Managing Health Supply Chains in Africa

Despite increased donor funding and an array of new products, weak links in the health supply chain continue to greatly restrict access to essential health products, including those needed to prevent and treat AIDS, malaria, TB and other deadly diseases.

Although supply costs do not constitute a major portion of the direct overall healthcare expenditure, the importance of supply chain management can’t be overemphasized. An effective supply chain will not only bring the direct cost of providing patient care down, but it will also offer a number of other important benefits, such as help ensure high availability, reduce counterfeits, increase responsiveness, increase resilience, increase choices, reduce waste, increase drug utilization, and play a role in reducing medication errors. A robust and effective supply system will relieve the caregivers of the duties and stress associated with concerns about medicine availability and quality, allowing them to focus on what they do best i.e. patient care.

Unfortunately, in most organizations in the healthcare sector in developing countries, the supply chain is not accorded its central role in the overall strategy of the organization. For example, the national malaria strategy for Kenya lacked supply chain component until it was reviewed in 2009. Due to this omission, supply of malaria commodities was erratic in spite of good planning at the program level. There was a clear mismatch between commodity availability at central level and the health facilities. Health facilities in the periphery would run out of AL stocks for months even when the central stores had sufficient stocks. The reasons for such a situation were traced to poor management of information, products and financial flows. It is possible that this mismatch occurred because supply chain was not considered critical for effective management of malaria in the country.

Similar situation is not unique to public sector. The same exists in the mission sector where supply chain management has not been mainstreamed in the strategy of the hospital. Consequently, supply chain related decisions are tactical at best and focus primarily on supporting or delivering organizational performance objectives. If the role of supply chain is elevated and incorporated in the overall strategy, then it can be used to enhance the overall performance by improving the effectiveness of available assets and resources. At the same time, balancing the needs of the clinical staff that are at the core of the healthcare sector with the needs of supply chain function is a complex task. This task has become more challenging in recent years due to the increased involvement of different stakeholders in health at both national and international level.

Efficient public health supply chain performance is essential for assuring access to health supplies, and thus for positive health outcomes. This is particularly important in most countries in sub-Saharan Africa where large proportion of the population is served by the public and mission health sectors. The public/mission health supply chain manager therefore has an essential role in the realization of global public health goals, for improving maternal health, reducing child mortality, and combating HIV/AIDS, malaria and other diseases.

Rapidly increasing health assistance from multilateral and bilateral donors has significantly benefited health programs, but has also resulted in huge increases in the quantity and value of commodities flowing through public health supply chains – a trend that will continue as newly developed products (many with demanding supply chain requirements) continue to be introduced into
developing countries health systems. A case in mind is the introduction of ARV’s in the healthcare system for management of HIV/AIDS. The drugs are very expensive and the flows were de-linked from other medicines and supplies. They require special handling as per the program requirements and until recently some (such as kaletra) needed cold chain handling. Besides, logistical challenges, the high value of the commodities pose a security risk in the ill-prepared health facilities, many of which do not have the infrastructure and human skills to meet such stringent requirements.

The public health supply chains of most African countries, too, are typically unable to respond effectively to existing demands, putting both health commodities and health outcomes at risk. They lack appropriate physical infrastructure (such as storage space), finances and technology to manage supply chain flows. Besides, the above challenges, limitations on supply chain performance stem in part from lack of professionals in health supply chain management and insufficient capacities of supply chain managers in health systems.

The key pointer to this situation is lack of recognition that technical skills are critical for good health supply chain management. This is further characterized by incumbent office holders with limited formal educational qualifications or certifications appropriate for supply chain managers, limited technical expertise. Effective supply chain managers must have advanced technical skills and qualifications, and should be recognized as instrumental to institutional decision-making and success. Organizations need to invest in skills upgrade for the supply chain personnel.

Some basic technical skills required for a health supply chain manager include product selection, product rationalization, supplier selection, inventory management skills, logistics and financial skills for supply chain management among other technical health supply chain skills and experience. Contrary to popular belief, supply chain management is not the same thing as logistics and supplies. Logistics is about moving commodities from one point to another. As explained below, supply chain management is much more complex.

**What is a supply chain?**

According to the Council of Supply Chain Management Professionals (CSCMP), Supply chain management encompasses the planning and management of all activities involved in sourcing, procurement, conversion, and logistics management. It also includes the crucial components of coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across organizations.

A supply chain consists of all parties involved directly or indirectly in fulfilling a customer request. In health, a customer could mean a hospital, health centre, clinic or an individual patient. It includes all functions involved in receiving and filling a customer request. These functions include but are not limited to new product selection, procurement, marketing, operations, distribution, finance, and customer service.

A supply chain, as opposed to supply chain management, is a set of organizations directly linked by one or more of the upstream and downstream flows of products, services, finances, and information from a source to a customer. Managing a supply chain is 'supply chain management' (Mentzer et al., 2001). Each stage in a supply chain is connected through the flow of products, information, and funds.
There is a close relationship between the design and management of supply chain flows (products, information and funds) and the success of a supply chain. Mission for Essential Drugs Supplies (MEDS) is a good example of a mission organization that has built its success on superior design, planning, and operation of its health supply chain. In contrast, the failure of several public health supply chain organizations in sub-Saharan Africa can be attributed to weaknesses in their supply chain design and planning.

From its beginning, MEDS invested heavily in physical infrastructure (modern warehouses), unique transportation and distribution model, and information technology to facilitate effective flow of goods and information. MEDS designed its supply chain with a pure “pull system, a mix of contracted transporters and own trucks and highly qualified staff. This ensured customer orders were supplied quickly in a cost effective manner. MEDS too has been in a leader in collaborating with suppliers to bring down costs and improve product availability.

The above example illustrates that supply chain design, planning, and operation decisions play a significant role in the success or failure of a health supply chain.

**Push/Pull view of supply chain**

The processes in a supply chain are divided into two categories depending on whether they are executed in response to a customer order or in anticipation of customer orders. Pull processes are initiated by a customer order, whereas push processes are initiated and performed in anticipation of customer needs. The push/pull view is very important when considering strategic decisions relating to supply chain design.

MEDS uses a pull system. Health facilities send orders to MEDS for their requirements. On the other hand, Kenya Medical Supplies Agency (KEMSA) that supplies the public health sector in Kenya, has for a long time been using the push system, where supplies were made to health facilities based on a “kit system” in anticipation of their needs. Today KEMSA uses both pull and push systems. Hospitals are served through pull system while rural health facilities are supplied on a push system.

**Inventory Management**

Since public and mission health supply chains are not driven by profit motivation, decisions of what medicines and medical supplies to stock are to a large extent guided by the essential drugs concept. However, the manager needs to know the optimal order quantity that should be ordered at any time without subjecting the organization to overstock, under stock or unnecessary cost. This is referred to as economic order quantity (EOQ). **Economic order quantity** is the level of inventory that minimizes the total inventory holding costs and ordering costs. Striking a balance between the two costs is the challenge for the supply chain manager. This becomes more challenging in health supply chains since under-stock can result in loss of life while overstock could lead to expiries and/or obsolescence.
The ABC analysis model has been used to guide the supply chain manager in inventory management. ABC Analysis is the basis for inventory management processes and helps define how stock is managed. It can form the basis of various activity including leading plans on alternative stocking arrangements (consignment stock), reorder calculations and can help determine at what intervals inventory checks are carried out (for example A class items may be required to be checked more frequently than c class stores.

The ABC classification system is used in grouping items according to annual issue value, (in terms of money), in an attempt to identify the small number of items that will account for most of the issue value and that are the most important ones to control for effective inventory management. The emphasis is on putting effort where it will have the most effect.

All the items of inventories are put in three categories, as below:

**A Items:** These items are seen to be of high dollar consumption volume. "A" items usually include 10-20% of all inventory items, and account for 50-60% of the total dollar consumption volume.

**B Items:** "B" items are those that are 30-40% of all inventory items, and account for 30-40% of the total dollar consumption volume of the inventory. These are important, but not critical, and don't pose sourcing difficulties.

**C Items:** "C" items account for 40-50% of all inventory items, but only 5-10% of the total dollar consumption volume. Characteristically, these are standard, low-cost and readily available items. ABC classifications allow the inventory manager to assign priorities for inventory control. Strict control needs to be kept on A and B items, with preferably low safety stock level. Taking a lenient view, the C class items can be maintained with looser control and with high safety stock level. The ABC concept puts emphasis on the fact that every item of inventory is critical and has the potential of affecting, adversely, sourcing, or sales to a customer or operations. The categorization helps in better control on A and B items.

In addition to other management procedures, ABC classifications can be used to design cycle counting schemes. For example, A items may be counted 3 times per year, B items 1 to 2 times, and C items only once, or not at all.

**Suggested policy guidelines for A, B & C classes of items**

<table>
<thead>
<tr>
<th>A items (High cons. Val)</th>
<th>B items (Moderate cons. Val)</th>
<th>C item (Low cons. Val)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very strict cons. control</td>
<td>Moderate control</td>
<td>Loose control</td>
</tr>
<tr>
<td>No or very low safety stock</td>
<td>Low safety stock</td>
<td>High safety stock</td>
</tr>
<tr>
<td>Phased delivery (Weekly)</td>
<td>Once in three months</td>
<td>Once in 6 months</td>
</tr>
<tr>
<td>Weekly control report</td>
<td>Monthly control report</td>
<td>Quarterly report</td>
</tr>
<tr>
<td>Maximum follow up</td>
<td>Periodic follow up</td>
<td>Exceptional</td>
</tr>
<tr>
<td>As many sources as possible</td>
<td>Two or more reliable</td>
<td>Two reliable</td>
</tr>
<tr>
<td>Accurate forecasts</td>
<td>Estimates on past data</td>
<td>Rough estimate</td>
</tr>
<tr>
<td>Central purchasing /storage</td>
<td>Combination purchasing</td>
<td>Decentralized</td>
</tr>
<tr>
<td>Max.efforts to control LT</td>
<td>Moderate</td>
<td>Min.clerical efforts</td>
</tr>
</tbody>
</table>
Conclusion

All supply chain processes discussed above can be classified into three macro process namely, customer relations management (CRM), internal supply chain management (ISCM) and supplier relationship management (SRM).

The CRM macro processes aim to generate customer demand and facilitate the placement and tracking of orders. It includes processes such as marketing, pricing, sales, sales and order management.

ISCM macro process aims to fulfill demand generated by the CRM process in a timely manner and at the lowest possible cost. ISCM include planning for storage capacity, preparation of demand and supply plans, and fulfillment of actual orders. In a health supply chain ISCM processes also include planning for location and size of warehouses, deciding which product to carry at each warehouse, preparing inventory management policies; picking, packing, and shipping actual orders.

The SRM macro process aims to arrange for, and manage supply sources for various medicines, medical supplies and services. SRM processes include the evaluation and selection of suppliers, negotiation of supply terms, and communication regarding new products and orders with suppliers. SRM also involves negotiation of pricing and delivery terms with suppliers.

Integration among the three macro processes is crucial for successful supply chain management and requires technical skills and experience. Do we have enough supply chain managers in our supply chain organizations in Africa who have the right skills and knowledge to manage our health supply chains? The answers to this question will trigger the right actions towards reforming the public and faith-based health supply chains in sub Saharan Africa and preparing them to contribute to achievement of the Millennium Development Goals (MDGs).

Dr James Mwenda Riungu