



- HARRY JONES AND PATRICIA SULLIVAN-TAYLOR - ,
PRICEWATERHOUSECOOPERS LLP

JUST WHAT THE DOCTOR ORDERED: The e-evolution of the healthcare supply chain in Canada

Harry Jones is a principal consultant in PricewaterhouseCoopers'

Ottawa office; Patricia Sullivan-Taylor, BScN, MPA,

is a principal consultant in their Toronto offices.

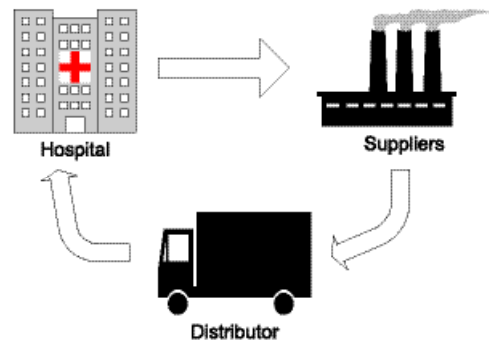
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The typical hospital spends 15 to 20 per cent of its annual budget on supplies making it the second-largest spending area after salaries. It is not surprising then to see administrators beginning to scrutinize their supply chain as a source of potential savings. And, as many businesses have done in today's wired-up world, they're turning to the Internet as a way of realizing those savings.

Internet technology is re-shaping the traditional supply chain in hospitals. The paper that used to support inventory management, supply requisition and shipping is giving way to a process by which products will be scanned electronically at a patient's bedside, flow automatically into the materials management system and be sent directly to the supplier for replenishment. Shipments will be received, scanned electronically and paid for via electronic funds transfer.

This article will look at new developments in the health care supply chain against the backdrop of historical and current models; and will show how an Internet-based, electronic supply chain can lead to significant savings for health care providers.

FIGURE 1 HISTORICAL HEALTHCARE SUPPLY CHAIN



As shown in Figure 1, the participants in the healthcare supply chain were traditionally hospitals (providers), suppliers and distributors. A centralized purchasing department was responsible for processing all purchase orders and for contract management. Suppliers would receive paper purchase orders, ship the goods via a distributor to the hospital and then mail the hospital an invoice. It was a completely manual process. Furthermore, each hospital generally held contracts with multiple suppliers and made little effort to standardize products.

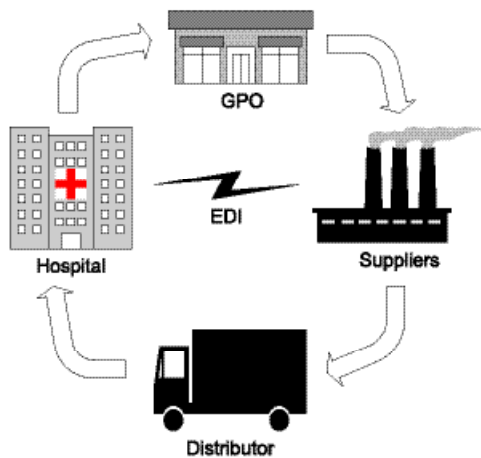
Today, the relationships of hospitals, manufacturers and distributors have evolved. There are also several new players in the industry including:

- group purchasing organizations (GPOs) such as Medbuy and HealthPro,
- value-added networks such as CareNET, and
- industry organizations such as the Efficient Healthcare Consumer Response (EHCR).

Group Purchasing Organizations (GPOs)

A GPO aggregates the demand from its members and uses that as leverage to negotiate lower prices with suppliers. Two of the largest GPOs in Canada are Medbuy and HealthPro. Medbuy has a national focus while HealthPro, which has historically focused only on Ontario, is also beginning to move out nationally as well. Over the years numerous hospitals have joined these organizations to reduce their supply costs.

FIGURE 2 CURRENT HEALTHCARE SUPPLY CHAIN



GPOs also provide contract management services thus eliminating the need for hospitals to participate in an RFP process. They then monitor the hospitals' compliance with those signed contracts to ensure that purchases are in fact directed to the approved supplier. Both Medbuy and HealthPro are wholly owned by their member hospitals so, in addition to providing the benefit of lower cost supplies to their members through standardization and large volume purchases, the GPOs distribute annual dividends to their members based on revenues earned from rebates and other value-added services such as consulting.

A potential threat to some GPOs is the regionalization of healthcare in Canada because consolidating the purchasing of several hospitals into one buying entity could provide more opportunity for product standardization and consolidation thereby improving the

organization's leverage with suppliers. An example of this can be found in London, Ontario where in 1997 the London Health Sciences Centre and St. Joseph's Health Care created Healthcare Material Management Services (HMMS). HMMS consolidated the functions of purchasing, accounts payable, receiving and inventory management within London and now provides services to twenty hospital sites on a regional basis.

HMMS claims that its buying volume provides the same leverage with respect to cost savings as did the GPO, and yet operating outside the GPO offers HMMS the opportunity to forge a closer relationship with their internal customers, manufacturers and distributors. Furthermore, HMMS believes it is easier to standardize products across a single region rather than across the many members of a GPO. Based on this HMMS cancelled their membership for medical /surgical items in its GPO¹.

However, regardless of whether a regional buying group or a GPO can obtain the best price, there is clearly a limit to how low that price can go. As a result GPOs continue to look for ways to add value to their shareholders and are beginning to offer additional services such as consulting (e.g. activity-based costing), market intelligence, professional development and contract management. For example, HealthPro is currently running the regional materials management function for the Niagara Health System in Ontario.

Value-added Networks (VANs)

As more Canadian hospitals began implementing systems using electronic data interchange (EDI), CareNET was established as an industry organization to create EDI standards and promote the use of electronic commerce in the healthcare industry. In turn CareNET contracted with SNS Assure to operate the network carrying the EDI transactions between the hospitals and suppliers. Currently the

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226 hospitals on the network have direct access to 122 suppliers and indirect access to another 900 suppliers (typically EDI to fax). With CareNET, the supplier absorbs the cost of transmitting the purchase order, but after this initial transaction the entity that sends the transmission (e.g., advance shipping notice) pays for it. The other leading EDI carrier is Sterling Commerce which charges the sender regardless of transaction type.

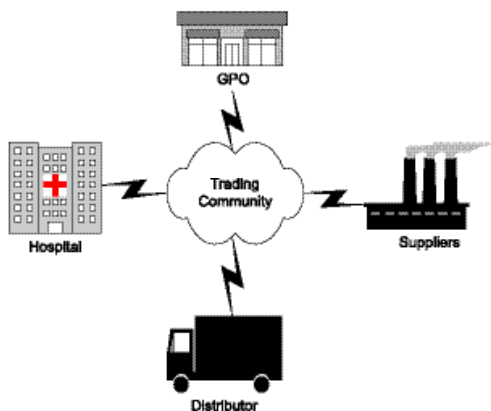
Interestingly, BCE Emergis, the electronic commerce arm of BCE Inc, purchased SNS Assure in late 1999 thereby obtaining access to a key piece of the healthcare e-commerce infrastructure. Clearly they hope to leverage this network to deliver additional services to the hospitals and are planning to make a new Internet-based delivery system available to healthcare suppliers.

Efficient Healthcare Consumer Response (EHCR)

EHCR is an initiative that began in the United States to improve the efficiency of the supply chain. The group commissioned an extensive study in 1995-96 that suggested that, of the US\$808 billion spent in that country on goods and services in healthcare, the supply chain process itself consumed US\$23 billion. Further analysis determined the supply chain process cost could be reduced by US\$11 billion by improving product movement (61 percent of savings), order management (15 percent of savings) and information sharing (24 percent of savings).² It has been suggested that the potential equivalent savings in Canada would be \$1 billion per year. However, we believe this figure is too high because, due to its historic focus on cost containment, the Canadian supply chain is already more efficient than its US counterpart. A more reasonable estimate of savings is \$200 to \$400 million per year.

In Canada, the EHCR initiative is supported by an association of partners in the healthcare supply chain including, manufacturers, distributors, GPOs and providers. Project management is under the direction of the ECCC (Electronic Commerce Council of Canada). The EHCR has been working on creating non-proprietary solutions

FIGURE 3 FUTURE HEALTHCARE SUPPLY CHAIN



to improve the supply chain such as pushing the adoption of best practices and the implementation of enablers such as bar-code standards and electronic commerce. The objective is to drive out non value-added activities, enhance customer service and focus on high quality/low cost solutions across the entire supply chain. The EHCR has recently undertaken the development of pilot projects to demonstrate improvements in the supply chain. The first pilot was launched at the Ottawa Hospital and further pilots are expected in the near future.

Process Changes and Automation

Hospitals have begun to experiment with the supply chain process and the technology by which it is managed. For example, several hospitals have incorporated EDI and hand-held scanner technology into their material management systems. A few hospitals are also using some form of electronic requisitioning albeit only in a few key departments. Electronic, or e-requisitioning, allows purchasing to be done by staff at the departmental level (who arguably know better than Purchasing what is needed at any given time) while limiting the department's choice to just those items that are on the electronic catalogue. This has proven to be quite successful and the purchasing directors involved indicate this initiative will continue to rollout to other areas of the hospital in the next year.

Additionally, purchasing cards ("P-cards") are becoming more prevalent as hospitals work in co-ordination with banks and suppliers to decrease the amount of time and effort spent on invoice processing. The P-card provides each hospital with one monthly invoice from each supplier rather than an invoice for each purchase order.

Hospitals are also striving to improve inventory management. One option at the moment is to outsource inventory to a distributor (e.g. Source Medical) and then set up a "just-in-time" (JIT) or "low unit of measure" (LUOM) contract in order to reduce the amount of product that is kept on-site. Additionally, some of the distribution companies are moving into logistics and activity-based consulting. Of the hospitals contacted for this article only York Central Hospital in Toronto appears to be using true electronic commerce capabilities. Handheld scanners are used on the floors to determine consumption from the carts. The data from the scanners is then downloaded into the material management system which creates purchase orders and transmits them via EDI to the suppliers. The purchase order approvals, advance shipping notices and invoices are received electronically and the suppliers are paid through electronic funds transfer (EFT).

Interestingly, suppliers are also offering several value-added services. These include direct contracting for specialty products such as diabetic supplies and providing consulting services for hospitals related to logistics and materials management.

In the future, the healthcare supply chain will look very much like the grocery supply chain where demand initiates the procurement process. When a product is used it will be scanned electronically at the patient's bedside thereby triggering an order. The advanced shipping notice and invoice will be tracked and received through the system, and then shipments will be received, scanned electronically and paid for via electronic funds transfer. All this will take place with very little human involvement.

As hospital mergers are fully implemented, the various purchasing departments will be consolidated after which they will begin the process of rationalizing and standardizing their product catalogues. However, whether this leads to these regions bypassing distributors and GPOs and contracting directly with suppliers remains to be seen. It is more likely that the current hybrid model will continue to be used although probably more efficiently.

Disaggregation will also be a trend. Product costs have already been reduced substantially so contracts that separate the product cost from the distribution cost are now being negotiated in order to achieve further savings. As a result, it is conceivable that distributors from other industries might enter the medical supply distribution business.

Electronic procurement over the Internet ("e-procurement") will

make tremendous inroads into the health care supply chain. The Purchasing department will allow departmental users to access electronic catalogues and select the desired items based on established contracts and business rules. At the point of selection the user will have the option of seeing the price and availability of product(s) and then, once the order is completed, it is sent automatically to the material management system where the automated process of forwarding the order electronically to the designated suppliers occurs, resulting in an electronic advanced shipping notice and ultimately an electronic invoice.

E-procurement has proven very successful in other industries for several reasons. Users enjoy the freedom to purchase when they want without having to deal with paper or a purchasing department. A centralized catalogue ensures the institution maximizes the contract leverage it has with its various suppliers. Furthermore, an Internet-based solution is generally less expensive to implement and maintain than an EDI solution - particularly for those smaller institutions and clinics who have not already invested in EDI technology.

Finally, E-marketplaces will become prevalent in healthcare just as in other industries such as automobiles and utilities. The use of procurement technology to order medical supplies as well as indirect supplies (i.e. office paper and pencils) will increase dramatically over the next couple of years. Additionally, these portals will provide functionality for on-line RFIs and RFPs as well as auction services for used equipment. Three E-marketplaces were announced in Canada in 2000: Medbuy, the GPO, established the Canadian Health Marketplace (<http://www.chm.ca>); GHX, a US-based, supplier-led exchange created GHX Canada (<http://www.ghx.com>); and Ormed, a Canadian software vendor, announced OrmedX (<http://www.ormedx.com>). The benefits of an E-marketplace - more efficient processes, reduced inventory levels, enhanced information for both buyers and sellers and so on -

increase the more the marketplace is used. It is interesting to note therefore, that GHX established a strategic alliance with OrmedX in February 2001, and then just a few weeks ago established a second strategic alliance with Neoforma, the technology behind CHM. These alliances should accelerate the adoption of E-marketplaces by both providers and suppliers in Canada.

Conclusion

The healthcare supply chain of the future will be very different from today. Demand will drive the system and e-procurement will be pervasive. Depending on the circumstances cost savings in the order of 2 to 5 percent of total annual purchases will be achieved and redirected into patient care. However, as always, this is not simply a case of implementing technology - substantial process changes will be needed as well. As one Purchasing Director we spoke to put it "the day will come when I pay my supplier more for a particular item than I otherwise would because it actually has a lower total cost."



| FOOTNOTES | |
|--|-------------------|
| 1 HMMS has maintained its GPO membership for pharmaceutical products. | |
| 2 In their August 2000 report on e-procurement the US healthcare practice of PricewaterhouseCoopers suggested e-supply chain management could provide savings of 6% to 13.5% in supply chain costs broken down as follows: | |
| Demand management (e.g. demand-driven ordering, demand planning) | 2% - 4% |
| Order management (e.g. consolidated purchasing, complete UPN implementation) | 2.5% - 4% |
| Supplier management (e.g. supplier consolidation, 90% GPO compliance) | 0.5% - 2% |
| Logistics management (e.g. consolidated service centre) | 0.5% - 2% |
| Inventory management (e.g. 25% - 40% reduction in SKUs, non-stock items < 30%) | 0.5% - 1.5% |
| Total | 6% - 13.5% |