Defense Medical Logistics Standard Support (DMLSS) Program: A DoD Medical Logistics Success Story

Stephen M. Wolfe, Col, USAF, MSC
DMLSS Director Operations and Business Process Reengineering
DBA.

John Saikowski
Program Manager
EDS U.S. Government Solutions, Military Health Programs
M.B.A.

Dale Hughes
Acquisition and Program Management Specialist,
EDS U.S. Government Solutions, Military Health Programs
M.B.A.

Introduction

"...should we unluckily enter upon the Campaign without an ample supply of those necessaries and comforts, which ought to be introduced in aid to Medicine, and without which Medicine is of little avail, I plainly perceive that we shall again experience the same Calamities and miseries which prevailed in 1776 and which destroyed so many hundred Men."[i]
General George Washington, Headquarters, Bergen County, July 15, 1780

Medical logistics is not a new concept. Military leaders of all ages have wrestled with the challenge of having sufficient medical supplies in the right place at the right time to support armed forces and other beneficiaries. Although the medical SCM model of 1780 is archaic, the fundamental processes that define the model have not changed. It remains a function that involves requirement understanding, process execution, and the use of reliable and timely means for satisfaction.

The DoD Supply Chain Management Model Prior to 1990

Prior to 1990, DoD medical logistics was wedded to a model founded on internal control for materiel management. The basic element was massive amounts of materiel stored at DoD locations--Depots (wholesale management) and military treatment facilities (MTFs). Depots existed to provide ready materiel support to immediate requirements (deployments) and daily demand at the DoD MTFs (retail management). In addition, large inventories were maintained at the MTF to ensure daily health care service occurred without interruption. This practice reflected a lack of confidence that MTF logisticians had in overall medical supply processes and system responsiveness and a model characterized by long order-ship times (from depots to MTFs). MTFs either ordered materiel from a military depot (to assist depot stock rotation efforts) or from a commercial trading partner. The route was generally dependent upon provider demand, ease of obtainment or government policy (use depots whenever possible). No automated product or price comparison tools existed to enable MTFs to facilitate best value procurements. Medical logistics from the MTF through the depot system lacked the information required to leverage high volume purchase activities and obtain optimal pricing from industry. Further, at the Service level logistics processes were different and uncoordinated, as were their automated information systems (AIS). Each used a proprietary system that was not designed to interface or integrate with other Service AIS.

The Gulf War was a wake-up call. It provided real life demonstration of the system's lack-of-effectiveness, while pointing out its inefficiencies. Instead of one DoD channel of communication containing integrated requirements, Service "stove pipe" systems were uncoordinated and multi-channeled. Further, when depot stored materiel arrived, healthcare providers refused to use many items because the practice of medicine had advanced beyond their utility. This ignited a frenzy of procurement actions to find replacement materiel suitable for contemporary battlefield medicine. Through these experiences it became clear that the logistics strategy had to be flexible and responsive to meet the demands of a complex and dynamic health care environment in order to be efficient and effective. An alternative model was required.

By contrast, the commercial sector's medical SCM model was entering the digital age. Their use of revised business practices and automated transaction processing provided benchmarks for DoD medical's BPR. Efficient processes, supplemented by a responsive AIS that communicated with trading partners, became the underpinning for the DoD internally initiated reengineering effort. Further, electronic commerce, web-enabled ordering and group purchasing although in their infancy also influenced the BPR. To regain lost vitality and contemporary relevance, movement of the military medical SCM model into the digital age was necessary.

Business Process Reengineering, Fast Payback and DMLSS

Armed with the above awareness, senior DoD medical logisticians initiated a Medical Logistics Functional Process Improvement Program (MLFPIP). The MLFPIP was a major BPR initiative that assessed the efficacy of existing processes, and refined or developed required replacements. The overarching outcome was a decision to move DoD medical logistics to one AIS. Health Affairs (HA) TRICARE Management Activity (TMA), in conjunction with the Deputy Under Secretary of Defense (Logistics and Materiel Readiness) was given the task to achieve BPR objectives. It created the Defense Medical Logistics Standard Support (DMLSS) Program to achieve the following objectives.

- Create an integrated medical supply management activity at the DoD level
- Reduce costs of pharmaceuticals and medical/surgical items
- Reduce order ship time for pharmaceuticals and medical/surgical items
- Reduce inventory at wholesale (depots) and retail (MTFs) levels
- Reduce time healthcare providers spend on medical logistics related activities
- Incorporate best business practices of the commercial health care industry

While the vision was an enterprise medical logistics system, enabled by a Joint Service AIS, functional execution remained with the Services where senior

medical logisticians recognized that achieving this outcome would take several years. Logistics capabilities had to advance at a faster pace. The BPR functional requirements were extensive and revolutionary. The task at hand was to identify and implement those business practices that could be implemented on short order and start the benefits stream. The focus became best practices that could provide improved information management and advanced communication, electronic commerce, for ordering and bill-paying, leveraging the purchasing power of the DoD and the development of automated tools that enable the user to make best value purchases. Effective electronic communication with trading partners proved the key. This moved the primary source of supply from the military depot to commercial trading partners; a change that produced increased capabilities that immediately generated reductions in materiel order-ship times. In-turn, it produced a dramatic reduction in on-hand (at MTFs and depots) stock as the enterprise moved quickly to embrace the principles of Just-in-Time (JIT) materiel management. This became known as the Prime Vendor Program.

Prime Vendor is a cooperative between military medical logistics and specific commercial trading partners to procure set items at reduced prices and guaranteed delivery times. Mechanically, the logistics function at the MTF places an electronic order. Within an hour, the trading partner provides electronic receipt confirmation and advises on fill status that will occur with next day's shipment.

With more than 95% of orders received the next day, the need for stockpiling supplies evaporated.

Almost simultaneous to the introduction of Prime Vendor, automated product and price comparison tools were provided. With this capability, logistics staffs were now able to quickly compare items using multiple criteria, packaging, therapeutic equivalency (pharmaceuticals), alternatives, pricing, etc. Simply put, logistics staffs were able to procure medical supplies at the best prices available, receive them within 24 hours, and reduce on-hand amounts.

The enterprise AIS strategy involved incremental or spiral development and fielding. Development of the DMLSS AIS began with implementation of Prime Vendor. Spiral development brought new capabilities and benefits much faster to the user. This strategy of development broke the AIS into three technology releases. Each was designed to support specific BPR requirements.

With each AIS release new capabilities and increases in benefits were provided to the user. The DMLSS AIS continued the momentum realized with Prime Vendor by automating the full range of processes reengineered during the BPR. The AIS provided a common suite of capabilities suitable for all Services, enabling them to turn-off their legacy systems. It also provided functional level information management integrated across the following areas: materiel, facility and equipment and technology management. Figure 1 displays system

functionality, by capability and system release—Release 3 achieves seamless integration of information across functional boundaries.

	Product/Price Comparison	**Product/Price Comparison and Facility Mgmt**	**Customer Area Inventory Mgmt and Facility Mgmt**	**Stock Room Inventory Mgmt., Assemblage Mgmt., and Equipment & Technology Mgmt**
MATERIEL MGMT	Product/Price Comparison Catalog Research Initiate Order Commercial Database Customer Support Common Data Monthly Catalog Update System Services Forward Customer Support (Stand Alone)	Product/Price Comparison Catalog Research Initiate Order Commercial Database Customer Support Common Data Monthly Catalog Update System Services	Customer Area Inventory Mgmt Customer Area Inventory Mgmt (Source of Supply) Prime Vendor Integration Stock Fund Inventory Wireless Barcode Receiving Stock Fund Financial Small Purchases System Services Customer Support	Perpetual Inventory Stock Room Inventory Mgmt Local Purchase Interface Excess Mgmt War Reserve Mgmt Assemblage Mgmt Dated Item Mgmt Quality Assurance Hazardous Item Mgmt
FACILITY MGMT		Facility Inventory Unscheduled Work Request Scheduled Work Request Project Mgmt Budget Mgmt System Services	Space Mgmt Condition Assessment Life Safety Mgmt Utilities Mgmt Fac Engt Interfaces Contract Mgmt Housekeeping Customer Support	
EQUIPMENT & TECHNOLOGY MGMT				Asset Mgmt Equipment Accountability Maintenance Support Equipment Request Technology Mgmt Customer Support Contract Mgmt Support Maintenance Services
	PRE-RELEASE 1	**RELEASE 1**	**RELEASE 2**	**RELEASE 3**

Figure 1: DMLSS Retail AIS Software Development Matrix

Continuing BPR

BPR didn't end (nor should it) with the work done at the front end of the DMLSS Program. The ongoing BPR continues process assessment and (where necessary) refinement to keep functionality and the AIS contemporary. Case in point is the processing of financial transactions between medical logistics systems/DMLSS and the Defense Finance and Accounting Service (DFAS). By

streamlining the electronic financial transaction process, DMLSS achieved considerable efficiency. A collaborative effort that reduced the number and complexity of electronic transactions passed between DoD medical logistics systems and DFAS, a 98% reduction in transactions was achieved with no loss of functionality. The streamlining of financial interfaces with DFAS resulted in a standard data transaction set adopted by all users. Figure 2 illustrates the streamlined DFAS interface.

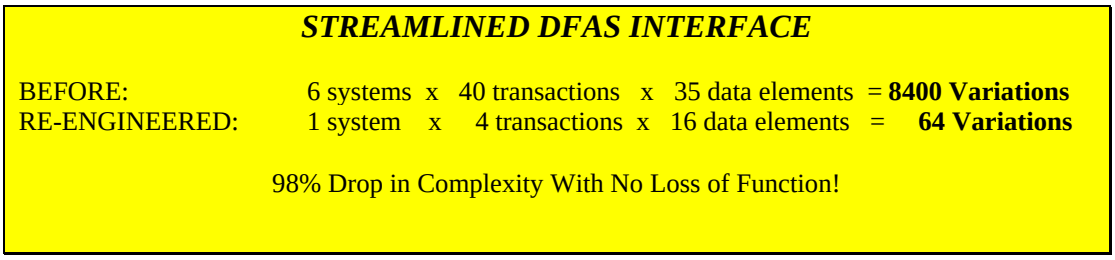

Figure 2 - Streamlined DFAS Interface - A Re-Engineering Success

Outcomes

The BPR produced very specific capabilities with definable performance outcomes that could be quantified and in turn measured. The reengineered processes, supported by modern information technology, contributed economic savings and performance improvements. Benefits achieved by the DMLSS Program have been documented throughout its life cycle. For the period FY 1991 through FY 1996, DMLSS achieved a $154 million reduction in the cost of drugs, $409 million reduction in inventories stored at the wholesale (depot) level and a corresponding $84 million reduction in inventories stored at MTFs (retail). An official economic analysis (EA) conducted in 1999 produced the following

results. For the period FY 2000 through 2012, estimated costs and benefits are: Program costs: $529.7 million, and benefits: $3,147.8 million. This produced an estimated benefit to cost ratio of 5.9:1. For every $1.00 of costs incurred by the DMLSS Program it produces $5.90 in benefits. This EA was validated in a post-implementation review conducted in 2001. The review looked at actual benefits and compared them to actual costs. The capabilities credited with producing the greatest return-on-investment were electronic commerce and JIT supply management. The improvement in overall logistics performance effectiveness is attributed to electronic commerce, JIT and automated information management--product and price comparison, item standardization and committed volume purchasing.

The cost/benefit analysis used mission performance measures developed during BPR and documented in the program Mission Needs Statement (intent/goals). The impact of the reengineered business processes and applied information technology has enabled DMLSS to surpass the performance benchmarks it established at the program's onset. Evidence is seen in the reduction of order-ship time for pharmaceuticals and medical/surgical items, the corresponding decrease in days of supply stored in depots and price reduction. Note in Figure 3, order-ship time was reduced from 20 days to 1 day; and the

number of days of DoD-wide medical inventory was reduced from a total of 380 days to 7 days.

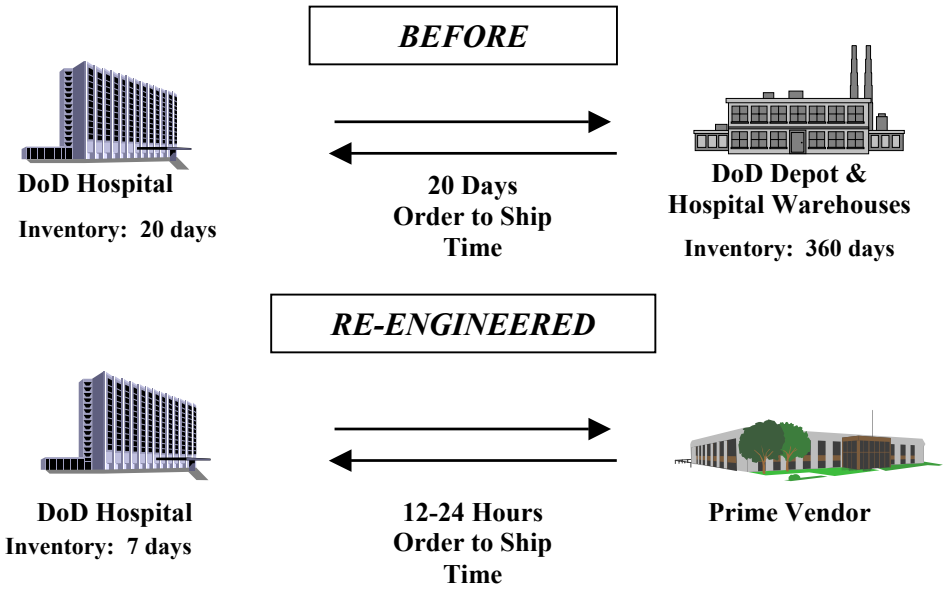

Figure 3 - Prime Vendor - A Re-Engineering Success

Lessons Learned

A number of factors contributed to the program's successes. Three standout as most meaningful: BPR, leadership support and eCommerce. Citing BPR may seem a statement of the obvious, but similar efforts as those undertaken by DMLSS experience less success because of poor foundation. The BPR provided the foundation for success. It gave a functional map that the technology development effort could follow. More importantly it engaged the user in the reengineering effort. Leadership support has many aspects and levels. Arguably most important for a program is its ability to gain funding. Senior level

leadership support is a key influencing factor on funding and its vitality. In addition and somewhat unrecognized is functional level leadership support. By its very nature reengineering introduces change to the work area. At times (if not involved in BPR) workers respond to new realities with less than complete acceptance. Having user support and active participation during the change process is fundamental and key. Functional leadership support and involvement can facilitate worker involvement and support for the change action, the change process and provide for quick resolution if disharmony develops. E-commerce brought new and meaningful capabilities to logistics that allowed for a complete reengineering of medical logistics business practices at all levels within the DoD. A key enabler of this magnitude facilitated the change process and brought immediate value to the user.

What Does the Future Hold?

The challenge to keep a functional area that interfaces with external partners contemporary in a dynamic environment does not cease. Recognizing this, DMLSS has its eye on the future and its role in ensuring military medical logistics is positioned to support a broad spectrum of health care demands. The following are a few items the program is working.

One effort that is underway, is the adoption of an industry wide standard medical surgical product identifier. A common identifier is known as the Universal

Product Number (UPN). Historically, manufacturers and distributors of medical/surgical items assign a unique identifier number to each product they manufacture or distribute. This results in numerous product numbers for the same item. The UPN concept provides a single manufacturer-assigned product identification number for each item produced. Distributors, rather than assigning their own unique item number, would use the single manufacturer's number. According to the Efficient Health Care Consumer Response publication, implementation of the UPN concept across the medical supply chain, would result in annual savings to the U.S. healthcare industry of $11 billion. Adoption of the UPN concept would facilitate price and product price comparisons.

Use the web to bring medical equipment catalogue information and the ability to make on-line purchases from those catalogues to the logistician.

Contract instruments that enable DoD to monitor commercial pharmaceutical and medical/surgical assets so medical assemblages developed to support war and contingencies other than war will contain items in common use by health care providers and readily available in the commercial sector.

Partnering with the Department of Veterans Affairs (DVA) to further expand the selection of medical supplies available to the healthcare provider, enabling DoD and DVA to fully enjoy the best pricing negotiated with commercial trading partners.

DMLSS is a DoD medical logistics success story, but it has only just begun!

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[i] Fitzpatrick, John C., Editor. *The Writings of George Washington from the Original Manuscript Sources, 1745-1799. Volume 19.* (Available online: http://lcweb2.loc.gov/cgi-bin/query/r?ammem/mgw:@field(DOCID+@lit(gw190213))