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## Improving Pharmaceutical Supply Chain Management Systems in Resource-Limited Countries: Time to Change Approaches to Capacity Building

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### Research Article

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### INTRODUCTION

Access to essential medicines continues to be a challenge in most developing countries and is among the Millennium Development Goals targets<sup>[1]</sup>. Over the past decade, international programs, including the Global Fund to Fight Aids, Tuberculosis and Malaria, the World Bank, the United States Agency for International Development, among others, have led to improved access to essential medicines, particularly those for HIV/AIDS, malaria and tuberculosis<sup>[2]</sup>. For instance, GAVI by end of 2013 had US\$8.2 million in pledges for new and underused vaccines, while the Global Fund to Fight AIDS, Tuberculosis and Malaria had received a total of \$30.5 billion in pledges and \$25.6 billion in contributions<sup>[3]</sup>. In addition to these, the President's Emergency Plan for AIDS Relief (pepfar)<sup>[4]</sup>, had US\$3.2 billion for HIV and AIDS for Africa alone in their 2014 budgets<sup>[4]</sup>. Laudable as these efforts are, the availability of commodities alone is not sufficient to improve the overall impact on communities and livelihoods. Accessibility to quality-assured essential medicines needs to be tied to functional pharmaceutical supply chain management systems. Functional pharmaceutical supply management systems enable efficient procurement, distribution, and rational use of life-saving medicines.

In many resource-limited countries, particularly in Africa, pharmaceutical supply chain management systems remain weak, yet for decades, much in terms of resources and effort have been invested into these systems. Resources have been invested via various forms of systems-strengthening, capacity building, and technical assistance (TA) mechanisms. A question that arises from the above is whether these initiatives have largely been ineffective in improving supply chain efficiency. If the answer is "no," then we should ask questions about why systems remain weak; and if we answer "yes," then we should ask questions about why approaches to capacity building continue to follow traditional pathways that are decades-long and often ineffective.

The most apt response to the question above is a hybrid of both the negative and the affirmative. In Sub-Saharan Africa, from Swaziland in the south to Sudan in the north, or from Zanzibar in the east to Liberia in the west, some successes have been scored in improving the efficiency of pharmaceutical supply chain management systems. The Medical Stores Department (MSD) in Tanzania, for example, reportedly operate at a more than optimum standard while the ones in Rwanda and Zambia (just to pick arbitrarily) have also been reported to be efficient<sup>[5,6]</sup>. Such successes can be attributed to local efforts (political will) in part as well as to partners who have long supported supply chain programs at the central level. On the not-so-positive side, the Central Medical Stores (CMS) in Malawi has continued to be plagued with challenges<sup>[7]</sup>. This is despite the Global Fund's engagement of a fulltime technical assistance agency for a period of over two years (between 2011 and 2013). Moreover, the procurement system in Ghana is considered acceptable, but the National Drug Service in Liberia is facing a number of challenges. All the examples cited above have at one point or another had direct technical assistance, demonstrating that the various TA mechanisms have had mixed success.

The challenges in supply chain systems in Africa do not only pertain to medical stores. In most countries supply chain management systems continue to lack the requisite human resources. With the exception of South Africa, in most countries in the Sub-Saharan region, the core duties of managing medicines and related commodities at the periphery fall in the hands of cadres not adequately trained or qualified to perform these functions. In Malawi, medicines are dispensed by assistants with no training in dispensing functions, while in Liberia some of the dispensers who manage medicines at service delivery points have less than seven years of formal education. Nurses and midwives shoulder most of the supply chain functions at the health facility level, yet the majority of them have not receive any training on how to manage medicines. Most of the skills and functions are learned on the job. Over the years TA agencies have often intervened with short training courses. Such courses have been reported to have little to no long-term impact <sup>[8]</sup>.

Supply chain management requires both technical and managerial skills. Technical skills are focused more with product handling, while managerial skills deal with planning and managing the resources. For the appropriate management of activities and functions and for decision making purposes, complete and reliable data is necessary to enhance supply chain efficiency. In most countries in Africa, supply chain efficiency is hampered by the non-availability of reliable data across the different levels of the system, from the central down to the smallest service delivery units. Such data are critical for policy making and for the quantification and forecasting of commodities needs. Accurate quantification of needs is critical for ensuring that sufficient stock of medicines and related commodities are available across facilities in a timely manner. Stockouts of medicines can cost lives, while excesses cost money, both untoward events. For the Global Fund and other donor-funded programs, the preparation of procurement and supply management plans (the key tool to monitor the performance of grants) require that commodity needs are quantified based on consumption data. A quick analysis of a number of Global Fund existing grants shows that a number of countries still use issues data as a proxy for consumption in order to quantify needs. This demonstrates that the availability of data still poses a challenge despite the number of TA agencies that have been supporting the systems. Technical assistance should invest more in capacitating programs to ensure that service delivery data, particularly for commodities, is readily available.

In addition to the above, medicines continue to be used irrationally across countries in the developing world. More worryingly, the overuse of antimicrobials remains high <sup>[9]</sup>. This has severe implications for antimicrobials resistance, which would hit hardest the countries that cannot afford newer generation antibiotics. These countries continue to face the challenges highlighted above in spite of having received prolonged periods of technical assistance.

If capacity building/technical assistance programs for improving supply chain efficiency have largely been ineffective, we advocate for a change in approach and argue that the time for this paradigm shift is now. We argue that *now* is the time for a number of reasons. First, global advocacy for supply chain efficiency is high, with organizations like the People that Deliver Initiative (PtD, 2014) <sup>[10]</sup> and the Reproductive Health Supply Coalition (RHSC, 2014) <sup>[11]</sup> actively working on this issue. Secondly, recipient countries are calling for change. They realize that long-lasting solutions lie in their ability to solve their own problems and have been increasingly integrating approaches to addressing supply chain systems challenges. Rwanda, for example, has designed an integrated supply chain system that manages most commodities from a central repository down to the service delivery points. This approach seems to be serving the country well with little to no stockouts of essential medicines and related commodities at facilities. Lastly, to be effective and to be acceptable, new approaches to capacity building for supply chain systems require the recipient country to be at the center with capacity building services agencies supporting the process. This way, if one exits the system the process will continue. This argument is based on the fact that most programs have a fixed tenure and developing countries are often ill-equipped to manage the void left by ending programs. To take this argument further we define in basic terms what we mean by capacity building services.

## **What is capacity building?**

Capacity building is the development of the ability of individuals and organizations or organizational units to perform functions effectively, efficiently and sustainably <sup>[12]</sup>. Often capacity building is erroneously equated with training. The current approach to capacity building for pharmaceutical supply chain management views conducting workshops as a “magic bullet” for any challenge. If there is a gap in performance, the suggested fix would be training. Yet, individual skills are only part of the complex mix of elements that constitute capacity to perform certain functions effectively and consistently over time. Individual health workers, no matter how skilled, are unlikely to deliver essential medicines or services effectively without adequate supplies and equipment, proper motivation and management support, and a good relationship with the community served. Capacity building services are required for all of these areas to ensure performance goals are achieved.

## **Attributes of capacity building for pharmaceutical supply chain management systems**

In the area of pharmaceutical supply chain, managers and policy makers are concerned with capacity because it enables good performance and increases efficiency. For example, a health facility that experiences regular stock-outs of pharmaceuticals might require additional capacity in the quantification of their needs (i.e., interventions that are specific to the particular performance goal of commodity supply). It follows that a capacity development strategy for improving pharmaceutical supply would call for an approach that is specific to the root cause of the problem encountered. In this aspect capacity can be perceived as a moving target. At any given time, capacity can improve or decline. It often develops in stages that indicate improved readiness to influence

performance. Capacity building, therefore, is an ongoing process, whose stages can be measured as “development outcomes.” As systems improve in developing countries, there is a need to tailor TA services to move in sync with the new developments.

### **Why is capacity building necessary?**

In the context of supply chain management systems, resources are invested with the ultimate goal of providing essential medicines and related commodities to the population. In any hospital system, medicines consume the largest budget. In addition, medicines are expensive commodities and their appropriate management is synonymous to frugal financial management. Allowing medicines to expire at a facility is losing money, while non-deliveries, late deliveries, or shortages cost lives. It is thus important that those who manage these essential commodities are able to do this effectively and efficiently. Translating skills learned into sustained performance often requires new or improved capabilities in individuals and organizations alike. Capacity in this sense represents the potential to use resources effectively and to maintain gains in performance with gradually reduced levels of external support. It is the sustenance with reduced external support that we focus on in this paper—i.e., the ability of supply chain systems in developing countries to maintain performance with gradually reduced levels of support from TA agencies and donor support.

### **Capacity building for Procurement and Supply Management (PSM) systems: The Global Fund Model**

Over the past 10 years, several countries have benefited from the Global Fund. Whereas other programs, such as PEPFAR and PMI, have also supported large commodity-based programs in developing countries, these usually came packaged with boxed-and-ready TA. The Global Fund model on the other hand requires that the country/or Principal Recipient (PR) takes responsibility for program implementation. Success is judged by attainment of certain programmatic benchmarks. The Global Fund grants allows for system strengthening interventions including investing in human resources for health. Within this context, Global Fund PRs are encouraged to identify procurement and supply management (PSM) challenges and implement interventions to address these challenges. However, in the several years that the Global Fund has been operational, PSM systems in many recipient countries remain weak and continue to be a major contributor to grant signature lead time. This again raises questions about why systems remain weak despite years of material and financial investments, and strengthen the call for a paradigm shift in approaches to the provision of TA.

In a bid to respond to the PR PSM challenges cited above, the Global Fund established the Procurement Support Service to facilitate the provision of Voluntary Pooled Procurement (VPP) and Capacity Building Services/Supply Chain Management Assistance (CBS/SCMA) for grant recipients <sup>[13]</sup>. The procurement support service was a coordinated approach to providing support to countries to address procurement bottlenecks and supply chain management challenges and to facilitate the timely access to pharmaceuticals and health products. The CBS/SCMA component targeted both short- and long-term interventions aimed at ensuring improvement and sustainability of in-country or programmatic PSM systems. The SCMA/CBS model purported to empower the PR to identify their own TA needs and to engage such TA to improve the performance of the grants. However, since the CBS program was mooted, only a handful of PRs appear to have benefitted from it. It is not clear why a program, which had so much promise, has not been expanded or reinforced to achieve sustainable impact.

In addition to focusing on the recipient countries and programs, innovative approaches that build on success factors of assistance should be applied, with the aim of capacity-development interventions resulting in measurable improvement in performance. The success of many capacity-development efforts has been limited by the fact that they focus on technical factors, while critical social and political barriers are ignored. Evidence as well as experiences in other areas highlights the importance of top level commitment and leadership, a conducive external environment, and the efficient management of organizational change processes. All these would need to be taken into consideration in thinking of a new paradigm for improving the effectiveness of TA programs for supply chain management.

While training alone should not be construed as the “magic bullet” to capacity building, training programs are still important. To be effective, however, these should target the root cause of problems. In building capacity in supply chain management, sustainable training should begin with developing appropriate curricula for different performance levels and targeting the various cadres involved in supply chain functions. These include pharmacy programs, pharmacy technician programs, and in some instances nursing programs. In Sub-Saharan Africa, the majority of the pharmacy curricula lack adequate content on supply chain management. Yet the work of a pharmacist is increasingly shifting to that of a supply chain manager. If the profession of pharmacy fails to see supply chain competences as an opportunity then other cadres should seize the opportunity and occupy this critical position for ensuring commodity security.

## **CONCLUSION**

Over the years there has been increased funding efforts aimed at improving supply chain systems of low-income countries. Minimum impact has been shown to result from these efforts. There is need for a paradigm shift in how to build in-country capacity to manage medicines and related commodities.

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