



# TAKING VACCINE MANAGEMENT TO THE NEXT LEVEL WITH THE ONLINE SMT

Lessons learnt from the introduction of the next generation  
SMT in Sierra Leone, Cameroon and South Sudan



*" The SMT makes it easy to monitor the stock data. Accessibility of this data will result in better decision-making. This helps a lot to improve vaccine equity and coverage."*

**Simon Peter Wal**

Cold Chain Officer, UNICEF South Sudan

# BUILDING FORWARD FROM EXPERIENCE



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To assist countries in optimization of vaccine management, UNICEF and WHO have launched a web-based stock management tool (SMT).

The tool offers new opportunities for effective monitoring of vaccine stocks, cold chain management, and data analysis and can thus improve immunization on a global scale.

The experience from South Sudan, Cameroon, and Sierra Leone included in this paper gives first-hand feedback on the learnings from the implementation of the next generation SMT.

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## The challenge of vaccine stock management

Immunization is the foundation of the primary health care system, and on a global scale we now have vaccines available to prevent more than 20 life-threatening diseases, helping people of all ages live longer, healthier lives. Yet, and despite tremendous progress, far too many people around the world – including nearly 20 million infants each year – have insufficient access to vaccines.

Some of the major obstacles to the success of many immunization programs worldwide are the often-complex requirements for effective vaccine stock management, which can result in short-

ages of vaccines at health facilities. To ensure vaccines are available wherever they are needed, managers and decision makers must have access to up-to-date and reliable information on the status of vaccine stocks at different levels of the supply chain. This access allows them to identify and address potential gaps. By digitalizing the national supply chain, countries can improve stock data availability and attain end-to-end visibility of supplies, which helps managers make more informed decisions to ensure the uninterrupted supply of vaccines for the immunization program.

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## The need for a new solution

Digitalization and new technologies can reduce inefficiencies, potentially saving costs and helping reduce health inequities. However, achieving supply chain digitalization requires a level of technical expertise and financial investment that might be out of reach, effectively posing a barrier for many countries wishing to take a step towards a digital future.

In 2006, WHO developed the original Stock Management Tool (SMT), an Excel-based tool designed to help countries manage their vaccine stocks. This tool collected information on various vaccine management areas and captured transactions of vaccines and supplies, and its use became popular among many national immunization programs. However, 15 years later and despite tremendous technological advances worldwide, in 2021 the Excel SMT was still the tool of choice for the management of vaccines in 41 countries in Africa.

Serge Ganivet, immunization supply chain specialist from the West and Central Africa Regional Office of UNICEF, describes the need for an improved solution: “After years with the Excel-based SMT, there was a need to move into a stronger and more solid and secure application. Using the Excel version, we realized there were limits and we needed a better overview of stock levels both centrally and in the districts. The feedback and data transmission were too heavy and time consuming. Furthermore, we had a very slow implementation with people who did not know Excel well, and we often had to correct the reports. We really needed a new solution that is easy to use no matter your qualifications.”

To address this need and in support to countries without the capacity to develop their own systems, in 2021 UNICEF and WHO designed a web-based version of the stock management tool – the next generation SMT.



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## The next generation Stock Management Tool (SMT)

The next generation SMT builds on years of experience with previous versions of the tool and is a major improvement: while it is an online stock management tool, it can also be used offline where internet connections are unstable. The SMT comes at no cost to the SMT comes at no cost and its ready to be used and its ready to be used, since it does not require investment in licenses fees or complex infrastructure, facilitating implementation in countries with limited technical or financial capacity. The simple and intuitive interface makes it user-friendly and easy to be deployed at all levels of the supply chain.

The SMT connects all vaccine stores in the country, recording movements of stock in real time, and thus provides an effective way to manage vaccines and cold chain equipment across all levels. The SMT enables staff working at vaccine stores to make operational decisions regarding storage, stock management and vaccine distribution. The platform includes dashboards with all the key indicators needed to monitor the immunization supply chain, further providing unique opportunities for identifying and addressing performance gaps.



**Serge Ganivet** sees a great improvement with the online SMT at country level :

*“The web app is optimized for use on a cell phone. This is a big advantage, allowing the different levels of the supply chain to connect. The introduction and implementation are very simple and do not require big technology or specific equipment. In addition, we have better security and better transfer of data.”*

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## Introducing the online SMT

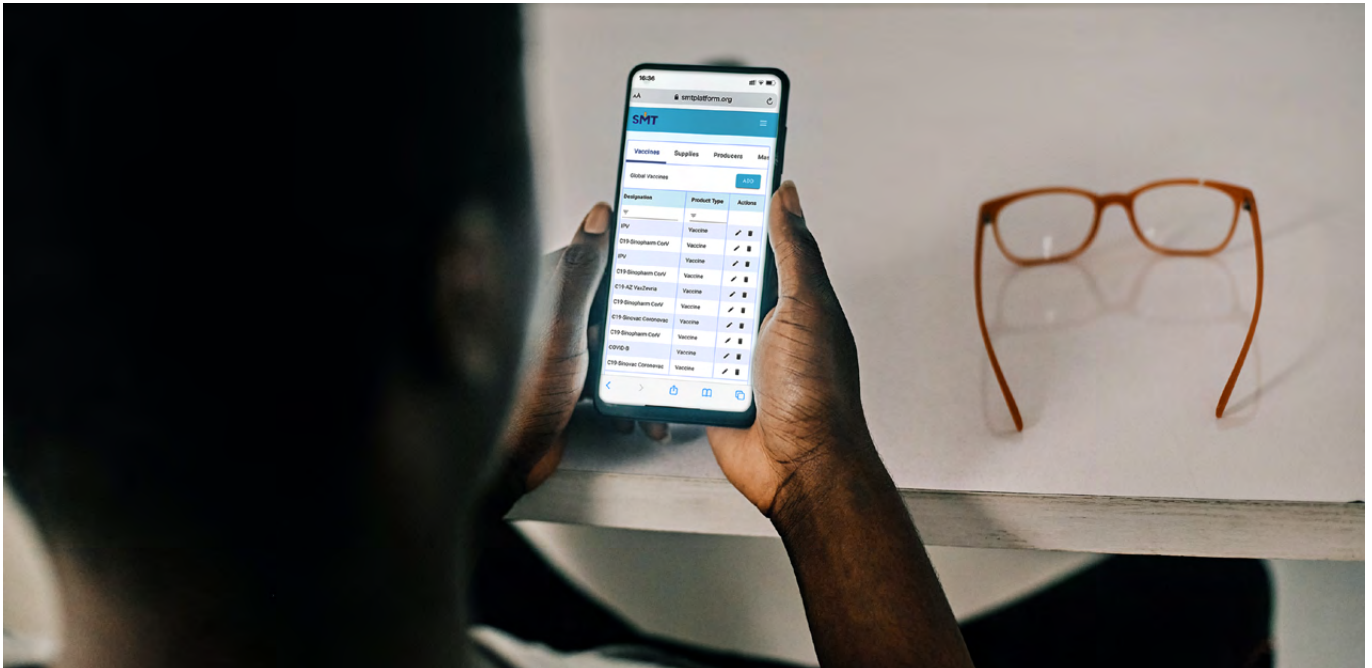
After completing the development of the platform, and in preparation for the global launch and roll out in early 2022, the online SMT was tested in a pilot study and introduced in three countries: Sierra Leone, Cameroon and South Sudan. As users of the previous version of the SMT these countries were selected based on diversity of language and supply chain structure and leveraging the readiness of the EPI 1 teams to deploy the new solution.

Since the SMT is a ready-to-use online platform and does not require any specific technology or infrastructure, all efforts were geared towards providing training to the new users and setting up the necessary immunization and stock data into the new system.

Given the high number of trainees in each country and considering long term sustainability, SMT trainings were

designed following a tiered structure: Training of trainers were implemented at national level, followed by cascade trainings where relevant. The initial program was designed and implemented by UNICEF in collaboration with a partner organization (Empower School of Health), and was an opportunity to test different training modalities that can be adjusted according to the context and needs:

- Online: Training delivered using a video-conferencing tool with participants and trainers joining online.
- Classroom: Face-to-face training of participants and trainers in a classroom setting.
- Hybrid: Training in a classroom setting with all participants in one location, and trainers joining online using a video-conferencing tool.



## South Sudan

The first country to pilot the online SMT was South Sudan, where the EPI management decided to introduce the platform at national level and to pilot its use in one of the states before rolling it out nationwide.

Due to difficulties for the global trainers to travel into the country at the time of Covid travel restrictions, it was agreed to facilitate the training of trainers remotely, following a mix of online and hybrid sessions. The ToT was attended by 15 participants from the EPI

team at national and subnational level, as well as UNICEF staff.

The first part of this training was a two-day introduction focused on understanding the SMT functionalities and learning how to use the platform, and was delivered in a hybrid modality, with participants in the same venue in Juba and the trainers joining online. The sessions combined a mix of presentations, group work and practice in the SMT platform.

The initial training was followed by a self-learning module of two weeks with two online check-in sessions, allowing time to collect immunization and stock data and enter it into the platform. The purpose of this activity was to give trainees the opportunity to further practice using the SMT in real life and to set up the platform with the data needed to function for the first time. However, some participants found it challenging to complete the online self-paced activities and stated their preference for the hybrid instructor-led sessions.

By the end of the two weeks, participants reconvened for another 2-day hybrid session focused on building their training facilitation skills and preparing for the SMT rollout at lower levels.



### Martin Makuekt

store manager at the National Vaccine Store, was very enthusiastic about learning how to use the SMT :

*“ It will help us to effectively manage the stock at all store levels across the country and will also enable all the data across levels to be analyzed. And (will provide) the top-level management with sufficient data needed for improvement and action. It is indeed really useful.”*



Despite experiencing some challenges to follow the remote facilitation due to poor internet connectivity, the hybrid approach proved effective in South Sudan since it allowed for face-to-face interaction among participants, who had the opportunity to work together and support one another.

James Bol, Cold Chain Consultant for UNICEF South Sudan and one of the participants, describes this training approach: "We have decided to pilot the SMT at national and subnational level. The Training of Trainers will allow us to then go and support the rollout at lower levels. The national trainers will conduct the cascade trainings for the

county teams, and they will be familiar with the methodology and the tool, and they will already have the experience of how the tool is implemented."

The presence of a UNICEF staff who was already familiar with the SMT platform and acted as a training coordinator and in-person support was also key for the success of this training.

After completing the ToT, South Sudan will continue piloting the SMT at national level and in Central Equatoria State for a few months. At the end of this pilot period, the EPI management, together with UNICEF and other immunization partners, will decide on the best approach for the nationwide rollout.



## Sierra Leone

The implementation of the SMT in Sierra Leone was designed differently, with the EPI management deciding to introduce the platform at national level and to rollout to all districts immediately after. The urgency of implementing the SMT became obvious in Sierra Leone in

late 2019 when the national immunization team experienced some challenges with the data from the Excel-based SMT, which, according to Baboucarr Boye, Immunization Specialist from UNICEF, exposed the country to a real risk of vaccine stocks being mismanaged.



### Joyce Kallon

the Immunization Supply Chain Team Lead from the MOHS 2 believes her work will become much easier with the online platform :

*“ We’ve been struggling so long with entering data manually in the system. It was time consuming, heavy and mistakes were made. But now, with the online SMT that we’re going to use as a country, everyone will have all information the moment I post a stock.”*

The SMT trainings in Sierra Leone were also planned with a different approach as all were conducted face-to-face. The Training of Trainers (ToT) took place in Freetown over a period of 5 days and was attended by 17 participants from the national EPI team, partner organizations including UNICEF and WHO, and 3 selected districts.

The face-to-face approach was very effective at engaging participants and transferring to them the required skills, as described by Baboucarr Boye from UNICEF : “The training and hands-on exercises are very good. This will enable us to navigate the different functions. And since we will train at district level, this will surely help us also in mentoring our staff after training.”

The in-person approach also facilitated the collection of all data needed to set up the new system. On the fourth day of the training, participants and facilitators joined together for a practical exercise at the National Vaccine Store. Several teams were created, and specific tasks were allocated to each team, such as conducting physical counts of

vaccines or collecting details of cold chain equipment. Back at the training venue that same day, the stock and storage data was entered into the SMT, making it ready to be used. On the last day of the ToT, participants were divided into two groups and started preparing and practicing for the cascade trainings for the district level.

Immediately after the ToT was completed, the training was cascaded into two 4-day training sessions covering EPI officers from all the 16 districts in the country. The EPI officer from Kailahun district, Braima Patrick Kanneh, who attended the national ToT and then co-facilitated one of the cascade trainings, shared the optimism regarding the efficiency of the new tool:

“The Excel based system can easily be affected by a virus, and if the computer crashes you lose all your data. With the online version I can switch to another computer, and the data will again be available. Now you can do your work, save, and then send it to the national level.”

The cascade sessions were focused on two components: learning to use the SMT functionalities and setting up the districts' stock data into the system. Participants were requested to collect all the necessary population and stock

data beforehand and the entry was completed during the training. Having the facilitators available to support was key to minimize errors and speed up the process, so both cascade trainings were completed in 3.5 days.

“ The reporting on vaccine stock is very critical. This will really help us to provide real-time data on vaccine stock – especially at lower levels. Like, at any point in time, wherever you are, you can just, within a second, a click of a button, see the stock status at all levels.” – says **Baboucarr Boye**

At the end of the pilot period, Sierra Leone had started using the online SMT

nationwide from central to district level.





## Cameroon

Cameroon was the third country to pilot the SMT, introducing the platform at national and regional level in December 2021. The ToT was implemented over a 5-day period, like in Sierra Leone, but following a hybrid approach, with participants present in the same room with online facilitation, like in South Sudan.

The training sessions were in French and attended by 27 participants from the EPI team as well as from other partner organizations such as UNICEF and WHO, including one training coordinator. Ten of these participants were immunization staff from the 10 regions across Cameroon.

As with the other countries, the first part of the program was focused on learning how to use the SMT platform.

After only one day of training, Frida Ewka, EPI Regional Logistician from the South West Region, was very confident with the SMT :

“I find it’s easy to add entries, equipment, and to monitor the vaccines. I’m at the regional level, and with the SMT I can overview my districts, monitor any changes. It will enable me to control the vaccine stock and follow possible vaccines that will soon expire. This way I can tell staff when a particular batch has to be used.”

During the 5-day ToT, which included a mix of lectures, practical exercises and group work, participants had the opportunity to get familiar with the SMT platform, set up the system with the necessary data from the national and regional levels, and to prepare for providing cascade trainings to lower levels.

The EPI management in Cameroon has decided to continue using the SMT at national and regional levels for some months before starting the rollout to the districts.



However, **Simon Atangana Mbarga**

Head of Logistics and Maintenance Section from the national EPI team already sees the clear benefits of the new system :

*“ This tool will allow decision-makers to monitor the stock situation at all levels from the central office. Anytime there is a movement of stock in a certain location you can see it and see what is being done in the region as well as what is done in the district, and this will allow me to make decisions.”*

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## Way forward

Given the success of the pilot introductions of the SMT in the three countries and the positive feedback received on the new platform, it is expected that the online SMT will, over time, replace the Excel-based vaccine stock management tool currently used across 41 countries. The SMT platform will also be available free of charge for other countries that want to take a step towards the digitalization of their vaccine supply chain but lack the capacity to develop a custom solution.

Going forward, the implementation of the web based SMT will be a tailor-made process, planned according to the needs identified in each country. Different approaches and user onboarding can be taken based on the supply chain structure, the size of the country and the availability of funding for trainings and rollout. For example, countries can decide to include both national and regional staff in the ToT, like in the case of Cameroon, to have a bigger pool of trainers that can support the rollout at lower levels at a later stage. It is also possible to pilot the SMT in specific areas before full national implementation, following the example of South Sudan. Alternatively, countries with a simpler supply chain structure can choose to rollout to district level from the beginning, like in the case of Sierra Leone.

The need for various training approaches is acknowledged, and the SMT implementation and training strategy has been further developed based on the findings from the three pilot studies. SMT focal points at national level, who can coordinate the training implementation and rollout at different levels, are essential. Engagement of dif-

ferent stakeholders to support the Ministry of Health at country level, including UNICEF and WHO, is an advantage to ensure a successful implementation and long-term support for the SMT use.

Intensive instructor-led training over one week is recommended since it gives a focus on adapting the system and an opportunity for exchange of examples and questions. Face to face trainings were found to be the most engaging and effective in transferring the required skills to the new users, so this approach is preferred, especially for the cascade trainings where the skills of participants might require more close support from the facilitators.

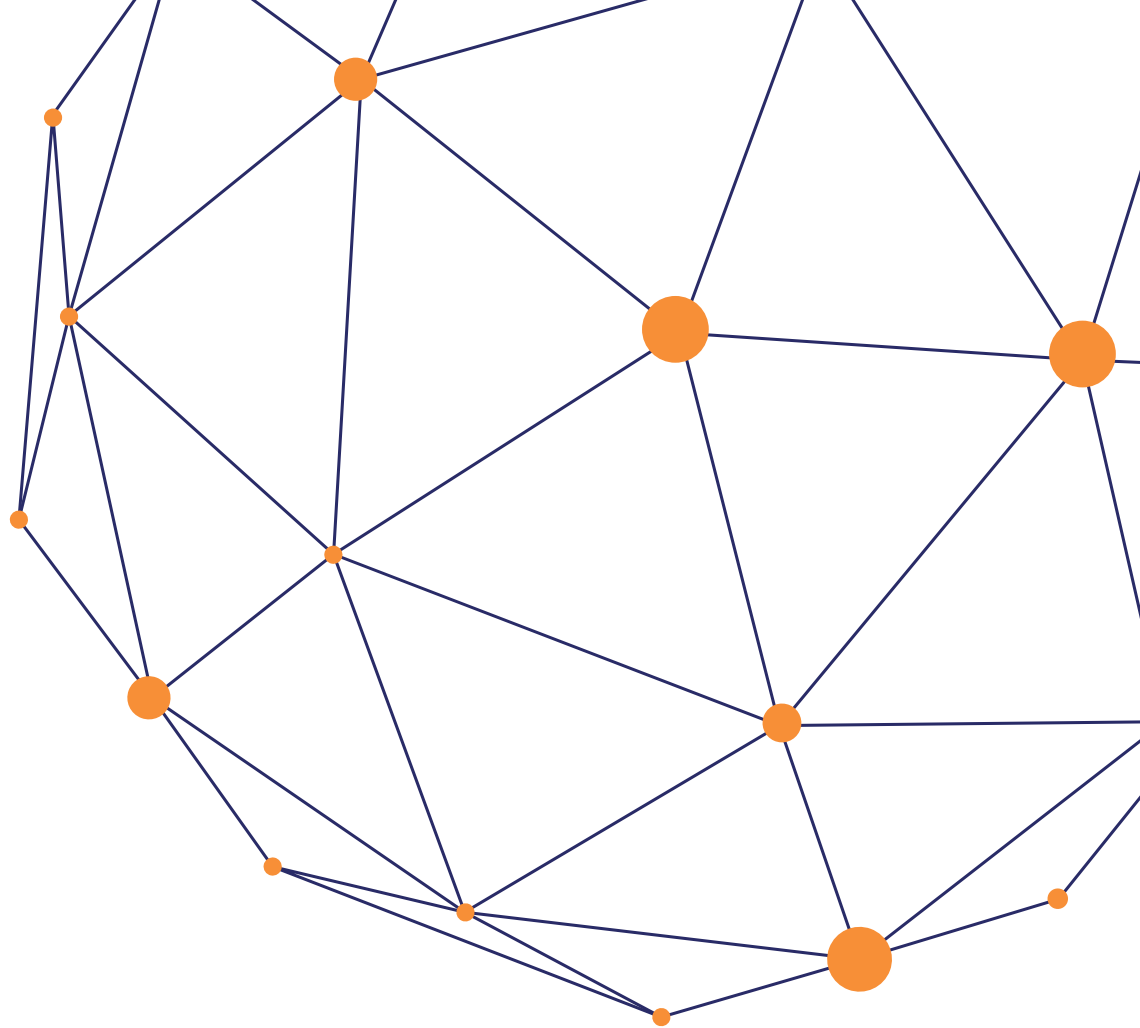
Given the practical nature of the hands-on approach, online training only is not recommended. A hybrid modality is also suitable for national ToTs but requires the presence of one or two focal points who are already familiar with the SMT platform and can provide in-person support to the training participants.

The duration of the training will depend on different variables such as the computer literacy of participants, familiarity with the Excel version of the SMT, internet connectivity and availability of the immunization program and vaccine stock data that needs to be entered into SMT before it is ready for use. However, the minimum duration is recommended to be four days for the national ToT and three days for the cascade trainings.

Allocating time between national ToT and the cascade trainings has the advantage of giving the national trainers the opportunity to gain experience in using the tool before rolling it out at lower levels, strengthening the quality of the national rollout.



Countries that wish to benefit from the next generation SMT can start a discussion with their local UNICEF or WHO office and get in touch with the SMT global team at [smt@unicef.org](mailto:smt@unicef.org)



# SMT

Taking vaccine management  
to the next level with  
the online SMT



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