FACT SHEET

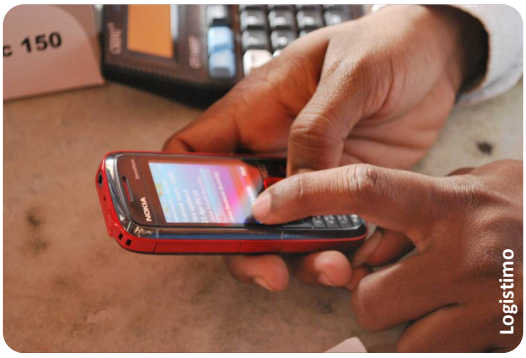
OPTIMIZE Immunization systems and technologies for tomorrow

PATH World Health Organization

# Point-of-service data to drive vaccine supply chains

## Current systems for demand estimation

Managers at all levels of the vaccine supply chain regularly need to decide how much vaccine to order, to distribute, and to keep as buffer stock. Their main goal is to make sure that vaccines are always available at the service delivery level so that no opportunities for immunization are missed. However, they must also be careful to avoid excessive stock levels, because cold chain capacity is limited and vaccines are perishable and vulnerable to freezing, heating, and other forms of wastage. The longer vaccines stay in the supply chain, the higher the risk that they will be wasted. With the introduction of new and more expensive vaccines, historically acceptable levels of wastage are no longer tolerable.




*Mobile phones can now be used to capture data at the point of service.*

To optimize ordering and distribution practices, managers need better estimates of final, service-level demand. There are three observed methods to estimate this demand based on target population estimates, actual child immunization schedules, and consumption data.

### *Based on target population estimates*

Enough vaccines are distributed to immunize all targeted children of a certain district or health center, as per the latest available census data, fertility rate, and target coverage. This system is simple, but increasingly inadequate in times of increasing migration, mobility, and urbanization.

### *Based on actual child immunization schedules*

An alternative approach is to register children and order enough vaccines to vaccinate them when they are due. However, this system requires either a somewhat sophisticated computerized information system or a very labor-intensive paper-based system, and it may not be a feasible solution in the short term for most countries.

### *Based on consumption data*

This system assumes that if a health center has used two vials each month for the past ten months, it will probably need two vials next month. So, average consumed quantities plus an allowance for unforeseen demand (buffer stock) is distributed. This is a simple system that is most effective if final demand consumption can be used for forecasts. That means that a district stores manager would ideally be able to look beyond her/his own stock and consumption and include availability and demand at lower levels in the calculation.

This fact sheet outlines the different approaches that project Optimize, a World Health Organization (WHO) and PATH collaboration, is testing to demonstrate that a consumption-based system that uses service delivery-level data can have a beneficial impact on inventory management, stock levels, and vaccine wastage.

## Point-of-service systems

A best practice in the fast-moving consumer goods industry is to make planning and distribution decisions based on the point-of-sales data. Not long after a salesperson at a checkout register scans your bottle of soft drink, the bottler of that drink will find out about it. The advantage to the bottler is that it can react quickly to changes in demand and is not misled by any fluctuations in inventory buildup by retailers.

**Optimize is a collaboration between the World Health Organization and PATH to identify ways in which supply chains can be optimized to meet the demands of an increasingly large and costly portfolio of vaccines.**

Could this be a model for vaccine distribution? Project Optimize aims to answer this question through work in three countries.

In **Vietnam**, Optimize is developing a system that will provide vaccine lot tracking and tracing ability. The original plan was to use barcodes and a refrigerator-based device that scans vaccines as they move in and out of the refrigerators. That will not be feasible in the short term, however, as there are currently no standardized barcodes available on vaccine packaging. Optimize is working with the Vaccine Presentation and Packaging Advisory Group at WHO to drive the definition of those standards.


*Traditional barcodes (left) and two-dimensional barcodes like the data matrix (right) are commonly used in the commercial world to track stock and tally sales and consumption.*

In **Senegal**, Optimize will gain access to service-level consumption through the data that are being collected by a moving warehouse—a truck that will deliver vaccines and other commodities to health centers on a monthly delivery schedule. The truck will top up stock in refrigerators at peripheral centers, thus implementing a consumption-based replenishment system.

Finally, Optimize is exploring a collaboration with the ministry of health in **South Sudan** and other partners to demonstrate the implementation of Logistimo, a mobile phone-based supply chain system. The idea is that users at lower levels would use phones to register stock transactions (receipts, issues, stock counts), and to submit orders for additional stock. The manager at a higher level could then track their stock and demand in real time and analyze consumption patterns. The use of mobile phones that could work both in online (connected) mode and offline mode would make the implementation of this system at scale more feasible.

## Project partners

- ANZ Solutions
- Itech
- Logistimo
- Senegal Ministry of Health
- South Sudan Ministry of Health
- Vietnam Ministry of Health

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