# Chapter 3
# A Novel GS1 Data Standard Adoption Roadmap for Healthcare Providers

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## ABSTRACT

*The use of GS1 Data Standards is envisioned to improve the efficiency of the healthcare supply chain as it did for the retail supply chain. The healthcare industry, especially providers, acknowledges their potentials; however, there are misconceptions and lack of understanding the associated costs and expected benefits. This study presents an adoption roadmap for GS1 Data Standards at the provider level in healthcare industry. The developed roadmap is a result of systematic efforts at conducting extensive studies, examining the best practices, and interacting with industry leaders. The adoption roadmap includes different levels and sublevels to provide a flexible foundation for healthcare providers where alternative adoption paths will be available for their immediate needs and requirements. Sublevels have a recommended precedence structure to realize maximum gains from the adoptions. The feasibility and practicality of the developed roadmap has been validated by two pilot studies, which were conducted in collaboration with two hospital provider partners. The pilot studies helped identify potential benefits as well as roadblocks and barriers for different levels of GS1 Data Standards adoption. The results indicate that the adoption is not an easy process and may require many workarounds; however, the potential gains are significant.*

## 1. INTRODUCTION

The complex nature of healthcare supply chains has intensified the need to share accurate and timely information about products and partners/locations. Information disconnects and rising costs of products require employing effective supply chain management practices. GS1 Data Standards are emerging as the long needed approach to gain efficiencies widely seen in other industries. Those standards are the essential building blocks for efficient product and cash flow as well as their associated transactions in healthcare supply chains. They also provide a critical foundation for inventory management and process automation within hospitals. Widespread adoption of standard product and partner/location identifiers can improve healthcare system interoperability and bring seamless integration of various technologies in healthcare informatics.

The need for efficient supply chains is crucial for the healthcare industry. From the cost perspective, 25-30% of a typical hospital budget goes for medical supplies and their handling (Ozcan, 2009). The cost of medical supplies now represents the second largest expense after personnel cost and it is projected to be approximately 15-30% of overall hospital net revenue (Williams, 2004). Supply related costs are estimated around $500 billion/year (Scalise, 2005) for the entire healthcare industry; therefore even small improvements in supply chain performance can have an enormous impact on the industry's financial outcomes. Furthermore, significant efficiencies may be realized in administration; an industry survey reported that around 24% of hospital supply administration time is spent on data management, cleansing and reconciliation efforts (Brody, 2007). From the quality of care perspective, while the healthcare supply chain does not directly oversee patient care, bedside administration and the use of supplies drives the entire supply chain. Unique, unambiguous, and universally accepted product and partner/location identifiers provided by GS1 Data Standards can

be leveraged for timely point-of-use replenishment, which would improve the quality of care patients receive.

Despite the emerging need for efficient supply chain processes and proposed solutions of standard information, most potential adopters are still hesitant and confused about whether and how to adopt. This is mainly due to common misconceptions and the lack of understanding of the associated costs. Expected process changes, required information system enhancements, and expected benefits are not clear and hard to quantify for the potential adopters. The benefits in the context of GS1 standards are especially complicated to assess because there is limited actual experience on which to draw, and each provider has different scales and scopes of operations, as well as different supporting information systems and partnership arrangements with manufacturers, distributors, and group purchasing organizations (GPOs).

This paper reports an extensive study to promote widespread healthcare industry adoption of GS1 Data Standards and help provider hospitals confront the implementation challenges and understand associated barriers and opportunities. After significant studies on current adoptions and hands-on efforts including testing different scopes of adoptions at different provider hospitals, examining best practices, and interacting with industry leaders, novel concepts of level of adoption and its roadmap, as well as anchoring numbering systems, have been developed. Those concepts were then tested at different healthcare provider hospitals in pilot studies to validate and document significant barriers and opportunities. The concepts and details about the pilot studies and the results are presented in sections to follow.

## 2. PROVIDER SUPPLY CHAIN

Before discussing GS1 Data Standards adoption and its associated costs and benefits at the provider level, healthcare supply chain structures have to

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