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Supply Chain Management Newsletter

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The Future of Pharmaceutical Supply Chain Management: Intelligent, Integrated, and Informed Design
The USAID | DELIVER PROJECT will host a Critical Issues Series on Monday, July 30th, in Washington, DC. Register here for this event.

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Using Private Sector Approaches in Public Health Supply Chains

In the commercial sector, companies like Apple, Proctor & Gamble, and Wal-Mart have integrated their supply chains to provide visibility of information and activity up and down the chain; they are informed the minute a product moves off the shelf, and they can serve their customers’ needs in ways they never imagined. Such integrated supply chains have fewer steps in the processes, and greater coordination and predictability of demand between all the levels and actors in the system.

Integration has transformed the way commercial companies run their supply chains and businesses, leveraging tools of the modern information age and building stronger teams. Public health systems in resource-limited settings are very different than private companies. Yet, public health supply chain managers face many of the same challenges as commercial supply chains did a few years ago, and now they have access to similar technologies.

Public health supply chains are under rising pressure to operate efficiently. With large-scale investments in health programs, a widening portfolio and volume of products, and expansion of services to new populations, supply chains must be flexible and responsive in this changing environment. Simultaneously, donors and policymakers look for accountability from each link in the supply chain and improvements that can be sustained without indefinite funding.

New, more affordable technologies, including mobile phone applications, expanding cell and data networks, and other information systems that connect people, can help countries improve supply chain operations in this increasingly complex environment. JSI’s recent publication, Getting Products to People, outlines an integrated framework for public health supply chains that incorporates all of these elements.

In this issue of the Supply Chain Management Newsletter, we look at topics related to applying private sector approaches in public health supply chains.
Are You Ready for Vendor Managed Inventory?

Increasingly, the private sector is using vendor managed inventory (VMI) models to improve the overall performance of their supply chains. In a VMI partnership, the vendor (who is the supplier of commodities to the customer), makes the main inventory replenishment decisions for the customer. Typically in these models, the vendor takes on the extra responsibility of determining the timing and quantity of commodities to be replenished at the customer’s location. In other words, the decision rights on the schedule and resupply quantities are shifted from the customer to the vendor.

In developing countries, it is still difficult to know how to identify opportunities for implementing VMI in public health supply chains. During the past year, the USAID | DELIVER PROJECT reviewed the existing literature and created new models. We first completed an extensive review of the literature on VMI in peer-reviewed journals and other credible Internet sources; and identified several examples from both the public and the private sector. To determine how to adapt these examples for public health supply chains, we presented these examples to a carefully selected group of technical experts during a brainstorming session. In November 2011, we made a research study visit to South Africa to test several ideas that were suggested during the session.

Specifically, we learned whether it was practical to establish various VMI models in a public-health setting that does not have a designated central medical store. Using the results, we proposed five VMI models for public health supply chains and a set of criteria for identifying situations where these models might be useful. This article focuses on one model—how one well-known private sector VMI model from a fast-moving consumer goods company has been adapted for the public health supply chain for HIV/AIDS commodities in Tanzania.

Why VMI?

Without VMI, vendors depend on orders from the customer to signal both the replenishment of stock and the strategy they should take to manage their stock for the customer’s future needs. In many settings, this has not worked well, often resulting in repeated crises for the vendor and the supply chain. In some cases, by the time the vendor receives the customer’s orders, the customer already has shortages and the vendor must continually try to catch up.

In this unproductive cycle, customers overreact to vendors who appear to be unresponsive but, in reality, are late in catching up with the customers’ needs. As a result, the customers’ orders might become more erratic, creating additional confusion for both parties. In other cases, if customers anticipate potential shortages, or the vendor makes decisions they do not like, the customer may deliberately send inaccurate orders, creating more confusion.

VMI can break this unproductive cycle, because the decisions about the timing and quantity of the customer’s stock to replenish are made with real-time data about the customer’s stock status. The typical information lag is eliminated, and it can result in zero waiting time between orders and replenishment of stock. Also, because the vendors have accurate information about their customer’s stock status, they can anticipate customer demand patterns and plan their internal processes that respond appropriately to the customer’s needs. The following examples from both the public and private sector illustrate these concepts.
A) Private Sector Example: Seconded Advisors at Walmart from Proctor & Gamble

Since the 1980s, a popular example of VMI has been developing between Walmart and Proctor & Gamble. In this relationship, Proctor & Gamble is the vendor (supplier); Walmart is the customer. All Walmart stores transmit instant point of sales data directly to Walmart’s headquarters through a secure Internet connection. At Walmart’s headquarters, Proctor & Gamble employs a team of dedicated staff who monitor the sales patterns and volume, inventory levels, purchasing and replenishment, as well as delivery and logistics of their products for all Walmart stores/distribution centers. This system links point of purchase sales data directly from the cash registers at Walmart stores to the Proctor & Gamble networks. The sales are taken into account and coordinated with the inventory replenishment for the correct distribution centers. Of course, the system is incredibly complex, but it streamlines the retail supply chain and greatly benefits both companies.

Vendor: Proctor & Gamble

Customer: Walmart

B) Public Sector Example: Supply Chain Management Advisors in Tanzania

All health commodities in Tanzania’s public sector are distributed through the Medicines and Supplies Department (MSD). The MSD comprises one central warehouse in Dar es Salaam and nine zonal warehouses. Service delivery points (SDPs) use a requisition (pull) system, receiving commodities directly from the regional warehouses.

As part of its supply chain strengthening activities, the Supply Chain Management System (SCMS) project in Tanzania designed and implemented a logistics system for the HIV and AIDS vertical program to increase visibility of essential logistics data items and to provide an early warning mechanism for possible system failure. Supply chain monitoring advisors (SCMAs), who are pharmacists employed by MSD but working in each of the regional warehouses, keep the logistics system functioning. They link the SDPs and regional warehouses and have access to a vehicle and a driver, which allows them to solely monitor HIV and AIDS commodities. (SCMAs work exclusively on the HIV and AIDS commodities vertical program.) The SCMAs’ primary job is to ensure the SDPs send accurate, timely orders to the regional stores for all HIV and AIDS commodities. At the end of each review period, SCMAs visit all the SDPs that have not sent summary reports for HIV and AIDS commodities to determine why the report was not sent. If necessary, they will do on-the-spot training and complete a physical stock count; they will also complete a report and requisition voucher and send it to the respective regional store. SCMAs ensure that all orders are filled. If necessary, they will deliver commodities from the regional warehouses directly to the SDPs. They are required to deliver emergency orders between review periods, if necessary.

Vendor: Medical Stores Department (MSD)

Third Party: Supply Chain Management System (SCMS)

Customer: Service delivery points (SDP)
What Can We Learn from the Case Study?

The case studies show striking similarities.

1. To strengthen the customer’s inventory management capacity, the vendor provides technical assistance to the customer. In both examples, staff employed by the vendor embed themselves within the operations of the customer to monitor a select group of commodities.

2. In both the public and private sector, third party logistics providers, who may not be the true vendors of the health commodities, can manage VMI. This is particularly relevant in the public sector because some private-sector vendors may not want to work with public-sector supply chains.

3. With VMI, information is available and visible, improving the accuracy of quantification and forecasting. Before Walmart implemented a VMI system, workers reviewed the inventory levels; orders were only based on how the products were moving. Without real-time data for the current inventory levels, Walmart ordered products based on what they guessed they needed. This could easily lead to an oversupply of stock or a stockout. In Tanzania, the VMI set-up has led to 100 percent forced ordering for HIV commodities.

4. On-the-spot training from or by the vendor/third party can quickly create a competent workforce.

The main drawbacks for this system are high operational costs and an investment in a limited category of health commodities, especially during set-up. However, as the system stabilizes, products can be added to the schedule, creating a more cost-effective VMI system.

Where Do We Go from Here?

This case study showcases a particular VMI model—Inventory Management Technical Assistance (IMTA). Examples of other models and their public sector applications are available on the USAID | DELIVER PROJECT website:

- **Technical brief: Is Vendor Managed Inventory Right for Your Supply Chain?**
- **Selecting and Implementing Vendor Managed Inventory Systems for Public Health Supply Chains: A Guide for Public Sector Managers**

The technical brief includes a short introduction to key concepts for the public-sector VMI. The guide includes a detailed discussion of each of the five models, including a complete set of appropriateness factors and guidance on how to select the most appropriate VMI model. It also contains considerations for implementing a VMI model in a public health setting and additional developing country public health VMI case studies.

You can also contact the authors directly for more information: Brian Serumaga (brian_serumaga@jsi.com); Noel Watson (nwatson@opsmend.com); and Joseph McCord (joseph_mccord@jsi.com). Using
Better Health through Improved Supply Chains and the Efficient Use of Assets

By Kevin F. Smith, CEO, Sustainable Supply Chain Consulting

The efficient distribution of pharmaceutical and medical supplies has evolved dramatically over the past half century. Advances in information flow and visibility have allowed businesses and hospitals to optimize inventories by reducing the amount of on-hand safety stock while simultaneously improving delivery performance to customers and clients.

To appreciate how different the distribution of goods is today compared to the middle of the last century, one must understand the subtle difference between warehouses and distribution centers (DCs). Simply put, warehouses are large buildings used to stockpile products and materials until you can figure out who needs them, and where they need to delivered. Distribution centers, on the other hand, are designed to serve as a conduit, allowing the efficient flow of products and materials from point of manufacture to end users.

Archaic processes were based on guessing, estimating, and then stockpiling goods. Today, with advances in supply chain management, we are able to employ predictive analytics, specialized systems, and databased business intelligence to more closely predict consumer demand and match standing inventories to short-term requirements. Replenishment from suppliers to stores and hospitals is sized and timed to meet demand rather than build large reserves. This has had the double benefit of reducing capital investment in inventory and ensuring a higher degree of customer service. In other words, we disappoint the customer less often due to variability in demand.

Progressive supply chains have also become less provincial and more open to collaboration with suppliers, distributors, and sometimes even competitors in order to improve the flow of goods and boost customer satisfaction. Information concerning demand forecasting, once closely guarded, is now routinely shared up-line with manufacturers and other supply chain partners. This allows factories to plan their production better and improve service levels to retailers, wholesalers, and distributors. In essence, the 20th Century belief that total vertical integration of supply is the best way to beat your competition has given way to a horizontal integration that allows the industry to reduce redundancy of supply and provide fulfillment to match demand.
U.S. drug retailers like CVS Caremark, Walgreens, and Rite Aid have embraced and even pioneered many of these new methods, including the introduction of in-store clinics to make getting health care easier and faster. Why? Because there are few retail businesses where availability of product can be so critical; sometimes the difference between life and death! When a consumer enters a drug store in the U.S. (especially in search of a prescription or other medical need), they are not merely a customer; they are, in effect, a patient. This status requires a higher level of attention and respect. It requires that you either have the product on-hand, or that you can provide the product in an incredibly short amount of time. And, this is no easy task when you consider that between pharmaceuticals, medical devices, over the counter (OTC) health products, and general merchandise you are talking about tens of thousands of unique items. The difficulty is compounded by the relatively short shelf life and low turnover of many of the items in question.

The ability to accurately forecast demand and subsequently position the appropriate inventory is now the difference between success and failure. Customer expectations are high and they must be met in order to keep the client both healthy and happy (health and happiness translate into loyalty). Additionally, in an era where cash flow is a make-or-break metric for publicly traded and privately held companies, inventory is essentially cash sitting on the shelf of every store or hospital supply room. If managers thought of their inventory as money, they would be a lot more attentive to what was, or wasn’t there.

Even with vastly improved methods of forecasting, variability sometimes subverts the process. Most stores and hospitals are replenished on a regular schedule; perhaps one to three times a week. So, a sophisticated, second tier distribution system has evolved to fill the gaps on the pharmaceutical side of the business. Companies like Cardinal Health, McKesson, and AmerisourceBergen in particular have emerged as strategic partners in the drug store and hospital supply industry, providing frequent deliveries of highly regulated drugs and materials, as well as fill-in inventory between regular deliveries. This type of collaborative, horizontal integration keeps the pipeline full, service levels high, and inventory investment low.

As we enter the next phase of health care in the U.S. (no matter what that might entail), one thing is certain. Quality of service and the cost to provide health care products and services will be critical. The total cost of health care will remain an amalgamation of expenses, including physicians, hospital and out-patient facilities, pharmaceutical costs, OTC costs, and even nutrition costs in the form of the weekly food bill. And, supply chain management can help to mitigate the costs of all of those elements.

By ensuring that companies can reduce their overall cost to serve through predictive analytics, better inventory management, improved shipping methods, and collaboration between supply chain partners, supply chain managers are actually playing a role in improving the health and happiness of everyone in North America. But, it doesn’t necessarily stop there. The same improvements in demand planning and product fulfillment are influencing health care around the globe. As we fast adapt advances in supply chain management to the needs of developing countries we will improve life for everyone. Predictive analytics and collaborative planning will undoubtedly allow us to make strides in the efficient delivery of drugs and materials to combat diseases like malaria and HIV in the most remote parts of the world. If quality of service and a cost to provide those services are key factors for success, then improved supply chains will be part of the overall solution.
Kevin Smith is president and CEO of Sustainable Supply Chain Consulting, headquartered in Windermere, FL. He was previously of SVP, Supply Chain & Logistics, and Corporate Sustainability Officer for CVS Caremark. Kevin is a graduate of The University of Massachusetts and advises numerous companies on supply chain strategy planning. He serves as special advisor to World 50 and is a contributor to the MIT Center for Transportation & Logistics and MIT Efficient Healthcare Delivery Research Group.

Outsourcing Study for Drug Distribution in Nigeria

A significant proportion of the procurement and distribution of essential drugs in most countries in sub-Saharan Africa is done by the Ministry of Health (MOH) or a parastatal agency closely linked to the Ministry of Health. The drug distribution needs within a country, however, usually overwhelm such drug distribution logistic systems along one or more performance dimensions. Outsourcing some functions or sections of the supply chain may provide options for improving performance.

In 2010 Transaid, working with the MIT Zaragoza Program and VillageReach, embarked on a Department for International Development (DFID) funded project to evaluate the feasibility of outsourcing various elements of the pharmaceutical supply chain in Kano State, Nigeria. While the project focused on a variety of areas, including warehousing, requisitions, and human resources, this technical case study focuses predominantly on the transport element of the project.

The purpose of the project was to develop a set of tools to model the potential cost and performance of options for contracting out components of public sector pharmaceutical supply chains (warehousing, transportation, and distribution). The basis of the tool development was an analysis of the performance of the supply chain for the Drug Revolving Fund (DRF) system for essential drugs serving primary health care and secondary health care facilities in Kano, Nigeria.

The team’s work was focused on understanding the following:

- Costs of distributing medical goods to primary health care and secondary health care facilities in Kano, Nigeria, from the state medical stores.
- Performance potential and cost of third party logistics providers to distribute essential medicines through the health system.
- Outsourcing opportunities in public distribution systems of essential medicines from the state level down to the last mile.
Transaid’s specific role was to focus on the transport elements of the supply chain; assessing existing in-house transport capacity, in-house capacity to manage third party logistics providers (3PLs), and evaluating 3PL capacity within the private sector.

Methodology

Over a four-week period, a field consultant visited primary health centers (PHCs), secondary health centers (SHCs), and the Drug Management Agency (DMA) for data collection purposes focused on operations in 2009 and 2010. From the 100 or so PHCs within the DRF the team chose 10 to visit. The 10 facilities were chosen based on a number of factors, including the classification of the PHC (dispensary, health post, basic health center, primary health center), proximity to the DMA, and proximity to a paved road.

To determine 3PL capacity the team used a survey approach similar to that used for assessing the state-run drug distribution system. These surveys generated an assessment of 3PL capabilities and elicited potential costs for their services. Pledges of anonymity were used where necessary to elicit information needed from 3PL providers.

Outcomes

The assessments of the DMA’s capacity to operate an efficient distribution fleet highlighted a number of opportunities for improvement:

- **Policy**: There was no transport policy available at the DMA, the development of a comprehensive policy will help ensure alignment among staff and stakeholders regarding the use of DMA vehicles.
- **Operational Management**: An individual is assigned as responsible for the management of transport (the director of administration and general services), a deputy/cover is available and transport is discussed as an agenda item during management team meetings. Procedures, however, are not documented. Trip authorities to monitor the movements of vehicles are used. Vehicles are not equipped with log books, however, up-to-date vehicle files (which include information such as maintenance records and ownership documents) are available. Currently, no formal vehicle planning routine is in place, neither for operations nor for maintenance.
- **Fleet Management**: While a planned preventative maintenance regime was said to be in place, it was determined that the intervals between vehicle services were not appropriate and were often not adhered to. It was found that drivers undertook daily vehicle checks; however, these were not documented or checked by supervisory staff.
- **Management Information**: Maintenance costs for vehicles are collated. However, individuals responsible for transport do not have any performance targets (e.g. vehicle utilization, running costs, or fuel consumption). Distribution performance indicators, such as truck fill, on-time delivery, and damages are not recorded or analyzed. No safety records are kept.
- **Human Resources**: Job descriptions were not available for those responsible for transport or drivers. No training was found to have taken place regarding driver training, fleet management, maintenance, budgeting, health and safety, or transport planning.

During the project, three third party transportation providers (Providers A-C) were assessed for their appropriateness in providing effective transport for pharmaceutical distribution. The key findings of the study are as follows:

- Private sector capacity is adequate to provide distribution services for essential drugs.
A variety of providers are available. A cross-section highlighted the difference between different types of provider in terms of systems, processes, and strengths. For some distribution operations (such as bulk goods, i.e. hospital beds) it may be more appropriate to use the services of Provider A, while for small consignment multi-drop distribution it may be more appropriate to use a specialist in this field, such as Provider C.

In-house 3PL management capacity requirements will vary greatly. Depending on the experience of the service provider, it is clear that varying amounts of 3PL management capacity will be required within the contracting party (e.g. the DMA) to manage the 3PL relationship.

At the time of this report, only two transportation providers had submitted a mock request for quotations (RFQ). Provider B submitted their costs as a per kilogram contract (₦500), while Provider A submitted costs as a per roundtrip contract (₦28,000) for a moderate distance (50–100 kilometers). Provider B’s quote was considered competitive for less than full truckload distribution, especially to PHCs but not for SHCs.

In terms of capability, the DMA assessment showed good problem solving of transportation problems, no third party logistics management capability, and inadequate in-house fleet management capability at present. Meanwhile, the capability assessment of transport 3PLs showed a range of fleet management capability from weak to good, a range of problem solving of distribution problems from weak to good, and mixed capability for managing clients.

Conclusion

The key recommendation of the project was for the partial outsourcing of transport in order to improve distribution to PHCs with expected savings of at least 12.9–19.6 percent on annual sales to PHCs. Essentially, it was recommended that a 3PL transporter be contracted for two thirds of PHC deliveries. One vehicle with a volume of 2.5 cubic meters (e.g. Toyota Hilux Pick Up) was calculated as being sufficient for the DMA to collect requisitions and manage deliveries to the remaining one third of PHCs.

Outsourcing of distribution can be undertaken for a number of reasons; cost savings, seeking improved service delivery, or simply to allow an organisation to focus on its core competencies. However, there are a significant number of considerations to take into account when analyzing the cost/benefit of outsourcing:

- What is the cost of the current in-house operation versus an outsourced option?
- How do you assess the capability of potential 3PLs? Fleet size, management capacity, experience, other clients?
- How will you manage 3PLs? What resource will be required? How should the contract be structured (by weight, volume, trip, delivery points, vehicle day, etc.)? What key performance indicators will be used to manage a 3PLs performance? How will conflicts be resolved? Should a single point of contact be made available at the 3PL?
- What negative impact might outsourcing have on service delivery, e.g. client contact, lengthened communication chains, etc.?

Tools Utilised

The key tools used included the 3PL Capacity Assessment Tool (to assess the service delivery capabilities and capacity of 3PLs), the 3PL Management Capacity Tool (for assessing the ability of public organizations to manage 3PLs), and the Transport Management Assessment Tool. Other tools used by the partners included transport costing surveys and warehouse costing surveys.
Partners

MIT Zaragoza Program, VillageReach, DFID, and PATHS2.

About Transaid

Based in the United Kingdom, Transaid is an international charitable organization that works to reduce poverty and improve livelihoods across Africa and the developing world by creating better transport systems. To find out more about Transaid, please visit www.transaid.org.