

What to Know about Your CCEOP Application and Deploying Cold Chain Equipment: Lessons from Tanzania and Mozambique

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INTRODUCTION

With one in five children in low- and middle-income countries (LMICs) still not fully vaccinated and thus at risk of preventable life-threatening illnesses, immunization programs are under pressure to increase coverage and improve performance and efficiency. Adding to this challenge, the number of vaccines available has grown from the original six recommended by the World Health Organization (WHO) three decades ago to 12 or more, depending on the country. At the same time, populations are growing, and immunization supply chains (iSCs) are facing constraints in reliable, optimal, and sufficient cold chain equipment (CCE) and transport to accommodate ever-increasing volumes and varieties of vaccines, vial presentations, and cold chain requirements.

WHAT IS THE IMMUNIZATION SUPPLY CHAIN?

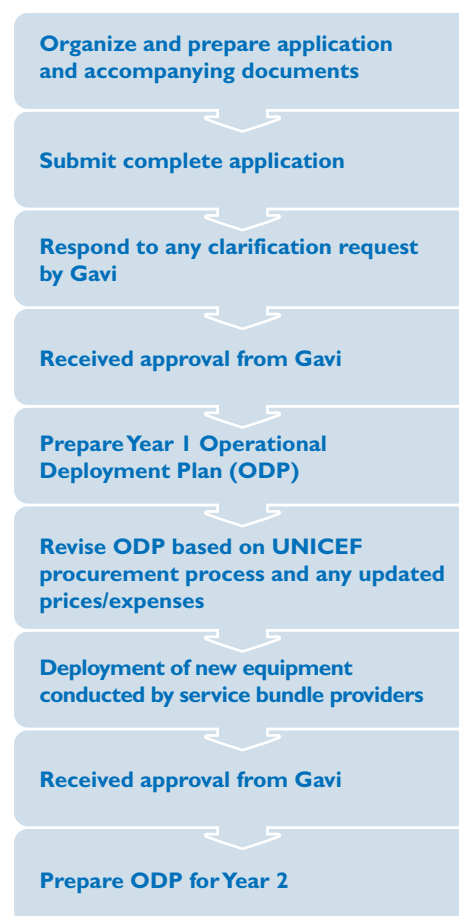
The immunization supply chain encompasses all the equipment, activities, tools, resources, and planning necessary to ensure that vaccines stay safe and effective and reach all those who need them. This can include, for example, the cooling equipment the vaccines are stored in, the routes through which they are distributed, the data collected to track and evaluate the distribution, and the people who manage the systems.

— Gavi Alliance, *Strengthening the Immunisation Supply Chain I*¹

To address these issues, Gavi, the Vaccine Alliance (hereafter referred to as Gavi), has invested in ensuring equal access to new and underused vaccines in LMICs. To address the iSC challenges, Gavi developed its immunization supply chain strategy in 2015 to increase attention on the importance of an efficient and effective iSC to ensure vaccine potency and increased availability of vaccines to improve coverage and equity. Gavi's Cold Chain Equipment Optimization Platform (CCEOP), established in 2016, addresses a fundamental part of this strategy. The CCEOP is a funding mechanism for which countries can apply to procure optimal WHO performance, quality, and safety (PQS)-approved CCE that is required to maintain the ideal temperature range to keep vaccines potent. Together with new temperature-monitoring devices (improved over simple thermometers), this PQS-approved equipment will ensure adequate storage for current and planned vaccines, fewer maintenance requirements, and lower running costs. The CCEOP addresses the supply and demand for optimal CCE, generation of demand by countries for technologically innovative and appropriate CCE, and stimulation of the market to respond to that demand with affordable and accessible equipment.² With improved CCE in LMICs, immunization programs can increase and sustain immunization coverage and equity by ensuring that potent vaccines are more available.

The CCEOP jointly invests with countries in the purchase, deployment, and installation of higher performing CCE. The platform links to Gavi's overall immunization supply chain strategy to strengthen all aspects of the immunization system, but does

PROCESS FLOW FOR CCEOP



not financially support other components, such as operationalizing the maintenance plan or strengthening human resources. The country must support, with separate funds, costs associated with components outside the purchase, deployment, and installation of CCE. For the manufacturer's warranty to be eligible for the platform, the CCEOP requires that the manufacturer contract with local service bundle providers to deploy and install the CCE

¹ Gavi Alliance. 2016. Strengthening the Immunisation Supply Chain. Geneva, Switzerland. <https://www.gavi.org/library/publications/gavi-fact-sheets/gavi-supply-chain-strategy/>

² The CCE demand is expected to increase with the implementation of the CCEOP, particularly for ice-lined and solar direct drive refrigerators/freezers, which make up 80–90% of annual CCE expenditures according to the 2014 UNICEF Supply Division procurement data. Gavi's market-shaping strategy aims to ensure that sufficient supply of high-performing CCE is widely available from many suppliers at sustainable prices.



The district immunization vaccine officer at a health facility in Morogoro district, Tanzania.

Photo credit: Ian J. Connors/John Snow, Inc.

at the facility or warehouse. In addition to delivering and installing the equipment, these service bundle providers will train health care workers and technicians on basic maintenance. The service bundle providers provide maintenance for any broken equipment under the warranty but do not provide ongoing maintenance beyond the warranty's expectations.

Application for the CCEOP requires thorough preparation, analysis, and planning.

Countries must submit a comprehensive multi-year plan (cMYP), an updated CCE inventory, a cold chain rehabilitation and expansion plan, and a CCE maintenance plan with their application (Annex 1).³ These processes, such as developing the maintenance plan or updating the CCE inventory, are done in preparation for the application and can be supported by in-country partners.

The United States Agency for International Development's flagship Maternal and Child Survival Program is providing technical assistance to the ministries of health in Tanzania and Mozambique in the application processes. These two countries are at different stages of the CCEOP application, approval, and equipment deployment process. This document aims to highlight experiences in both countries in an effort to provide insights and lessons learned for other countries eligible for CCEOP.



COUNTRY OVERVIEW: TANZANIA

The Immunization and Vaccination Development (IVD) Program of Tanzania submitted its CCEOP application and all corresponding documentation to Gavi in May 2017. All partners involved in immunization activities collaborated in developing the application and preparing the required documentation, such as updating the CCE inventory and developing the maintenance plan. No external support was provided to prepare the application. The country prioritized newly opened facilities, equip-

ment beyond repair, and obsolete equipment (more than 10 years old or CCE using absorption technology that relies on gas or kerosene, which are unreliable) to receive new equipment through CCEOP. The initial application requested 5,640 pieces of CCE (Table 1), consisting of solar direct drive (SDD) equipment as well as equipment that runs off the electrical grid. Although Gavi did not initially provide a ceiling for allowable funding requests, it asked IVD to reduce its request by about half, citing budget expectations. Following some questions from Gavi for additional information, the IVD's application was approved in October 2017.

In February 2018, the country submitted its operational deployment plan (ODP), detailing the first year plan of deployment for the new equipment, with details about facilities and sites to receive the new equipment, specific locations (GIS coordinates), access information, type of structure or roof (relevant for SDDs and in determining where solar panels could be installed), and contact information for each site. UNICEF, as the procurement agent, provided updated prices to IVD. There was a small increase in the price for equipment (expected, since there was a year between the CCEOP application and equipment procurement) and a larger and surprising increase in the cost of the service bundle provider. Because this was the first time using service bundle providers, the original cost estimates provided by the manufacturers dramatically changed during the process and upon finalizing the contracts. As such, IVD had to reduce the number of units for procurement by 25%. As of mid-2018, IVD is in final negotiations with Gavi on the type and quantity of equipment it will receive.

Targeted segment	Equipment model	Manufacturer	Vaccine capacity (L)	No. of units
District vaccine store	TCW 4000 AC	B Medical	240	140
District vaccine store	VLS 400A	Vestfrost	145	254
Health facilities (on grid)	VLS 200A	Vestfrost	60	1,015
Health facilities (on grid)	BFRV55 SDD	SunDanzer	56	2,149
Health facilities (on grid)	VLS 054 SDD	Vestfrost	55.5	2,082
Total				5,640

³ Guidance for the CCEOP application process can be found on the Gavi website: www.gavi.org/support/process/apply/cceop/.



COUNTRY OVERVIEW: MOZAMBIQUE

Mozambique began its process about a year later than Tanzania. The initial workshop for preparation of a CCEOP application in Mozambique was held in March 2018, facilitated by a consultant from UNICEF. This consultant supported the Ministry of Health Expanded Program on Immunization (EPI) and partners through the application process and preparation of the required documentation. Partners had previously contributed to preparing the documents required to accompany the application—for example, UNICEF supported updating of the cold chain inventory and the Clinton Health Access Initiative supported development of the CCE maintenance plan. Gavi did not provide guidance on allowable funding requests. The country submitted its application in June 2018, and it was approved at the end of July, pending a few clarifying questions from Gavi, such as ensuring consistency throughout the application in terms of equipment requests and priority areas. The country has prioritized five provinces (Nampula, Zambezia, Tete, Manica, and Sofala) that are geographically remote and have low coverage and many poor communities with high numbers of unvaccinated children.

The CCEOP application forecasts a total of 997 units of CCE as follows:

- 361 on-grid ice-lined refrigerators without a freezing compartment
- 118 on-grid freezers
- 128 off-grid SDD refrigerators without freezers
- 390 off-grid SDD refrigerators with a freezing compartment

The next steps include the UNICEF procurement process, followed by updating the ODP based on any required changes due to fluctuation in prices and service bundle requirements.

KEY LESSONS LEARNED

As other countries prepare their CCEOP application, develop a cold chain maintenance plan, update CCE inventory, or revise



Photo credit: Ian J. Connors/John Snow, Inc.

their ODP, a few lessons from Tanzania and Mozambique may help them to streamline the process and more efficiently prepare for eventual equipment deployment.

- **Clearly document the CCE selection and priority locations.** Both Mozambique and Tanzania followed a thorough process to identify the most appropriate CCE as well as priority sites for deploying new equipment, based on analysis of need, coverage, and equity. For CCE selection, one criterion is to request equipment that is the same or similar to equipment the country already has, and thus leverage technicians' expertise for ongoing maintenance. Both countries used Gavi's CCE technology guide⁴ to identify the specific PQS-approved equipment for this funding platform. Because the CCE market is fluid and is still being shaped by the CCEOP, UNICEF must negotiate the best price, which means the country might not receive its preferred equipment. As seen in Tanzania, however, with proper documentation and justification, a country is better placed to make the argument for its preferred selection.
- **Fully understand the application process from the beginning.** Both Tanzania and Mozambique recommend having a team of committed and capable people responsible for developing the application, seeing it through approval, and ensuring a country-owned process. In Mozambique, UNICEF provided a consultant who worked with the Logistics Technical Working Group to ensure understanding of the application process, pose clarifying questions to Gavi, and ensure that all accompanying documents were included. This facilitated adherence to the application timeline. Tanzania did not use an external consultant, but the process was led by a group of committed people from EPI and partners. It was useful in both countries to have documents such as CCE inventory and maintenance plans updated and prepared before starting the CCEOP application, which also promoted country ownership of the process. Using WHO tools such as the Cold Chain Inventory and the Vaccine Volume Calculator helped the teams to determine the necessary size of the equipment by location.
- **Double-check for consistency in the application.** The application is lengthy and it often duplicates requested information, such as number of equipment units requested or priority sites. Providing consistent information and completing the required forms fully (with accompanying signatures) will avoid additional questions from Gavi that may delay the approval process.
- **Plan for service bundle providers.** Using the manufacturer's designated service bundle providers to install equipment is a new approach that Gavi included in the CCEOP to see if installation can be made more effective and efficient. The Mozambique EPI sees this as a benefit as it had challenges in the past with ensuring that CCE installation at subnational levels was completed in a

4 Gavi Alliance. 2018. Cold Chain Equipment Optimisation Platform. Geneva, Switzerland. <https://www.gavi.org/library/publications/gavi/cold-chain-equipment-technology-guide/>

timely manner. The Tanzania group has a different view, however, as IVD has the technical capacity to install and manage the CCE and has transport available for delivering the equipment to the sites. From IVD's perspective, the service bundle providers are expensive—more than the cost of the equipment itself—as they charge a standard rate regardless of site location for a job that IVD is equipped to do. Regardless, because this is currently a Gavi requirement, both countries are preparing to use a service bundle provider.

- **Plans will change.** Despite Gavi revising some aspects of the application to quicken the approval process, the time between the application and equipment deployment is still lengthy, and factors, such as equipment and service bundle provider prices, will inevitably
- change. In Tanzania, the average cost per equipment unit increased 33% between application and time of procurement, including the service bundle provider costs. As such, IVD had to reduce the number of CCE units in its plan by 25%, and, subsequently, revise the ODP.
- **Understand the true costs.** Different equipment will require different materials and will have different costs. For example, Tanzania was surprised to discover the price difference between solar CCE that requires poles for the solar panels and the same equipment using the rooftop for the solar panels—a distinct requirement for certain facilities but with a surprising additional cost. An additional mandatory central-level training was also included in the ODP, cutting into funds that could be available for equipment procurement.

MOVING FORWARD

Gavi is already addressing several issues coming out of the first years of this experience. In line with reshaping processes to ensure better outcomes, Gavi has already changed some of the application procedures to reduce the approval time, and consultants are providing support to ensure that the application is complete, thorough, and appropriate to avoid extensive back-and-forth questions and clarifications. Gavi is committed to ensuring that immunization is available to all and that the CCEOP is fulfilling its goal of adopting more reliable and efficient equipment. These lessons learned can help countries leverage this platform as CCEOP expands and improves its processes.

Annex I: Mandatory documents to accompany the CCEOP application

No.	Strategy/plan/document
1	Signature sheet for the ministers of health and finance, or their delegates
2	Minutes of the coordination forum meeting (National Inter-Agency Coordinating Committee, Health Sector Coordination Committee, or equivalent) endorsing the proposal
3	National health sector development plan/strategy (or similar)
4	National comprehensive multi-year strategic plan
5	Effective vaccine management (EVM) assessment
6	EVM improvement plan
7	EVM annual work plan and progress report on EVM improvement plan
8	WHO Cold Chain Equipment Inventory Tool, PATH Cold Chain Equipment Manager Tool, or other tools to help assess targeting of equipment
9	Inventory report and facilities segmentation
10	Comprehensive document on cold chain equipment (CCE) needs: Chapter 1: Cold chain rehabilitation and expansion plan Chapter 2: Projected coverage and equity improvements Chapter 3: Operational deployment plan, including deviation plan to account for any last-minute changes in the deployment plan during installation Chapter 4: Equipment selection
11	Maintenance plan with financing and source(s)
12	Proof of status for CCE tariff exemptions waiver