

Can Supply Chain Software Really Deliver More Nurses? St. Michael's Hospital in Toronto Knows IT Can

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Supply Chain initiatives fail to appear on a CEO's top 10 priority list in most hospitals; yet it is known that

1. Medical-surgical supply chain costs rank in the top three hospital expenditures, along with labour and pharmaceuticals; costs include administration, overhead and logistics, and are rising at 10% annually¹. This rate of growth is second to pharmaceutical costs (13%).
2. Numerous reports show that use of best practice and technology could reduce medical errors by 80%, saving an estimated \$200 million in Ontario alone through shorter patient stays².
3. Studies indicate that 15% of nursing time³ is spent "chasing supplies"; a significant frustration that hinders patient care. With the current nursing shortages predicted to grow to between 60,000 to 110,000 in Canada by 2011,⁴ efficient staff utilization and retention has never been so critical.

To meet this challenge the value proposition must be grounded on common standards, best practices and educational support for supply chain professionals. This is an issue that Ontario's Healthcare Supply Chain Network (www.hscn.org) has tackled head-on, by endeavouring to establish industry standards and provide a support framework for healthcare supply chain professionals.

St. Michael's Hospital has responded. St. Michael's is a Catholic teaching and research hospital, fully affiliated with the University of Toronto, specializing in critical care, oncology, women's health, heart and vascular disease, inner city health, trauma, diabetes comprehensive care, minimal access therapeutics and mobility disorders.

In 2001, St. Michael's decided to adopt an outsourced third party logistics model for consumable inventory. This has evolved to embracing a shared services model in partnership with Hamilton Health Sciences Centre, utilizing the LogiSYS Materials Management platform to support the delivery of off-site warehousing and logistics services. Their commitment continues today in tandem with Mississauga-based Aurillion Micro Systems, and the evolution of the platform into a universal process management tool for *all* categories of inventory and *all* logistical processes; from receipt to utilization and every point in between.

The Challenge: Lack of Visibility and Measurement for End User Inventory Transactions

Without appropriate records of departmental on-hand inventory values, departmental issues and historical usage, St Michael's did not have the systems visibility to make hard decisions on what and how much inventory should be stored at nursing stations. This inability to manage inventory demand resulted in wasted nursing time chasing supplies that could have been better spent with patients.

Enterprise Resource Planning systems (ERPs) are sufficient for the financial management but offer limited capabilities for inventory control and thinly manage operational processes. There was a need to enhance ERP supply chain visibility by automating logistical processes, capturing transactional data at the point of activity, imposing an e-audit trail and delivering accurate business intelligence. These deliverables would enable St. Michael's to exercise sound management decisions in its effort to lower Storage Keeping Unit (SKU) counts, lower inventory carrying costs, increase inventory turnover and mitigate operational risk.

To date, the logistics model has delivered these capabilities within the consumable inventory category; however St. Michael's still had a systems gap across their other inventory categories and processes. After a thorough market investigation, a collaborative expansion of their new solution was selected, representing the best path to address this shortfall.

A Process Driven Solution

When St Michael's approached Aurillion Micro Systems (www.aurillion.com) with their bold vision of "One handheld computer to manage *all* inventory categories, regardless of source," the bar for materials management solutions was significantly raised.

Aurillion has been delivering regional scale supply chain solutions for over a decade and has worked closely with St. Michael's Hospital as part of their Just-In-Time



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inventory joint venture with Hamilton Health Sciences (HHS). The program bears the “TPL” moniker, meaning *Third Party Logistics*, and outsources all common, consumable, med-surg supplies to a warehouse shared with HHS. St. Michael’s *real world* knowledge and supply chain leadership coupled with Aurillion’s process-centric design approach was a natural fit and resulted in the expansion of their system to address operational gaps that can be found in most hospital supply chains.

Through this process, the system at St. Michael’s has evolved into a functional process management solution leader in the healthcare market and an essential addition to any ERP solution.

Project Scope – LogiSYS Expansion

St. Michael’s concentrated on building its solution within the confines of the Operating Room Unit (OR), intent on building its new process in one of the busiest ORs in the nation. The battle-tested solution would then be the model for hospital-wide roll out. Customization to the existing ERP, Geac SmartStream was not an option due to cost and schedule – the tight project schedule precluded any involvement with the ERP solution provider.

The successful operation of the TPL program left a large disparity in service and management tools between the stock inventory category and St. Michael’s direct purchase items, consignment items, their stockroom environments and their logistical processes.

Process Management for Consumable Inventory

- common consumable supplies replenished daily via TPL service provider
- point of use transaction logging
- barcode enabled
- rationalization to 1100 TPL SKUs
- replenishment cycle optimization
- par level optimization

St. Michael’s focused on two priority objectives:

- replicate the management control of the stock inventory category in all inventory categories
- extend their process visibility to the entire hospital supply chain

This approach would enable St. Michael’s to have direct visibility to inventory status from the moment of receipt, through to delivery, storage and departmental issue.

The shared vision of St Michael’s and Aurillion was distilled down to the delivery of four new functional modules.

Aurillion has now delivered these new modules satisfying the common goals. This total solution is being implemented in the OR, and will be rolled out across the entire hospital.

Process Management Expansion – Shared Vision

Consumable Asset Tracking

- item “Instance” tracking for extended item attributes (Lot/serial number, electronic product code, expiry date, etc.)
- consignment process management
- point of use transaction logging
- barcode enabled

Hospital Stores

- supports multiple ‘stockroom’ environments
- full cart management capability

Global Receiving

- automate all receipt processes on a mobile platform
- full integration with purchasing system(s)
- barcode and image capture enabled

Delivery Tracking

- capture proof of delivery
- track delivery status of all receipts to end user
- barcode and image capture enabled

Lessons learned from this project:

- Ensure sufficient resources are allocated to the project and backfill team members as required.
- Spend sufficient time planning – resist the temptation to jump into the project before all dependencies are fully understood.
- Ensure frequent and concise communication among all parties.

The Results

The full ROI for this project is still evolving and will be available in the coming months; significant initial outcomes for the OR implementation and earlier TPL initiative validate the value of this undertaking.

Outcome: Hard Dollars Supply Chain Savings

Every hospital faces challenges balancing sufficient space for inventory (and patients!), minimizing carrying costs of stock and efficient use of labour resources in the replenishment process, with acceptable service levels for end users or consumers. As a result of implementing LogiSYS, significant gains have been achieved.

- Reduced operating room SKU’s in the data base by 50% from over 14,000 to 7,000 items.
- Eliminated obsolescence (unused or duplicate items) from the carts and significantly reduced rush shipments due to improved forecasting tools.

The 43 steps required to fulfill such direct orders were automated, cutting a 24-hour ordering cycle down to less than six hours.

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Statistics relating to carrying costs and inventory turns are currently being monitored for future release, but service levels have improved from 82% in 2001 to 99.6%.

Outcome: Systematized Adoption of Best Practice

Today's healthcare environment requires the adoption of automated best practices. The St. Michael's System delivers 24 of the 25 technology-enabled leading integrated supply chain management practices as outlined by the OntarioBuys report.⁵ The system has automated all of St. Michael's logistics process, utilizing bar-coding technology to capture transactional data at the point of consumption. This has imposed an e-audit trail across the entire supply chain, bench-marking skill-sets and enabling continuous improvement.

Outcome: Leveraging Existing ERP Investment

The automated system seamlessly wraps around St. Michael's ERP solution, augmenting Geac's financial capabilities with an advanced logistics process layer. This enables the hospital to leverage the existing ERP investment to gain significant process improvements and cost savings. The solution can also tie into the hospital's Siemens clinical system to populate patient specific inventory usage into the electronic health record.

Outcome: Business Intelligence

Due to inadequate audit trails and business intelligence, constant arguments, rogue ordering, "secret" inventory stockpiles, expired items and waste are the norm. Now, St. Michael's has been enabled to make informed management decisions in concert with nurse managers at the department level that reduce their inventory carrying cost, and increase inventory turnover. Furthermore, St Michael's has real historical and on-hand visibility, giving it control of its supply chain. Nurses regain trust in the system and can get back to their real work – patient care.

Outcome: More Nursing Time for Patient Care

As the nursing shortages spiral towards six digits, utilization and retention is essential. Nursing staff simply can't afford the time "chasing supplies." Prior to implementing process management solutions, disposable inventory run-outs hit 400 per month; since implementing the solution this has dropped to four or five per week (caused by vendor backorders /no item substitutes).

Furthermore, prior to implementation, one nurse per OR spent the first hour of each day chasing supplies rather than serving their first patients. The new system has saved St. Michael's this time, redirecting two full-time nurse equivalents back onto core OR tasks. This has had a direct positive effect on patient care.

Supply Chain & Risk Management

What is seldom discussed but should not be overlooked is the role materials management plays in risk mitigation. Every aspect of hospital process affects patient safety, particularly the supply chain.

Infection Control: When day-to-day logistics processes are under control, appropriate time and attention can be placed on infection control procedures.

Staff Compliance: Strict user security enables management to monitor staff compliance to standard operating procedures, and to provide corrective training where appropriate.

Consumable Asset Tracking: An e-audit trail for consignment items ensures sufficient inventory on hand, accurate billing from the vendor and on-time payment cycles.

Patient Utilization: An e-audit trail provides an effective historic usage picture linked to the patient record for any future eventuality.

For further information on this project please contact:

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Notes:

1 SG Coben Securities Corporation, 2001.

2 OHA/EHCR, Task Force Report on Supply Chain Management, Nov 2001

3 Deloitte & Touche study for Sunnybrook and Women's Hospital, 1999. (Corrective action has now been undertaken to resolve this issue at Sunnybrook and Women's.)

4 Courtyard Group, The State of the EHR & Electronic Healthcare in Canada, Nov 2003.

5 OntarioBuys Working Group, iSCM A Leading Practice Compendium, Dec 2004.

For further information on integrated Supply Chain Management best practice visit www.ontariobuys.com.