

# Chapter 8

## Lean Thinking in Global Health Care: Theory and Applications

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### ABSTRACT

*This chapter explains the overview of Lean production; the overview of value stream mapping (VSM); the applications of Lean production in global health care; the implementation of Lean production in global health care; and the challenges and implications of Lean production in global health care. Lean production can be used to identify and eliminate the wastes in any health care activity performed within a health care facility. Lean production can be applied to hospitals and health care organizations to redesign health care processes toward improving the quality of care and reducing costs and wastes. Successful Lean health care efforts result in the measurable improvements in patient outcomes, such as improved quality, less harm due to preventable errors, better access, shorter waiting times, and better service. Implementing Lean production has the potential to enhance health care performance and gain sustainable competitive advantage in global health care.*

### INTRODUCTION

Recently, there has been an increasing interest in implementing Lean thinking in the health care industry (Poksinska, 2010). Many Lean studies in modern health care have been published (Fillingham, 2007), with results that show the potential of Lean for reducing waiting times and costs in health care systems (Kaplan & Patterson, 2008). To be safe, efficient, and cost-effective in health care organizations, health care staff usually adopt various improvement concepts (Dannapfel, Poksinska, & Thomas, 2014). Lean is mostly utilized in modern health care as an essential process improvement approach (Poksinska, 2010). Lean principles aim to ensure quality services and to promote the productive and customer-focused culture throughout the organization (Wu, Liu, & Belson, 2010).

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The health care industry is one of the world's largest and fastest-growing industries (Bhat, Gijo, & Jnanesh, 2014). Health care is a complex business that must continuously balance the need for medical care together with an attention to financial constraints (Laureani, Brady, & Antony, 2013). In today's rapidly changing health care environment, health care organizations are expected to continuously improve the quality of care delivered to an expanding population of patients (Rutman, Stone, Reid, Woodward, & Migita, 2015). Lean thinking offers not only quality improvement methodologies (Mazur, McCreery, & Rothenberg, 2012), but also a management system that makes it possible for health care organizations to implement the change and to hold the benefits (Steinfeld et al., 2015). Lean production and other quality management methodologies have been used by manufacturing and health care for many years (Merlino, Petit, Weisser, & Bowen, 2015).

Major approaches based on Lean principles in health care settings, particularly in hospitals, are reported to have a significant impact on quality, cost, time, and satisfaction of both staff and customers (Papadopoulos, Radnor, & Merali, 2011). Health care system performance needs information on cost and revenue of care because of the rising health care costs (Ma, 2016). Transferring Lean to health care is relatively new (Burgess & Radnor, 2013). Lean thinking has been appealing for health care, after achieving good results in different industries (Haddad, Gregory, & Wickramasinghe, 2014). The beneficial changes through Lean thinking have been shown to create the essential improvements in how hospitals are effectively run (McDermott & Venditti, 2015). The application of Lean concept in modern health care can increase process integration which results in the higher value-added activities to the patients (Khodambashi, 2015).

This chapter aims to bridge the gap in the literature on the thorough literature consolidation of Lean production. The extensive literature of Lean production provides a contribution to practitioners and researchers by describing the theory and applications of Lean production in order to maximize the health care impact of Lean production in global health care.

## **BACKGROUND**

The Lean production concept was emerged on the Japanese manufacturing shop floor and was promoted through the success of the Toyota Motor Corporation (Womack, Jones, & Roos, 1990). The Lean production management design included among other things just-in-time (JIT), kanban method, and a high level of employee problem solving (Kollberg et al., 2007). Lean production is described in five elements: Lean manufacturing, Lean product development, supply chain coordination, customer distribution, and Lean enterprise management (Womack et al., 1990). However, several researchers have focused on Lean manufacturing because of its major impact on peoples' work on the shop floor and manufacturers' interest in these techniques (Hines, Holwe, & Rich, 2004). Womack and Jones' book titled "Lean thinking: Banish the waste and create wealth in your corporation" published in 1996 described the concept of Lean production.

Today, Lean production is no longer exclusive to manufacturing companies (Drotz & Poksinska, 2014). Organizations from all business sectors attempt to improve their performance using Lean production methods (Liker, 2004). Health care is one of the most important sectors in which Lean production is being considered and adopted as an improvement program (Poksinska, 2010). The key principle of Lean thinking lies in the perception of value from the customer perspective (Al-Hakim, 2014). The strategic

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