campaigns, carried out using DHIS management systems, also facilitated the teams' supervision activities. It also allowed workers to produce reports and graphs to judge the achievement of objectives.

Reactive vaccine provision:

During immunization activities, it can happen, for various reasons, that vaccination teams run out of vaccine. The results of the data analysis and performance also allowed the supervisory teams to supply the vaccination teams with vaccine when needed. These steps have made it possible to improve the continuity of service in the field while ensuring the efficiency of the activity.

Improved vaccine confidence and acceptance:

In the opinion of the respondents, the organization of catch-up campaigns has improved the population's knowledge on vaccination and on the different vaccines. In doing so, catch-up campaigns have been effective approaches to improving vaccine confidence and acceptance at the community level. Communication activities carried out before and during these activities make it possible to reach even the hardest-to-reach populations.

LESSONS LEARNED

1. There are some gaps and challenges in the implementation of the best practices that are related to the capacity of providers at all levels. However, challenges are more important at proximate levels, ie, those who work closely with vaccine recipients. The abilities of the teams at these levels determine the success of the mop-up activities. Thus, there are needs for capacity building of the lower-level staff on vaccination activities. Training in demand generation will help to improve EPI access and utilization.
2. Immunization activities take place every month and almost every time. This may lead to the conclusion that everyone is informed about immunization. This is a wrong perception because knowledge that immunization is good is different from being ready to engage for immunization activities. There is a need to educate the public on vaccination. Knowledge of the importance of immunization is not the problem, what is at stake is to help the public know what is in detail in the activities.
3. Organizing mop-up activities requires preparation and comprehensive coordination. This is more important at equipment level. All initial logistical hurdles in vaccine procurement and distribution need to be addressed effectively. All cold chain system needs to be checked before, and any problem identified needs to be addressed before the campaign.
4. Mop-up activities are organized to reach the unreached. Various reasons may explain why these children were not reached. This may include the wrong information aired on the immunization in general and specifically on the vaccines that are being delivered. It is important to address all misinformation and rumors about vaccines.

5. The creation of more outreach points helps improve immunization coverage and leave no child behind. These challenges gave a broad view of how to implement best practices on immunization.

CONCLUSION

The success of the mop-up activities on immunization in Greater Accra underscores the importance of tailored strategies, strong partnerships, and adaptive management in achieving high vaccination coverage. These lessons learned are crucial for future immunization efforts, recommending sustained community engagement, robust data management, and flexible funding mechanisms to address evolving health challenges effectively. Quarterly mop-up campaigns, when adopted will help improve immunization coverage and vaccine acceptance rate therefore a need to replicate it in other countries. A strategic EPI implementation guideline and training manuals should be made available for successful implementation in other countries. This structured reflection captures key insights and areas for improvement based on the experience of implementing immunization mop-up activities in Greater Accra, highlighting both successes and challenges encountered in the process.

Further reading

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When Lucy finds fulfillment as a Community Health Nurse: Challenges and required actions for improved door-to-door activities

Ms. Lucy, a 41-year-old Registered Community Nurse (RCN), began her career as a Community Health Nurse (CHN) in 2008. Over the years, she advanced in her profession and now holds the rank of Senior Staff Nurse (SSN). Her journey started in the Dangbe West district, where she was first stationed, and she currently serves at the Korle Klottey Municipal Health Directorate.

This very active vaccine advocate like caring for people, and that passion for caring for people pushed her into nursing.

“When I was applying for the nursing program, I had no idea of the preventive and curative aspects and only bought forms for Community Health Nursing because that was what was available, but after finishing the course and practicing as a CHN, I must say I have never regretted once working as a preventive nurse. Currently, I have been working for close to 17 years and although my passion for caring for people pushed me into nursing, I have enjoyed my role as a preventive nurse and I still enjoy it.”

No specific element or facts of her personal or family life was decisive in her choice, but just the love she had for caring for people. Spreading happiness and seeing the joy she can provide directly on the faces of people when they receive care, and on the face of mothers are the principal sources of her motivation. Her motivation is not about money as the per diem for vaccination campaigns is nothing too huge to be a motivation. She find her fulfillment in knowing that her services will protect children from diseases that can disable them or even kill them.



Some problems related to vaccine uptake mainly refusal or hesitancy convinced her that there is still a lot to do to improve demand for immunization.

“my encounter with persons with strong vaccine hesitancy and mistrust for health workers was a challenge that strengthened my commitment to vaccination activities. My encounters with several individuals who were reluctant to receive vaccines due to myths or cultural beliefs that contradicted the benefits of vaccination and convincing these individuals to trust medical advice over misinformation became a daily challenge. However, experiencing these challenges deepened my commitment to vaccination activities.”

Lucy has few experiences that could affect her involvement in immunization activities. Some of these experiences indicate that her work is not as easy as some may think and in some situations like in door-

to-door activities as done during mop-up immunization sessions, it even can be risky. Despite living suspicions, accusations and abusive attitudes from anti-vaccination individuals, she is still engaged in promoting immunization when and where ever it is necessary.

“A vaccination-related event I have experienced is an Adverse Event Following Immunization (AEFI). In the facility where I work, a child experienced swelling on the face immediately after receiving a routine immunization. But the proper channels and processes were followed, and I can say that the child recovered nicely and is doing very well now.

I have experienced some vaccination-related events. Recently, during the peak of COVID-19 and mass vaccination campaigns had started, I was once verbally abused in my house-to-house activities to get people vaccinated. I remember one man who rained a lot of insults on me mainly because he had heard a lot of misinformation about the COVID-19 vaccine and thought I was part of the ploy to use the vaccines to harm them.”

As to the solutions to issues identified, Lucy has many ideas, some of which are more urgent. The problem-solving practices or approaches that she thinks are essential and that need to be used are continued education to the public on the benefits of immunization and the information on safety and efficacy of vaccines.

“ We have to continually educate the general public to reduce health misinformation in the communities. Most of the refusals are related to some misinformation that they have heard so if we continue to actively educate the public on the safety and effectiveness of vaccines, I think it will help solve some problems.”

Success and achievements are measured of courses, in terms of reduction in the number of vaccine preventable disease cases and deaths for Lucy. The fact that it is lest common to hear of children dying from measles, pneumonia or diarrhea is a big success. However, for her, beyond these considerations success is a mater of contributing to populations’ satisfaction.

“The joy I get when I provide services to caregivers is a major success for me, knowing that children have been protected from diseases.”

Lucy has concerns about many issues in immunization activities. In her view, as a lesson learned, communication is one of the areas that requires changes including in mop-up campaigns for more effectiveness.

“... currently, information on vaccination activities is not given to the general public in time. This makes it difficult for vaccinators to reach clients and vaccinate them without much trouble. Vaccination teams visit the homes of caregivers during immunization campaigns and are told that they were not aware of any vaccination campaign. Dissemination of information on vaccination activities has to come down early to ensure successful vaccination campaigns and also help improve routine immunization activities.”

For Lucy, it is evident that vaccine save lives and there is a need of more committed health workers to ensure that the gains are maintained. For her, without personnel that are committed, the success stories may die off.

The Novel Oral Poliovirus type 2 (nOPV2) vaccine accountability Monitoring in Ghana

INTRODUCTION

Much has been accomplished in the fight against polio, making the goal of eradication within reach. Achievements are the result of the Global Polio Eradication Initiative (GPEI), integrating immunization, international partnership, surveillance, social mobilization and catch-up activities. However, the emergence of vaccine-derived polio cases is compromising the prospects of immediate reach of the goals. The occurrence of these cases is linked to many factors combined with lack of optimal management of live vaccines supplied during vaccination campaigns. The challenge of accountability in relation to nOPV2 vaccine is to prevent live attenuated vaccine-derived viruses from finding their way into the environment as sources of contamination.

Since the inception of the GPEI, Ghana has continuously improved levels of polio immunization coverage, with both administrative and WHO/UNICEF Estimates above 90% for the last five years^v. As a result of this effort, in the country, wild poliovirus type 2 has not been detected since 1999 and was declared eradicated in 2015. Then, after cases of circulating vaccine-derived poliovirus type 2 (cVDPV2) in 2019, Ghana reported in 2020 up to 12 cases of cVDPV2. The advent of cases of cVDPV2 is a sign of a decline in polio immunization coverage, and a presence of spots or cohorts of naïve and under-immunized children.

Ghana was still classified by the International Health Regulations (IHR) as a state infected with cVDPV2, with potential risk of international spread^{vi}. In 2022, the country was certified to use the novel nOPV2 vaccine and the first nOPV2 vaccine campaigns started in August 2022^{vii}. Before nOPV2, prior to the introduction of vaccine accountability, vaccines handling, vaccine distribution and wastage management were not optimal. No tool was there for giving information on handling of vaccines. The number of the vials of vaccine before and after campaigns was not a serious issue. From the different levels of workers, there was little to discuss or justify as to what was provided and what could be traced and reported.

The introduction of nOPV2 is an advanced step in polio prevention effort that requires the application of new precautions for monitoring activities and traceability of remaining vials during and after vaccination campaigns. The process through which this precaution is organized is the vaccine accountability management, done using specific tools and procedures. After the first nOPV2 campaign in August, a second round of nOPV2 vaccine campaign was organized from 6th to 10th of October 2022. Up to 7,675,915 children under 5 years were vaccinated with 8,158,550 doses of nOPV2 vaccines, achieving a coverage of 111.5%. A strong process of accountability management was implemented during this campaign.

PROGRAMME PLANNING

Partners involved in campaigns and in the accountability management procedures include EPI, Unicef, WHO, Ghana Education Service, District Assembly and other local actors like the Information Service Department. At regional level, additional actors like FDA officers, Environmental health officers and/or Environmental Protection Agency (EPA) officers are also members of the teams.

Program design and preparation for accountability management aligned with procedures defined in GPEI documents and guidelines (GPEI, 2021)^{viii}. For the purposes of nOPV2 management, accountability is to be understood as the responsibility of each member of the team handling nOPV2 to account for all vials of the vaccine received or kept in their custody and to properly document and return all vials to the next upper level at the end of the campaign in which they were engaged. At workers' level, accountability is a requirement meaning that every vial must be accounted for.

Planning accountability management starts at the national level where accountability is included in the objectives and where there is adequate personnel and capacity.

For the actual implementation, one or two people are sent to each of the 16 regions to supervise and report on the activities. At each of these levels, vaccine accountability actors are positioned. At national and regional levels there are Vaccine Accountability Monitors (VAM) and at District and subdistrict levels there are Vaccine Accountability Officers (VAO). The planning of the round 2 campaign accountability activities, that took place during a virtual meeting with the regions, was preceded by a review of round 1 campaign.

- Financial planning

Planning a campaign is a matter of budgeting and integrating accountability monitoring activities has some cost implications that need to be considered. All actors that will be working on vaccine accountability need to be trained and will be paid for their work. This includes also planning for travel means and documents to be used.

-Training on Vaccine Accountability Management:

Training is done following a cascading approach. People are trained at the national level then these people will train district level actors and so on. The planning meeting was organized on the 30th of September 2022 where vaccine accountability and logistics management were among the areas of discussion. A virtual/in-person training was organized for national and regional Vaccine Accountability Monitors (VAM) on the 3rd of October 2022. Topics included filling of vaccine consumption monitoring tool and the Form A in the ODK. Regional actors were instructed to train district VAOs to make entries during and after the campaign. A lot of effort was made to avoid dilution of competence from the top to the field level and to have the same quality of training at all the levels of the system from national to local.

Vaccines Distribution:

Monitoring accountability requires the availability of the appropriate logistics at all levels of the health system. This includes markers, Ziploc and various forms to be used for reporting by actors. This also includes the nOPPV2 vaccines. In addition to 1,177,750 doses remaining from round 1 the country received 8377500 doses of nOPV2 vaccines for the round 2 campaign bringing the total to 9,555,250 doses of nOPV2 vaccines available for round 2. For the 16 regions 8767900 doses were distributed for the round 2 campaign.

PROGRAMME IMPLEMENTATION

Vaccine Accountability During Campaign:

Implementation of the activity involved field visits, observations, reporting, physical counting of tools and other logistics, and awareness-raising among stakeholders after observations. In terms of visits,

regional and national VAMs visited colleagues and cold stores at district, sub-district and team levels. Several aspects including vaccine storage, fridge/freezer thermometers and temperature observations, electricity stability, daily vaccine distribution and retrieval, storage of empty, partially used and broken vaccines, as well as record keeping and form filling were observed. Reporting activities were properly carried out daily between districts and regions. The same applies to the verification of cold stores. Reporting activities were carried out using the daily vaccine consumption monitoring tool. This was sent daily by each sub-district VAO in the ODK. Sub-district and district data could be monitored via the Power BI dashboard. Reporting was completed by submitting Form A at the end of the campaign. Vaccine shortages in the regions and districts were easily detected, and replenishments were organized from the national stockpile or from neighboring regions. Unopened and unusable vials (with broken or peeled-off labels) were documented and reported to the regions. The use of WhatsApp groups set up at regional level facilitated the various activities. No cases of missing vials were reported.

Vaccine Accountability Committee

As mentioned above, the partners involved in implementing accountability are present at all levels, depending on the relevance of their presence. At regional level, this is reflected in the participation of various bodies in vaccine accountability committees. These include Deputy Directors of Public Health (DDPHs), national and regional VAMs, FDA officers, environmental health officers and/or EPA officers, partners (WHO, UNICEF, CDC), etc. These specialized committees, set up for campaign activities, were reactivated for this campaign, particularly for the disposal of vials. Meeting for the purposes of this campaign, these committees were able to plan and establish vaccines retrieval schedules for the districts. They were then able to decide on the types and sites of disposal and inspect these sites for unusable vials at the end of the campaign. All the usable and unusable vials retrieved were disposed of under the supervision of the committee members, who signed the disposal forms once the destruction process had been completed.

Tools for the national, for the regions, for the district's levels and tools for the subdistricts are used. **The tools** are filed every day to show « *this is what you gave me, this what I have used, this what is remaining* ». With the tools, it is possible to track and account for daily transaction and see what is received at each level and what is passed down to the lower level. The tools helped also to know how the vaccines get retrieved, both empty vials and used ones. **Reports:** reporting is done daily from subdistrict to district and from district to region. At the regional level they don't report daily. When the work was paper-based, reports were done and sent to the district and the regional levels. Now that ODK is used, teams have both paper and ODK version to send to district and regional levels so that the situation of the vaccine at regional level is known when needed.

Resources and cost

Resources for the activities are provided by all partners including Unicef, WHO, the government of Ghana and Gavi. All partners of the GPEI are contributors. In addition, local actors are also contributing, mainly in-kind. This is the case of Ghana Education Services and District Assembly who sometimes provide vehicles for the activities. Planning and implementation of accountability activities have many cost implications that are also important. Vaccine monitors and vaccine accountability officer must be paid including all campaign personnel. These are additional costs to consider.

OUTCOME

Vaccine retrieval

At the retrieval stage, all unusable vials were collected for destruction. Usable vials were stored in freezers in regional cold rooms and then transferred to the national level. At this stage of vaccine retrieval and record keeping, it was found that no vials (usable or unusable) were missing. However, one sealed package of nOPV2 vaccines contained 9 vials instead of 10 when opened. The observation made in Sekyere South (Ashanti region), more precisely at Agona Hospital, was brought to the attention of regional and national VMA officials. A report on the case (considered as a packaging error by the manufacturer) was made to the higher levels, with supporting photos.

Table 1 : Usable and unusable vials retrieved at the regional level (GHS/EPI, 2022)

Usable and Unusable Vials Retrieved at The Regional Level							
S/N	Name of Districts	Total nOPV2 Vials Issued	Empty Vials	Vials Returned		Total Unusable vials	Vials Unaccounted
			No of Empty Vials Returned	Usable (VVM1&2)	Un-usable (VM3,4,broken, damaged,distorted label)		
1	AHAFO	3,467	2,864	595	8	2,872	
2	ASHANTI	28,571	28,441	100	30	28,471	1
3	BONO EAST	7,953	6,410	1,530	13	6,423	
4	BONO	6,413	6,054	348	11	6,065	
5	CENTRAL	15,647	15,471	137	39	15,510	
6	EASTERN	15,051	14,726	303	22	14,748	
7	GREATER ACCRA	31,562	31,260	280	22	31,282	
8	NORTH EAST	4,608	3,433	1,170	5	3,438	
9	NORTHERN	15,886	12,086	3,784	16	12,102	
10	OTI	5,511	4,306	600	5	4,311	
11	SAVANNAH	4,439	3,614	815	10	3,624	
12	UPPER EAST	8,270	7,652	615	3	7,655	
13	UPPER WEST	5,122	4,641	470	11	4,652	
14	VOLTA	7,840	7,600	227	13	7,613	
15	WESTERN	10,482	10,206	252	15	10,221	
16	WESTERN NORTH	4,536	4,407	119	18	4,425	
TOTAL		175,358	163,171	11,345	241	163,412	1

Wastage rate

As the table below shows, the wastage rate was at an acceptable level during the second campaign. For the country, it was 6.0% for open vials and 0.1% for closed vials. Closed vials wastage were generally due to mishandling of the vaccines, resulting in broken vials.

Destruction

Several approaches to destroying unusable vials are possible. In the second campaign, except for the Greater Accra and Eastern regions, where the autoclaving method was used, all regions opted for incineration as the disposal method for unusable vials. The chosen process required all unusable vials to be organized and transported to the final disposal site on the day agreed by the committee. Burial was required after incineration and autoclaving, so all remains were buried in a safe place. In detail, 163,434 unusable vials were destroyed at the end of Cycle 2. This figure takes into account 22 unusable vials from the first round (20 empty vials which had not been destroyed in the Eastern region, and 2 vials used nationally for training regional teams, which were expired).

Table 2 : Close and open vial wastage (GHS/EPI, 2022)

Close and Open Vial Wastage										
S/N	Name of Districts	Target Population	Total nOPV2 Vials Issued	Empty Vials	Vials Returned	Vials Unaccounted	Total target Immunized	%Coverage	Reported Open Vial wastage Rate	Reported Closed Vial wastage Rate
				No of doses of Empty Vials Returned	Un-usable (VM3,4,broken, damaged, distorted label)					
1	AHAFO	133,928	3,467	143,200	8	-	136,578	102%	4.6%	0.2%
2	ASHANTI	1,229,886	28,572	1,422,050	30	1	1,356,248	110%	4.6%	0.1%
3	BONO EAST	264,998	7,953	320,500	13	-	295,412	111%	7.8%	0.2%
4	BONO	267,773	6,413	302,700	11	-	287,715	107%	5.0%	0.2%
5	CENTRAL	672,767	15,647	773,550	39	-	739,977	110%	4.3%	0.2%
6	EASTERN	648,246	15,051	736,300	22	-	684,969	106%	7.0%	0.1%
7	GREATER ACCRA	1,242,365	31,562	1,563,000	22	-	1,504,834	121%	3.7%	0.1%
8	NORTH EAST	160,971	4,608	171,650	5	-	169,742	105%	1.1%	0.1%
9	NORTHERN	497,264	15,886	604,300	16	-	572,948	115%	5.2%	0.1%
10	OTI	181,608	4,911	215,300	5	-	193,007	106%	10.4%	0.1%
11	SAVANNAH	157,590	4,439	180,700	10	-	173,209	110%	4.1%	0.2%
12	UPPER EAST	306,974	8,270	382,600	3	-	344,471	112%	10.0%	0.0%
13	UPPER WEST	194,086	5,122	232,050	11	-	204,555	105%	11.8%	0.2%
14	VOLTA	300,531	7,840	380,000	13	-	329,140	110%	13.4%	0.2%
15	WESTERN	448,002	10,473	510,300	15	-	483,237	108%	5.3%	0.1%
16	WESTERN NORTH	191,603	4,544	220,350	18	-	199,237	104%	9.6%	0.4%
			0	-		-				
TOTAL		6,898,592	174,758	8,158,550	241	1	7,675,279	111%	6%	0.1%

Overall result

The overall outcome of the accountability monitoring process is that two years after the campaigns, cases of vaccine derived polio are less reported than in the years preceding the campaigns and the implementation of accountability procedures. From January 2023 to mid of 2024, Ghana is among the rare countries in West Africa where no environmental detection was reported^{ix}.

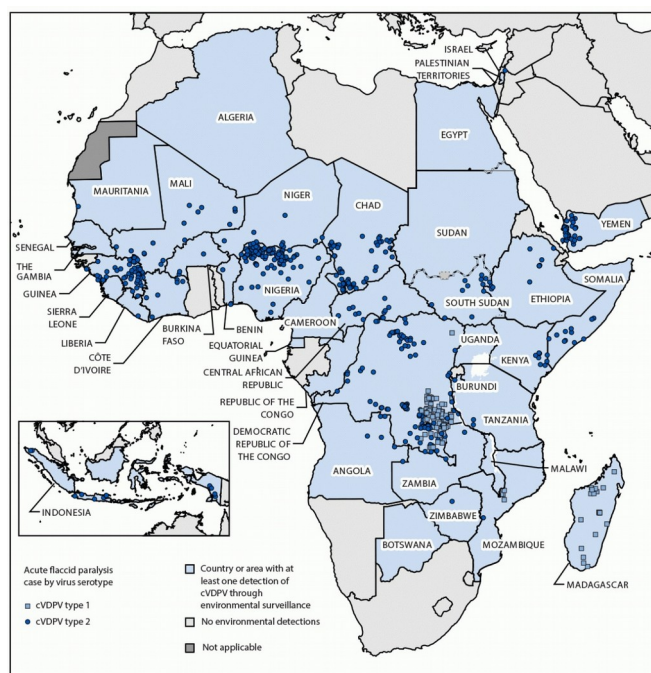
Figure 1 : Countries and areas* reporting circulating vaccine-derived polio outbreaks (N = 39) — worldwide, January 2023–June 2024† (Apophia N.-F. et al., 2024)

Abbreviation:

cVDPV = circulating vaccine-derived poliovirus.

* Some boundaries might differ under World Health Organization mapping guidelines.

† Data as of September 18, 2024.



BEST PRACTICES

- **Good implementation of the accountability management activities at all levels:** the report indicated that all activities planned for the accountability were undertaken as anticipated. The tools provided for the different levels of actors were adequately used. With the accountability tools it is possible to trace them to who is liable for the vials they cannot account for and based on that at the level of Unicef or at managers' levels, whatever compensation the actors were supposed to get from that campaign they will get it. Because of that compensation, people became more serious about handling of the vaccine and passing it to a higher level with details on what they received, what they used and what is left, on giving the vials and the records.

- **From polio to other campaigns:** The application of accountability processes to other campaigns including measles and yellow fever from the experience of polio (nOPV2) is one best practice Ghana is experimenting. All things considered, the accountability procedures proved to be relevant for other vaccine management areas. With the tools, teams prove liable for all vaccine given to them. Whatever happened with the vaccines on the fields are reported. The accountability procedures and tools are also relevant for monitoring immunization teams' performance. For example, if it is supposed to be twenty doses per vial, and a team has a track record of fifty percent wastage rate on daily basis, it is obvious that there is something wrong. Maybe they don't know how to give, or they are deliberately purring away the vaccine because it is away out of the expected wastage.

- **Using lessons of accountability in routine immunization:** Because of the training given to them, workers are now using the knowledge they obtained to manage the routine immunization activities and vaccines. Accountability brought a change of attitude at workers' levels. Although this has not been evaluated and not all of them will have the mindset of accountability but some of them will. The use of tools provided for accountability activities like zip-lock to protect documents was also adopted by workers when performing other immunization activities.

- **Retrieving a lost vial.** It happens that a vaccination team loses a vial. These are cases that are rare but can happen. A case was reported and to find the missing vial all village inhabitants were mobilized to comb everywhere to find where the vial was. In that case some procedures are used to try to destroy the viral that is supposed to be in the vaccine before it mutates. This consists in pouring red or hot ashes on the place so that the viral is killed and cannot spread in the environment.

- **Tracing origin of cases of vaccine derived polio:** As reported in the introduction, 18 cases were detected in the country mainly in the northern region. The investigation around the cases has taken accountability to another level by tracing the origin of 2019 and 2020 circulating vaccine derived polio cases. A multidisciplinary approach desk reviews, AFP surveillance operations and immunization evaluation, interview, review of patients' admission records, active case search for AFP, laboratory analysis and virus sequencing were used. It was finally demonstrated that all strains were genetically linked to a Nigerian cVDPV2 strain that circulated in 2018. Existence of pocket of low immunization coverage in context of substandard sanitation, lack of toilet, open defecation pollution of drains with fecal matter by resident were among possible causes that favor the spread of the virus. Recent cases of cVDPV2 are also said to come from Nigeria.

LESSONS LEARNED

Lesson 1: Implementing all activities that are necessary for monitoring vaccine accountability is resource consuming. However, the importance of the issue requires that all activities planned are fully financed for their proper implementation. This was not the case during the second-round campaign. Resource limitations have impacted supervision activities and, in some cases, National VAMs had to share vehicles, therefore, could not make adequate visits to lower levels to support them.

Lesson 2: More effort and training are required for vaccine management and reporting. At vaccine retrieval it was obvious that vaccines mishandling needed to be addressed given the high close vial wastage reported. District and Sub-district VAMS were sensitized to encourage teams on the immediate reporting of broken vials on the field to higher levels. While sensitization can be of good help, it is more important to have a dual and combined approach in the form of hands-on training or supportive supervision.

Lesson 3: Consistency in reporting is important at all levels. The reports indicate that vials had been issued to some teams who did not record the receipt of the vials on their forms. The need for all teams to record receipts of vial before leaving for the field is to be raised at both District and Sub-district VAMs and actors' levels. Adequately identifying the forms to fill and doing good calculation for indicators to be reported on the forms is important to succeed in accountability monitoring.

Lesson 4: Good practices promote themselves. Health workers are usually adopting approaches that can facilitate their activities and improve their performance. As mentioned in the best practices section, health workers have integrated into their practices the elements from the implementation of accountability activities they found relevant. However, scaling up these same practices requires support insofar as not all healthcare providers have a proactive attitude to innovation.

Lesson 5: The use of three documentation tools - manual forms, the ODK application and photo/whatsApp - is an advantageous approach. The use of manual forms enables checks to be carried out to re-establish the authenticity and completeness of the information. The use of ODK makes

information quickly available on the platform, enabling supervisors to act or react to events on the ground during the campaign. Finally, photos make problems visible and share them just as instantly. Despite the technical difficulties and the time and cost issues involved, maintaining these different reporting approaches improves the implementation of accountability monitoring activities.

CONCLUSION

The implementation of vaccine accountability procedures during the second vaccination campaign with the nOPV2 vaccine in 2022 was a success. Further documentation on the application of accountability approaches is required. Similarly, the adaptation of the approach to other campaigns, notably measles and yellow fever, needs to be well documented and lessons learned shared. As mentioned in the results, accountability management has opened up new perspectives in the implementation of vaccination campaigns. Training in this area has been a source of improvement in workers' knowledge and performance. As an ultimate result, the implementation of the approach has prevented the population of Ghana, and specifically children, from suffering new cases of vaccine-derived polio, notably from the nOPV2 vaccine. This is a convincing result which contributes to the overall efforts made by decision-makers, workers and populations and GPEI to make the total eradication of polio a reality. Initiatives to adopt accountability monitoring approaches must consider the planning aspects, particularly financial issues, but more specifically the rigor of implementation is important.

Common accountability for international compliance: The success against polio and vaccine derived polioviruses

Dr Kwadwo Odei Antwi-Agyei is a retired manager of the Expanded Program on Immunization (EPI) we also consider as a member of what could be a Council of Elders for the immunization program. Dr. Antwi Agyei had a remarkable career with the Ghana Health Service, serving from 1983 until 2013. During this time, he held several critical positions. From 1997 until 2003, he served as the Brong Ahafo region's first Director of Public Health, making important contributions to public health efforts. Following that, he was appointed National Immunization Program Manager in 2003, giving him the ability to influence national immunization strategies. Dr. Agyie also worked as a program manager for the Expanded Program on Immunization (EPI), PATH Ghana, and as a consultant for the Ministry of Health. His significant skills and leadership have had a long-term impact on public health in Ghana and immunization.



His dedication to preventive medicine was greatly impacted by seeing firsthand the catastrophic effects of the 1983 measles outbreak while working as a medical officer at Brong Ahafo District Hospital during his rotation. Observing measles-related deaths in youngsters underscored the vital importance of vaccination, igniting a keen interest in public health. He was inspired to pursue a profession in medicine with an emphasis on disease prevention by his early witness to the misery brought on by a variety of ailments. Motivated by a desire to avert the misery he had witnessed in hospitals, he persevered in overcoming the obstacles encountered in the practice of public health. Knowing the background of Ghana's immunization programs, which started in 1968, strengthened his commitment. All of these encounters influenced his desire to prioritize immunization.

In managing immunization programs, financing presents a recurring challenge, particularly reliant on external donors and partners. Historically, Ghana's government shouldered this responsibility, evident during the polio campaigns when substantial financial contributions were made. However, the landscape shifted with the advent of Gavi's support in 2002, marking a crucial transition in funding dynamics. Before external assistance, Ghana funded immunization efforts independently since 1978, highlighting reliance on governmental resources.

Ghana takes pride in its achievements in immunization, primarily focused on reducing mortality rates and preventing diseases effectively. Success is evident in the significant decline of under-five mortality rates, reflecting successful disease prevention efforts. Ghana has met international targets, such as maintaining a polio-free status since 2007, despite occasional vaccine-derived polio outbreaks swiftly contained within six months. This continuous maintenance of polio-free status demonstrates Ghana's commitment to sustaining immunization success and preventing wild polio cases. Overall, these achievements underscore Ghana's effective immunization strategies and ongoing efforts to ensure public health through rigorous disease prevention measures and international compliance with immunization goals.

CONCLUSION OF THE REPORT

The present report covers a limited selection of themes and topics that hold particular significance for both us and the respondents, and we believe they will be of equal interest to readers. Apart from the topic of accountability in polio vaccination, which we had preselected and was later confirmed by the respondents, all the subjects included in this report were chosen by the respondents and field actors. Many aspects that could have been included as sources of best practices and valuable insights do exist, even though they could not be covered in this documentation. Additionally, some interviews on topics proposed by respondents could not be included due to a lack of baseline data, results, or reports that would allow for comprehensive documentation.

As we have titled it, Ghana has demonstrated continental leadership in vaccination. Over the years, the country's health authorities have shown strong political will and unwavering commitment to ensuring vaccine supply and supporting the sector. The global partnership surrounding the government, along with UNICEF, serves as a cornerstone for resource mobilization and the implementation of interventions. The results achieved are a testament to the dedication of healthcare workers, some of whom, through their personal stories, have shared the motivations that drive them while also providing valuable insights into the relevance of the approaches used. Above all, these results reflect the participation of communities—often difficult to reach or engage—who nonetheless seize the opportunities and protection that vaccination offers.

For the three health issues addressed, Ghana's successes include a return to the pre-pandemic situation regarding COVID-19, maintaining its polio-free status, and the elimination of measles-related deaths—all to the benefit of the population. The lessons learned can undoubtedly enable other vaccination programs in the region to achieve similar successes, bringing great benefits to the communities they serve.

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