

# Chapter 11

## Development of a Conceptual Framework for Performance Measurement of Pharmaceutical Supply Chain within Hospital

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### ABSTRACT

*In recent years, the European hospital sector suffers the brunt of the economic crisis. This sector is now faced with a paradox, which is to reduce costs, related to the decline in government subsidies and an increase in the quality of care required by the regulatory bodies. This paradox can be resolved through the optimization of the hospital supply chain. Despite hospital supply chains having a great impact on hospital budgets, still opportunities for optimization exist and improve the health care quality. This article aims to propose a conceptual framework that allows hospitals to evaluate the performance of their pharmaceutical supply chains in order to identify bottlenecks and cost reduction opportunities. After reviewing the literature regarding to the hospital supply chain and the performance measurement, the authors focused on the study of hospital processes of pharmaceutical distribution within the hospital. The findings of this study propose a conceptual framework that will allow hospital to measure the performance of their pharmaceutical supply chain.*

### 1. INTRODUCTION

#### 1.1. Setting the Scene

Due to recent evolutions, the healthcare sector is being confronted with a challenging exercise. On the one hand the sector has to decrease costs while on the other hand the sector has to maintain or improve its quality standards as well as patient safety. These are a consequence of multiple causes.

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First, there is the demographic evolution. This results in more people requiring more care than ever before. Secondly, healthcare expenditures in government budgets are rising. Whereas total health care expenditure made up 7.2% of the GDP in 1990, in line with the EU average, this rose to 10.2% in 2007, thereby exceeding the EU average (Gerkens & Merkur, 2010). In times in which government budgets are under pressure, healthcare doesn't escape from the exercise for financial discipline.

The revenue streams of health care providers are changing: instead of fee-for-service, other models are emerging which require proof that treatment is effective (Ebel et al., 2012). Since 2002 the funding system for hospitals in Belgium is based on performance and justification of activities (Di Martinelly, Guinet, & Riane, 2005; Gerkens & Merkur, 2010).

But this pressure on costs cannot lead to deterioration in quality. Healthcare doesn't escape from the general trend towards higher quality demands in an increasingly complex medical environment. The formerly passive patient became an active actor in the treatment process. The active client has other and higher demands, is better informed and is continuously looking for the best care. This introduces the concept of competition between healthcare organizations in which quality is the key differentiator. Lastly and most importantly: in healthcare, quality means saving lives.

Hospitals are considered to be one of the most complex players. This complexity is due to the heterogeneity (wide variety of care services offered), professionalism of doctors (they impose requirements and constraints), human factor (patients induce a high degree of uncertainty) and complex structure (a hospital includes non-primary activities that have to be synchronized with the care providing) (Hammami, 2006). Diverging objectives of the different actors involved with the hospital make things even more difficult. The complexity of hospitals, linked with the fact that they constitute between 50% and 70% of the health care budget (WHO, 2003) and the fact that improvements on large scale are possible justify a further focus on hospitals.

When we look at what induces costs in healthcare organizations, and more particularly in hospitals, we see that logistics have a considerable stake in the cost of these organizations. Estimations differ but (Landry & Beaulieu, 2001) conclude that they must make up between 30% and 40% of the total costs. The pharmacy-related costs are considered to be half of these costs (Di Martinelly, Riane, & Guinet, 2006; Hammami, 2006; Hassan, 2006).

For a long time, logistics were considered to be secondary to the care providing. In that way a lot of inefficiencies and highly costly processes have slipped into the hospital. Although supply chain management has proven significant benefits in other industries, the healthcare industry has been very slow to adopt these practices (Meijboom, Schmidt-Bakx, & Westert, 2011; SU & Yang, 2011; Vlerick Business School, 2010).

Apart from a cost savings opportunity there is considerable quality and patient safety improvement possible through the area of logistics (Costin & Chitou, 2012). Adverse drugs events (ADE) are the negative effects on patients due to administration of the wrong medication. In Belgium over 4000 cases of ADEs were reported in 2008. According to MCKINSEY (Ebel et al., 2012), adverse drugs events result in 100 000 deaths a year.

Another tendency in healthcare is the increased implementation of technology. There is not only the medical technology, but also supporting technology. The non-medical technologies are copied from the retail and grocery industry where benefits of for example EDI and RFID have been proven long before the health care sector adopted them (Vlerick Business School, 2010). These technologies allow the nursing staff to focus on core activities while improving the safety of the processes. It also generates

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