

The Evolution of Healthcare Logistics: The Canadian Experience¹

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The COVID-19 pandemic was an opportunity to grasp the strategic importance of logistics activities within health institutions. Although the theme of healthcare logistics has been studied for more than 20 years, the issues and challenges of logistics activities are just beginning to receive the necessary attention within the organization. In this sense, the development of the logistics function within hospitals in the province of Quebec (Canada) is emblematic of the trend observed in other healthcare institutions around the world. This article is an opportunity to review the evolution of healthcare logistics and to try to trace development paths that are essential to the sustainable performance of healthcare systems.

Keywords: healthcare logistics, organizational structure, evolution

INTRODUCTION

Everywhere in industrial countries, public decision-makers are seeking to draw the full potential from their health care system according to the criteria of quality of care, accessibility of services and cost control (Naylor, 1999). To reconcile this triad, one of the areas for improvement that has gradually spread over the last 20 years in institutions is to improve the performance of support activities to the delivery of care, including those associated with logistics (Kim and Kwon, 2015; Kwon et al., 2016). Indeed, a hospital will have to acquire a variety of products (medical supplies, medicines, food products, cleaning products, etc.) and distribute them through a multitude of networks to its various user departments (Beaulieu et al., 2018). These flows must be managed effectively to ensure quality care. These initiatives can be grouped under the concept of "healthcare logistics".

The French Association for Logistics (ASLOG) defines healthcare logistics as "the management of the flow of patients, products, materials, services and related information to ensure quality and safety at a defined level of performance and efficiency, from the supplier to the patient and, as the case may be, to the final recipient." This concept can be extended by integrating waste flow management while focusing on the creation of sustainable value for the patient (Bentahar and Benzidia, 2019a). Indeed, more and more

hospitals are moving beyond the economic vision of logistics by moving towards the implementation of sustainable approaches that take into consideration the environment, ethics, and quality of life at work.

Of course, in most hospitals there may be a disconnect between the theoretical understanding of logistics and its actual embodiment, after all, some people were saying that the logistics function was going to become more important in hospitals 35 years ago (Crumling, 1985)! In the province of Quebec (Canada), the reform carried out in the spring of 2015 decreased the number of public health institutions from 182 to 34 and led to a review of organizational structures, including those for managing logistics activities (see Box 1 for more details on the health sector in this country). To highlight the place of logistics in health organizations before and after the reform, we conducted more than ten interviews with senior managers of the new logistics departments of as many institutions. They were asked three questions during interviews lasting an average of 30 minutes:

- What are the main changes experienced by logistics since the 2015 reform?
- What are the main logistics projects you are currently carrying out?
- What are the main obstacles facing the logistics department?

This article will be interspersed with the comments arising from these interviews and, to put the Quebec situation into perspective, observations from the experiences of the American and French health care sectors will be integrated.

TABLE 1 THE HEALTH SECTOR IN CANADA

Quebec is one of the ten provinces that make up Canada. With a population of 8.5 million, Quebec accounts for just under a quarter of Canada's total population. The administration of health care falls under the jurisdiction of the provinces, which must, however, comply with guidelines issued by the federal government. The provinces have opted for a public health care sector funded through taxes and financial transfers from the federal government. The private sector provides mainly long-term care or the provision of generally very minor surgery. Thus, public health care institutions that provide the vast majority of direct patient care are publicly administered.

The Late 1990s: An Anonymous Function

To understand the evolution of healthcare logistics in the Quebec health care system, it is necessary to understand what these activities meant at the turn of the 2000s, when the concept of "healthcare logistics" began to be popularized (Jarrett, 1996; Paché and Colin, 2000). Three characteristics could be formulated regarding the Quebec situation.

First, while the term "logistics" was beginning to be used in French hospitals (Sampieri, 1999), it was completely ignored in Quebec hospitals. These activities were supervised by a supply department. This term tends to focus on only one dimension of healthcare logistics, that of purchasing, which can neglect others such as inventory management or internal distribution (Beaulieu and Landry, 2002). In the United States, the term "materials management" was used to refer to a perspective integrating the activities of purchasing and distribution of materials within the hospital (Henning, 1987). In France, some institutions were beginning to use the term "logistics" to refer to the economic department, which was generally responsible for non-clinical activities (Beaulieu and Landry, 2002).

Then, in the province of Quebec, the incumbent of the supply department had the title of coordinator. He was therefore a middle manager. Like the model in the United States, this department very often reported to the finance department (Beaulieu and Landry, 2002). The coordinator was therefore far removed from the strategic discussions of the board of directors. Also, by being attached to the finance department, this structure could lead to the perception among the various contacts in the supply department that the latter was only looking to reduce costs to the detriment of other dimensions, such as the quality of inputs (Landry and Beaulieu, 1999).

Finally, the supply departments of Quebec hospitals were often reactive in their approach, characterized by emergency management and a low capacity to implement the initiatives necessary to improve logistics performance (Landry and Beaulieu, 1999). On this point, the Quebec situation was not unique. In France, in the early 2000s, the ASLOG conducted a survey of 1,200 healthcare institutions, the results of which revealed that half of the respondents did not have a logistics project. The survey also indicated that logistics project leaders were mainly large institutions such as university hospitals. Along the same lines, a few years earlier, a report dealing solely with supply activities still carried out in French hospitals concluded that the strategic nature of these activities was most often neglected, if not ignored (Inspection générale des affaires sociales, 1997). Still at the same time, but this time in the United States, surveys of general managers and finance directors of healthcare institutions showed that materials management services were criticized for their poor inventory management and customer service (Kowalski, 1998).

2015: Reforming the Quebec Network

While the position of logistics has progressed incrementally in the Quebec health system since the 2000s (Landry et al., 2016), our respondents are unanimous: the spring 2015 reform created the conditions for revaluing healthcare logistics by creating integrated health and social services networks. These consolidated institutions are similar to the Integrated Delivery Networks (IDNs) model that appeared in the late 1990s in the United States and whose goal was to offer a wide range of health services under a single administration in order to facilitate the patient's care trajectory (Cuellar and Gertier, 2003). In some respects, the 2009 reform in France sought to foster inter-institutional collaboration by creating territorial hospital networks (Fulconis and Joubert, 2017). This consolidation of institutions creates a critical mass that often justifies investments in more efficient logistical infrastructure (Abdulsalam et al., 2015).

One of our respondents noted that "the logistical needs of these mega-organizations have very little in common with those of the originating institutions, which were limited to a few targeted islands of distribution activity." For another, "our institution consists of about 100 facilities spread over an area of thousands of square kilometers, so the emphasis on logistics needs was becoming increasingly evident." This is not a unique case; many of the new Quebec networks now have operations over larger territories than many countries in the world.

For Quebec, the reform has been accompanied by a change that all of our respondents agree on, namely the creation of logistics departments, with a full member of the board of directors. "We started to exist," comments one respondent. It should be noted that this choice of the structure only follows a strong trend. Over 25 years, data from various surveys of multiple sectors of activity show that the supply/logistics function is taking on more responsibility, increasing its direct control over the organization's purchasing expenditures, and occupying a more strategic position in the organization (Johnson et al., 2014). More specifically in the U.S. healthcare sector, according to surveys, 35% to 50% of respondents say that the supply chain manager is a formal member of the board of directors and has the title of vice-president (ARHMM, 2013). This is a significant change from 35 years ago when some advocated such an appointment (Janson, 1985). In France, as previously mentioned, logistics activities often fall under the responsibility of an economic and logistics department that is also a member of the board of directors (Beaulieu and Landry, 2002).

These new departments have taken over the historical activities of the former supply departments: purchasing, inventory management and distribution to the various points of service. Transportation activities (internal messaging and inter-facility transportation, etc.) were often added to this core group. This represents a real breakthrough with previous practices, when these latter activities were decentralized, with no real coordination between the different flows transported (Paquette et al., 2014). "These activities did exist, but they were distributed, scattered throughout the organization, often within clinical or other support activities. They were often not thought out and did not offer any real added value. "In some of the new logistics departments also manage production activities (laundry, food, reprography). As one respondent reminds us," this organizational choice was encouraged, but not imposed by the Ministry of Health, which resulted in departments with very different configurations and responsibilities."

2020: Challenges to Overcome

Based on interviews conducted with logistics directors, we can identify three main challenges that Quebec's logistics departments must overcome: upgrading processes, developing staff skills, and promoting the benefits that logistics can generate for the rest of the organization. We believe that these challenges are also experienced in hospitals outside the province of Quebec.

About process upgrades, our respondents agree that the creation of logistics departments is only an enabler to generate value for the institutions. To achieve this, many highlighted the challenge of standardizing the disparate logistics processes inherited from the old structures. For example, all of these new networks have to deal with four or five product databases and, in many cases, different information systems. Also, since logistics are cross-functional, with processes tending to be present in different departments of the organization, in such a context, "you need a good understanding of the activities of internal customers," says one respondent. For another, "there needs to be a clear division of roles and responsibilities between clinical and logistics staff."

Likewise, the obsolescence of logistics infrastructures, especially storage facilities, is becoming a real constraint for many hospitals when implementing logistics policies (Beaulieu and Roy, 2015). Often old locations that are not adapted either to the new normative and regulatory requirements or to the innovative warehousing process that facilitates the circulation of flows. This reality was described nearly 40 years ago for many American hospitals (van Drimmelen, 1982). In this context, a new logistics trend is beginning to emerge in hospital strategy: the centralization or pooling of flows through infrastructures such as warehouses (Roy et al., 2014). This policy can generate economies of scale in transport, a reduction in buffer stock costs between the warehouse and internal customer demand. In Quebec, several institutions have more or less advanced thoughts on such concepts. In France, hospitals have chosen this strategy of centralizing and pooling flows through internal (multi-site) or external collaboration involving different healthcare organizations. In the United States, after years of outsourcing warehousing activities to external suppliers, there is a trend towards the development of regional distribution centers managed by healthcare institutions (Abdulsalam et al., 2015).

In terms of skills upgrading, one manager recalled that health system reform was accompanied by targets for reducing supply costs, requiring this activity to improve its practices to achieve these objectives while complying with the more demanding regulatory framework. Another manager explains that with a much smaller number of institutions now, contracts often have larger amounts. The loss of a contract to suppliers will have a greater impact. For this reason, institutions need to be very specific in writing their calls for tenders to limit the potential for legal challenges. One director points out that this situation leads to a necessary development of the skills of some employees of the former structures. This example applies to other areas of healthcare logistics. In fact, for more than 20, sometimes 30, years ago, authors have been advocating for the upgrading of the skills of staff in logistics departments in healthcare institutions to respond to modern logistics challenges (Dowling, 1991; Giunipero, 1997; Ageron et al., 2018).

Finally, about promoting the benefits of healthcare logistics, managers mention the need for selling effort with other departments within the institution to explain and demonstrate the benefits generated by logistics for the entire organization. As one respondent points out, "clinical services still want to transfer tasks, but without the associated budgets. While it is important for clinical activities to delegate logistics activities to focus on their core business, it is also important to provide financial support to the logistics department to ensure process performance." This comment also comes up again when examining the results of surveys produced in the United States, where logistics managers admit that the lack of support from senior management is a barrier to a better logistics performance (Callender and Grasman, 2010). However, as one manager reminds us, "there are no indicators that allow us to measure each other. It is therefore difficult to demonstrate improved performance." However, this statement must be qualified. As Watson (1991) reminds us, it is not a lack of indicators, there may be too many. It is a lack of flexibility in the information systems that can generate them which is often problematic (Beaulieu and Roy, 2015).

What About the Future?

The recent experience of the Quebec health network follows the steps taken by other countries such as France or the United States in terms of the valorization of logistics activities. In Quebec, the consolidation of the health system was an opportunity to create a logistics department, a full-fledged member of the board of directors. As other analysts point out, "one of the main added values of the logistics function is its ability to transcend the separation between business lines, [...] because it is a global and transversal approach that promotes decompartmentalization and cooperation." It is in this perspective that more and more managers are talking about Logistics 2.0, the one that goes beyond material management to develop an added value for the direct delivery of care (Bentahar and Benzidia, 2019a). Also, these new logistics departments now have the critical mass to equip themselves with specialists to facilitate the achievement of such an ambition. For one respondent, "we know within our directorates. We have to make the most of it".

On the other hand, as another respondent points out, "our paradigms are often our biggest obstacle. We need to be open to new ways of solving problems or achieving our goals!" To this end, we see a new frontier that healthcare logistics managers must overcome: data management and more recently, big data (Beaulieu et al., 2014; Guha and Kumar, 2018). One of our respondents pointed out the lack of performance indicators, but this is only a symptom of a more generalized gap. Our observations of practices in Quebec networks tend to show that the different levels of decision-making in activities manipulate a great deal of data, but too often from an event-driven perspective, without any real ability to link results to specific phenomena. In this sense, we do not consider the Quebec situation to be different from the rest of North America or France. The issue of information systems in healthcare logistics has been raised for more than 30 years ago (Henning, 1987). The recent difficulties in inventory management resulting from the COVID-19 pandemic have often only demonstrated the limits of these information systems.

Improved practices in the area of data management and logistics performance measurement will require more user-friendly and better-synchronized information systems and also the implementation of new technologies such as big data analytics and artificial intelligence. Recent studies highlight the positive impact of innovative technologies on the agility, adaptability, and operational performance of the supply chain (Ageron et al. forthcoming; Bentahar and Benzidia, 2019b; Wamba et al. 2020). These initiatives simply follow long-standing recommendations to automate procurement and logistics activities in hospitals (Siebecker, 1991).

Despite this, managers should not rely solely on technological developments. Other actions are needed to achieve this technological evolution: identifying inventory policies, determining the frequency of updates, and designing processes to keep data up to date. For example, almost all Quebec networks have worked to unify their product databases from their former organizations. The exercise requires significant effort, but it should not be limited to data harmonization. It is necessary to develop procedures to ensure the long-term integrity of the new database. A dimension that is neglected by many organizations, including a large number of private companies.

One of our respondents sums up the evolution of logistics in the healthcare sector in the province of Quebec. "Before 2015, in Quebec, the term "healthcare logistics" was beginning to "gain an audience" and was part of a growing number of discussions in the hospital supply chain. However, since 2015, we consider much more than the "hospital component" of patient care. We seek to integrate the patient's entire episode of care and therefore the entire continuum of health services required." To embody this vision, new logistical models have yet to be developed and, in this sense, these reflections are being carried out in Quebec, the United States, France, and elsewhere in the world!

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ENDNOTE

- ¹ This article is a revised and expanded version of an article by Beaulieu, M., Bentaha, O., & Benzidia, S. (2019). L'évolution de la logistique hospitalière : L'expérience du Québec. *Gestions Hospitalières*, 583, 86-89.

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