Cluster: Cluster of Enhancing Competitive Advantage of Healthcare Service in Thailand (Mahidol University)

Title: Improved Healthcare Supply Chain and Logistics Management

Duangpun Kritchanchai¹*, Sophon Muangchoo²
Department of Industrial Engineering, Faculty of Engineering, Mahidol University,
*e-mail: duangpun.skr@mahidol.ac.th

Abstract:

In general industry, such as food, retail and electronic component parts, there are currently applied to effective supply chain management. The information through supply chain can be sharing among the supply chain members. Products can be determined the current and past locations and also other information. However, in the area of healthcare industry such as medicine and medical device which is vital to life and Thailand being a regional leader in healthcare services, healthcare supply chain in Thailand is uncompleted or not smooth. There is a lack of supply chain information sharing capability among healthcare supply chain players. It characterized by healthcare providers using their own in-house identification codes and recording systems because these codes and systems are built based on different objectives and different users. Not only did this affect the traceability of products, but it also prevented the development and use of a standard national data exchange system. This may direct impacts on patient safety and supply chain efficiency. When the healthcare products are found to be either defective or potentially harmful, they may not be removed from the market entirely and timely if the information among the healthcare supply chain still fragmented.

To smooth operation and management of healthcare supply chain, it depends on it being able to monitor its use of medical products and their movement throughout the supply chain (from manufacturer/importer, distributer and hospital to patient). A standardized healthcare product identification system can help achieve this, and ensures that medical products are visible at any point in the supply chain. Standardization also does not assist in the product identification, but also sharing and exchange of information as it allows hospitals to come together with distributors and create a single database on the supply of medical products. (Figure 1)
The standard code with supporting of standard database and electronic data interchange (EDI) can provide the important information about healthcare product, there are not only the general information (such as batch number, expiry date, Thai FDA registration code, trade name, manufacture name, etc.), but also the clinical information (such as active ingredient, strength, dosage, adverse drug reaction, drug interaction, etc.) logistics information (such as presentation unit, product dimension, product weight, etc.) and also dynamic product information (such as manufacturing lot number, expiry date and manufacturing date). This allows a standard database on the manufacture, movement and use of healthcare products to be created; one that all hospitals using the system can automatically enter and exchange data with.

In addition, in order to extend the utilization of the standard code and database, traceability system in healthcare and Vendor Managed Inventory (VMI) is being developed. The traceability system allows healthcare product can be tracked to the patient, traced back to the manufacturer and also supports the data for the product recall. VMI provides suppliers to take responsibility for maintaining drug replenishment to make sure that the hospital has the required level of drug inventory in order to completely improve the healthcare supply chain.

These will be benefit to both healthcare and supply chain management perspective. The medication errors and harm to the patient which increase patient safety are reduced, and the whole healthcare supply chain is brought together with higher system interoperability resulted in higher performance of health information system, product traceability and logistics efficiency.

**Selected research output:**

**Publications (Top 5)**


**Patents and other applicable outputs**

Electronic Data Interchange Prototype

**Keywords:** supply chain management, healthcare supply chain, standard drug code, datapool, electronic data interchange