



Healthcare supply chain management; strategic areas for quality and financial improvement



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ABSTRACT

Healthcare supply chain has recently attracted attention by scholars, researchers, government officials and providers as one of the main tools in their effort to manage healthcare cost and improve quality at the same time (Elmuti, et al., 2013). It is reported that healthcare costs in the United States represent a sizeable portion of the gross domestic product and it is expected to increase at a much higher rate than other sectors in the economy. Nevertheless maturity of healthcare supply chain is said behind the commercial supply chain leaving room for improvement (de Vries and Huijsman, 2011). This paper explores strategic areas where healthcare supply chain may enhance efficiency in terms of cost per patient discharge of healthcare operations while improving the quality of care in terms of reducing re-admission rate. This paper argues that fundamentals of supply chain principles should be deployed to create “supply chain community surplus” where resources can be tapped to improve quality of care. Three strategic areas were explored to maximize the provider’s revenue; understanding of supply chain principles (perception change), process improvement and deployment of logistics tools.

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1. Introduction

As early as 2008, the Pricewaterhouse Health Research Institute reports more than \$1.2 trillion out of \$2.2 trillion spends on healthcare each year is a waste of money (Kavilanz, 2009). Failure of using standardized process costs the healthcare industry unnecessary waste (Dooner, 2014). A lack of cooperation from health care supply chain partners is cited as a major barrier in implementing cost effective standardized process in the healthcare industry (Nachtmann and Pohl, 2009). Lack of cooperation may stem from either a lack of or absence of collaborative framework among trading partners. As a matter of fact, Nachtmann and Pohl (2009) points out that 60% of survey respondents mentioned a lack of trust is a major barrier in achieving an acceptable level of collaboration among healthcare supply chain organizations.

In spite of many studies claiming that use of supply chain tools reduce organizational costs, reduce cycle time and lead to higher performance without compromising quality (Elmuti, et al., 2013), the healthcare industry consistently lags commercial industry in implementing supply chain tools. For example, the healthcare industry

still uses heavily less than truck load (LTL) transportation mode (60% of their transportation) which is more expensive and increase damages as it touches more frequently than truck load (TL) mode. The warehouse utilization rate in healthcare is 60–70% of the capacity and inventory turns in healthcare is 2 whereas it is 44 for consumer electronic, 10 for automotive industry and 6 for consumer packaging goods (Dooner, 2014). Such an inefficient utilization of capital investment in inventory management only adds to the operating costs in the healthcare industry. According to one study, the logistics cost in healthcare is 38% of the total expense while the same is 5% for the retail industry and 2% for the electronic industry (Johnson, 2015). A possible reason for such a wide gap may include unique distribution networks that healthcare supply chain is employing due to group purchasing organizations (GPOs) and independent delivery networks (IDN) practices (Kwon and Hong, 2011). A recent study reveals that healthcare cost in this country is the biggest barrier to entrepreneurship investment (O’Marah, 2015).

Another area that healthcare supply chain is struggling with is a misunderstanding of the fundamentals of supply chain concepts. Healthcare supply chain has been mistakenly identified as purchasing and contract management as group purchasing organizations such as Novation and Premier dominate purchasing and contract management for providers. Recent information indicates that over 70% of healthcare

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spends is managed by GPOs. Their major role is to negotiate the best prices for healthcare providers and pay less or no attention to logistics related cost of the total package. Supply chain is more than purchasing and contract management. Nevertheless, the term “supply chain management” is often used by healthcare professionals without having a firm concept of this management tool. Often cited excuse is that “the hospital stands for humanitarian delivery of health care than cost containment” (Schneller and Smeltzer, 2006). It has become a function, not an end-to-end process (Cecere, 2014). A failure of understanding of supply chain principles may have led decision makers to narrowly defined supply chain concept (e.g. purchasing) leaving many other areas in supply chain unexplored or neglected resulting in suboptimal solutions. We submit that it is time to integrate commercial supply chain concepts with healthcare supply chain practices to reap potentials from supply chain operations.

The purpose of this paper is to explore and discuss strategic areas of supply chain in healthcare organizations in an effort to reduce spending (efficiency) and improve quality of care (effectiveness) within a supply chain management framework. This paper argues that efficiency and effectiveness coexist in supply chain as it creates supply chain surplus where extra resources so created will be diverted/reinvested into areas which benefits customers (patients). Strategic areas proposed in this paper will be divided into three broad fields; deeper understanding of supply chain concepts in healthcare, organizational process improvement and utilization of relevant supply chain functional tools.

This paper is organized as follow: Section two will briefly review literature in healthcare supply chain areas relevant to supply chain foundations and tools deployed in commercial areas. Section three discusses strategic areas where supply chain management tools can make the difference in improving the operational outcomes. Section four discusses conclusion and summary and managerial implications. Limitations of this paper will be presented in Section five.

2. Existing literature on healthcare supply chain management

Although the concept of supply chain management has been around for over 20 years, still there are many professionals who believe that supply chain is a simple tool that can be adopted and implemented without solid foundation and framework of how supply chain works. Perhaps that is one of the main reasons why in some areas especially in healthcare, supply chain implementation either failed or produced less than expected. Many professionals rush to the concept of supply chain in order to reap an outcome that supply chain management promises to yield only to be disappointed (Benavides, et al., 2012).

Supply chain indeed provides intended results, un-precedent to other management tools. However, supply chain management whether it is a long term strategic tool, or operational as well as a tactical tool, should be deeply rooted in three principles; sharing information, sharing the risks and benefits (Kwon, et al., 2011). Absence of any one of these principles may result in a suboptimal performance.

Sharing information has been one of the most crucial and challenging elements in the supply chain success story including or perhaps more importantly in healthcare supply chain since healthcare supply chain deals with critical services and products that impact human life. Information sharing fosters a spirit of collaboration and provides supply chain practitioners with opportunities to optimize the entire supply chain operation, not one area of their interests (Kwon and Suh, 2004a, b). Sharing information is likely have a potential disruptive impact on existing supply chain structure that might have been one of the major causes that collaborative consumption is not well understood in healthcare supply chain field (Barnes and Mattsson, 2016). In addition, knowledge sharing even foster innovative capabilities among trading partners. (Schneckenberg, et al., 2015).

A close collaboration based on supply chain principles tends to reduce transaction costs which, according to many studies, represent as much as 35 to 40% of the costs associated with economic activities

(Butler, et al., 1997; North, 1990) and as high as 50% in IT outsourcing (Rottman and Lacity, 2006). One research shows a strong relationship between the level of trust and productivity ($r = 0.66$, Dyer and Chu, 2003), and Chrysler lost \$24 billion for lack of collaboration between Chrysler and suppliers over 12 years period (Henke, et al., 2014; de Vries and Huijisman, 2011).

Enduring relationship between supply chain partners reduces search and review/inspection costs contributing to increase profitability for the entire supply chain partners. Healthcare supply chain partners consider the “pie (profit)” is fixed that result in an antagonistic negotiation behavior among supply chain partners. Supply chain practitioner believes “my supply chain is as strong as my weakest link” (Coleman and Jennings, 1998) and renders a helping hand to its partners to increase the “pie” for everyone involved in business transactions since supply chain is a competitive strategic advantage. Power of collaboration has been also reported in manufacturing and information technology fields. For example, Lin, Wu and Cheng (2015) argue that such collaborative effort produced significant positive effect on product quality, reduction of design changes, cycle time and overall cost.

Although healthcare supply chain has come a long way to recognize contributions that other sectors in supply chain make in the areas such as product design, transportation, inventory, warehousing, packaging etc., still the dominant player in healthcare supply chain is contract management via group purchasing organizations. In spite of pioneering works by Burns (2002), Schneller and Smeltzer (2006) and others (Dacosta-Claro, 2002; Oliveira and Pinto, 2005) in health care, progress has been painfully slow in implementing the supply chain strategies to the entire healthcare supply chain arena. There has been little progress made in exploring various tools available in the commercial areas in the healthcare field in spite of the fact that there are billions of dollars in value to be realized in healthcare industry by utilizing supply chain tools in the entire healthcare operations (Harrington, 2015).

Kwon and Hong (2011) discussed how two supply chains differ in emphasis which may provide a framework for further research. Among the areas, they highlighted four critical supply chain spots that would improve performance in healthcare supply chain management; core emphasis (efficiency for commercial vs. effectiveness for healthcare), supply chain plan (push/pull for commercial vs. mostly pull for healthcare), scope (entire supply chain for commercial vs. regional/local/providers for healthcare) and sourcing (common practice for commercial vs. seldom practice in healthcare supply chain). Among many areas that healthcare supply chain could explore to improve profitability, the above four areas are most promising to achieve the goals in healthcare operations; enhance profitability while maintaining quality of healthcare delivery.

It is worth exploring how much progress has been made in healthcare supply chain in a few important areas since Burns' work in 2002. Table 1 below is reproduced from Burns' original work (2002) with perceived progress that has been made since then.

There is growing evidence that healthcare supply chain is moving toward their target area other than “service” area. A considerable effort has been made by a few healthcare organizations to consolidate the logistics component of supply chain (e.g. ROI in Missouri and Intermountain Healthcare System in Utah). Titles such as supply chain manager, vice president of supply chain, etc. in healthcare organizations become more prevalent now than even 5 years ago. One study shows that 62.5% of companies had their Head of supply chain on the Operational Board or Executive Management Team (Farrow, 2013).

Nevertheless, the predominant operational model in healthcare supply chain is still “pull” model as a coherent planning and forecasting concept is not a part of their strategic business plan. As a result, inventory is overstock, becomes obsolete and puts pressure on supply chain cost. Considering supplies are the second largest expenditure after personnel, waste could have been minimized by a sound planning and forecasting in mapping the entire supply chain. Commercial supply chain effectively utilizes push-pull boundary to optimize the entire

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