

# NAVAL POSTGRADUATE SCHOOL MONTEREY, CALIFORNIA



DTIC QUALITY INSPECTED 8

## THESIS

**THE FEASIBILITY OF IMPLEMENTING A  
PRIME VENDOR PROGRAM FOR  
LABORATORY SUPPLIES AND RELATED  
MATERIAL**

by

James M. Andreano and Francis E. Hanley

December, 1996

Principal Advisor:

Paul J. Fields

Associate Advisor:

James A. Scaramozzino

Approved for public release; distribution is unlimited.

19970507 137

# REPORT DOCUMENTATION PAGE

Form Approved OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.

1. AGENCY USE ONLY <i>(Leave blank)</i>	2. REPORT DATE December 1996	3. REPORT TYPE AND DATES COVERED Master's Thesis	
4. TITLE AND SUBTITLE THE FEASIBILITY OF IMPLEMENTING A PRIME VENDOR PROGRAM FOR LABORATORY SUPPLIES AND RELATED MATERIAL		5. FUNDING NUMBERS	
6. AUTHORS James M. Andreano and Francis E. Hanley		8. PERFORMING ORGANIZATION REPORT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey CA 93943-5000		10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.			
12a. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.		12b. DISTRIBUTION CODE	
<p>13. ABSTRACT <i>(maximum 200 words)</i></p> <p>In 1993, the Department of Defense (DoD) implemented an inventory reduction program for medical treatment facilities referred to as Prime Vendor (PV). This program was a new approach to the procurement and management of pharmaceutical and medical/surgical supplies. The results have been documented as an overwhelming success.</p> <p>Typically, a medical treatment facility's laboratory department has the same type of inventory issues as a pharmacy. The products have a predictable usage rate and usually a short shelf life, overstocking typically occurs, a considerable amount of manpower is applied to maintaining the stock, and information technology is not used to expedite order processing.</p> <p>This research provides insight into the feasibility and effects of implementing a prime vendor program for laboratory supplies and related material. The findings show that many of the benefits realized in civilian industry and in the Pharmaceutical and Medical/Surgical Prime Vendor Programs can be realized in the medical treatment facility's laboratory departments with the creation and implementation of a Laboratory Prime Vendor Program.</p>			
14. SUBJECT TERMS prime vendor, laboratory, pharmaceutical, medical/surgical, Just-in-Time inventory		15. NUMBER OF PAGES 75	
		16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UL

NSN 7540-01-280-5500 Standard Form 298 (Rev. 2-89)

Prescribed by ANSI Std. Z39-18 298-102



Approved for public release; distribution is unlimited.

**THE FEASIBILITY OF IMPLEMENTING A PRIME VENDOR PROGRAM FOR  
LABORATORY SUPPLIES AND RELATED MATERIAL**

James M. Andreano  
Lieutenant Commander, United States Navy  
B.S., United States Naval Academy, 1985  
and

Francis E. Hanley  
Lieutenant, United States Navy  
B.S., New Hampshire College, 1992

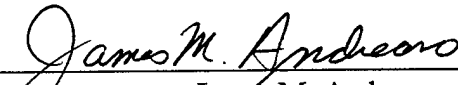
Submitted in partial fulfillment  
of the requirements for the degree of

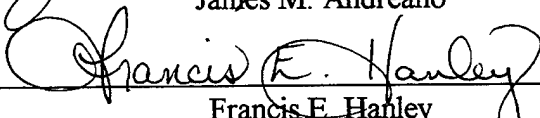
**MASTER OF SCIENCE IN MANAGEMENT**

from the

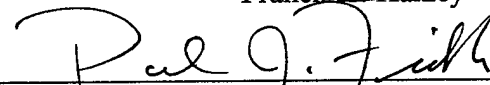
**NAVAL POSTGRADUATE SCHOOL  
December 1996**

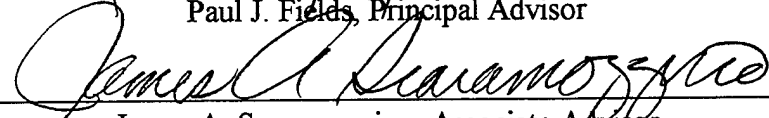
Authors:

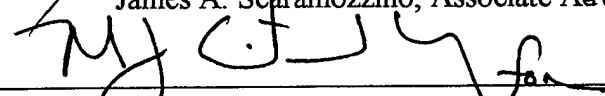
  
James M. Andreano

  
Francis E. Hanley

Approved by:

  
Paul J. Fields, Principal Advisor

  
James A. Scaramozzino, Associate Advisor

  
Reuben T. Harris, Chairman, Department of Systems Management



## ABSTRACT

In 1993, the Department of Defense (DoD) implemented an inventory reduction program for medical treatment facilities referred to as Prime Vendor (PV). This program was a new approach to the procurement and management of pharmaceutical and medical/surgical supplies. The results have been documented as an overwhelming success.

Typically, a medical treatment facility's laboratory department has the same type of inventory issues as a pharmacy. The products have a predictable usage rate and usually a short shelf life, overstocking typically occurs, a considerable amount of manpower is applied to maintaining the stock, and information technology is not used to expedite order processing.

This research provides insight into the feasibility and effects of implementing a prime vendor program for laboratory supplies and related material. The findings show that many of the benefits realized in civilian industry and in the Pharmaceutical and Medical/Surgical Prime Vendor Programs can be realized in the medical treatment facility's laboratory departments with the creation and implementation of a Laboratory Prime Vendor Program.



## TABLE OF CONTENTS

I.	INTRODUCTION .....	1
A.	GENERAL .....	1
B.	BACKGROUND .....	1
C.	OBJECTIVE OF THE RESEARCH .....	2
D.	RESEARCH QUESTIONS .....	2
E.	SCOPE AND LIMITATIONS .....	3
F.	LITERATURE REVIEW AND METHODOLOGY .....	4
G.	DEFINITIONS, ABBREVIATIONS, AND ACRONYMS .....	4
H.	ORGANIZATION OF THE THESIS .....	4
I.	CHAPTER OUTLINE .....	5
II.	PRIME VENDOR PROGRAM OVERVIEW .....	7
A.	THE HISTORY OF THE PRIME VENDOR PROGRAM .....	7
B.	FUNDAMENTALS OF THE PRIME VENDOR PROGRAM .....	8
C.	CONTRACTS .....	10
D.	DAPAs .....	12
E.	BENEFITS OF THE PRIME VENDOR PROGRAM .....	13
	1. General Inventory .....	13
	2. Wholesale Storage Depot Inventory .....	14
	3. Customer Satisfaction .....	15

F.	LESSONS LEARNED FROM PHARMACEUTICAL AND MEDICAL/SURGICAL PRIME VENDOR PROGRAMS. . . . .	16
G.	CHAPTER CONCLUSION. . . . .	21
III.	ANALYSIS OF COMMERCIAL VENDORS . . . . .	23
A.	KEY MANUFACTURERS/DISTRIBUTERS . . . . .	23
B.	MANUFACTURER AND/OR DISTRIBUTER CAPABILITIES. . .	23
1.	Baxter Healthcare Corporation . . . . .	23
2.	Fisher Scientific Corporation . . . . .	24
3.	Other Suppliers . . . . .	25
C.	DISTRIBUTION CAPABILITY . . . . .	25
D.	ACCOMMODATION OF DoD'S VOLUME . . . . .	26
E.	ELECTRONIC ORDERING CAPABILITIES . . . . .	27
1.	DPSC's Requirements . . . . .	27
2.	Current Status . . . . .	28
F.	CHAPTER SUMMARY. . . . .	29
IV.	IMPLEMENTATION CONCERNS, CONCEPTS AND OPTIONS FOR A LABORATORY PRIME VENDOR PROGRAM . . . . .	33
A.	INTRODUCTION . . . . .	33
B.	LABORATORY PRIME VENDOR PROGRAM AREAS OF CONCERN . . . . .	33
1.	Non-standard Laboratory Equipment and Supplies . . . .	33
2.	Unique Transportation Requirements . . . . .	35

3.	Lack of Universal Product Identification .....	35
C.	POTENTIAL BENEFITS TO THE MTF AND LABORATORY WITH THE IMPLEMENTATION OF A LABORATORY PRIME VENDOR PROGRAM .....	36
1.	Increase in Cash Flow .....	37
2.	Savings in Storage Space .....	37
3.	Decrease in Procurement Workload .....	38
4.	Improved Quality of Care .....	38
5.	Job Redesign .....	39
6.	Improved Interaction and Teamwork Throughout the MTF .....	40
D.	POTENTIAL SAVINGS TO DPSC WITH THE IMPLEMENTATION OF A LABORATORY PRIME VENDOR PROGRAM .....	40
E.	CONTRACTING CONCERNS AND OPTIONS .....	42
1.	Concerns .....	43
2.	Contract Alternatives .....	44
a.	Status Quo .....	44
b.	Incorporating the Laboratory Products into the Pharmaceutical and/or Medical/Surgical Prime Vendor Programs .....	44
c.	National or Regional Prime Vendor Contract .....	44

F.	TRAINING .....	45
G.	SUMMARY .....	46
V.	SUMMARY, CONCLUSIONS AND RECOMMENDATIONS .....	47
A.	SUMMARY ..	47
B.	CONCLUSIONS .....	48
C.	RECOMMENDATIONS .....	48
D.	AREAS FOR FURTHER RESEARCH .....	52
	APPENDIX A. ALLEGIANCE DISTRIBUTION FACILITIES .....	53
	APPENDIX B. FISHER SCIENTIFIC DISTRIBUTION FACILITIES .....	57
	LIST OF REFERENCES .....	59
	INITIAL DISTRIBUTION LIST .....	63

## **I. INTRODUCTION**

### **A. GENERAL**

This thesis evaluates the Prime Vendor Program developed by the Defense Personnel Support Center (DPSC) and Military Medical Departments. To understand the program requires an examination of the overall program structure and the differences between the current Pharmacy and Medical/Surgical programs. In addition, the examination of Military Medical laboratory departments, their systems, data and specific need requirements is necessary in order to identify areas that could be improved by implementing a Laboratory Prime Vendor Program.

### **B. BACKGROUND**

In 1993, the Department of Defense (DoD) implemented an inventory reduction program for medical treatment facilities referred to as Prime Vendor (PV). This program was a new approach to the procurement and management of pharmaceutical and medical/surgical supplies. The results have been documented as an overwhelming success.

The main goal of the Defense Personnel Support Center (DPSC) in instituting the PV program was to reduce each medical treatment facility's overall delivered cost for brand name medical supplies by reducing stock levels, reducing the losses caused by expired and overstocked goods, reducing manpower, and by using existing industry automation to expedite order processing.

The intent of this research is to see if the current Prime Vendor Program can be enhanced by applying the same goals and lessons learned from this program to the medical treatment facility's laboratory departments.

Typically, laboratories have the same type of inventory issues as a pharmacy. The products have a predictable usage rate and usually a short shelf life, overstocking typically occurs, a considerable amount of manpower is applied to maintaining the stock, and information technology is not used to expedite order processing.

In order to maximize the goals of DPSC, the just-in-time philosophy must be adapted in the daily operations of the laboratory. This research provides insight into the feasibility and effects of implementing a prime vendor program for laboratory supplies and related material.

#### **C. OBJECTIVE OF THE RESEARCH**

The objective of this study is to provide interested parties in the DoN and DoD with an evaluation of the medical prime vendor program's successes and concerns and an assessment of implementing a prime vendor program for laboratory supplies and related material.

#### **D. RESEARCH QUESTIONS**

The primary question that this thesis endeavors to answer is: Can implementing a prime vendor program for laboratory supplies and related material benefit DoD? In addition to answering the primary question, subsidiary research questions are addressed:

- What is the history of the Prime Vendor Program? What are the fundamentals of the Prime Vendor Program? What type of contracts are in place and how are they managed? What are the benefits of the Prime Vendor Program? What are the lessons learned from the Pharmaceutical and Medical/Surgical Prime Vendor Programs? These questions are answered in Chapter II.
- Who are the key manufacturers and what are their capabilities? Do they typically have distribution centers across the country or only regionally? Can they handle the business volumes for DoD on a daily basis? What are the Electronic Ordering capabilities of the vendors? These questions are answered in Chapter III.
- What are the areas of concern with implementing a Laboratory Prime Vendor Program? What are the potential benefits to the MTF, laboratory, and Defense Personnel Support Center? What are the concerns related to the Laboratory Prime Vendor contract? What are the alternatives? Should the Prime Vendor contracts be regional or national? Can laboratory items be added to existing medical/surgical or pharmacy contracts, or are new contracts necessary? Does training the users play a role in the success of the Prime Vendor Program? These questions are answered in Chapter IV.
- Are there any specific considerations to implementing a Prime Vendor Program for laboratory supplies and related material? What are the recommendations? These questions are answered in Chapter V.

## **E. SCOPE AND LIMITATIONS**

This thesis consists of an examination of the Prime Vendor Program as currently employed by DPSC and the Military Medical Departments. It examines relevant historical and background information; the current systems, data and specific calculations used in determination of payment prices; the impact on Military Treatment Facilities (MTFs) decisions regarding policy and resources; and

alternative approaches. Because of the recent introduction of this concept, this thesis is limited to current experience.

## **F. LITERATURE REVIEW AND METHODOLOGY**

Publications, instructions, and working papers from DPSC, DLA, NAVMEDLOGCOM and various Military Medical Departments were reviewed for areas relating to the Prime Vendor Program. This provided background data on practices and the implemented programs.

Key personnel from DPSC, DLA, NAVMEDLOGCOM and various Military Medical Treatment Facilities were interviewed to gain additional insight and perspectives into the current program.

## **G. DEFINITIONS, ABBREVIATIONS, AND ACRONYMS**

Definitions of certain terms presented in the thesis are given as they arise. A list of abbreviations and acronyms is presented after the Table of Contents.

## **H. ORGANIZATION OF THE THESIS**

The thesis is divided into five parts. The first part is an overview and history of the medical Prime Vendor Program, followed by a general analysis of the program's successes and concerns in the second part. Then the third part is an assessment of commercial vendors for laboratory supplies, and the fourth part discusses concerns, concepts, and options. Finally, the fifth part gives recommendations for or against the implementation of a laboratory prime vendor.

## **I. CHAPTER OUTLINE**

Following the introduction chapter, which provides a general overview of the concept and current DPSC policy on the Prime Vendor Program, this thesis is organized into five chapters:

- Chapter II provides an overview of the Pharmaceutical and Medical/Surgical Prime Vendor Programs and an analysis of successes and areas of concern.
- Chapter III examines the commercial vendors of medical laboratory supplies.
- Chapter IV presents the implementation issues relevant to a Laboratory Prime Vendor Program.
- Chapter V presents the recommendations for or against the implementation of a Laboratory Prime Vendor Program.
- Chapter VI contains the conclusion and recommendations for further research.



## **II. PRIME VENDOR PROGRAM OVERVIEW**

### **A. THE HISTORY OF THE PRIME VENDOR PROGRAM**

The current Military Prime Vendor Programs came about as a result of General Accounting Office Report No. NSIAD 92-58, "DoD Medical Inventory: Reductions Can Be Made Through the Use of Commercial Practices," December, 1991. Specifically, the report noted that DLA warehouses were overstocked and it recommended inventory management initiatives similar to those practiced at Vanderbilt University Medical Center and the Veterans Administration. In addition to the GAO report, reductions in military and civilian personnel along with decreased operating budgets signaled an immediate need for changes to the inventory practices used.

Before Prime Vendor, supplies were provided by the Defense Personnel Support Center (DPSC) through standard stock material or local suppliers. This created an accumulation of large inventories in order to deal with the lack of timely deliveries and uncertainties of availability. Additionally, there were problems with expiration of shelf life material, misuse of priorities, and increased open purchases.

To fix the problems noted by the report, the system had to change. Personnel was not the problem, they were doing their jobs right, it was the system that was wrong. Medical inventory systems were operating on a "just-in-case" (JIC) inventory system in order to adjust to lead times and to protect against stockouts.

DoD conducted research to move to emulate commercial business practices. One of the first sites where DoD conducted research was at Vanderbilt University Medical Center (VUMC). VUMC is a successful example of the “just-in-time” (JIT) inventory management system for three major reasons. To begin with, VUMC’s JIT inventory practices were effective in improving processes that lead to cost savings, while improving quality. Next, breaking down the traditional communication barriers internally and externally to the organization allowed for new roles to emerge and produced mutual benefits for all parties. Lastly, VUMC adopted the JIT philosophy and it was embraced by everyone in the organization in their approach to and resolution of complex issues.

After conducting the research, DoD began the Medical Prime Vendor Program. It’s initiative was to “Buy Response, Not Inventory.” The Medical Prime Vendor Program became a cooperative venture between the Defense Logistics Agency (DLA) and commercial industry. It provided federal medical facilities with a consolidated source of supply for brand specific items. The program was developed and administered by the Directorate of Medical Materiel of the Defense Personnel Support Center (DPSC) in Philadelphia, PA.

Prime Vendor allowed military treatment facilities to change their JIC inventory program to a JIT program through implementation of a combination of the JIT philosophy and JIT purchasing techniques.

## **B. FUNDAMENTALS OF THE PRIME VENDOR PROGRAM**

DPSC defines a Prime Vendor as a single distributor of commercial “brand-

specific” supplies from a group of purchasers in a given geographic area. Their goal is to provide delivery of products to satisfy ordering facility needs with a just-in-time system to supply military treatment facilities with deliverable pharmaceutical and medical/surgical products of all types (consumable and reusable).

The major features of the DPSC Medical Prime Vendor Program is that it provides:

- Comprehensive product coverage of pharmaceutical and medical/surgical products,
- Next day delivery,
- Best overall pricing in the industry,
- Total geographic coverage,
- Automated bill payment,
- Availability of emergency deliveries, and
- Guaranteed minimum 95 percent fill-rate.

Previous business practices resulted in clinical personnel spending valuable time and money managing supplies in their areas. As a result, Military Treatment Facility (MTF) personnel established and maintained unofficial inventories to ensure availability of material. Maintaining the unofficial inventories consumes supply dollars and degrades the ability of material managers to justify related budgets. These unofficial inventories represent unrecorded demand histories, which is a key component of the data needed to properly support the prime vendor program.

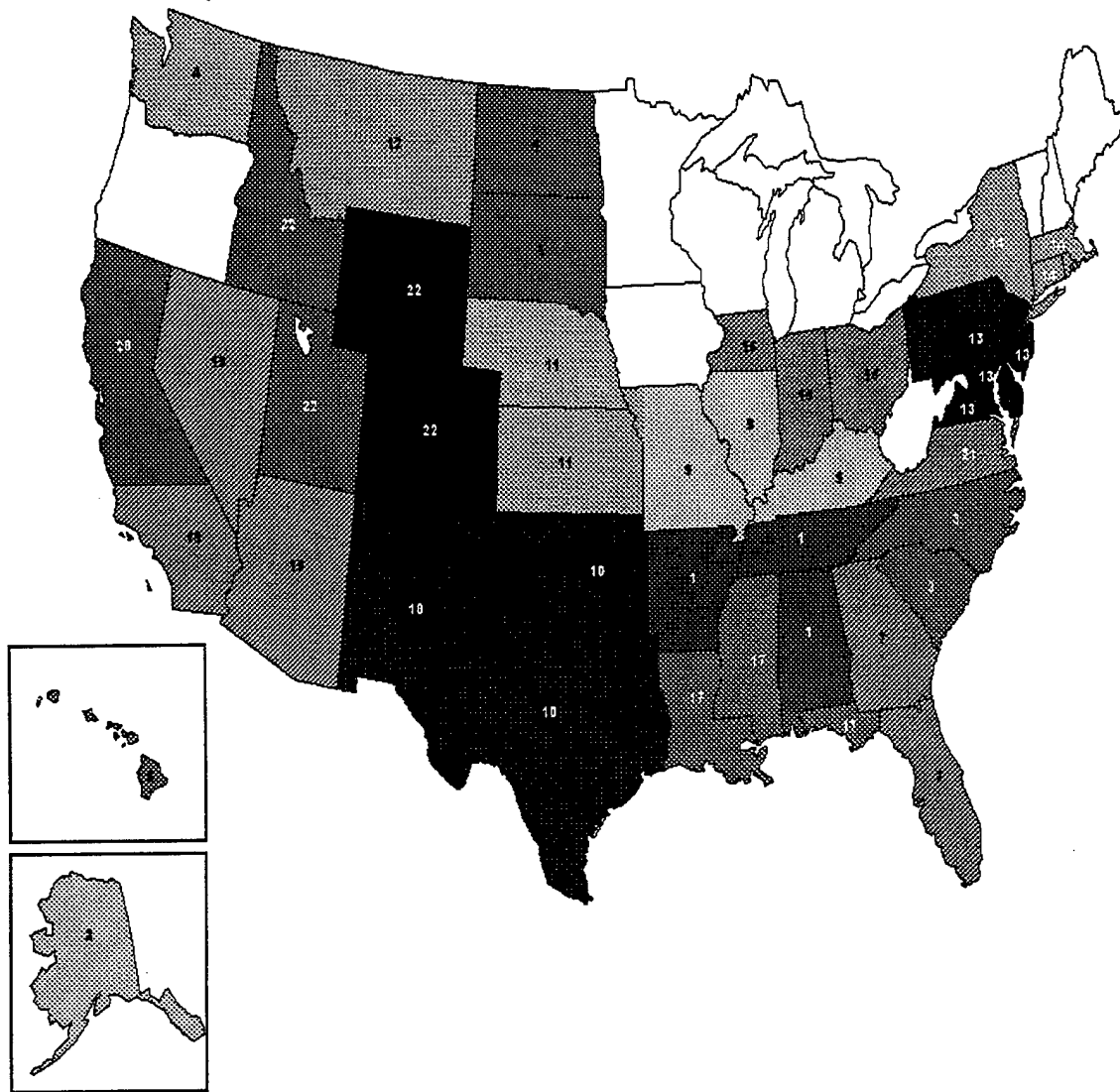
Prime Vendor enables MTFs to take advantage of the commercial vendor's distribution systems. It allows the MTF to tap into resources that their current transportation systems cannot duplicate. It enables the customer access to a vendor's inventory and delivery within 24 hours. Prime Vendor bypasses the clogged supply pipeline and lays a new streamlined process providing a fresher product for the customer.

The Prime Vendor Program is a contract, between the government and a distributor, for one day, automated order processing and delivery of Pharmaceuticals and Medical/surgical supplies to medical treatment facilities within a geographic region. This re-engineering effort adopted commercial business practices and involves implementing buying practices through the use of Electronic Data Interchange. The goal has been to improve quality of support to health care providers while reducing both wholesale (depot) and retail (MTF) inventories DoD wide.

The United States has been divided into twenty-two regions (see graph on the next page), with one prime vendor for pharmaceutical items and one prime vendor for medical/surgical items, delivering commercial products to all ordering facilities within that region.

### **C. CONTRACTS**

The Directorate of Medical Materiel awarded the first pharmaceutical contract in January 1993 and the first medical/surgical contract was awarded in June 1993. Awards were initially announced covering MTFs in the National Capital region and



<u>REGION</u>	<u>FACILITIES</u>	<u>REGION</u>	<u>FACILITIES</u>
1. AL/TN/AR	7	12. MONTANA	1
2. ALASKA	3	13. NATL CAPITAL	19
3. CAROLINAS	14	14. NY/NE	6
4. CASCADES	6	15. OH/IL	2
5. DAKOTAS	3	16. PACIFIC	17
6. EUROPE	16	17. PANHANDLE	11
7. FL/GA	17	18. ROCKY MTS	3
8. HAWAII	3	19. SAN DIEGO	14
9. IL/KY/MO	4	20. SAN FRANCISCO	12
10. LONESTAR	18	21. TIDEWATER	8
11. MIDWEST	5	22. UTAH/IDAHO	2

AREAS WITHOUT COLOR/NUMBER HAVE NO REQUIREMENTS

purchases from prime vendors began 45 to 110 days after the award of each contract.

At the end of FY 1995, 20 pharmaceutical contracts and 6 medical/surgical contracts had been awarded. Those 26 contracts represent agreements to purchase approximately \$908 million annually in pharmaceuticals and approximately \$114 million annually in medical and surgical items. At the end of FY95, 236 MTFs were covered under the pharmaceutical contracts and 44 MTF under the medical/surgical contracts.

#### **D. DAPAs**

As part of the Prime Vendor Program, Distribution and Pricing Agreements (DAPAs) were established between DPSC and the pharmaceutical and medical/surgical manufacturers and distributors. Under the DAPA, the agreement holder consents to allow the prime vendor to distribute its products to the ordering facilities and agrees that the prime vendor will be charged the same price as established in the agreement.

DPSC has established the DAPA management system in order to:

- Increase availability of products,
- Automate manual application and review process,
- Increase data integrity,
- Provide user-friendly access to DAPA database, and
- Streamline access to DAPA prices for all prime vendors and DAPA holders.

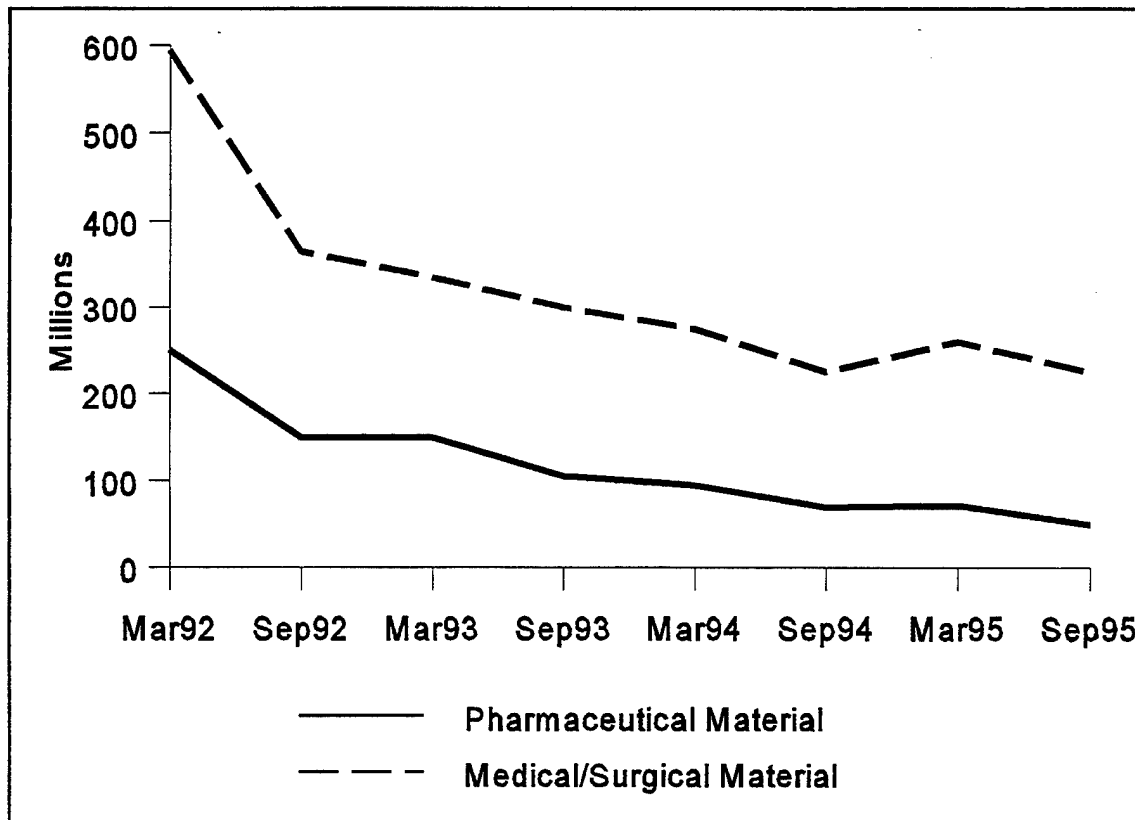
These DAPAs use Federal Stock System price as a ceiling price unless there is no FSS available, in which case uses leveraged pricing strategy. Only products that have DAPAs can be ordered from the manufacturer/distributor. This utilization allows DoD to increase the speed at which products are made available to the ordering facility by re-engineering the DAPA business practice.

#### **E. BENEFITS OF THE PRIME VENDOR PROGRAM**

The major benefits of the Prime Vendor Program were directly addressed in the General Accounting Office Report No. NSIAD 92-58, "DOD Medical Inventory: Reductions Can Be Made Through the Use of Commercial Practices," December, 1991, are General Inventory Reduction, Wholesale Storage Depot Inventory Reduction, and Increased Customer Satisfaction.

##### **1. General Inventory**

Defense Logistics Agency (DLA) wholesale medical inventories have decreased since the medical prime vendor program began in 1993. Those reductions are attributed to the ability of MTFs to order smaller quantities, more frequently, because prime vendors can deliver medical supplies from available stock within 24 hours, with emergency deliveries within 6 hours. In addition, losses created by the expiration and overstocking of pharmaceuticals have also been reduced. (DOD IG 1996)



**Figure 1. Value of Medical Inventory in DoD Wholesale Depot**

## **2. Wholesale Storage Depot Inventory**

DLA wholesale medical inventories have decreased as a result of various inventory reduction initiatives, including the Prime Vendor Program. In January 1992, medical inventories at DoD storage depots totaled \$607 million with \$361 million in medical and surgical items and \$246 million in pharmaceutical items. By March 1993, those inventories had been reduced as the result of humanitarian assistance, disposal action, and other inventory reduction initiatives. After March 1993, wholesale medical inventories continued to decline, principally as the result of the Prime Vendor Program. As shown in Figure 1, wholesale medical inventories

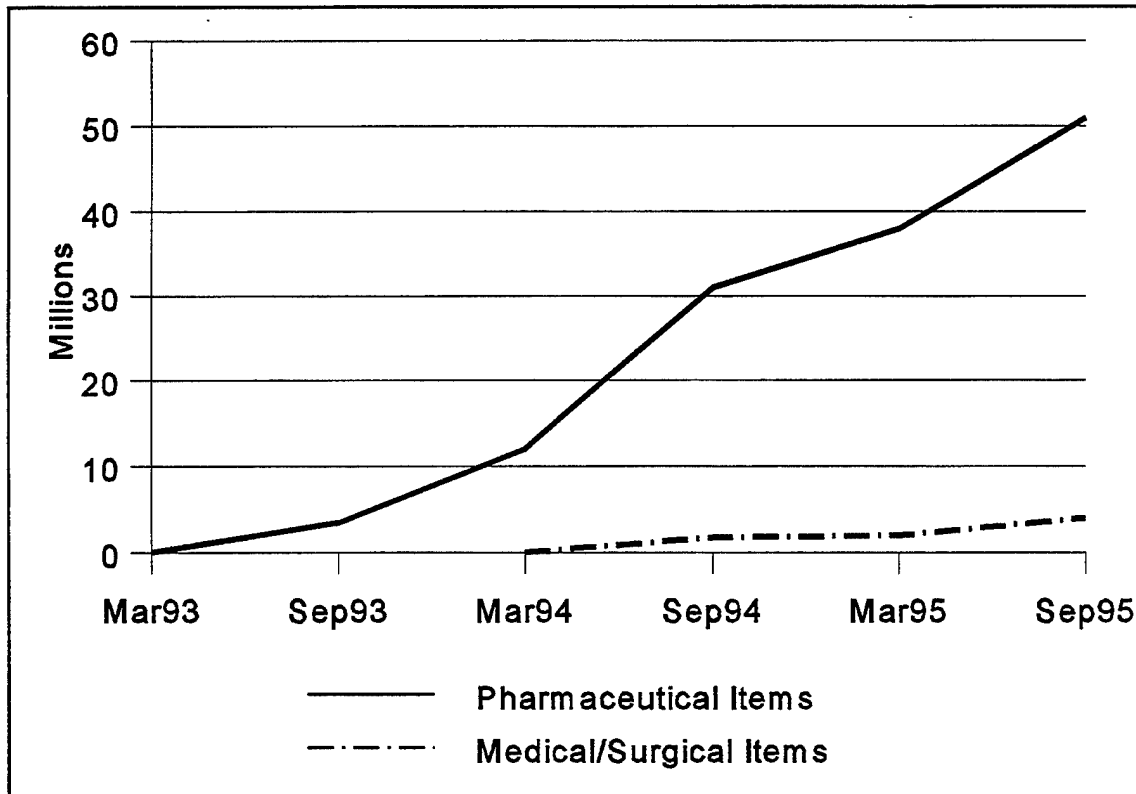
have decreased from \$333 million in March 1993 to \$206 million in September 1995. The largest decrease was for the pharmaceutical items which declined from \$140 million to \$49 million. (DOD IG 1996)

### **3. Customer Satisfaction**

In surveys conducted by DPSC, customers stated that they were very satisfied with the Prime Vendor Program and that most of the desired benefits have been achieved particularly in the area of pharmaceuticals. Pharmacists noted faster delivery, fewer stock outages, a reduction in administration time, and a reduction in inventory. (THOMAS)

The steady increase in purchases since the beginning of the Prime Vendor Program, as shown in Figure 2, is a clear indication of customer satisfaction. Figure 2 shows the purchases by month and by fiscal year since March 1993 (DOD IG 1996). During the last six months of 1993, purchases from the prime vendors totaled \$10 million, and then rose dramatically to \$170 million in FY1994 and \$476 million in FY 1995.

Per the 1996 GAO audit, there has been no major failures with this program. The largest concern is that the gains made by implementing a Medical/Surgical Prime Vendor Program have not mirrored the success of the Pharmaceutical Prime Vendor Program. The next section explains the underlying causes of this disparity.



**Figure 2. Customer Purchases from Prime Vendors**

**F. LESSONS LEARNED FROM PHARMACEUTICAL AND MEDICAL/SURGICAL PRIME VENDOR PROGRAMS**

The Prime Vendor Program has demonstrated that it works and it works well. As clearly shown in Figures 1 and 2, both the Pharmaceutical and Medical/Surgical Prime Vendor Programs have been successful, but the Pharmaceutical Program has been more successful.

There are several reasons the pharmaceutical program has been more successful. First, the pharmacy is an extremely centralized area with one person in control. The pharmacist not only counts the inventory and does the ordering, but

actually is the person depleting the stock when filling a prescription. This is a good example of a perpetual inventory system in action.

Secondly, pharmacists commonly receive some business training during their education and clerkship. Some pharmacists are also involved in civilian pharmacy organizations, and may even work with civilian pharmacies. This allows them to be exposed to modern business practices, such as JIT and Prime Vendor.

This familiarity allowed the pharmacists to adopt this program with relative ease because they were familiar with the type of process and DPSC included them in the process and provided training in the JIT system. In the pharmacy, the inventory managers are the pharmacists and by adopting this program, it actually made their operation smoother and more efficient in both dollars and time spent in their day-to-day activities. This is why the pharmacists were willing to adopt the program so easily.

The Medical/Surgical Prime Vendor Program has demonstrated that it can be successful, but its growth rate has been slow, as shown in Figure 2. There are seven major differences between the Pharmaceutical and Medical/Surgical Prime Vendor Programs that led to the slower adoption rate.

First, the Medical/Surgical arena is a highly decentralized inventory system with each Medical/Surgical area ordering what it needs from material (inventory) managers located at the MTF.

Second, in contrast to the pharmacists, some of the material managers and material management personnel have never received training in material

management, much less in modern business practices, such as JIT and Prime Vendor. Research interviews were conducted with personnel from DPSC, Material Management Department Heads, Financial Department personnel, Laboratory and Pharmacy Department Heads and related personnel at National Naval Medical Center Bethesda, Walter Reed Army Medical Center, and Naval Hospital Portsmouth. These interviews indicate that it is less likely that material managers and material management personnel have been involved in civilian material management organizations, thus they have had less exposure and training than the pharmacists.

Third, the Prime Vendor Program was implemented in Medical/Surgical because of the success in the pharmaceutical arena. Senior leadership failed to realize that the dynamics of the Medical/Surgical program were not the same as for the Pharmaceutical Prime Vendor Program. Unfortunately, when the Medical/Surgical Prime Vendor was implemented, the material management personnel, with less exposure, experience, and education, received less training and guidance.

Fourth, the material managers had no incentive to effectively adopt this system. The Prime Vendor Program was not "packaged and sold" to them as it was to the pharmacists. Many material managers and material management personnel saw the Prime Vendor Program as a direct threat to their job security.

Fifth, the Pharmaceutical Prime Vendor Program had a phased approach with each region up and running prior to implementing the next region. When the

Medical/Surgical Program was started, the users were not educated nor exposed to this new program prior to its implementation. The underlying assumption DPSC made was that because the Pharmaceutical Prime Vendor Program was successful, the Medical/Surgical Prime Vendor Program would be just as successful, but they failed to involve and educate the users in the process. (WOOD)

Sixth, as with any organizational change, the failure to invest in training and educating the workforce in a new program often creates a negative feeling towards the new program and slows employee participation and buy-in. This is what happened with the Medical/Surgical Prime Vendor Program. The Medical/Surgical Prime Vendor Program has been a success, but not of the same magnitude as the Pharmaceutical Prime Vendor Program. The lack of planning prior to implementation made the transition difficult. (WOOD)

Seventh, Pharmaceuticals typically use National Drug Codes (NDCs) to identify the product. With the use of NDCs, it is relatively easy to identify different products. Pharmacists are familiar with the process of identifying products in this manner, therefore it was easy for them to adapt to the Prime Vendor process of ordering medications.

In the medical/surgical arena there was no such identification numbers. Each manufacturer or distributor has its own method of identifying the product. What one company identifies as one product, another may call something completely different. Equivalent or even like items are not easily identifiable. This required the procurement department to conduct more extensive research of

products to identify the correct item to order. It required more effort and more time to be spent to identify the correct product and thus, led to a slower adoption rate of the Medical/Surgical Prime Vendor Program.

DPSC has tackled this by creating a Product and Price Comparison Catalog. This catalog, available via computer disks, provides the purchasing agent with a list of the products available by name, type, manufacturer, etc. Although more time is required to create and sometimes use this catalog, it provides the procurement official with the resources to identify the correct product to order.

After the initial two and one half years of the Pharmaceutical and Medical Surgical Prime Vendor Programs' existence, Department of Defense Inspector General Report No. 96-109, "Audit of Prime Vendor Support of Medical Supplies," May 1996, cited only minor errors with the Prime Vendor Program. These errors were mainly attributed to using incorrect distribution fees, incomplete catalog data (from the DAPAs), and not taking advantage of manufacturer rebates. This final area was not addressed in the Prime Vendor Program itself. DoD has little experience in dealing with manufacturer's rebates or discounts when buying bulk quantities. Currently, some MTFs take rebates, other MTFs take them in the form of credit, while still others take them in the form of other qualified contractual items. Purchases made with manufacturer rebates are not recorded in the procurement system. In all instances, the material is placed in inventory and issued under the same procedures as material purchased through the procurement system. (DoD IG 1996)

## **G. CHAPTER CONCLUSION**

DLA has successfully implemented a "Buy Response, Not Inventory" procurement process that mirrors commercial business practices with its implementation and success of the Medical Prime Vendor Program. General Accounting Office Report No. NSIAD 95-142 (OSD Case No. 9919), "Inventory Management: DoD Can Build Progress in Using Best Practices to Achieve Substantial Savings," August 4, 1995, reported that the Prime Vendor Program for medical supplies is the most successful program in DoD.

"The best way to gain support of an idea or program is to demonstrate that it works," (FIELDS). Prime Vendor has clearly shown that it works. The success of this program provides a benchmark for military organizations to look at to adapt similar commercial practices for other consumable items purchased, such as office supplies, subsistence, dental supplies, optometry supplies, and laboratory supplies.



### **III. ANALYSIS OF COMMERCIAL VENDORS**

#### **A. KEY MANUFACTURERS/DISTRIBUTORS**

Defense Personnel Supply Center (DPSC) provided the authors with the names of the five largest suppliers of current prime vendor service under the existing pharmaceutical and medical/surgical agreements. The authors conducted Interviews with representatives ranging from corporate Vice Presidents to Directors of Military/Corporate Accounts.

#### **B. MANUFACTURER AND/OR DISTRIBUTOR CAPABILITIES**

The five interviewees all agreed that Baxter Healthcare Corporation and Fisher Scientific Corporation are the two major companies that could provide a prime vendor service in the laboratory area at the present time. The three other companies interviewed (Owens & Minor, Durr, and Colonial Healthcare) stated that they are not in the laboratory supply business at this time. This is not to say they could not acquire the expertise or equipment to do this, but it is currently not one of their goals.

##### **1. Baxter Healthcare Corporation**

Baxter Healthcare Corporation (Baxter) is the largest provider of health care supplies. Baxter is both a manufacturer and distributor and is an experienced Prime Vendor since Baxter is DoD's Medical/Surgical Prime Vendor for the San Diego area.

Baxter manufactures many laboratory specific products, reagents, and capital equipment used in the lab. Baxter recently spun off their distribution company on October 1, 1996. Baxter's Hospital Distribution and Laboratory Supply Distribution are now integrated into the newly formed Allegiance Corporation. In addition to this manufacturing capability their former "Scientific Products" division was a market leader (maintained a competitive advantage) in the research laboratory products area for a number of years. This portion was recently sold to VWR Scientific Products (VWR).

Alligiance provides thousands of products and services needed by hospitals, laboratories and others in health care. As stated above, they manufacture many of the products they supply, while others come from leading health and medical companies from around the world including Johnson & Johnson, 3M, Baxter, Dade International, Kendall, Corning, Mallinckrodt, Becton Dickinson, Tecnol and Tenneco. Allegiance believes the key is not just providing the product but also providing a unique set of innovative, integrated cost management services.

This is extremely important in health care today because it allows hospitals to save money and focus on patient care rather than supplies and logistics.

## **2. Fisher Scientific Corporation**

Fisher Scientific Corporation (Fisher Scientific) is also a manufacturer and a distributor. Fisher Scientific is currently a DAPA holder, but does not have any Prime Vendor experience in the DoD Pharmaceutical or Medical/Surgical Prime Vendor Programs. However, they have been awarded two Prime Vendor contracts

in support of the more specialized lab research divisions, Armed Forces Institute of Pathology (AFIP) and Walter Reed Army Institute of Research (WRAIR).

Fisher Scientific manufacturers one-third of their chemical products, with the other two-thirds comprised via negotiations between Fisher Scientific and the manufacturer of the products. Fisher Scientific's concentration is predominantly in the industrial, governmental, educational, and research marketplace. They have a smaller niche in the clinical marketplace which they just recently entered when Fisher Scientific acquired Curtis Mattheson Scientific in October 1995.

### **3. Other Suppliers**

VWR was mentioned during our interview with Fisher Scientific director of corporate accounts, Dr. Anthony Viscido, but they are purely an industrial governmental educational supplier. They do not carry any clinical product line which would be required to support DoD's requirements. They could participate in a prime vendor program, but for research laboratories only.

The other aspect that will be recommended as an area for further study is the analysis of the small businesses that have shown an interest in participating in a laboratory prime vendor program. Small business will not be addressed for the remainder of this paper.

### **C. DISTRIBUTION CAPABILITY**

Both Allegiance and Fisher Scientific have major national distribution centers, not only across the country but internationally as well. Distribution to any CONUS DoD facility could be easily facilitated by current distribution network as

shown in Appendix A and B. Allegiance maintains its own fleet of trucks while Fisher maintains a close working relationship with the United Parcel Service (UPS). Baxter's and Fisher Scientific's distribution facilities current locations are displayed in Appendix A and B, respectively. As this paper explores the feasibility of providing service to the continental United States sites only, our distribution diagrams show only the applicable 48 states.

#### **D. ACCOMMODATION OF DoD'S VOLUME**

Both Allegiance and Fisher Scientific state they could accommodate DoD's large volume. There are currently just slightly over 1.5 million personnel on active duty today. The United States population is approximately 265.1 million. This means that currently the active duty portion of the Department of Defense comprises only one half of a percentage point of the current US population. In addition, end strength is forecasted to fall to less than one million personnel by the year 2000. These numbers reflect the magnitude of DoD's portion in the medical sector. Baxter, for instance, is a ten billion dollar per year company (prior to the creation of Allegiance Healthcare). Notwithstanding, prior to the restructuring of the company, DoD makes up less than five percent of Baxter's ten billion dollar annual business in Fiscal Year 1996. (Williams)

Allegiance is a distributor of many thousands of medical, surgical and laboratory products - enough to fill 80 percent of a typical hospital's supply needs. On any given day Allegiance delivers more products than any other company in our industry (they are without doubt the largest by an order of magnitude). An average day consists of about 900,000 boxes to more than 6000 locations across the country.

DoD's Medical Treatment Facilities make up less than two percent of the entire United States hospital population (number of hospitals not number of beds). As of June 14, 1996 there were 93 Medical Treatment facilities comprised of 9710 beds available for active duty personnel in the continental United States. Thirty one of these Medical Treatment Facilities (one-third) have 25 or less beds. There are over 5200 hospitals in the United States.

#### **E. ELECTRONIC ORDERING CAPABILITIES**

One of the most important component of all is that of Electronic Data Interface (EDI). Without EDI, the Prime Vendor Program would still be only an unproven theory. This is because Prime Vendor relies on a just-in-time inventory which is transparent in patient care while saving DoD hundreds of million dollars. This tremendous cost savings and cost avoidance achieved not because these Prime Vendor companies have the capability or distribution networks but because they know exactly what is being consumed at each facility everyday via their Electronic Order Entry (EOE) or EDI systems and have specified points on when to resupply these activities.

##### **1. DPSC's Requirements**

Prime Vendor contractors must demonstrate the following to meet DPSC's existing Prime Vendor requirements:

- Provide adequate training at each ordering facility to ensure that government personnel understand the workings of the proposed EOE and EDI system.

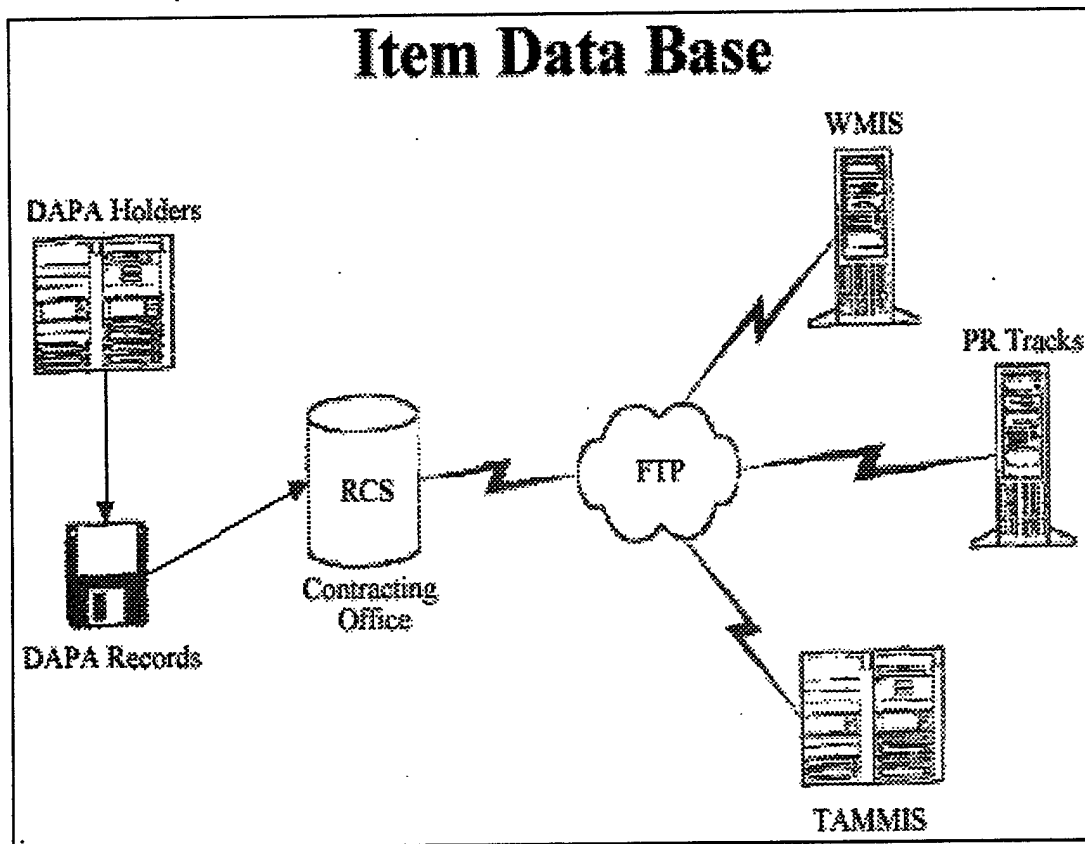
- Provide the required business documents in ANSI X12 format within six months of award.
- Ensure that ordering facilities will be able to place orders to a single contractor order receipt point without having to distinguish between divisions.
- An EOE system with a price and product catalog and can ensure that all items for which the ordering facilities have provided usage data can be loaded within 60 days of contract award.
- Electronic confirmation within two hours following transmission of the order from the ordering facilities in all cases.
- Provide adequate "help" procedures in place if a problem is encountered by Government personnel when interacting with the prime vendor's catalog or EOE system.

## **2. Current Status**

Baxter, which is performing as a Prime Vendor in the Medical/Surgical Prime Vendor Program, meets the existing Electronic Order Entry System (EOE) and Electronic Data Interchange (EDI) capability.

Fisher Scientific is only performing as a Prime Vendor for research laboratories, but they too are performing in accordance with above requirements.

Figures 3 and 4 on the next two pages provide diagrams of how Fisher Scientific's EOE/EDI systems are connected between the Prime Vendor, the MTF, the DAPA holders, and DPSC.

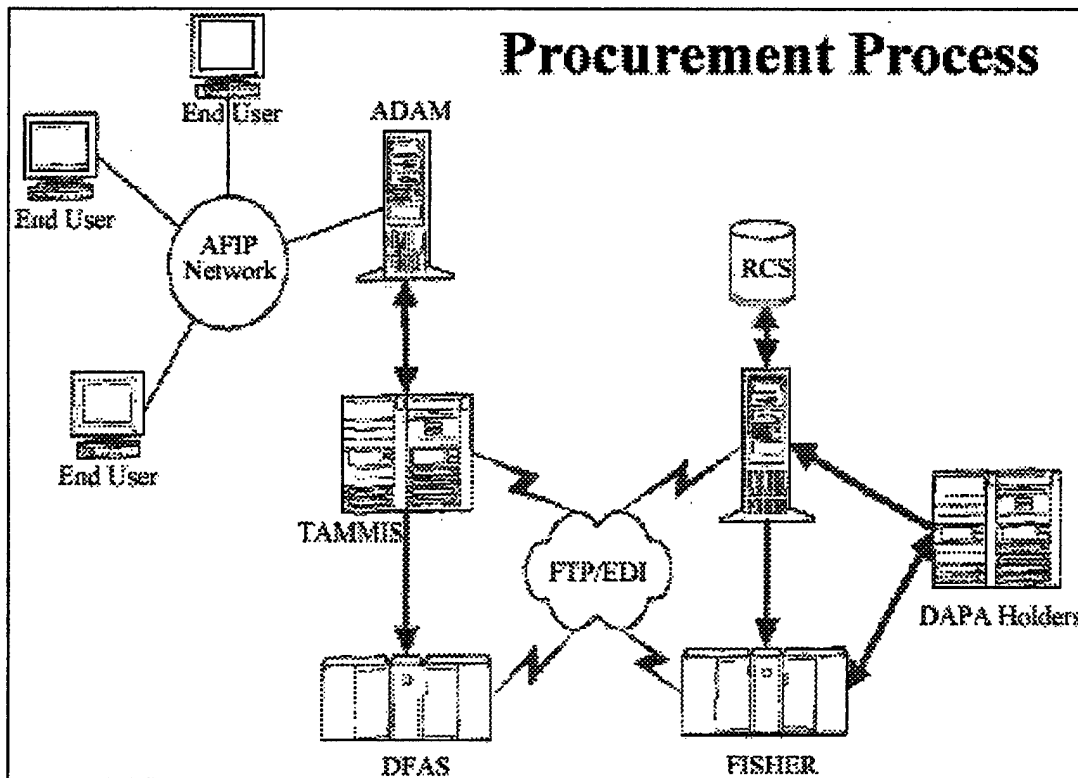


**Figure 3. Fisher Scientific's Item Data Base**

## F. CHAPTER SUMMARY

In James Brian Quinn's article in 1985 for the Harvard Business Review entitled, "Managing Innovation: Controlled Chaos," he talks about large organizations undertaking change and states,

The probability of error increases exponentially with complexity, while the system innovator's control over decisions decreases significantly — further escalating potential error costs and risks. Such forces inhibit innovation in large organizations. But proper management can lessen these effects.



**Figure 4. Fisher Scientific's Procurement Process**

DoD is at a crossroads; it must choose between two strategies. Will DoD continue to try to trim patient care to available resources, or will DoD attempt to leverage available resources to reach new levels of increased patient care even as available resources drop? (Hamel and Prahalad)

Both vendors are thoroughly capable of providing DoD military treatment facilities with a Prime Vendor program for the laboratory area that mirrors that of the Pharmaceutical or Medical/Surgical Programs. These companies have a long association providing civilian hospitals the same material required by Military Treatment Facilities. They also both have established records as Prime Vendors,

they have the capacity, established distribution networks, and Electronic Data interface systems required to do the job.

J. Michael O'Conner states,

I am convinced commercial distribution can perform its function quite effectively and in return assist the DoD Military Treatment Facilities in realizing significant savings and efficiency gains. Eliminating the duplication of inventories which currently exists from the supply pipeline alone can take millions and perhaps billions out of healthcare delivery costs. The labor costs associated can be equally significant as it is believed that for every dollar you spend on a product you also spend another dollar to acquire and possess the product ...These facts are documented as there are "Big 8" accounting firm studies that confirm this. (ANDERSON and ERNST)

These companies have enormous previous experience in the private sector. The challenge of adapting to and interfacing with existing DoD system are not insurmountable as both the Pharmaceutical and Medical/Surgical Prime vendor Programs have shown.

The next chapter looks at implementation concerns, concepts and options for a Laboratory Prime Vendor Program.



## **IV. IMPLEMENTATION CONCERNS, CONCEPTS AND OPTIONS FOR A LABORATORY PRIME VENDOR PROGRAM**

### **A. INTRODUCTION**

Prior to examining specific recommendations, it is necessary to discuss the concerns, concepts, and options in order to determine the best alternatives for implementing a Laboratory Prime Vendor Program.

### **B. LABORATORY PRIME VENDOR PROGRAM AREAS OF CONCERN**

There are three major hurdles that must be overcome prior to implementing a laboratory prime vendor program: non-standard laboratory equipment and supplies, unique transportation requirements, and lack of universal product identification.

#### **1. Non-standard Laboratory Equipment and Supplies**

Currently, it is common practice for MTFs to make their own local arrangements for equipment with lab suppliers. These agreements include leasing major laboratory equipment at low cost and in some cases leasing at no charge. These contractual agreements are entered into between the MTF and a company with the MTF realizing that only that company's reagents and consumables can be used in conjunction with that machine. This practice has caused a proliferation of non-standard equipment in each facility. In other words, by visiting two separate hospitals (regardless of service affiliation) located in the same geographic area of the country, each hospital could have completely different pieces of equipment in

the laboratories. These agreements between hospital and suppliers exist because for the most part they were extremely cost effective. (SCHMITT)

One concern is that because of these local arrangements and local purchase of lab supplies, DPSC does not have accurate demand data nor a record of associated supplies being used to support daily laboratory operations. This information is necessary because DPSC must have this data in order to ensure required items are contracted by DAPAs and enable the Prime Vendor to fill all requirements. Since there is no standard brand of equipment or consumables used in every MTF (although each conducts similar tests), DPSC would have to require each MTF laboratory provide it with an inventory report that includes every major piece of test-based equipment used, its corresponding supplies, and the usage data.

Another concern is the legality of the contracts being negotiated at the MTFs for equipment. A common practice in the civilian community is one for the hospital to contract for the consumables and the company supplying the consumables to give the laboratory the equipment free of charge. This is called a "buy-in." While this may be accepted in the civilian community, in the military it violates Title 48, Code of Federal Regulations - Federal Acquisition Regulations and SECNAVINST 4001.2F.

Ideally the equipment in each MTF would be the same as the next, but complete equipment standardization is unlikely and it is not required for this program to succeed so long as the required product baseline is established, along

with corresponding DAPAs, to enable a Prime Vendor to meet the user's requirements. Equipment may not be totally standardized throughout the DoD system unless one provider is selected for the entire system, but regional standardization is a possibility and could be easily achieved by incorporating a phased replacement policy for major equipment into a separate DPSC led equipment contract. Equipment cannot be included in the same contract with consumables because it has a different expense element. Additionally, equipment contracts should be worked through the MTF's procurement office and Biomedical Repair Office for risk management.

Another benefit of standardized equipment is that it allows the teaching hospitals to train new technicians on the same equipment they will see in the field or at their next duty station.

## **2. Unique Transportation Requirements**

The Laboratory Prime Vendor Program contracts need to ensure the prime vendor can meet all of the transportation requirements. Reagents are time and temperature sensitive and may require refrigeration to ensure correct analysis results when utilized. These transportation requirements are similar to those of pharmaceuticals. Additionally, laboratory distributors have had to meet these same requirements to support their civilian customers.

## **3. Lack of Universal Product Identification**

The numbering or identification of each different reagent (batch numbers), piece of laboratory equipment, and consumables must also be addressed. Under

an initiative spearheaded by former DPSC Prime Vendor Program Manager LCDR Mitch Cooper, DoD has led the evolutionary process in pharmaceutical and medical/surgical products. The vehicle for identifying the product is the Universal Product Number (UPN). July 31, 1996 was the deadline placed on the manufacturers for one hundred percent compliance. This effort started in October of 1992. Currently ninety five percent of items for pharmaceuticals and medical/surgical items have been assigned UPN numbers. Civilian medical hospital facilities have joined DoD in driving the manufacturers to identify everything down to the smallest unit of issue. This is critical to tracking demand and forecasting budgets. There are currently two vehicles for assigning UPNs, the UCC/EAN Global Product Identification Standard and the Health Industry Business Communications Council (HIBCC) format. Both are in bar coded format which is the key in allowing the Prime Vendor Program to drive reorder quantities and capture usage data.

**C. POTENTIAL BENEFITS TO THE MTF AND LABORATORY WITH THE IMPLEMENTATION OF A LABORATORY PRIME VENDOR PROGRAM**

As previously mentioned, there are many potential benefits for both the MTF and the laboratory by implementing a Prime Vendor Program. Specifically, they include an increase in cash flow, savings in storage space, decrease in procurement workload, improved quality of care, job redesign, and improved teamwork throughout the MTF.

## **1. Increase in Cash Flow**

Under the Prime Vendor Program, lead time and variability in lead time will decrease, therefore, the MTF can decrease its inventory. This will lead to a decrease in expenditures to maintain a larger inventory.

Both Walter Reed Army Medical Center (WRAMC) and Bethesda National Naval Medical Center (Bethesda) were able to reduce significant amounts of inventory after the start of the Prime Vendor Programs. Bethesda related a reduction from 3,600 line items being carried to only 480, inventory value decrease from \$2,500,000 to \$230,000. WRAMC had an inventory reduction valued at \$3,500,000.

## **2. Savings in Storage Space**

As lead time, lead time variability, and inventory decreases, the facility will gain space once used for supply storage. This space could be used for an increase in patient care areas or other uses.

During the first year of the Pharmaceutical and Medical/Surgical Prime Vendor Program's inception, WRAMC was able to vacate five buildings and one floor of another, for a total amount of 42,106 square feet. This amounted to a savings of \$364,554 in building costs and \$31,580 in saved utility costs. Similarly, Bethesda vacated three warehouses.

With the implementation of a Laboratory Prime Vendor, space allocated in the clinical laboratory areas for supplies can be decreased, potentially providing for increased patient workload or expansion of services for the laboratory or MTF.

Laboratory products make up a smaller percentage of inventory than Pharmaceuticals and Medical/Surgical, but the same potential impacts exist.

### **3. Decrease in Procurement Workload**

Compared to the Prime Vendor Program, depot orders, blanket purchase agreements (BPAs), or open purchase orders for various reagents with various distributors incur significantly more of the procurement agents time and effort, and thus more procurement costs. Implementing the Prime Vendor Program allows the number of depot orders, blanket purchase agreements (BPAs), and open purchase orders to decrease, thus saving procurement time, effort, and costs. In addition, implementing a Laboratory Prime Vendor Program would incur a procurement cost for the entire region once every five years if the follow-on options (initial contract with four option years) are exercised.

For example, Bethesda currently maintains over 1800 BPAs for laboratory products. These would be unnecessary with a Laboratory Prime Vendor.

Another benefit is that it decreases the procurement action lead time (PALT) of the procurement department.

### **4. Improved Quality of Care**

The Prime Vendor Program will result in a faster, more reliable receipt of supplies. This allows MTF personnel, previously frustrated by supply issues, to focus their attention on patient care. In addition, loss due to shelf life expiration will disappear, ensuring that the specified product for the patient is available upon demand.

## **5. Job Redesign**

The authors do not expect, promote or actively seek personnel cuts. If positions can be realigned to streamline processes, then they should be considered. If personnel can be attrited, then this may be indeed beneficial; however, we do not anticipate personnel reductions. Instead, job redesign is the key.

In the MTFs, corpsman typically are assigned the responsibility of managing their respective department's supply inventory, including inventory management and the replenishment of supplies.

Since the implementation of the Prime Vendor Program, each of the MTF's Material Management Departments visited (WRAMC, Bethesda, Portsmouth) has taken the initiative to redesign the jobs of their personnel and have placed their supply personnel into clinical spaces. Bethesda has titled their initiative, "Forward Deployment" and has redesigned the jobs of 50% of their logisticians and reassigned them from managing inventory stock in the warehouse to managing inventory within clinical spaces.

Naval Hospital Portsmouth placed a purchasing agent into the operating room full-time. WRAMC reported saving over \$504,000 in the Material Division Full-time equivalent (FTE) personnel reductions.

By redesigning the assignments, the personnel with the training are managing the supplies instead of personnel with little to no training. By doing this,

it saves hundreds of clinical corpsman man-hours that are better utilized in the provision of direct health care services.

The Bethesda Laboratory uses 10 corpsman to manage their laboratory supplies. Implementing a Laboratory Prime Vendor could allow for additional logisticians to be assigned into the lab and return some of these technicians back to their clinical and technical positions. Even if logisticians couldn't be reassigned into the laboratory, with less volume of supply to manage, faster delivery, and a reduction in administration time, the laboratory technician would at least spend less time managing supplies, and it could be managed by less laboratory personnel.

#### **6. Improved Interaction and Teamwork Throughout the MTF**

As personnel work toward a JIT system, a more cohesive patient care team is highly probable. Since inventory levels will be maintained at a minimum, it will require that personnel involved in patient care communicate more frequently. It solidifies Material Management's involvement in the healthcare team and it could lead to an improved quality of care.

#### **D. POTENTIAL SAVINGS TO DPSC WITH THE IMPLEMENTATION OF A LABORATORY PRIME VENDOR PROGRAM**

As previously noted, DLA wholesale medical inventories have decreased as a result of various inventory reduction initiatives, including the Prime Vendor Program. Looking at the FSC's and dividing the inventory into two main areas, dated and non-dated materials, allowed the analysis of 2031 laboratory related records. Non-dated material out-sold dated material approximately 3 to 1, as a

percentage of sales, this represented 39% and 13% for non-dated and dated material respectively. This was used to allocate the support cost based on the percentage of sales and the annual medical logistics support costs.

These figures apply only to the items in which DPSC Medical MSO supplies. Due to the wide variations in the types of labs and there associated specific requirements, giving an accurate picture of the total costs associated with running a lab would be extremely difficult.

As far as managing the items that DPSC supports, there is no difference in the costs, because of the way DoD allocated expenses. Since DoD uses an average to allocate costs, there is no opportunity to specifically designate a percentage to certain items or FSCs. The only exception that may have an impact is the potential disposal costs to remove out-dated materials.

Since the implementation of the Pharmaceutical and Medical/Surgical Prime Vendor Programs, DPSC has been able to reduce the value of their inventory by 34.92% to \$228.5 million. Using this as a basis, a calculated savings for lab support items was calculated. It consists of two parts, an actual reduction of inventory plus a reduction in the processing fees associated with handling the inventory. This comes to an estimated total savings of \$2.25 million. Table 1 demonstrates the calculation DPSC used to determine the potential savings.

(KELLY)

---

**Non-Dated Savings**

Inventory Sales	\$1,366,065
Transaction Processing	<u>\$ 264,138</u>

Total	\$1,630,203
-------	-------------

**Dated Savings**

Inventory Sales	\$ 451,637
Transaction Processing	<u>\$ 167,766</u>

Total	<u>\$ 619,403</u>
-------	-------------------

Total Savings	<u><u>\$2,249,606</u></u>
---------------	---------------------------

---

**Table 1. DPSC Calculated Savings for Laboratory Support Items****E. CONTRACTING CONCERNS AND OPTIONS**

The development of a Prime Vendor Program provides the that the distributor deliver supplies more often and in smaller quantities. The advantage for the MTF is that the distributor will take on the responsibility for storage and transportation. The MTF will pay for these services likely in a higher unit cost, however it provides long run cost savings that offset the higher unit cost.

Additionally, the Prime Vendor Program establishes a close relationship with select suppliers which is consistent to point four of W. Edwards Demings 14 points of management. Point 4 states, "End the practice of awarding business on price tag alone." This requires seeking the best quality and work to achieve it with a single supplier for any one item in a long-term relationship.

A Laboratory Prime Vendor Program will require contracts to be tailored to meet the unique requirements of individual/regional MTFs. This is appropriate to a JIT system and supports the Total Quality Leadership goals of the USN.

#### **1. Concerns**

A concern in the contract negotiation and development may be the current contracts that MTFs have with their current laboratory equipment and supply vendor. The Prime Vendor for each region needs to be able to supply a significant amount of supplies to the MTF for it to be profitable. So long as proper usage data is collected prior to contract negotiations, DAPA contracts should be able to resolve this. Ideally, the MTF's would be uniform in their use of equipment and supplies, thus providing a simpler process from both the user and supplier.

As previously mentioned, DoD regulations require the procurement office to buy the laboratory equipment. This is a concern because this will require effective communication and coordination between the Laboratory, Prime Vendor and Biomedical Repair Division.

One additional concern is who provides the hardware and software? When the Pharmaceutical Prime Vendor Program was implemented, the vendor provided the hardware and software. In contrast, when the Medical/Surgical Prime Vendor Program was started, the customer had to provide them, and some did not have the hardware available. (Libby)

## **2. Contract Alternatives**

There are several alternatives for inventory management that our research uncovered. The alternatives consist of continuing with the status quo, adding the laboratory products into the Pharmaceutical/Medical Surgical Prime Vendor Programs, and the option of choosing a national or regional prime vendor contract.

### **a. Status Quo**

By maintaining status quo, this leaves managing laboratory inventory to typically the hospital corpsman trained as laboratory technicians. Some are better than others, but few typically have training in inventory and procurement management. Additionally, in light of budget forecasts of continuing declines in funding, status quo is unacceptable.

### **b. Incorporating the Laboratory Products into the Pharmaceutical and/or Medical Surgical Prime Vendor Programs**

Some products can be purchased through the established Pharmacy or Medical/Surgical Prime Vendor Programs, such as some slides, specimen cups, etc. However because of the associated specific requirements, only a few generic items can be purchased in this manner, so this is not a viable option.

### **c. National or Regional Prime Vendor Contract**

The next option is creating one national prime vendor contract or several regional contracts. One prime vendor for the continental U.S.(although overseas options have not been explored in this research, it is feasible that the

program could be expanded to overseas MTFs) could potentially allow for standard equipment to be used throughout DoD. As suggested earlier, the initial development of a Laboratory Prime Vendor will require contracts to be tailored to meet the unique requirements of individual MTFs. This will take into account the laboratory's supplies and materials unique transportation requirements, different control numbers/batch lots, refrigeration requirements, hazardous material handling and requirements, and vendor percentages.

#### **F. TRAINING**

It is important to realize that the dynamics of the Laboratory program are not identical to either the Pharmaceutical and Medical/Surgical Prime Vendor Program and as previously noted, one of the lapses in the Medical/Surgical Prime Vendor Program was the lack of education and training for the users.

When the Medical/Surgical Prime Vendor was implemented, the material management personnel received little training and guidance. Some material managers and material management personnel have never received training in material management, much less modern business practices, such as JIT and Prime Vendor.

To succeed in implementing a Laboratory Prime Vendor Program training and retraining will be necessary. The process must involve the user (the laboratory staff and MTF's procurement officials).

The comparison between how the Pharmaceutical and Medical/Surgical Prime Vendor Programs were planned and implemented provided a lesson of how

to and how not to implement the Laboratory Prime Vendor Program. The Laboratory Prime Vendor Program should have a phased approach, one region up and running prior to implementing the next region. The Laboratory Prime Vendor Program should be “packaged and sold” to the users. It cannot be viewed as a threat to anyone’s job security or it will not provide the user with an incentive for the program to succeed.

As with any organizational change, the failure to invest in training and educating the workforce in the new program often creates a negative feeling towards the new program and slows employee participation and buy-in.

#### **G. SUMMARY**

Many of the benefits realized in the civilian industry and in the Pharmaceutical and Medical/Surgical Prime Vendor Programs can be realized in the MTF laboratory departments, with the creation and implementation of a Laboratory Prime Vendor Program. The next chapter provides recommendations to resolve the concerns in implementing a Laboratory Prime Vendor Program.

## V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

### A. SUMMARY

The focus of this research was to examine whether or not implementing a Prime Vendor Program for laboratory supplies and related material could benefit DoD. In order to make that assessment, the following subsidiary questions were addressed:

1. What is the history of the Prime Vendor Program? What are the fundamentals of the Prime Vendor Program? What type of contracts are in place and how are they managed? What are the benefits of the Prime Vendor Program? What are the lessons learned from the Pharmaceutical and Medical/Surgical Prime Vendor Programs?

2. Who are the key manufacturers and what are their capabilities? Do they typically have distribution centers across the country or only regionally? Can they handle the business volumes for DoD on a daily basis? What are the Electronic Ordering capabilities of the vendors?

3. What are the areas of concern with implementing a Laboratory Prime Vendor Program? What are the potential benefits to the MTF, laboratory, and Defense Personnel Support Center? What are the alternatives? Should the Prime Vendor contracts be regional or national? Can laboratory items be added to existing medical/surgical or pharmacy contracts, or are new contracts necessary? Does training the users play a role in the success of a Prime Vendor Program?

4. Are there any specific considerations to implementing a Prime Vendor Program for laboratory supplies and related material? What are the recommendations?

## **B. CONCLUSIONS**

The findings of this research show that many of the benefits realized in civilian industry and in the Pharmaceutical and Medical/Surgical Prime Vendor Programs can be realized in the MTF laboratory departments with the creation and implementation of a Laboratory Prime Vendor Program. Additionally:

- A just-in-time program is a long term initiative.
- The JIT philosophy can be successfully adapted to the healthcare industry through the Prime Vendor Program
- The Prime Vendor Program can be adopted by the MTF Laboratory Departments and can be enhanced by applying the same goals and lessons learned from the Pharmaceutical and Medical/Surgical Prime Vendor Program.

## **C. RECOMMENDATIONS**

Based on the findings and conclusions of this research, the Laboratory Prime Vendor Program is following a natural course of evolution. The Laboratory Prime Vendor Program will work if the following six actions are effectively implemented and managed:

### **1. Collect Accurate Usage Data**

At the Defense Personnel Support Center (DPSC) level, DPSC should have

each MTF laboratory provide it with an inventory report that includes every major piece of test-based equipment used, its corresponding supplies, and the usage data in order to create effective DAPAs.

## **2. Involve the Right People in the Creation of the Statement of Work**

The requirements portion of the Statement of Work should be drawn up with the assistance of logisticians and laboratory personnel. Their inputs are invaluable because they possess fundamental knowledge from working with these materials on a daily basis and can provide a baseline, thus ensuring the contractual requirements fulfill the MTFs needs.

## **3. Tailor Contracts**

Development of a Laboratory Prime Vendor will require contracts to be tailored to meet the unique requirements of individual/regional MTFs. This is appropriate to a JIT system.

The contract should be established to allow the prime vendor to install its own equipment and stock its own supplies, thus creating a productive relationship between the prime vendor and the customer. Additionally, by forming this relationship DoD would receive a better quality product and a better price. As W. Edwards Deming states,

Purchasing departments customarily operate on orders to seek the lowest-price vendor. Frequently this leads to supplies of low quality. Instead, they should seek the best quality and work to achieve it with a single supplier for any one item in a long term relationship... The suppliers that serve one company also serve other companies, and will deliver to all of them better and better quality with better and better economy. Everybody will come out ahead.

#### **4. Phased-in Approach**

The Laboratory Prime Vendor Program should be phased in with one region up and running prior to implementing the next region. By using this approach, follow on regions will start higher on the learning curve and have the ability to avoid the difficulties that occurred during the previous region's implementation. A working group should be developed to determine the best regions and sites to phase in the program.

#### **5. Conduct Effective Training**

Senior leadership must realize that the dynamics of the Laboratory Prime Vendor are not the same as either the Pharmaceutical or the Medical/Surgical Prime Vendor Program. Based on the lessons learned in the Medical and Surgical Prime Vendor Program, the Laboratory Prime Vendor Program should be "packaged and sold" to the users, as it was with the Pharmacy Prime Vendor Program and the pharmacists. As with any endeavor in a successful organization, DoD must invest in training and educating the workforce so that they will be motivated to implement this program.

At the MTF level, the Director for Logistics/Department Head of Laboratory Services must be trained, educated and committed to the program. Additionally, a program should be initiated to ensure the education of the Commanding and Executive Officers at each MTF on JIT and the Prime Vendor Program.

## **6. Standardize Equipment**

Ideally, the MTFs would be uniform in their use of equipment and supplies, thus providing a simpler process from both the user and supplier. It allows the user and vendor to establish a rapport, which is conducive to effective business interactions and the Navy's TQL program.

Ideally the equipment in each MTF would be the same as the next, but complete equipment standardization is unlikely and it is not required for this program to succeed so long as the required product baseline is established, along with corresponding DAPAs, to enable a Prime Vendor to meet the user's requirements. Equipment may not be totally standardized throughout the DoD system unless one provider is selected for the entire system, but regional standardization is a possibility and could be easily achieved by incorporating a phased replacement policy for major equipment into a separate DPSC led equipment contract. Equipment cannot be included in the same contract with consumables because it has a different expense element. Additionally, equipment contracts should be worked through the MTF's procurement office and Biomedical Repair Office for risk management.

Another benefit of standardized equipment is that it allows the teaching hospitals to train new technicians on the same equipment they will see in the field or at their next duty station.

#### **D. AREAS FOR FURTHER RESEARCH**

This research uncovered several areas that impacted upon Laboratory Prime

Vendor Program methodology that warrant further research:

- An analysis of the impact that a Laboratory Prime Vendor may have on readiness;
- A study of additional areas that could benefit from a prime vendor program, such as optometry, dental, etc; and
- A study of the cost savings and cost avoidance realized during the first region's activation to validate the full benefit of the Laboratory Prime Vendor Program.



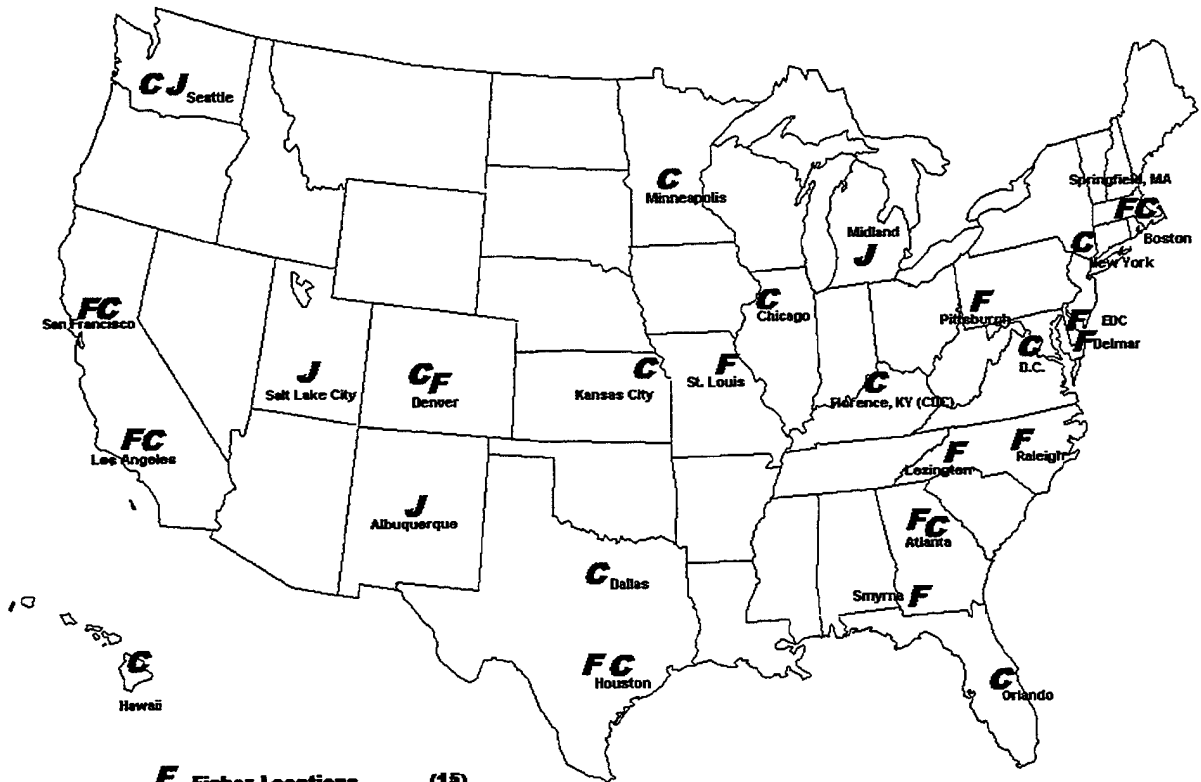
**APPENDIX A.  
ALLEGIANCE DISTRIBUTION FACILITIES (ACTIVE SITES)**

City	# of Facilities
Atlanta	3
Baltimore/Washington	3
Birmingham	1
Boston	2
Buffalo	1
Charlotte	1
Chicago	2
Cincinnati	1
Cleveland	1
Columbus	1
Dallas	4
Denver	2
Detroit	2
Ft. Lauderdale	1
Houston	3
Indianapolis	1
Jackson	1
Kansas City	1
Los Angeles	2
Memphis	1
Miami	1
Minneapolis	1

Nashville	1
New Orleans	2
New York	2
Ocala	1
Omaha	1
Philadelphia	1
Phoenix	1
Pittsburgh	2
Portland	1
Raleigh	1
Sacramento	1
Salt Lake City	1
San Antonio	1
San Francisco	2
Seattle	1
St. Louis	1
Tampa	1
Virginia Beach	2
<b>TOTAL</b>	<b>59</b>



**APPENDIX B.  
FISHER SCIENTIFIC DISTRIBUTION FACILITIES (ACTIVE SITES)**



<b>F</b> Fisher Locations	(15)
<b>J</b> Fisher JIT Locations	(4)
<b>C</b> CMS Locations	(16)
<b>TOTAL FACILITIES</b>	<b>(35)</b>

**F**  
Puerto Rico



## LIST OF REFERENCES

1. Arthur Anderson & Company, "Stockless Materials Management, How it Fits into the Healthcare Cost Puzzle," 1990.
2. Interview with Betty Atienza, Inventory Management Specialist, GS11, Naval Medical Center Portsmouth, September 1996.
3. Interview with Nora Ballenge, Automation and Budget Office, Walter Reed Army Medical Center, September 1996.
4. Interview with CDR Michael Brophy, Department Head, Laboratory, National Naval Medical Center Bethesda, September 1996.
5. Capano, Anthony M., "The Effects of the Department of Defense's Prime Vendor Program on Navy Medical Readiness", Master's Thesis, Naval Postgraduate School, Monterey, CA, December 1994.
6. Interviews with LT Tony Capano, Navy Prime Vendor Manager, Ft. Detrick, MD, June to September 1996.
7. Interview with Michael Davenport, Director of Military Accounts, Durr Medical, August 1996.
8. Ernst and Whinney, "Product to Patient: Valuing the Medical Products Distribution Chain, 1988.
9. Fields, Paul J., Production Management Course, Naval Postgraduate School, Monterey, CA, July to September 1996.
10. General Accounting Office Report No. NSIAD 92-58, "DOD Medical Inventory: Reductions Can Be Made Through the Use of Commercial Practices," December, 1991. Report, December 1991.
11. Interview with David Goldsberry, Assistant Director of Corporate Accounts, Allegiance Healthcare, August 1996.
12. Hamel, Garyh and Prahalad, C.K., "Strategic Intent," Harvard Business Review, May-June 1989.

13. Heizer, Jay and Render, Barry, Production & Operations Management, Fourth Edition, Prentice-Hall, Inc., 1996.
14. Inspector General, Department of Defense Report No.96-109, Report on the Audit of Prime Vendor Support of Medical Supplies (Project No. 5LD-0037), Arlington, VA, May 7, 1996.
15. Interview with Sean Kelly, DPSC Medical Materiel, August 1996.
16. Kinney, Bill C., and Symonds, Stephen B., Just-In-Time Inventory Management; Application and Recommendations for Naval Hospital, Oakland, Master's Thesis, Naval Postgraduate School, Monterey, CA, December 1992.
17. Interview with CDR Earle S. Libby, Staff Medical Logistician, Head, Materiel Management Department, Naval Medical Center Portsmouth, September 1996.
18. Interview J. Michael O'Conner, Director of Military Accounts, Colonial Healthcare Corporation, August 1996.
19. Interview with HM2 Adam Petersen, Laboratory Technician, Supply Petty Officer, National Naval Medical Center Bethesda, September 1996.
20. Interviews with Steve Piraino, Navy Representative, DMLSS Materiel Management Team, Joint Medical Logistics Functional Development Center, Ft. Detrick, MD. June to September 1996.
21. Interview with Thomas B. Price, Jr., Vice President and Government Accounts Manager, Fisher Scientific, October 1996.
22. Quinn, James Brian, "Managing Innovation: Controlled Chaos," Harvard Business Review, May-June 1985.
23. Interviews with Michael Schmitt, Senior Acquisition Official, DPSC, June 1996.
24. Interview with Charles Thomas, Inventory Manager, Supply System Analyst, National Naval Medical Center Bethesda, September 1996.
25. Interview with Lori Trautwine, Contracting Officer, Owens and Minor Inc., August 1996.

26. Interview with Dr. Anthony Viscido, Director of Corporate Accounts, Fisher Scientific, August 1996.
27. Walton, Mary, The Deming Management Method, Perigee Books, 1986.
28. White, Kevin L., "Adopting the Prime Vendor Program to Manage Marine Corps Authorized Medical/Dental Allowance," Master's Thesis, Naval Postgraduate School, Monterey, CA, December 1994.
29. Interview with Richard Williams, Director of Corporate Accounts, Allegiance Healthcare (formerly Baxter), August 1996.
30. Interview with Capt. Theresa Wood, USAF Prime Vendor Representative, USAF Medical Logistic Office, August 1996.



## INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center ..... 2  
8725 John J. Kingman Road, Suite 0944  
Fort Belvoir, VA 22060-6218
  
2. Dudley Knox Library ..... 2  
Naval Postgraduate School  
411 Dyer Road  
Monterey, CA 93943-5101
  
3. LCDR Mitchell A. Cooper, MSC, USN (RET) ..... 1  
713 Firethorn Road  
Cheasapeake, VA 23320
  
4. Professor Paul J. Fields ..... 1  
(Code SM/FP)  
Naval Postgraduate School  
Monterey, CA 93943-5000
  
5. Thomas B. Price, Jr. .... 1  
Vice President and Government Accounts Manager  
Fisher Scientific Company  
2000 Park Lane  
Pittsburgh, PA 15275
  
6. CAPT James A. Scaramozzino MSC, USN ..... 1  
(Code SM/SZ)  
Naval Postgraduate School  
Monterey, CA 93943-5301
  
7. Michael Schmitt ..... 1  
Senior Acquisition Official, Directorate Of Medical Material  
Defense Personnel Support Center  
2800 S. 20<sup>th</sup> Street  
Philadelphia, PA 19101-8419
  
8. Rick Williams ..... 1  
Allegiance Health Care  
3651 Birchwood DR  
Waukegan, IL 60085

9. LCDR James Andreano ..... 2  
4045 Sherman Oaks Ave.  
Virginia Beach, VA 23456
  
10. LT Francis Hanley ..... 2  
4561 Palmer Ave.  
Jacksonville, FL 32210