

## Improving vaccine delivery through moving warehouses

### Distributing supplies and support down the chain

In many low-income and lower-middle-income countries, vaccines are not distributed all the way through the supply chain to health centers. They are often delivered to a point at which a collection system takes over. In some instances, district health staff collect the vaccines from the regional medical stores (the level above). It is also common for health center staff to collect vaccines from the district level. However, fuel shortages, insufficient financial resources, and a lack of functioning vehicles often prevent this collection system from working efficiently.

Rather than having health staff collect vaccines and supplies from higher levels of the supply chain, “moving warehouses” offer a better system by distributing supplies down the chain. The moving warehouse is a truck composed of delivery teams that visit each health facility, check stock levels, and replenish stock as needed. Each team also includes a supervisor and cold chain technician who provide supportive supervision to health care workers and ensure that equipment is operating correctly.



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### Moving warehouses in Senegal

In late 2010, the government of Senegal launched a new project to demonstrate the impact of vaccine supply chain improvements, including the use of moving warehouses to deliver vaccines to the peripheral levels of the health system. The moving warehouse program has now proven so successful that it is being expanded to transport other health products.

First deployed in early 2011, the moving warehouse regularly transports vaccines from regional stores directly to more than 100 health centers and posts throughout Senegal’s Saint-Louis region. This means that vaccines no longer need to be stored in district warehouses, and health center staff no longer need to collect vaccines from the district stores each month—saving many long and often arduous journeys.

Each month, the truck embarks on three separate delivery circuits. The first circuit covers the districts of Saint-Louis and Richard Toll and can take up to two days. The second, to Dagana District, takes three days. During both circuits, vaccines are stored in a 170-liter [Aircontainer](#) Bigbox storage container. While the Bigbox was originally designed to transport seafood, project findings indicate that it can keep vaccines cool for up to four days.

The third circuit covers the more remote districts of Podor and Pete, and can take up to a week. In addition to the Bigbox storage container, a [Dometic RCW 4](#) vaccine carrier is used to keep vaccines within the correct temperature range of 2°C to 8°C. To be sure that the cold chain is maintained throughout the journey, the truck is equipped with [Libero](#) temperature monitors and [LogTag](#)® data recorders to constantly monitor vaccine temperatures.

The moving warehouse truck is equipped with a computer and a wireless Internet connection, enabling staff to connect to the logistics management information system (LMIS) that tracks vaccine stock. By doing so, staff can access and update vaccine stock information in real time, sharing data with district management teams and regional and national storage facilities.

With each monthly delivery, moving warehouse staff record in the LMIS current vaccine stock levels and the number of vaccines distributed the previous month. They then top up vaccine stock to the required level. By regularly monitoring vaccine stock numbers in this way, accurate forecasts can be made for future stock requirements, minimizing overstocking and reducing the likelihood of stockouts.

### **Additional benefits**

The moving warehouse has brought other benefits in Senegal. By accompanying the truck on its delivery circuits, district and regional officers can now visit health centers and posts to provide regular supervision and training to health staff. At each stop, the warehouse team also collects safety boxes filled with used syringes from health centers and posts, which are then returned to the district stores for safe disposal.

Other health providers in Senegal have taken advantage of the benefits that the moving warehouse can bring to their own supply chains. In Saint-Louis, the warehouse already delivers the vaccines required by Senegal's measles and polio campaigns, and will do the same for the country's next meningitis campaign.

Plans are under way to leverage the power of the moving warehouse still further. In March 2012, the moving warehouse took responsibility for delivering reproductive health products—formerly distributed by the Division of Reproductive Health in an entirely separate supply chain—to every district of Saint-Louis. In June 2012, after agreement with the Senegalese Ministry of Health, the moving warehouse began delivering malaria, tuberculosis, and AIDS control drugs. Nongovernmental organizations such as the Micronutrient Initiative also hope that the moving warehouse can provide solutions to their own supply chain challenges.

Other Senegalese regions are taking note of the Saint-Louis success story. The three neighboring regions of Saint-Louis—Louga, Diourbel, and Matam—are all making plans to establish their own moving warehouses. In Senegal, the moving warehouse is truly on the move.

### **Project partners**

- Aircontainer Package System Sweden AB
- Dometic Sàrl
- Elpro Services, Inc.
- LogTag Recorders Limited
- Senegalese Ministry of Health

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