**Elizabeth Glaser
Pediatric AIDS Foundation**
Fighting for an AIDS-free generation

The Elizabeth Glaser Pediatric AIDS Foundation's DELTA2 Project

COVID-19 Response Mechanism Technical Assistance – Data Management

Introduction and Overview

The Elizabeth Glaser Pediatric AIDS Foundation (EGPAF) is a recognized leader in the global effort to eliminate pediatric AIDS and one of the most successful international implementation organizations for pediatric, adolescent, youth, and adult HIV prevention, care, and treatment programs. EGPAF currently provides technical assistance (TA) at the national, sub-national, facility, and community levels in 17 countries to effectively support the implementation, scale-up, and evaluation of HIV, TB, and COVID-19 programs.

EGPAF has implemented HIV care and treatment initiatives and provided targeted, high-impact TA through U.S. Centers for Disease Control and Prevention (CDC) support for over 20 years. Through current CDC funding, EGPAF is implementing the five-year Delivering Technical Assistance (DELTA2) cooperative agreement for global TA, providing services to optimize the impact of programs supported by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) and the Global Fund to Fight AIDS, Tuberculosis, and Malaria (GFATM) to ultimately help achieve an AIDS-free generation.

In 2021, EGPAF was awarded American Rescue Plan Act funds through EGPAF's DELTA2 mechanism to provide tailored, targeted technical support to Ministries of Health (MOH) and GFATM grantees in six countries to achieve their COVID-19 response mechanism (C19RM) activities and targets. The overall focus of this initiative, implemented from 2022-2024, was to support COVID-19 response and mitigate the impact of COVID-19 on HIV, TB, and malaria programs, improving health and community systems in Cameroon, Cote d'Ivoire, Haiti, Malawi, Uganda, and Zimbabwe.

EGPAF's TA directly supported country C19RM activities and targets, primarily through the identification and secondment of several Technical Advisors to address identified gaps, needs, and challenges in the pandemic response in each country, in close collaboration and coordination with Ministries of Health (MOHs), other relevant government entities, implementing partners (IPs), PEPFAR, USAID, and CDC missions. EGPAF worked with each country's respective MOH and key stakeholders to identify implementation challenges associated with achieving the country's C19RM targets at the national level.

Haiti	In **Haiti,** EGPAF's TA bolstered treatment continuity for people living with HIV in the context of COVID-19 and Haiti's political and security instabilities, supported **data management improvements and site-level staff capacity building** to prepare for future pandemic response, and mitigated the effects of the COVID-19 pandemic on the **pediatric HIV cascade.**
Cameroon	In **Cameroon**, EGPAF strengthened the **COVID-19 reporting and data management system** by improving the monitoring of Cameroon's national indicators, which led to increased collaboration and reporting between key stakeholders. EGPAF also supported improvements to data processes/management systems and data quality audits and supported the development of the epidemiological surveillance data management national guidelines for accurate data processes and monitoring management.

Côte d'Ivoire	In **Côte d'Ivoire,** EGPAF provided support to quantify current pharmaceutical product stocks throughout the country and to develop an **operational plan for the management of sanitary waste,** including ensuring the quality of the pharmaceutical products disposal process and the evaluation of conditions of collection, transport, and destruction.
Uganda	In **Uganda**, EGPAF provided TA to the Ministry of Health to **develop long COVID-19 management guidelines and guidelines on the integration of COVID-19 care activities into the routine health care system** using lessons learned from integrating COVID-19 vaccinations into routine immunization. These guidelines aim to increase awareness and improve the ability of healthcare workers to offer integrated COVID-19 services.
Zimbabwe	In **Zimbabwe,** EGPAF's provided TA on data management systems including **electronic health record system development, laboratory, surveillance and diagnostic TA, case management TA, TB and HIV program adaptation TA and COVID-19 response national coordination TA.** EGPAF was also able to provide key support for Global Fund and Pandemic Fund proposal development and technical support to the emerging cholera epidemic in Zimbabwe.
Malawi	In **Malawi,** EGPAF assisted with the development of the Equipment Standards Manual and Specifications Scope of Medical Equipment to **improve the country's management of medical equipment,** in addition to creating a **computerized system for medical equipment management in health facilities.**

Key themes emerged in reviewing the successful planning and implementation of C19RM TA activities across these six countries. Data management and health information systems are powerful drivers of health systems change, collaboration across stakeholders, and joint ownership of progress towards epidemic preparedness and control. Broadening the use of these systems and technical innovations like electronic medical records (EMR) and robust data dashboards will further modernize national data platforms and facilitate greater sustainability by local government systems and institutions. These initiatives encompass software development; automatic application deployment using continuous integration and delivery; system, infrastructure, network, and data support; and data quality assurance. The development, implementation, and maintenance of these systems, in collaboration with affiliated ministries, increase the efficiency of health systems and improve the health of women, children, and their families. Through TA and expert support, EGPAF built ministry capacity across the data management cascade from site level to national level to develop, utilize, and maintain data systems to encourage data consumption and data use for informed decision making. This improved national stakeholders' use of data trend analysis to make data-based decisions that improved in-country health system delivery in response to the COVID-19 pandemic.

The following narrative highlights EGPAF, CDC, and ministries' impressive collaboration and successful implementation of C19RM TA activities under DELTA2.

Technical Assistance Overview

Providing Data Management Supportive Supervision in Haiti

EGPAF worked with the Ministere Sante Publique et Population (MSPP) / Unité de Coordination des Maladies Infectieuses et Transmissibles (UCMIT) / PNLS (Haiti National AIDS Control Program, subunit of UCMIT) to identify three main areas of TA: mitigating effects of the COVID-19 pandemic on the pediatric HIV cascade, supporting HIV/ AIDS and TB database integration, and bolstering treatment continuity for people living with HIV (PLHIV), particularly in the context of COVID-19. EGPAF hired three Technical Advisors, one for each area of TA. The Data Management Technical Advisor began by assessing UCMIT's existing data management platforms, which are monitored by PNLS staff at the central level. From there, he and UCMIT staff identified sites where there were problems with reporting and the quality of data submitted to the platforms. The Technical Advisor developed and implemented an action plan to visit the sites with the aim of analyzing the primary sources of data collection such as registers, verifying that data was compliant on all reporting platforms and in all shared reports, working with data managers to correct reports that contain errors, and organizing working and orientation sessions with Data Managers to improve data management and indicator reporting. At the end of these visits, in conjunction with PNLS staff, the Technical Advisor shared his findings and recommendations with the sites and wrote to the Platform Designer and Manager to report certain data entry problems, inconsistencies, and other technical problems. Through EGPAF's supportive supervision and intensive mentoring, site-level data managers now better understand the indicators and are better able to produce reports with high-quality and real-time data, which helps the staff to make more informed decisions. The EGPAF Technical Advisor also provided direct support to the monitoring and evaluation (M&E) section of the PNLS. He presented on sampling techniques during a Healthqual workshop, revised study protocols on early warning indicators and quality of care, actively supervised data collection activities at select facilities, participated in technical follow-up meetings, and revised PNLS bulletins before publication.

## Assessing the Need for a Computerized Maintenance Management System in Malawi

EGPAF Malawi worked closely with the Health Technical Support Services (HTSS)/Physical Asset Management (PAM) Unit of the MOH to identify areas of technical assistance needed in Malawi. Subsequently, EGPAF recruited two Technical Advisors to support the start-up, operationalization, and scale-up of new software to support biomedical equipment inventory tracking and maintenance. The EGPAF and PAM teams first assessed the digital landscape to determine the appropriate Computerized Maintenance Management System (CMMS) for Malawi. EGPAF's Technical Advisors worked with PAM/HTSS to develop requirements for the CMMS and led a workshop for biomedical engineers to gather additional requirements for the system. EGPAF's Technical Advisors reviewed four CMMS systems available on the market, finalized a medical equipment distribution database and an equipment status assessment tool for central hospitals, and collaborated with PAM/HTSS to select the appropriate system for the Malawian context. After analyzing various approaches to implementing the CMMS, the team decided to customize the existing software; the Technical Advisors cited the speed of delivery and the relatively low costs compared to other options. The Cold Chain, a version of the DHIS2 system, was chosen as the optimal system for customizing and building specific modules for the CMMS. DHIS2 is favored by the Ministry of Health for digitizing various processes within its functions and mandate. Additionally, there is a supportive community available to provide technical assistance during development and after launch. With funding from Health Service Joint Fund, launching the customized CMMS software may start around May 2024.

# Developing a Public Health Emergencies Dashboard in Cameroon

In close collaboration with the MOH's Public Health Emergency Operations Coordination Center (PHOECC) and CDC Cameroon, the EGPAF team identified the need for TA to support data management at both the national and regional level. EGPAF hired four Technical Advisors to strengthen the COVID-19 reporting and data management system by improving the monitoring of Cameroon's national indicators. The Technical Advisors evaluated existing challenges in the COVID-19 data management system (DMS) by conducting a collaborative evaluation of the system. The DMS assessment revealed various gaps including poor quality of documentation, inefficient data flow and reporting, poor data transmission and accuracy, and issues with how different data systems operate with one another. To address these challenges, EGPAF worked with the PHOECC to revise the annual plans of MOH technical departments to produce a common plan of action integrating new activities aimed at strengthening the health information system and filling in gaps The EGPAF team supported the development of a DMS roadmap which was reviewed and validated by the MOH, IPs, and other stakeholders. The team first prioritized cleaning all data, centralizing all databases, and developing an interactive, easy-to-access dashboard to assist decision makers in real time. The EGPAF team subsequently developed a National Public Health Disease Dashboard for COVID-19, which was reviewed and validated by PHOECC. Following its successful presentation, the COVID-19 dashboard was extended to include cholera data. The dashboard allows MOH staff to quickly analyze data and easily present the country's current epidemiological situation.
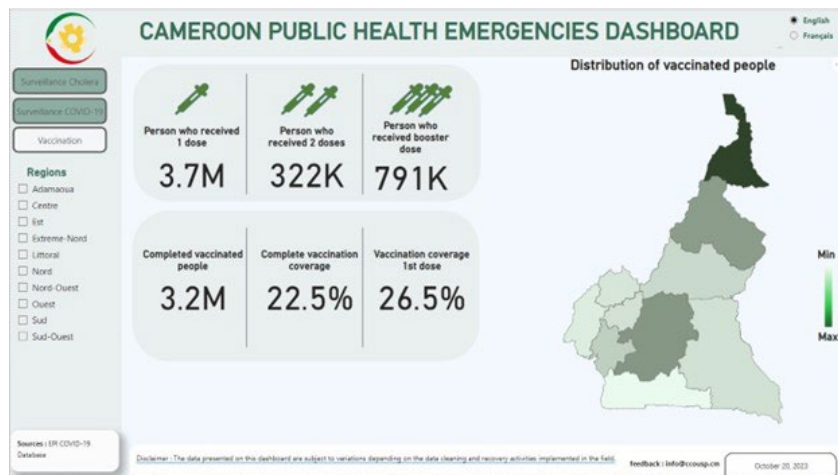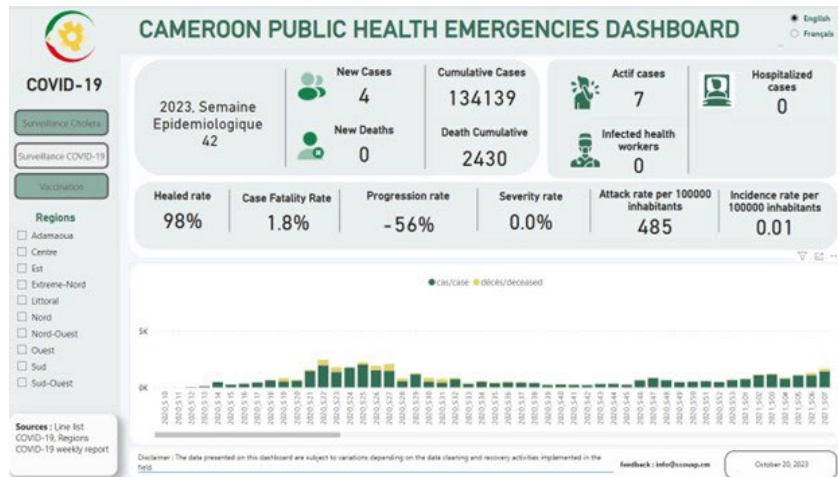
In addition to the successful development and presentation of this National Public Health Disease Dashboard, the EGPAF team assisted with developing the Data Management Guidelines and Standard Operating Procedures, a prototype for an Incident Reporting Tool for public health emergencies, and training modules on the use of the national platform for enrolling priority patients as part of universal health coverage.

Supporting National Health Information and Data Systems in Zimbabwe

Working with the Ministry of Health and Child Care (MOHCC), UNDP, and CDC Zimbabwe, the EGPAF team identified four areas of TA to provide through the C19RM mechanism: National Response Management, Laboratory Systems and Surveillance, Data Management Systems, and Case Management & HIV/Tuberculosis Adaptation. Following the declaration that COVID-19 was no longer a public health emergency of international concern by the WHO in May 2023, the TA EGPAF provided evolved to include support for the development and rollout of the national electronic health system, Impilo Electronic Health Records (Impilo EHR), as well as TA for the National Digital Health Strategy. EGPAF's support to the MOHCC Family Health Unit resulted in resolution of inconsistent data outputs from the antenatal register, report, and ANC module in the Impilo EHR. EGPAF's Technical Advisors supported the development of a customized national Digital Adaptation Kit (DAK) to strengthen prenatal care services through the consistent and efficient use of digital systems. To ensure improved quality of data collection and storage, EGPAF developed and piloted a DHIS2 mobile application and digital COVID-19 Screening Tool at seven sites. EGPAF's Technical Advisor led an integrated training on the Impilo EHR and DHIS2 Mobile Application. Post-training support and mentorship were provided during the digital tools' deployment. This TA strengthened data management systems for emerging health threats in Zimbabwe.
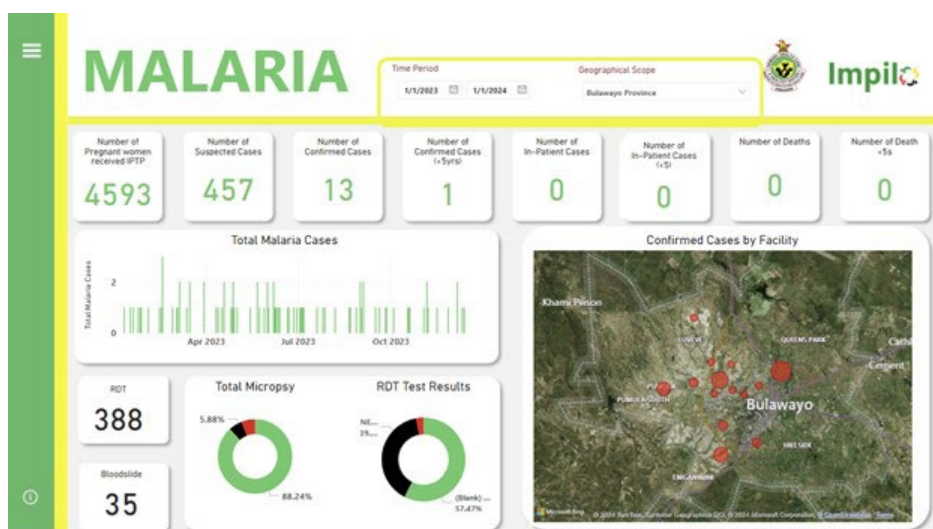
Lessons Learned

Identifying Successes

Overall, each EGPAF team found success when there was an open line of communication between the Technical Advisors and the primary recipients (different units of the MOH). With close collaboration and clear communication, EGPAF's Technical Advisors implemented the appropriate activities and filled the gaps identified at the beginning of each project.

In Malawi, the team took a collaborative approach with the primary recipient and other partners to successfully develop and implement a CMMS for the MOH. Each stakeholder played a crucial role in different phases of the project, from initiation to post-implementation activities. The first phase, stakeholder mapping, allowed the team to outline the roles, responsibilities, and budget considerations for each stakeholder, and to ensure a comprehensive understanding of the contributions and commitments required for the seamless execution and sustainability of the CMMS project. The Data Management Technical Advisor in Haiti frequently traveled to sites to conduct supportive supervision together with a member of the UCMIT team, working collaboratively to coach site staff. His direct support to members of the M&E section of PNLS allowed them to accomplish certain key tasks they were not accomplishing prior to his presence In Cameroon, the team quickly learned that the development of the technical assistance process must be carried out in collaboration with the MOH and in consultation with all stakeholders, to identify needs and address them effectively. Enhanced coordination of the various stakeholders' interventions was necessary to pool all efforts and

avoid duplicated interventions. In Zimbabwe, the Impilo EHR system has been instrumental in modernizing patient data management, and the WHO-approved Digital Adaptation Kit for Antenatal Care integrated into the Impilo EHR system has strengthened prenatal care services through the consistent and efficient use of digital systems.

In addition, it is worth noting the flexibility of the American Rescue Plan Act COVID-19 funding offered the ability for TA implementers, including EGPAF, to provide TA across project years, and through shifting Ministry priorities, without any delays in implementation.

Addressing Challenges

In Cameroon, the Technical Advisors highlighted incomplete data and poor data quality as the main challenges. To address data completeness problems, the team worked with key stakeholders to develop and implement a data "catch-up" plan. For poor data quality, the teams provided coaching to stakeholders on data collection and review. Support at all levels of the health system proved to be essential for the success of data management activities. Another challenge came with the end of the COVID-19 public health emergency declaration—this shift had the effect of making staff in Cameroon working on COVID-19 surveillance and monitoring less interested in these efforts. To address the demotivation of staff, efforts were made to clarify WHO messages during sites visits, stakeholder meetings, and at health facility entry points; messaging to healthcare workers regularly included data on the local levels of COVID-19; and MOH developed a service note to healthcare workers to continue their COVID-19 surveillance.

The difficult political and economic context in Haiti created various challenges throughout EGPAF's implementation of C19RM activities. The Data Management Technical Advisor relied on in-person support and mentorship to site-level staff as the primary form of TA, but travel became increasingly difficult as violence and instability expanded throughout Haiti. The political climate in Haiti also led to high turnover of staff. The instability has resulted in many healthcare workers leaving the country to find work elsewhere. There is a lack of motivation amongst those who remain, and there is a need to continually build capacity around data management with new staff.

The main challenge with the CMMS implementation in Malawi was the funding available for the system itself. The team met with other implementing partners to determine if they had funds available to procure services needed to launch the CMMS. Even with funding constraints, EGPAF's efforts greatly supported the groundwork for the upcoming launch of a successful CMMS.

In Zimbabwe, the main challenges were delays in approvals from the MOH and a lack of available funding to conduct the user requirements gathering sessions to initiate the development process of the Malaria Module and Electronic Integrated Disease Surveillance and Response. To resolve the funding issue, EGPAF partnered with and co-funded the activity with another implementing partner, Zimbabwe Technical Assistance, Training, and Education Center (Zim-TTECH) and successfully conducted the user requirements gathering sessions.

Sustainability

EGPAF's C19RM TA activities across the six supported countries centered on capacity building of local structures and implementers. In many cases, EGPAF's Technical Advisors were seconded directly to Ministries of Health and/or prime recipients, ensuring strengthening of national and regional health systems. Assignment activities also focused on not just addressing COVID-19 pandemic response, but also on how data completeness, data quality, and accompanying policy and guidance documentation, dashboards, and technical support can ensure the availability of real-time quality data that can be used for decision making to improve health. As EGPAF's Technical Advisors provided TA, sustainability efforts and capacity building of MOH and partner colleagues was continuously incorporated.

Conclusion and the Way Forward

EGPAF is dedicated to improving all aspects of national, regional, and local health systems through improving service delivery, strengthening the health workforce, and building leadership and governance capacity.