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Section 201: Independent Assessment of the Health Care Delivery
Systems and Management Processes of the Department of Veterans
Affairs

Assessment J (Supplies)

September 1, 2015

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Preface

Congress enacted and President Obama signed into law the Veterans Access, Choice, and Accountability Act of 2014 (Public Law 113-146) ("Veterans Choice Act"), as amended by the Department of Veterans Affairs (VA) Expiring Authorities Act of 2014 (Public Law 113-175), to improve access to timely, high-quality health care for Veterans. Under "Title II – Health Care Administrative Matters," Section 201 calls for an Independent Assessment of 12 areas of VA's health care delivery systems and management processes.

VA engaged the Institute of Medicine of the National Academies to prepare an assessment of access standards and engaged the Centers for Medicare & Medicaid Services (CMS) Alliance to Modernize Healthcare (CAMH)[1] to serve as the program integrator and as primary developer of the remaining 11 Veterans Choice Act independent assessments. CAMH subcontracted with Grant Thornton, McKinsey & Company, and the RAND Corporation to conduct 10 independent assessments as specified in Section 201, with MITRE conducting the 11th assessment. Drawing on the results of the 12 assessments, CAMH also produced the Integrated Report in this volume, which contains key findings and recommendations. CAMH is furnishing the complete set of reports to the Secretary of Veterans Affairs, the Committee on Veterans' Affairs of the Senate, the Committee on Veterans' Affairs of the House of Representatives, and the Commission on Care.

The research addressed in this report was conducted by McKinsey & Company, Inc., under a subcontract with The MITRE Corporation.

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[1] The CMS Alliance to Modernize Healthcare (CAMH), sponsored by the Centers for Medicare & Medicaid Services (CMS), is a federally funded research and development center (FFRDC) operated by The MITRE Corporation, a not-for-profit company chartered to work in the public interest. For additional information, see the CMS Alliance to Modernize Healthcare (CAMH) website (http://www.mitre.org/centers/cms-alliances-to-modernize-healthcare/who-we-are/the-camh-difference).

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Executive Summary

BACKGROUND

Title II Section 201 of the Veterans Choice Act required an independent assessment of the purchasing, distribution, and use of pharmaceuticals, medical and surgical supplies, medical devices, and health care related services by VA and VHA.

In line with the language of the legislation, pharmaceuticals, medical and surgical supplies (hereafter referred to as clinical supplies), and medical devices are considered within the scope of this assessment. In addition, services directly related to the purchasing, distribution, and use of these products are also considered, such as third party distributors and inventory management services. However, medical equipment (capital, reusable, or durable) was not included as its evaluation was not mandated in the legislation.

To complete this report, the assessment team visited eight VA Medical Centers (VAMCs), two Consolidated Mail Order Pharmacies (CMOPs), and three contracting organizations; interviewed 185 VA/VHA personnel and 20 non-VA subject matter experts; analyzed large sets of purchase history and other data from 12 different sources; and reviewed more than 24 prior reports. The assessment's findings and recommendations are summarized below.

FINDINGS

General findings

As a general characterization, VA's supply chain performs well for pharmaceuticals but less so for clinical supplies and medical devices. VA pays relatively low prices for drugs, it has a robust and efficient pharmaceutical distribution network that achieves high Veteran satisfaction scores, and has mechanisms in place to ensure appropriate utilization of medications that have strong buy-in from clinicians and pharmacists. However, the performance of VA's supply chain related to clinical supplies, medical devices, and related services is poor when compared with VA's pharmacy organization or to best practices in leading hospital systems. Its contracting processes are bureaucratic and slow, which can delay Veterans' access to care. Purchasing processes are cumbersome, which has driven VHA staff to workarounds and exacerbates the variation in prices VA pays for products. Utilization is difficult to measure or manage given lack of data, which likely leads to significant avoidable expense for the VA.

A number of factors inherent to these product categories may have contributed to the difference in VA's current supply chain performance, including:

- Product and supplier complexity: Pharmaceuticals is a well-defined and narrow product category for which a limited set of highly regulated suppliers exist. Clinical supplies is a diverse category that typically has more suppliers for a given clinical supply than there are for a given drug. This impacts the ease of supplier management and product selection.

- Access to clinical evidence: Pharmaceuticals must go through rigorous clinical trials prior to regulatory approval and clinical evidence often exists to compare drug effectiveness. Medical devices also go through rigorous testing but there are more feature variations and less comparative effectiveness data is typically available. Data on the efficacy or

safety of clinical supplies is limited. This impacts the organization's ability to make fact-based procurement and utilization decisions.

- Industry-wide data standardization: The naming and numbering of pharmaceuticals is standardized nationally. No such system exists for clinical supplies or medical devices, which makes it hard to know whether two products are the same and to compare disparate data sets.

Several internally-driven factors have also led to the performance disparity seen between the supply chain management of pharmaceuticals relative to the other product categories within scope. The factors observed and described in this report are broad and relate to differences in organizational structure and alignment, processes and the degree of process standardization, IT systems and their interoperability, and data quality and management.

While we have contrasted the performance of what is, in effect, two supply chains, nuances certainly underlie our broad characterization. For example, VA does not consistently buy pharmaceuticals at the lowest price available and Veterans' transitions into VA from active military service could be improved. Conversely, the Denver Acquisition and Logistics Center (DALC) is a bright spot within VA's supply chain management related to clinical supplies and medical devices, as are several other pockets of innovation.

However, because the strengths and opportunities related to pharmaceuticals are quite distinct from those related to the other product categories within scope, we have structured this report in two parts: (1) Pharmaceuticals and related services, and (2) clinical supplies, medical devices and related services. Specific findings are outlined below and described in more detail in the body of this report.

Findings related to pharmaceuticals and related services

Overall, VA performs well on the key dimensions of purchasing, distribution, and use of pharmaceuticals. Across VA, the Pharmacy Benefits Management (PBM) organization's two-way cascade of committees – from the national PBM organization to Veterans Integrated Service Networks (VISNs) to VA Medical Centers (VAMCs) and vice versa – provides an effective mechanism to escalate insights and innovation from the field, develop policy centrally, and build buy-in quickly across the country to facilitate implementation. Within VAMCs, clinical pharmacists are well integrated into multidisciplinary care teams and are highly valued by physicians and Veterans.

Key findings include the following:

- **VA pays relatively low prices for pharmaceuticals overall but several factors limit its ability to consistently access the lowest price available:** Through federally mandated price concessions and national contracting, VA has secured relatively low pricing overall on the pharmaceuticals it buys. However, pharmaceuticals are not always bought at the lowest price available to VA for a number of reasons, including contract lapses, national drug shortages, and requirements to buy pharmaceuticals from countries that are compliant with the Trade Agreements Act (TAA).

- **VA's distribution of pharmaceuticals is efficient and effective:** VA's pharmaceutical prime vendor (PPV) is a distributor that sources pharmaceuticals from suppliers and delivers them to VA facilities. The PPV provides a number of additional services that support VA's purchasing, distribution, and use of pharmaceuticals, including web-based purchasing, regular data reports, and inventory management services. The PPV model ensures efficient delivery of pharmaceuticals to facilities and CMOPs and supports a just-in-time inventory management approach. The PPV model received unanimous support from the pharmacists, pharmacy managers, and CMOP leaders interviewed during this assessment.

  VA's seven CMOPs deliver 80 percent of VA's outpatient prescriptions directly to Veterans' homes, and they do so efficiently and cost effectively at $1.53 per prescription (VA, 2015b; VA, 2015c). The CMOP program also achieved the highest overall customer satisfaction scores of any mail order pharmacy in the country in a recent J.D. Power customer survey (871 points out of a possible 1000) (J.D. Power, 2014).

  However, CMOP facilities have opportunities to increase automation of packing and shipping to improve throughput and quality, and to optimize the network's footprint to improve utilization of fixed assets and reduce costs.

- **VA has developed effective mechanisms to drive appropriate utilization such as its formulary, clinical use guidelines, and involvement of clinical pharmacists:** All physicians and pharmacists interviewed believed the VA formulary helps guide good clinical decision-making around prescribing, and they expressed strong buy-in to the formulary decision-making process.

  Standardized processes are also in place to enable off-formulary prescribing, which includes electronic submission of clinical justification by physicians and review by clinical pharmacists. Around 80 percent of such off-formulary requests are approved (VA, FY2014b). Currently, five percent of outpatient prescriptions dispensed by VA are for drugs that are not on the VA formulary (VA, 2010-2014b). Inpatient data was not available. In summary, VA's formulary process is sufficiently flexible to give Veterans access to medications based on clinical need regardless of a medication's formulary status.

  VA does not measure the use of generic medications in a way that is easily comparable with industry benchmarks (typically the proportion of generic prescriptions dispensed of all prescriptions). However, VA purchases 97 percent of its drugs (by volume) as a generic when a generic exists (VA, 2010-2014a) – similar to the health care leader Kaiser Permanente which claims a 99 percent generic prescription dispensing rate when a generic exists (Kaiser Permanente, 2015). This helps deliver high quality, FDA-approved medications to Veterans while ensuring efficient use of taxpayers' dollars. However, there are pockets of opportunity to use a higher share of generics within certain drug classes in some geographies.

- **VA has implemented policies and processes to improve patient transitions from the Department of Defense (DoD) to VHA but challenges remain:** Several prior reports have highlighted challenges related to Veterans' transitions directly from DoD care to VA care, particularly related to medication continuity.

VA has taken steps to improve this process in recent years, including the release and implementation of a January 2015 directive. However, three key challenges remain:

- o Poor access to primary care: The most recent studies report that new VA patients wait on average 40 days to see a primary care physician (VA, 2014c) and the average time between servicemember discharge date and first VA appointment is 81 days (GAO, 2012). Many prescriptions are written for less than the 81 day average as evidenced by 54 percent of VA's own prescriptions being for 30 days or less (VA, 2014d). Therefore, patients who have a 30-day supply could run out of medication while they are waiting to see a VA physician. While policies exist to address patients running out of medications (GAO, 2012; Staff interviews, 2015), access improvements may improve transitions. Access to physicians is beyond the scope of this assessment but is covered in Assessment B and scheduling in Assessment E.

- o Limited mobility of health information between DoD and VA: In line with findings from previous reports, physicians and administrators interviewed during this assessment consistently cited poor access to DoD medical records and medication history as the biggest challenge associated with transitions from DoD. Without access to previous medical records, they reported challenges understanding why patients were taking certain medications. Access to such information can be critical to ensure Veterans continue to receive their medication. For example, a physician may need a patient's medical history to be comfortable prescribing a medication such as a high risk or high potency drug, or to prescribe an off-formulary medication.

- o Differences between DoD and VA formularies: DoD's and VA's formularies and formulary processes are different. DoD has a three-tiered formulary, of which the third tier is considered non-formulary and not stocked on military bases. Instead, these non-preferred medications are only available through community pharmacies or mail order, and a large co-pay applies. All FDA-approved medications, until reviewed, are required by law to be placed in the second tier. VA has one national formulary and no tiers, and all medications are provided through VA pharmacies or CMOPs. However, both systems have mechanisms to provide access to off-formulary medications if clinically indicated. Media reports have raised risks regarding medication switches during transitions. While accurately understanding the rate of medication switches driven by formulary differences would require a prospective study of transitioning servicemembers (which is beyond the scope of this report), an internal VHA PBM audit of 2,000 new patients showed approximately three percent of patients transitioning from DoD within a year of discharge (21 of 759) had a medication switched by VA physicians without documented clinical justification (VHA Pharmacy Benefits Management, 2015a). Deeper analysis of that three percent was not available, but several factors could have driven the switch, including undocumented clinical reasons, a patient's request to try a new medication, or a physician's desire to adhere to VA's formulary. The assessment team is not aware of any work underway to align the formularies at this time.

- **VA has implemented programs to reduce utilization of high risk medications and early results are promising**: For example, VA's opioid reduction program has cut the share of

patients prescribed opiates by almost three percentage points since 2012 (VHA Pharmacy Benefits Management, 2015b). However, there are opportunities to improve the current measurement approach by taking into account the type, strength, and dosage frequency of opioids dispensed.

Findings related to clinical supplies, medical devices, and related services

In contrast to the management of pharmaceuticals and to best practice in the industry, the rest of VA's medical supply chain faces major performance challenges. Specific findings include the following:

- **The organizational structure of the VA's supply chain enterprise is unduly complex and duplicative:** VA and VHA both contain organizations that play a role in the management of VA's medical supply chain. VA's Office of Acquisition, Logistics, and Construction (OALC) is subdivided into two organizations – the Office of Acquisition and Logistics (OAL) and the Office of Acquisition Operations (OAO). VHA's medical supply chain consists of three organizations – the Procurement and Logistics Organization (PLO) that is responsible for clinical supplies, the Prosthetics and Sensory Aids Service (PSAS) that is responsible for medical devices, and the Pharmacy Benefits Management (PBM) organization that is responsible for pharmaceuticals. These three organizations are responsible for additional product categories that are outside the scope of this assessment.

  Within PLO, the procurement and logistical management of clinical supplies are managed by two separate groups – the Office of Procurement and the Office of Logistics respectively – and the reporting structure for each group is different. Procurement personnel report through VHA's NCOs and SAOs to the VHA's national Office of Procurement. In contrast, facility-based and regional logistics personnel do not report up to VHA's national Office of Logistics. Instead, they report into their local VAMC or VISN Director respectively.

  Together, VA and VHA have 28 entities involved in aspects of contracting in some way. There are 4 contracting entities within VA – the Strategic Acquisition Center (SAC) and the Technology Acquisition Center (TAC) that sit within OAO, and the National Acquisition Center (NAC) and Denver Acquisition and Logistics Center (DALC) that sit within OAL. There are 24 contracting entities within VHA for the medical supply chain – 21 Network Contracting Offices (NCOs) that establish contracts for each VISN and three Service Area Organizations (SAOs) that establish contracts on behalf of multiple VISNs. The SAOs are geographically aligned to the western, central, and eastern regions of the country.

  The assessment team's analysis showed that there are several areas of overlap between VA and VHA overall, between national and regional contracting organizations, and between the four VA-level contracting organizations, particularly the NAC and SAC. Senior leaders in VA's and VHA's supply chain organizations who were interviewed unanimously said that the current organizational structure is too complex and should be simplified. Several interviewees described tension between some of the groups involved in supply chain management. Others described a vacuum of ownership and accountability because of the organization's siloed and fragmented structure as well as lack of clarity on roles and responsibilities.

- **VA's current IT systems, data systems, and analytical capabilities related to finance, inventory management, and purchasing are major impediments to effective supply chain management:** VA's IT and data systems in these areas are antiquated, not integrated, and do not meet the needs of a modern health system. Many health care systems today operate with or are adopting integrated Enterprise Resource Planning (ERP) systems, which give them end-to-end visibility into the operational and financial performance of their supply chains. This enables more effective budgeting, forecasting, and inventory management, as well as automation of key supply chain processes such as ordering. Best in class health care systems build advanced business intelligence capabilities on centralized and standardized data systems, allowing them to perform sophisticated analysis on spend and utilization.

  In contrast, VA has at least 130 separate and independently maintained instances of Veteran Information System Technology Architecture (VistA) (VA, 2015e), the underlying architecture for its clinical, procurement, and inventory management systems. Each has its own product nomenclature and numbering system for the items in its database, and because entries are mainly free text, data from each instance can be quite different. Therefore cross-site comparisons or regional/national roll-ups are almost impossible. This situation is a major impediment to effective management of VA's medical supply chain.

- **The performance of VA's contracting organization does not meet customers' expectations, so frontline staff have developed workarounds:** Ninety one of 122 interviewees we spoke to regarding contracting for clinical supplies and medical devices, including contracting leadership, expressed concerns about the proliferation of VA contracting organizations or their ability to collectively meet performance needs of the organization. When the assessment team asked clinicians, logistics staff, and facility administrators to identify three areas they would most like to improve, speed and responsiveness of contracting was almost always one of their recommendations.

  Our analysis confirmed issues with the responsiveness of contracting. For example, at one facility, if a request was submitted to contracting that was incomplete or inaccurate, it took on average 21-39 days from the date of initial submission to receive the first response from contracting requesting, for example, additional information or paperwork (VAMC site visit, 2015).

  VHA customer surveys show that communication from contracting is another area for improvement. Of all the dimensions assessed in surveys of contracting users (included on all email communications by contracting), communication received from contracting officials scored lowest by customers (3.3 average NCO score out of 5, ranging from 2.7 to 4.0 for overall communication effectiveness and 2.8 to 3.8 for status updates) (VHA, 2015a). Several interviewees recommended that VA provide more clarity on the status of a contracting request to help them plan and schedule care.

  Conversely, individuals in contracting believed that VAMC staff were responsible for some of the delays in the contracting process. They reported that requests submitted to them from VAMCs were often incomplete or unclear and that facilities were poor at forecasting demand for items, leading to unpredictable peaks in demand for contracting services that exceeded their capacity. PLO and facilities are seeking to address these challenges by

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placing Contract Liaisons in facilities to better support Contracting Officer Representatives throughout the process (VHA Assistant Deputy Under Secretary for Health Administrative Operations, 2014).

As a result of the ongoing contracting challenges, frontline staff reported that they had developed two interrelated workarounds to avoid using contracting. First, they try to buy the majority of their clinical supplies and devices on VA-issued purchase cards because this gives them more autonomy to choose the products they want and to buy through their preferred channel (for example, directly from a manufacturer or through a local distributor). Second, they try to ensure that any orders placed (regardless of payment mechanism) are below the $3,000 micro purchase threshold that would trigger involvement of contracting. As a result, approximately 98 percent of VA's purchases of clinical supplies are made on purchase cards, which accounts for around 75 percent of VA's spend on that category (VA, FY2014a). Ninety-seven percent of VA's clinical supplies and prosthetics purchase orders are below $3,000, although this only accounts for 59 percent of the total spend for those categories (VA, FY2014a; VA, FY2014c). Data also confirmed that a disproportionately high number (two to three times the expected number) of purchase orders for clinical supplies are within $500 of the micro-purchase threshold ($2,500 to 3,000) (VA, FY2014a).

Use of purchase cards is encouraged in Federal Acquisition Regulations (FAR), partly because their use reduces the need for contracting to make multiple small-value awards. However, their use limits VA's ability to ensure compliance with government contracting regulations because purchase card holders are responsible for identifying appropriately priced goods and contracted vendors, and VA's current systems do not support these tasks with integrated catalogs and controls. This likely leads to higher than necessary prices paid for goods.

Purchase card purchasing processes are also inefficient when compared with modern alternatives, such as electronic order transmission and funds transfer. Purchase card holders are required to maintain appropriate documentation and to reconcile purchases. Electronic ordering and payment can automate reconciliations, reduce errors, and also enable automatic reordering based on utilization forecasting.

- **VA has not taken full advantage of its scale or potential for product standardization to achieve optimal pricing and efficiency:** Unlike pharmaceuticals, no external unit price benchmarks exist for medical and surgical supplies, medical devices, and related services. Therefore, as a proxy, the assessment team evaluated variation in prices paid for identical items across sites and the share of items bought on government contracts, which typically provide access to prices that are significantly below open market prices.

Analysis of unit prices for facilities across two VISNs showed significant variation in price paid for identical items (VA, FY2014a). On average, the highest price paid for an identical item was 1.3 times the lowest price. However, in some cases, the difference in prices was much greater. For example, the highest price paid for a commonly used disposable blood pressure cuff was more than twice the lowest price.

In addition, contracting compliance analysis showed significant opportunity for improvement. Analysis of purchase order data showed that 38 percent of purchases were made on a government contract, 27 percent were made at open market prices, and 34 percent did not have a source type specified (VA, FY2015). Private sector organizations typically aim to buy 80-90 percent of their clinical supplies and medical devices on some type of negotiated contract (High performing health system interviews, 2015).

Interviews and observations revealed that there are two primary reasons for VA's relatively high share of open market purchasing. First, in contrast to pharmaceutical purchasing, VA's supply purchasing systems are not integrated with contract or pricing catalogs. Therefore, the purchasing process relies on buyers (often clinical staff) to research whether an item is on contract and through which contract a purchase should be made. Because of that complexity, several buyers reported that they bypass this step and buy products through the channel that is most familiar and convenient, for example, by replicating previous orders to their usual supplier, despite changes that may have occurred (new contracts and pricing arrangements, for example). Second, VA has limited ability to monitor and drive compliance with the contract hierarchy because the required data is not captured electronically. In fact, over 60 percent of all clinical supply items do not have a contract number listed (VA, FY2014a).

In addition, despite numerous reports highlighting the need for greater product standardization, VA has achieved limited product standardization to date. This has led to a fragmented supplier network and a high number of items under management by the logistics organization.

Finally, VA does not have a mechanism to identify products for which central contracts should be established. High performing organizations routinely analyze purchase order data and partner with clinical teams to identify products that should be prioritized for contract negotiation or renegotiation, as well as for utilization management. These integrated teams write comprehensive requirements that meet clinicians' needs and have an appropriate supply chain strategy. In some cases, VA standardized national contracts have missed important end user input that complicates use.

- **Inventory management process, practices, and systems are neither integrated nor optimized:** VA has contracts with six Medical/Surgical Prime Vendors (MSPVs) – distribution companies that provide services to support the purchasing, distribution, and use of clinical supplies and medical devices. Each MSPV covers a different part of the country. In addition to distribution, MSPVs have the capability to provide a range of additional services to support VA's management of its inventory such as electronic ordering platforms, warehousing services, just-in-time inventory management services (for example, low unit of measure distribution), and data analytics.

  To date, VA has taken limited advantage of these services. For example, only one VISN has partnered with a MSPV to support a lean, low unit of measure inventory model.

  VA's fragmented inventory management systems and processes also create challenges. VA's current inventory management does not have a feedback loop that links inventory to product utilization, contracting, ordering, and vice versa. This prevents optimal utilization

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of the Medical/Surgical Prime Vendor (MSPV) program and missed opportunities to establish more effective volume-based national or regional contracts. It also leads to peaks and troughs in demand for contracting services, which can overwhelm contracting's capacity.

- **VA struggles to attract, hire, and retain high caliber supply chain talent:** There was limited central data on vacancies in the logistics organization. However, interviewees estimated that 20-30 percent of positions in logistics were currently unfilled, which required staff to incur overtime to ensure timely delivery and distribution of supplies. As an example, as of May 12th 2015, VA had 563 open positions for medical supply aides and technicians, which represents around 20 percent of all employees of that type or almost four vacancies per facility on average (VA, 2014e; VHA, 2015d).

  Supply chain leaders described three factors that could have contributed to their recruitment and retention challenges. First, supply chain leaders perceive that the recent downgrade of several supply chain positions has impacted morale and has made some positions less attractive for potential recruits. Second, sixty percent of supply chain and contracting interviewees also expressed concerns about the time it takes HR to fill open positions. They cited long lead times and a small eligible applicant pool as the primary drivers. It is beyond the scope of this report to evaluate HR policies and practices. However, VA recruiting regulations do preferentially favor Veteran and internal hires, which can restrict VA's access to a potentially large pool of talent that does not fulfill those criteria. Third, logistics leaders reported a lack of opportunities for career progression. They gave several examples of high performing individuals who had left the supply chain organization to take a non-supply-chain VA position at a higher grade.

  Experts interviewed during this assessment said that competition for supply chain talent in health care is higher now than in the past and organizations are paying more to attract and retain the highest performers (High performing health system interviews, 2015). This may be contributing to VA's recruitment and retention challenges.

- **There are pockets of good performance and innovation in VA that could be replicated across its supply chain:** The Denver Acquisition and Logistics Center (DALC) is a bright spot within VA's supply chain organization in its acquisition and distribution of select devices such as hearing aids to Veterans. It has developed an integrated operating model that brings together clinicians, contracting, finance, logistics, and program management. That integrated team makes decisions around product and supplier selection based on a holistic view of what is best for Veterans and for VA.

  In addition, VA medical centers and VISNs have a degree of autonomy to test and pilot new processes, management approaches, and technologies. Several innovations were observed during this assessment that could be scaled across VA to improve service to Veterans.

RECOMMENDATIONS FOR CONSIDERATION

Based on these findings, the assessment team believes VA should consider the following recommendations. The body of the report provides additional details that would support implementation of the recommendations below.

Recommendations related to pharmaceuticals and related services

- **Establish mechanisms to ensure VA secures a reliable supply of pharmaceuticals and accesses the lowest possible pricing more consistently**
  - Modernize VA Acquisition Regulations (VAAR) to enable access to lower priced commercial sources when possible
  - Identify pharmaceuticals at highest risk of shortages and price spikes, and develop specific strategies to limit impact
  - Improve lifecycle management of contracts to prevent lapses

- **Continue driving efficiency through VA's CMOP network**
  - Drive more volume through CMOPs, particularly for prescription refills
  - Continue to automate processes in the CMOPs
  - Evaluate consolidation of CMOPs to drive efficiency and higher utilization

- **Develop more robust mechanisms to improve the transition of patients from the Department of Defense to VA care**
  - Improve access to primary care for transitioning Veterans as per Assessment B and Assessment E
  - Improve sharing of medical records and medication history between DoD and VA and make it a strategic priority (see Assessment H)
  - Explore opportunities to align or integrate formularies taking into account clinical evidence and economic impact
  - Develop drug-class-specific guidance for medication changes related to transitions
  - Develop mechanisms to track transitioning DoD servicemembers
  - Improve communication with Veterans about their medications during transitions

- **Build sophisticated approaches to drive appropriate utilization of pharmaceuticals**
  - Incorporate evidence-based prescribing guidelines into clinical protocols and pathways, building upon recommendations in Assessment F
  - Invest in IT and analytic capabilities to support outcomes-based data analysis
  - Drive appropriate data interpretation and utilization through peer review
  - Build utilization rules into prescribing system to reduce inappropriate use

Recommendations related to clinical supplies, medical devices, and related services

- **Transform and consolidate VA's entire medical supply chain organization**
  - Rationalize the organizational structure by consolidating entities into one integrated supply chain organization that manages all VA contracting and logistical management of clinical supplies and medical devices
  - Establish robust performance management of supply and device procurement that is focused on Veteran outcomes
  - Develop deep category-level expertise within the organization

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- **Improve key enablers required to support the organizational transformation, including IT systems, data standardization, and talent management**
  - o Update or replace supply chain IT systems to make them fit for purpose
  - o Standardize supply chain data and overlay user-friendly interfaces that enable robust and timely decision-making
  - o Revise VA's approach to talent management
- **Streamline, standardize, and integrate key supply chain management processes**
  - o Expedite product selection and standardization in key product categories
  - o Rationalize contracting requirements wherever possible and provide VAMC-level staff with access to contracting status
  - o Standardize and simplify purchasing processes by automating wherever possible, linking inventory management systems to ordering systems, and driving greater use of electronic order entry
  - o Systematically identify, collect data from, and propagate innovations across VA

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The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

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1   Introduction

1.1 Background, Purpose, and Scope

The Veterans Access, Choice, and Accountability Act of 2014 was signed into law by President Obama in 2014 in response to emerging issues related to delivering care at the Department of Veterans Affairs (VA) facilities. In addition to authorizing non-VA care for Veterans, it also mandated an independent assessment of twelve areas of the VA's delivery of health care. Assessment J, identified under Title II – Health Care Administrative Matters, Section 201, outlines a structured assessment of the purchasing, distribution and use of pharmaceuticals, medical and surgical supplies, medical devices and health care related services by VA including the following:

- The prices paid for, standardization of, and VA's use of the following:
  - o Pharmaceuticals
  - o Medical and surgical supplies
  - o Medical devices
- VA's use of group purchasing arrangements to purchase pharmaceuticals, medical and surgical supplies, medical devices, and health care related services (defined as services that are directly related to the purchasing, distribution, and use of pharmaceuticals, medical supplies, surgical supplies, and medical devices).
- VA's strategy and systems to distribute pharmaceuticals, medical and surgical supplies, medical devices, and health care related services to Veterans Integrated Service Networks (VISNs) and medical facilities of the VA.

The purpose of this assessment is to identify evidence-based findings and develop actionable recommendations that will, if implemented, improve the quality, efficiency, and effectiveness of the VA's purchasing, distribution, and use of pharmaceuticals, medical and surgical supplies (hereafter referred to collectively as clinical supplies), medical devices, and health care related services.

The scope of Assessment J, as outlined in the Choice Act legislation, includes four major medical product categories: pharmaceuticals, clinical supplies, medical devices, and health care-related services. The definition of each category and topics addressed by this assessment are outlined below in Table 1-1. For medical devices, the scope was based on the FDA definition of regulated medical devices, but excludes capital equipment such as MRI and surgical robots, and durable medical equipment such as crutches and wheel chairs. These equipment are generally considered by the health care industry as different than medical devices because of their lifecycles and management approaches. As these equipment were not in scope for this Assessment, it may be in the interest of VA and the Commission on Care to initiate an additional assessment of these areas.

Many of the challenges we and other assessment teams have observed are interrelated and highly complex. Implementing solutions to long-standing challenges will require collaboration among Congress and the Executive Branch, VA leadership (VACO, VISN, and VAMC) and staff, as

well as the unions and external stakeholders. We see this assessment as an opportunity for improvement, to be achieved by all stakeholders through a combination of local, regional, and national action. Addressing these challenges will require sustained commitment as a part of an integrated transformation effort for the system as a whole.

Table 1-1. Definition of Categories Covered in Assessment J

Categories	Definition
Pharmaceuticals	(1) Articles recognized in the official United States Pharmacopoeia, official Homoeopathic Pharmacopoeia of the United States, or official National Formulary, or any supplement to any of the above (2) Articles intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease in man or other animals (3) Articles (other than food) intended to affect the structure or any function of the body of man or other animals (4) Articles intended for use as a component of any articles specified in clause (1), (2), or (3)
Clinical supplies	Defined as supplies that: (1) Are usually disposable in nature or require refurbishment or sterilization after use (2) Are primarily and customarily used to serve a medical purpose (3) Generally are not useful to a person in the absence of illness or injury
Medical devices	(1) Items that are intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of disease (2) Items that are intended to affect the structure or any function of the body, and which: (a) Do not achieve its primary intended purposes through chemical action within or on the body (b) Are not dependent upon being metabolized for the achievement of its primary intended purposes (3) Items funded through VA supply budgets and directly interface with or are implanted into a patient's body and would only be used by those to whom they were prescribed
Health care-related services	Defined as services that are directly related to the purchasing, distribution, and use of pharmaceuticals, medical supplies, surgical supplies, and medical devices

Table 1-2. Assessment Cross-references to Legislation

Legislation	Cross-references
The prices paid for, standardization of, and VA's use of pharmaceuticals	Section 3.2.1, 3.2.3
The prices paid for, standardization of, and VA's use of medical and surgical supplies	Section 4.2.4
The prices paid for, standardization of, and VA's use of medical devices	Section 4.2.4
VA's use of group purchasing arrangements to purchase pharmaceuticals, medical and surgical supplies, medical devices, and health care related services	Section 3.2.1, 4.1.1, 4.2.1, 4.2.4
VA's strategy and systems to distribute pharmaceuticals, medical and surgical supplies, medical devices, and health care related services to Veterans Integrated Service Networks (VISNs) and medical facilities of the VA	Section 3.1.1, 3.2.2, 4.1.1, 4.2.2, 4.2.5

1.2 Context

1.2.1 Organization & Key Statistics

VA is one of the largest integrated health care systems in the world. Its more than 150 VA Medical Centers (VAMCs) are organized into 21 Veterans Integrated Service Networks (VISNs). Together, they provide care to over 6 million unique patients. To support the delivery of care to this population, VA operates a supply network that procures and distributes approximately $9 billion in supplies and materials. VA's supply spend includes ~$4.9 billion for drugs and medicines, ~$1.4 billion for medical and dental supplies, and ~$2 billion for prosthetic appliances and other patient-related services (see detail in Figure 1-1) (VA, 2014a; VA, 2015a). In 2014, VA's total spend on pharmaceuticals, clinical supplies, surgical supplies, and medical devices represented approximately 5 percent of the total VA budget and 15 percent of the budget allocated to medical care (VA, 2014b). VA estimates that its medical supply spend will increase by approximately 7.4 percent between 2014 and 2015 compared to an overall decrease of 3.5 percent in spend for the entire VA organization.

**Figure 1-1. Summary of VA's Actual and Budgeted Expenditures
for Supplies and Materials (FY2013-15)**

$ Billions

Pharmaceuticals
Clinical supplies[1]
Prosthetics

	2012	2013	2014	2015 (estimate)
Total	7.89	7.51	8.35	8.97
Pharmaceuticals	4.87	4.32	4.95	5.34
Clinical supplies	1.26	1.39	1.40	1.47
Prosthetics	1.77	1.80	2.00	2.16
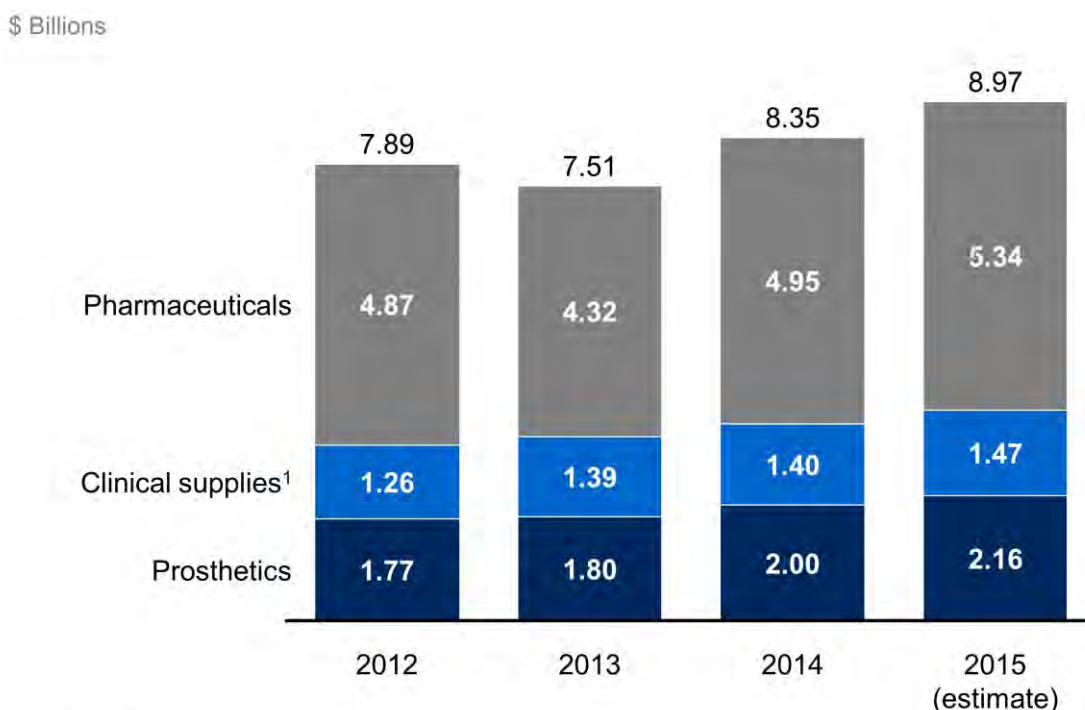
1 Includes dental

SOURCE: VA. (2014a). Congressional budget submission. Volume II - Medical programs and information technology programs. Data represents Object code 26 (Supplies) only.

VA manages its pharmaceutical, medical supply, and medical device spend through four organizations (Figure 1-2):

- **VA Office of Acquisition, Logistics, and Construction** (OALC). The OALC provides operational support and oversight for the VA's procurement and logistics functions. Key activities include strategic contracting, setting department-wide policy, and ensuring compliance with other Federal partners.

- **VHA Pharmaceutical Benefits Management Organization** (PBM). The PBM organization coordinates the VA formulary management process through collaboration with the Medical Advisory Panel (MAP) and the VISN Pharmacist Executives Committee. It also is responsible for standardizing drug benefits to reduce variation in cost and utilization.

- **VHA Procurement and Logistics Organization** (PLO). The PLO is responsible for all purchases and distribution of clinical supplies, medical device purchases greater than $3,000, and health care-related services. It is also responsible for the standardization of supply utilization through contracting and monitoring logistics data. Contracting staff are organized into 21 Network Contracting Offices (NCOs) aligned with each VISN, and report to three Service Area Organizations (SAOs) aligned by geography (East, Central, and West). Field logistics staff report directly to facility leadership and not to PLO. Additional information on supply chain structure can be found in Section 4.1.1 and Figure 4-2.

- **VHA Prosthetics and Sensory Aids Service** (PSAS). PSAS provides a range of prosthetic aids, medical devices, medical equipment, and services to Veterans. Staff are responsible

for the procurement of relevant items less than $3,000, inventory management, distribution, and coordination of care related to these items. Field prosthetic staff may directly report to either facility leadership or to the VISN Prosthetic Representative.

Figure 1-2. Reporting Structure of Supply Chain Offices within VA
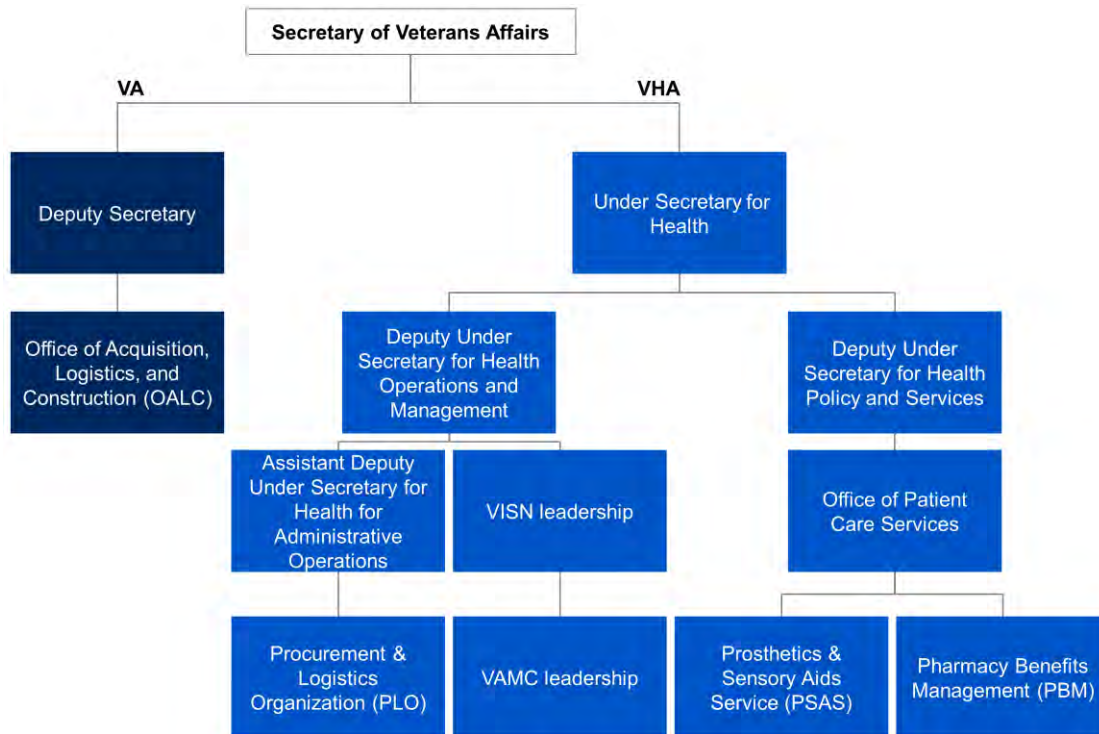
SOURCE: VA. (2014f). *VA Functional Organization Manual v2.0a.* Retrieved from Organizations — U.S. Department of Veterans Affairs: http://www.va.gov/landing_organizations.htm

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2 Methodology

The assessment was conducted using both quantitative data collected from key organizations on the purchasing, distribution, and use of relevant supplies, and a number of qualitative interviews with field staff during site visits and with central office leadership. The team responsible for Assessment J visited 13 sites – eight VA Medical Centers (VAMCs), two Consolidated Mail Order Pharmacies (CMOPs), three acquisition / distribution / contracting centers, and spoke with more than 185 staff. Additional interviews with industry experts and supply chain leaders in best in class health care systems were also conducted. Three high performing health systems that were nationally recognized for care and have demonstrated leadership in sourcing and/or supply chain management were interviewed. The team collected and analyzed large data sets from more than 12 sources.

2.1 Data Sources

Data was collected from departments and individuals across the VA system (for example, at national, VISN, and VAMC levels). Throughout the data collection process, VA teams provided quick and comprehensive responses and data pulls for the assessment team where data was readily available. However, for clinical supplies and medical devices in particular, much of the data was available only facility-by-facility, which made data extracts cumbersome and time consuming. In those cases, we requested data for a sub-set of facilities. It should also be noted that we did not conduct a review to validate the accuracy of data that was provided, although, where applicable, we did note potential data integrity issues highlighted during site visit interviews. In some cases, gaps in data exist because of limitations in the data systems. Such gaps will be noted throughout the assessment. Several large data sets from 12 different sources were analyzed in the course of this assessment. Details of these data sets can be found in Appendix A.1, and include:

- System wide pharmaceutical prime vendor purchase data from CY2012 through CY2014
- All purchase order and line item data for five VISNs from FY2014 through Q2 FY2015
- Medical and surgical supplies purchase data from October 1, 2014 through January 31, 2015 with an item master file number
- Prosthetic appliance purchase data for the entire system for FY2014
- Various prime vendor reports for pharmaceuticals, and medical and surgical supplies
- Procurement and logistics staffing and budget information
- Public source data including Federal Business Opportunities and data from the Federal Procurement Data System

Detailed methodology for the analysis of these data can be found in Appendix A.2.

2.2 Site Selection and Interviews

Eight VAMCs were selected from a core sample of 25 facilities selected for the entire Choice Act Assessment effort. That core sample was selected using the process in Appendix A.3.

Assessment J ensured that the eight VAMCs selected from the core sample included facilities that covered the full range characteristics deemed to be relevant to the scope and purpose of the assessment, including: large, complex, full service urban facility; small, less complex rural facility; facility affiliated with a medical school; facility that is believed to have a well-functioning procurement and supply chain function; facility that is believed to have major challenges related to procurement and supply chain management. Geographic breadth was also taken into consideration in the selection process. The list of sites visited is shown below in Table 2-1.

Table 2-1. VA Medical Centers Selected for Assessment J Site Visits

VISN	Facility	City	State
1	Brockton VA Medical Center	Brockton	MA
1	Augusta VA Medical Center	Augusta	ME
8	Malcom Randall VA Medical Center	Gainesville	FL
8	Miami VA Healthcare System	Miami	FL
9	Lexington VA Medical Center	Lexington	KY
17	Central Texas VA Healthcare System- Olin E. Teague VA Medical Center	Temple	TX
21	San Francisco VA Healthcare System	San Francisco	CA
21	VA Palo Alto Healthcare System	Palo Alto	CA

The assessment team visited two of the VA's seven CMOPs (Table 2-2). Sites were chosen based on number of prescriptions and proximity to other sites visited during the course of the Choice Act assessment.

Table 2-2. Overview of CMOPs Selected for Assessment J Site Visits

CMOP	City	State
Leavenworth CMOP	Leavenworth	KS
Great Lakes CMOP	Hines	IL

Contracting organizations were selected based on the impact of each organization on the VA's procurement of pharmaceuticals, clinical supplies, and medical devices (Table 2-3). The National Acquisition Center (NAC) was selected given that it is the largest contracting organization (by spend) and is responsible for the majority of Federal Supply Schedule (FSS) contracts. The Denver Acquisition and Logistics Center was selected given that it has developed and successfully implemented a number of innovative contracting tactics (to be discussed in Section 3). Network Contracting Office (NCO) 15 was selected because of its role in pharmaceutical contracting for the CMOPs.

Table 2-3. Overview of Contracting Organizations Selected for Assessment J Site Visits

Contracting organizations selected	City	State
National Acquisition Center	Hines	IL
Denver Acquisition and Logistics Center	Denver	CO
Network Contracting Office 15	Leavenworth	KS

In addition to the site visits above, the assessment team interviewed leaders from the Strategic Acquisition Center, Office of Acquisition and Logistics, Office of Acquisition Operations, and several VISNs. Three high performing health systems were interviewed for this work. They were selected based on their national recognition for supply chain management, spend of at least one billion dollars in supplies annually, and their volume of at least 100,000 inpatient admissions each year.

2.3   Approach

The assessment team developed a structured approach for its investigation to ensure a comprehensive assessment of the VA's medical supply chain. This approach was syndicated and revised with 10 industry supply chain experts and 20 VA SMEs prior to launching site visits and data requests. The write-up of the assessment was split into two sections based on VA's current organizational structure and the degree of operational overlap, particularly between medical / surgical supplies and medical devices. The two sections are:

1. Pharmaceuticals and related services
2. Clinical, medical devices, and related services

In each section, current performance was assessed in relation to the purchasing, distribution, and use of specified products along dimensions of quality (i.e., getting the right product to the right Veteran), efficiency (i.e., getting the product to the Veteran at the right time), and value (i.e., getting the product to the Veteran at the lowest possible price). Finally, health care-related services were assessed for their impact on quality, efficiency, and value as functional enablers (Figure 2-1). For example, within the pharmaceutical supply chain, the services associated with the VA's prime vendor contract were analyzed to determine their relative impact on the VA's care delivery.

Figure 2-1. Overview of Approach to Assessment J
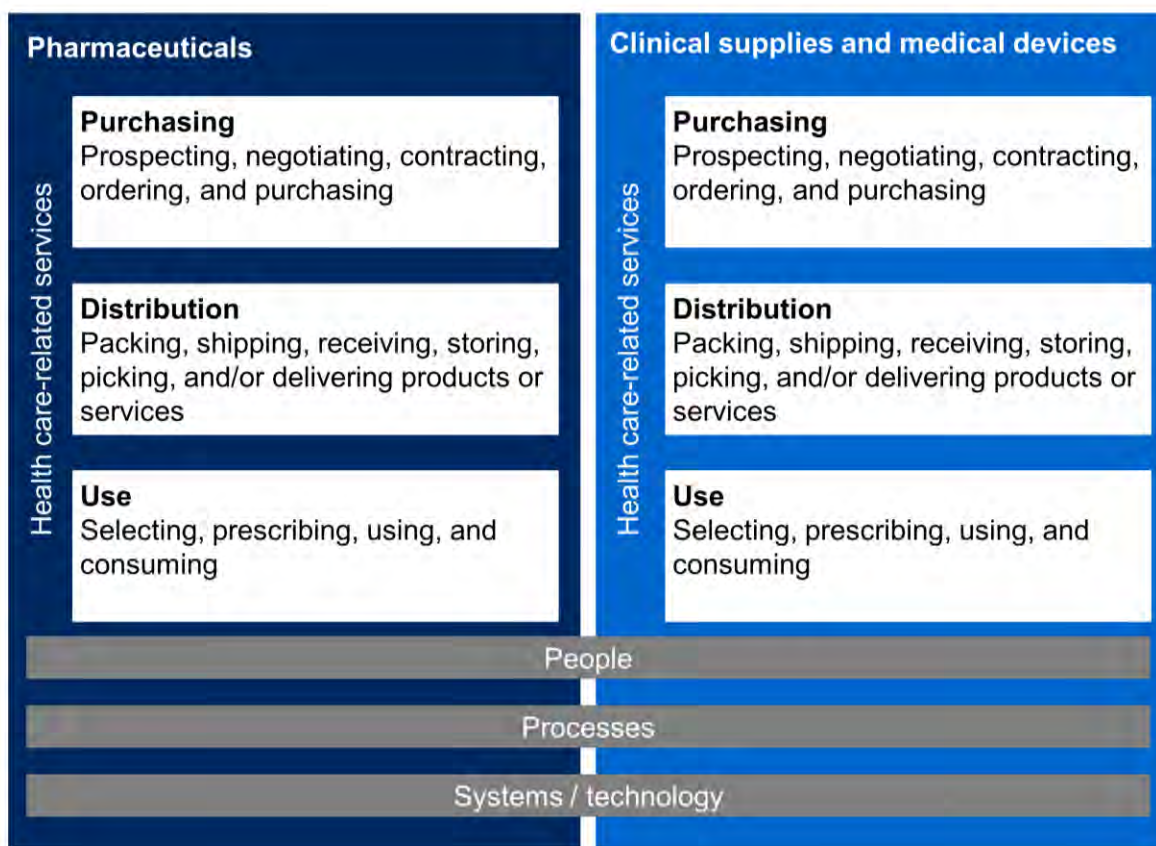
The assessment team took a four-phased approach to complete the work. Key activities conducted during each phase are summarized in Table 2-4. An independent Blue Ribbon Panel, consisting of high-level health care industry leaders, was formed to provide expert input throughout the assessment process. The panel members possessed a thorough understanding of health care industry best practices and leading edge practices. The Blue Ribbon Panel provided advice and feedback on the emerging findings and recommendations for the assessment.

Due to the required independence of the Choice Act, Section 201 assessments, findings and recommendations were developed independently. We therefore expect these recommendations will need to be refined and integrated by VHA leadership and the Commission on Care into the ongoing efforts.

Table 2-4. Overview of Key Assessment Activities by Phase of the Assessment

Phase	Activities
Discovery	▪ Reviewed existing workflow documentation, tools, and interfaces ▪ Interviewed VHA subject matter experts ▪ Researched best-practices (through literature searches, industry reports, internal knowledge / expertise, for example)
Analysis	▪ Conducted site visits at VAMCs, VISNs, CMOPs, and contracting and distribution centers ▪ Conducted external subject matter expert interviews to revise / refine best practices and gather benchmarks ▪ Analyzed VA data to determine performance against benchmarks ▪ Tested analytical approach with VA SMEs to ensure accuracy and validity of data interpretation
Findings	▪ Revised and drew out insights from analyses ▪ Synthesized findings and outlined major themes ▪ Shared findings with Blue Ribbon Panel (a panel of external experts) and incorporated feedback ▪ Conducted follow up interviews with key leaders and VA staff to address open questions
Recommendations	▪ Developed and documented recommendations to maintain, improve, or replace existing VA practices ▪ Identified interdependencies with other assessment areas

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3 Pharmaceuticals and Related Services

3.1 Context

3.1.1 Organization

Purchasing

VA's pharmaceutical organization is supported by two major contracting organizations that oversee all national-level contracts for pharmaceuticals:

- The National Acquisition Center (NAC), located in Hines, IL, is responsible for management of all Federal Supply Schedule (FSS) contracts, many high volume, multiple award schedule national contracts, and blanket purchase agreements (BPAs) with pharmaceutical vendors worldwide.
- Network Contracting Office (NCO) 15, located in Leavenworth, KS, is responsible for all purchasing and contract management for the VA's Consolidated Mail Outpatient Pharmacies (CMOPs) that cannot be accomplished through FSS or prime vendor contracts and for emergency procurements (e.g., during shortages). While this role was originally supported by the NAC, it was transferred to NCO 15 in October 2013 at the request of CMOP leadership.

VAMCs do not engage in contracting but they do buy medications for use in the inpatient setting and for some outpatient prescriptions, such as outpatient prescriptions that are picked up at pharmacy windows or are mailed to Veterans from the VAMC. The majority of these purchases are made through the Pharmaceutical Prime Vendor (PPV) that is described in the following section.

Distribution

VA acquires around 90 percent of its pharmaceutical supplies through its pharmaceutical prime vendor (PPV) (VA, 2012-2014; VA, 2015a). The PPV program has been in existence since 2001 and the distributor provides next-day, direct shipping of pharmaceuticals to CMOPs and facilities such as VAMCs. The PPV also provides a number of services to VA (for example: IT platforms for ordering, logistics support, emergency shipments) which will be discussed in detail in the Findings section. The remainder is acquired directly from manufacturers or from other distributors such as local distributors of specialty drugs.

Veterans receive almost all their medications either from VA's outpatient "window" pharmacies located in VAMCs and clinics, or from the CMOPs, both of which are described below:

- **Consolidated Mail Outpatient Pharmacy (CMOP) Network:** VA has seven CMOPs across the continental U.S. In aggregate, CMOPs distribute approximately 80 percent of VA's outpatient pharmaceutical prescription volume to Veterans (VA, 2015b). Each CMOP is aligned with one or more VISNs and is responsible for dispensing and shipping pharmaceuticals directly to Veterans. CMOPs use an integrated, automated pharmaceutical dispensing system to process between nine and 26 million prescriptions

annually per facility (VA, 2015c). The locations of the CMOPs are summarized in Figure 3-1.

Figure 3-1. Overview of CMOP Geographic Distribution

SOURCE: VA. (2015c). CMOP Fiscal data.

- **VAMC outpatient "window" pharmacies:** VA also dispenses outpatient prescriptions at pharmacy windows in each of its VAMCs. In total, around 20 percent of VA's outpatient prescriptions are dispensed from window pharmacies (VA, 2015b). While window pharmacies predominately serve Veterans who are in-person at the VAMC (for appointments, lab testing, radiological examinations), they are also responsible for mailing prescriptions to Veterans that cannot be processed by the CMOPs (because they are controlled substances, specialty drugs, or because of a stock out, for example). Clinical pharmacists at the VAMC's outpatient pharmacies are also responsible for front-end processing (validation of the signature, checking for drug-drug interactions and allergies) of all outpatient prescriptions prior to transmission to a CMOP.

Use

Veterans get almost all of their VA outpatient prescriptions from VA's window pharmacies or CMOPs as described above. When Veterans are inpatients in VA facilities, medications are dispensed to them from pharmacies within those facilities.

Three principal entities monitor, manage, and operationalize the use of pharmaceuticals within the VA system:

- **Pharmaceutical Benefits Management Services (PBM)**: PBM is a national-level organization that reports into VHA through Patient Care Services. PBM is responsible for managing VA's formulary, monitoring and reporting on pharmaceutical utilization, and

developing and implementing programs to improve quality and safety associated with use of pharmaceuticals. The PBM organization is supported by over 7,300 clinical pharmacists and 4,200 pharmacy technicians nationwide (VA, 2015d). The assessment team could not source benchmarks to evaluate the appropriateness of this level of staffing.

- **Clinical pharmacists**: Within each VAMC, clinical pharmacists manage drug dispensing in inpatient and outpatient pharmacies, and provide clinical guidance on the use of medications. These pharmacists support compliance with the VA's formulary and collaborate closely with care teams to determine appropriate pharmaceutical treatment of Veterans.

- **Clinical providers**: Clinicians at the front-line of care delivery (like physicians, nurse practitioners, physician assistants) are responsible for making pharmaceutical treatment decisions to provide appropriate, evidence-based clinical care while maintaining compliance with the VA formulary.

The pharmaceutical organization's evolution over the past 60 years has greatly increased its ability to influence VA prescribing practices (GAO, 2010). From 1955 to 1995, each VAMC had its own formulary, supported through local contracts with pharmaceutical suppliers. In 1995, VA created a centralized group (PBM) to manage pharmacy benefits nationwide. During the transition period, formulary management and contracting moved from the VAMC to the VISN, enabling more standardization and greater use of bulk purchasing. In 1997, all formulary management was centralized at the national level when VA rolled out its first national formulary. However, local VAMC formularies continued to exist until 2001 and VA ended all VISN-level formularies in 2009. In parallel, distribution transitioned to the current prime vendor model, which has helped facilitate VA's current level of standardization and centralized purchasing (to be discussed in more detail in the Findings section). The service level provided by the PBM group and its engagement with VISNs and VAMC's was critical throughout this evolution. Strong physician engagement has also helped drive the success of the pharmaceutical organization.

3.1.2   Key Trends

In CY2014, VA spent approximately $4.8 billion on pharmaceuticals through its prime vendor (VA, 2010-2014a; VA, 2010-2014b), the majority of which were dispensed on an outpatient basis (Figure 3-2).

Figure 3-2. VA Spend on Pharmaceuticals through the Prime Vendor

Note: Data is reported for calendar year and will not be directly comparable with fiscal year budget spend reported in Figure 1-1

SOURCE: VA. (2010-2014a). PPV Spend by Calendar Year. VA. (2010-2014b). Outpatient prescription data

VA's spend per patient on drugs increased by 19 percent over the past year, which reversed the trend of declining costs from CY2010 to CY2013 (Figure 3-3) (VA, 2010-2014b).

The introduction of new Hepatitis C drugs (Sofosbuvir, Simeprevir, and Ledipasvir / Sofosbuvir) accounted for 59 percent of the spend growth between 2013 and 2014 (VA, 2012-2014). Thirty percent of the spend growth was due to price increases of existing drugs (Figure 3-4). Over the same period nationally, drug spend in health care increased 13 percent, 26 percent of which was due to the introduction of new Hepatitis C drugs (IMS Institute for Health Informatics, 2015). These drugs accounted for more than half of all new drug spend in 2014. Prevalence of Hepatitis C is believed to be higher in Veterans using VA care than the U.S. population as a whole (VA, n.d.), which would account for the disproportionate impact of Hepatitis C drugs on VA. While the increase in expenditure on these drugs was notable in the last year, treatment with these drugs may reduce long-term cost of care for patients with Hepatitis C by, for example, reducing inpatient admissions or the need for nursing home care. Additionally, unit prices of these drugs are expected to decline over time as other Hepatitis C therapies enter the market, and there is some evidence this is already happening (Hirst, 2015).

Figure 3-3. Trends in Pharmaceutical Cost per Patient for Outpatient Prescriptions

Dollars per patient

+19% 806

-1%

704   727   711   679

CY2010   CY2011   CY2012   CY2013   CY2014
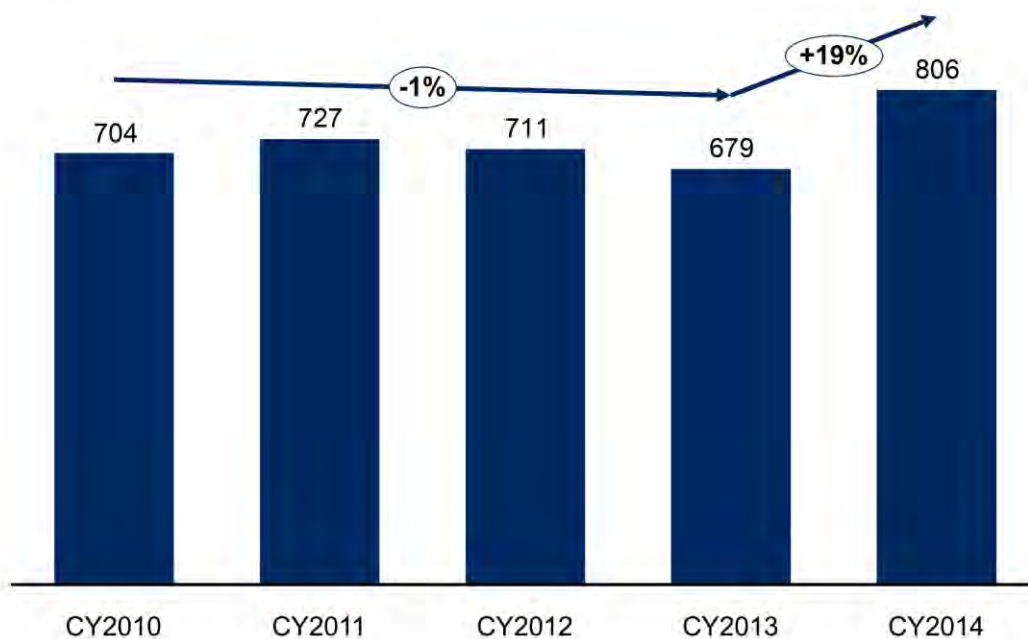
SOURCE: VA. (2010-2014b). Outpatient prescription data.

Figure 3-4. Growth in VA Pharmaceutical Prime Vendor Spend (CY 2013-14) by Major Spend Driver

Percent

Volume changes
of existing drugs

8

Price changes
of existing drugs

30

59   Introduction of new
Hepatitis C drugs[1]

4

Introduction of other new drugs[2]
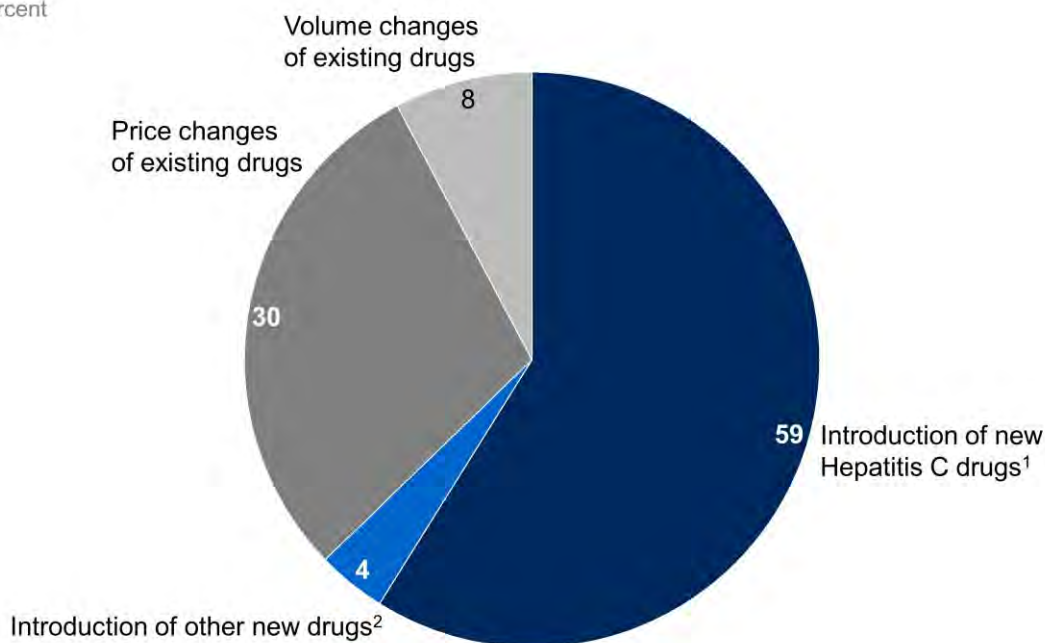
1 Additional cost for Sofovuvir, Simprevir, and Ledipasvir / Sofosbuvir in CY14 compared with CY13
2 Drugs which had no volume in CY13

SOURCE: VA. (2012-2014). Pharmaceutical Prime Vendor Purchase Order Data

From 2013-14, average prices paid by VA for branded drugs rose by 8.7 percent and by 11.3 percent for generic drugs (Figure 3-5). Nationally, drug prices rose by 4.1 percent and 8.6 percent for branded[2] and generic drugs (Elsevier Gold Standard, 2014) respectively over the same time frame. It is unclear why VA experienced a greater price increase than the national average. However, if the two years from 2012-2014 are taken together, prices remained relatively flat at 0.6 percent and -0.8 percent per annum for branded and generic drugs respectively.

Figure 3-5. Annual Price Changes of Drugs Purchased by VA

Percent annual price change

Branded drugs

8.7 %
0.6 %
-3.3 %

Generic drugs

11.3 %
-3.4 %
-0.8 %

2012 to 2013   2013 to 2014   2 yr. compound annual growth rate
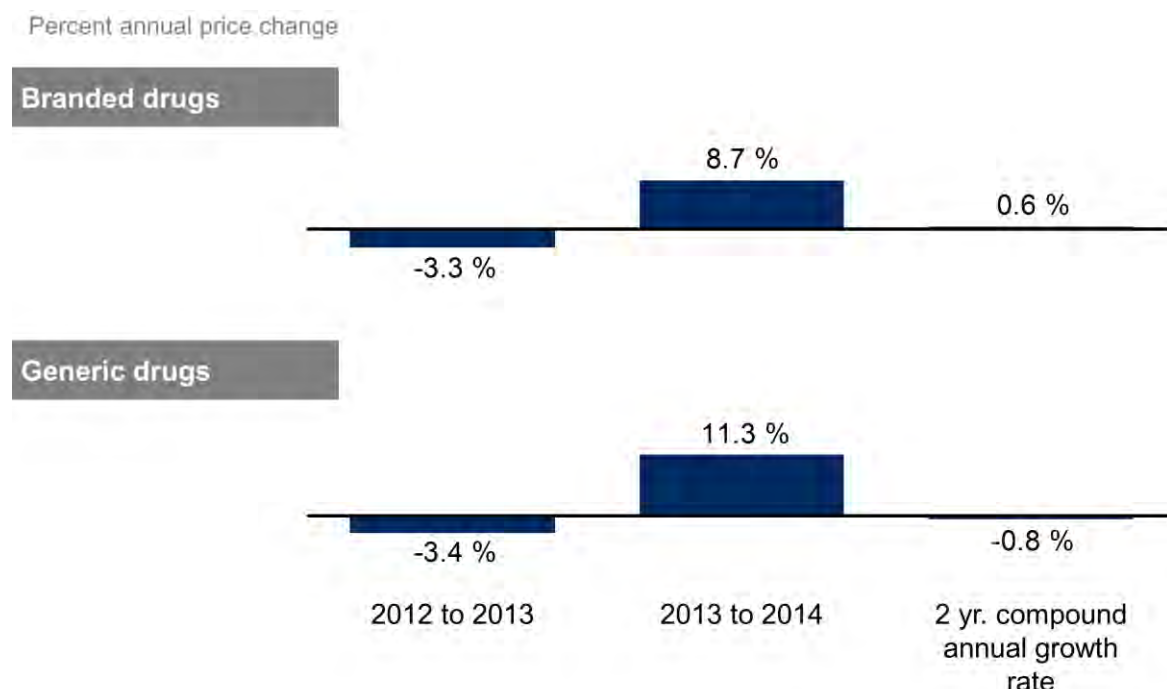
Note: Year over year average price changes or 2-year CAGR were calculated for each equivalent VA product (active ingredient, dosage, and form); price change was excluded if more than 10 fold change. Weighted by volume in last year considered (i.e., weighted by total volume in 2014, for 2013-14 price changes)

SOURCE: VA. (2012-2014). Pharmaceutical Prime Vendor Purchase Order Data

3.1.3   Previous Assessments

VA's system for purchasing, distributing, and using pharmaceuticals has been the subject of numerous reports by the Office of the Inspector General (OIG), the Government Accountability Organization (GAO) and several third parties. Major findings and recommendations relevant to this assessment are summarized in Appendix B.1. Common themes that cut across these assessments included the following:

- There is an opportunity to optimize pricing through improving processes and standardization of purchasing at the lowest price point that is accessible to VA.

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[2] Average price change of Wholesale Acquisition Cost for branded drugs between Q42013 and Q42014 using PriceRx data.

- There may be an opportunity to more effectively leverage scale (e.g., to reduce prices) by combining VA and DoD purchasing power.
- There is an opportunity to improve the transition process for active servicemembers that are switching to the VA formulary.

Where applicable, previous findings and actions taken to address them will be discussed in the findings. These past assessments have tended to focus on specific issue areas and/or individual facilities, separately developing recommendations for improvement in discrete areas. In contrast, our assessment tries to take an end-to-end view of inpatient clinical operations across five key sub-assessment areas and all high- and medium-complexity VAMCs.

3.2   Findings

Data findings, observations, and interviews with a broad range of administrative and clinical personnel confirm that VA's pharmacy organization and operating model performs well; it purchases drugs cost-effectively, distributes them efficiently to facilities and Veterans, and uses them in a measured and clinically appropriate way.

Across VA, the Pharmacy Benefits Management (PBM) organization's two-way cascade of committees – from the PBM organization to Veterans Integrated Service Networks (VISNs) to VA Medical Centers (VAMCs) and vice versa – provides an effective mechanism to escalate insights and innovation from the field and to develop policy centrally and build buy-in quickly across the country to facilitate implementation. Within VAMCs, clinical pharmacists are well integrated into multidisciplinary care teams and are highly valued by physicians and Veterans.

Based on our assessment, the characteristics in Table 3-1 have helped drive this level of performance.

Table 3-1. Pharmacy Benefit Management Key Success Factors

People	▪ Highly trained, professional workforce supported by extensive development program
	▪ Clear roles and responsibilities for policy making, contracting, purchasing, and utilization management
	▪ Strong alignment and buy-in/engagement across the organization
Process	▪ Cascade of facility to VISN to national committees that integrates pharmacist and physician input for policy-making and implementation
	▪ Pharmacist-doctor collaboration that increases product selection safety and performance and expanded scope of pharmacist practice which alleviates physician workloads
	▪ National Formulary that provides standard evidence-based, safe and efficacious drugs with processes for flexible off-formulary prescribing as needed
Systems	▪ Largely standardized data (from the PPV), facilitating utilization management
	▪ Purchasing system (through the PPV) that facilitates contract compliance and efficient ordering

	▪ Cascade of safety and utilization management indicators from national to facility level that drives performance improvements
	▪ Efficient and effective consolidated distribution of pharmaceuticals through the PPV and CMOP network
	▪ Effective systems for best practice sharing and information dissemination

As in all organizations, there are opportunities for improvement, but overall the pharmacy organization is a bright spot. The organization's performance, the positive characteristics outlined above, and some of the key improvement opportunities are described in more detail in the findings below:

1. VA pays relatively low prices for pharmaceuticals overall, but several factors limit its ability to consistently access the lowest price available.

2. VA's distribution of pharmaceuticals is efficient and effective.

3. VA has developed effective mechanisms to drive appropriate utilization such as its formulary, clinical use guidelines, and involvement of clinical pharmacists.

4. VA has implemented policies and processes to improve patient transitions from the Department of Defense (DoD) to VA but challenges remain.

5. VA has successfully implemented programs to reduce utilization of high risk medications such as opioids and benzodiazepines, and early results are promising.

Each of these themes is described in more detail below with supporting data, observations, interview findings, and comparisons to leading organizations or standard industry practice.

3.2.1 VA Pays Relatively Low Prices for Pharmaceuticals Overall, but Several Factors Limit its Ability to Consistently Access the Lowest Price Available

The prices VA pays for drugs have been evaluated multiple times in the past and have been found to be some of the lowest prices in the country (Von Oehsen, 2001; US Congressional Budget Office, 2005; Render, Nowak, Hammond, & Roselle, 2003; US Congressional Budget Office, 2014). All indicators evaluated in this assessment confirm that to be the case. Specific findings related to pricing are the following:

a. VA has achieved relatively low pricing overall due to federal price restrictions and VA's ability to contract centrally.

b. VA faces regulatory constraints, operational contracting challenges, and drug shortages that limit its ability to consistently access the lowest available price.

a. VA has achieved relatively low pricing overall due to federal price restrictions and VA's ability to contract centrally

VA's average price paid for drugs is significantly below national benchmarks. A report from 2005 suggested that VA paid 42-53 percent of Average Wholesale Price (AWP) for its drugs (US Congressional Budget Office, 2005). Our analysis suggests that VA's pricing may now be lower than that range, at 35-38 percent of AWP (Figure 3-6).

As context, Average Wholesale Price (AWP) is a benchmark that has been used by the industry for many years. The Average Wholesale Price itself is not particularly meaningful because it is not regulated, is set by manufacturers, and does not take into account the volume discounts and rebates often involved with prescription drug sales (Gencarelli, 2005). Therefore, AWP (or percent of AWP) is typically used to enable like-for-like comparisons of drug prices and is typically not used alone as a true indicator of price competitiveness.

The National Average Drug Acquisition Cost (NADAC) referred to in Figure 3-6 is a benchmark based on a survey of community pharmacies that includes large retail chains. In the survey, pharmacies report their acquisition costs for drugs purchased over the last month. NADAC prices are gathered by a third party and are published weekly on Medicaid's website. NADAC benchmarks are often used by states when setting Medicaid reimbursement rates (Centers for Medicare and Medicaid Services, n.d.).

Figure 3-6. Comparison of VA Average Prices to Average Wholesale Prices and Retail Acquisition Costs

VA pays low prices for its drugs
Average unit price per pill as a percent of AWP

Branded drugs

100% 71% 35%

Generic drugs

100% 52% 38%

Average Wholesale Price (AWP)[1]   National Average Drug Acquisition Cost (NADAC)[2]   VA average price[3]

1 Average Wholesale Price information included in VA purchase data
2 National Average Drug Acquisition Cost (NADAC) is a government drug price index based off aggregated invoice surveys from retail pharmacies
3 Weighted average price per pill for each National Drug Code (NDC) purchased in April 2014, data only includes tablets and capsules, excluded drugs with NADAC price change in April 2014, n = 926 branded NDCs, 191 generic NDCs
SOURCE: VA. (2012-2014). Pharmaceutical Prime Vendor Purchase Order Data; Centers for Medicare and Medicaid Services. (2014, April). *National Average Drug Acquisition Cost (NADAC)*. Retrieved from Pharmacy Drug Pricing: http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Benefits/Prescription-Drugs/Pharmacy-Pricing.html

VA's relatively low prices are protected under law. Pricing for the majority of products purchased by VA is established in accordance with the 65 I B Schedule program under the Federal Supply Schedule (FSS) service. Specific pricing stipulations for VA pharmaceuticals purchased through FSS contracts are outlined in Section 603, Public Law 102-585, which states the following:

"The price charged during the one-year period beginning on the date on which the agreement takes effect may not exceed 76 percent of the non-Federal average manufacturer price"

- Veterans Health Care Act of 1992, Public Law 102-585

This applies to "Big 4" customers (i.e., Department of Veterans Affairs, Department of Defense, Public Health Services including Indian Health Services, and the Coast Guard) who should receive at least a 24 percent discount from the net prices that wholesalers pay to manufacturers for covered drugs (also known as the Federal Ceiling price). Vendors may offer a higher price for other government agencies in addition to the Big 4 price (dual pricing), or a single price if it meets the Federal Ceiling Price threshold.

In addition to this 24 percent discount, VA has successfully centralized the majority of its contracting for pharmaceuticals so prices can be negotiated further at a national level. Multiple vendors on the FSS are competed to drive down costs, and longer-term national contracts can be established. Ninety-eight point six percent of purchases through its prime vendor are on some form of government contract (Figure 3-7), many of which achieve pricing below the FSS or Big 4 price (Table 3-2)[3]. In this way, VA is effectively its own group purchasing organization (GPO) for pharmaceuticals.

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[3] If a single price is offered by the supplier, it is considered FSS. If a supplier has dual pricing, VA pays the Big4 FSS price. FSS Restricted represents a temporary price reduction off the base FSS contract price for one or more specific agencies. This is typically done by companies for competitive purposes and is typically long-term; the "temporary" in temporary price reduction just differentiates it from the permanent base FSS contract price.

Figure 3-7. VA PPV Spend by Contract Type
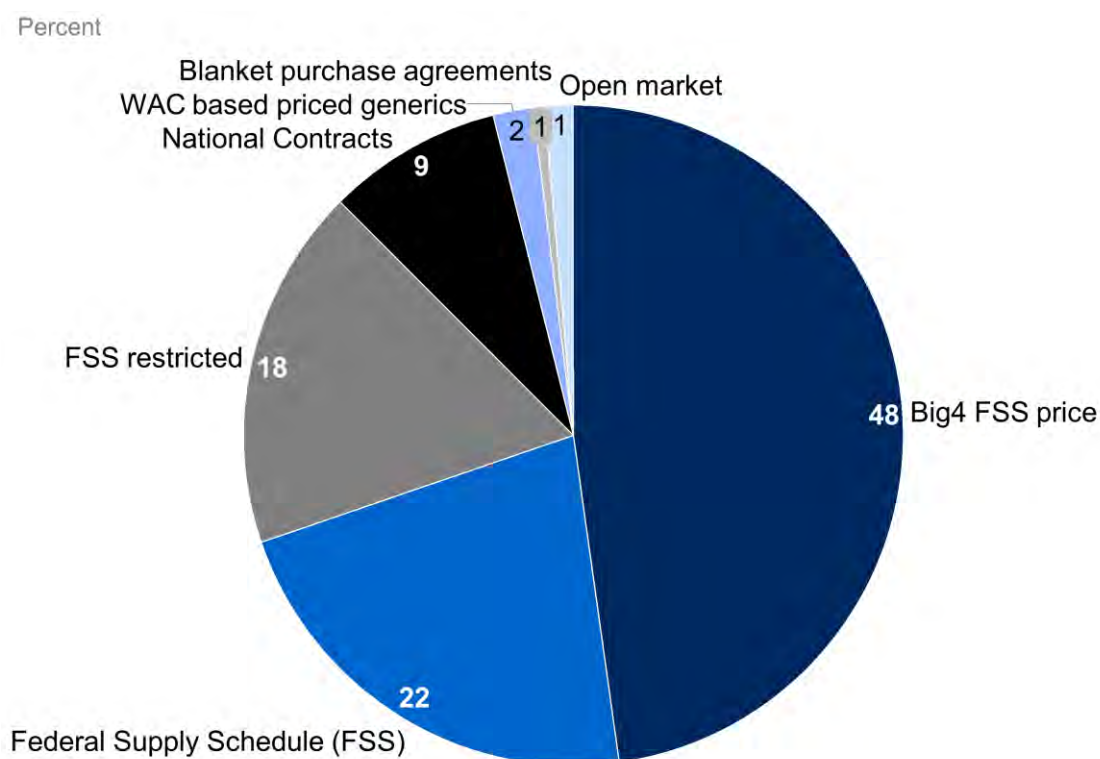
SOURCE: VA. (2012-2014). Pharmaceutical Prime Vendor Purchase Order Data

VA's pharmaceutical distributor (also known as its prime vendor, which is described below) provides tools that support VA's centralized, consolidated procurement and standardized purchasing process (VA, 2012). These tools help VA and its contracting entities generate insights from volume and pricing data to support effective negotiations.

Table 3-2. Price Comparison by Contract Type

Contract type	Price relative to Federal Supply Schedule (FSS)[4]	
	Generics	Brands
National contracts	0.62	0.57
FSS restricted	0.96	0.91
FSS	1.00	1.00
Big 4 FSS price	-	1.00

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[4] For drugs purchased through multiple pricing arrangements in each calendar year from 2012-2014, the volume weighted average price for each contract type was indexed to the FSS volume weighted average price. The median relative value is shown (VA, 2012-2014).

Contract type	Price relative to Federal Supply Schedule (FSS)[4]	
	Generics	Brands
WAC priced generics	2.14	-
Open market	2.41	1.81

While purchases made through the PPV are overwhelmingly through government contracts, around nine percent of overall spend each year is made through vendors other than the prime vendor. These purchases are recorded in the Integrated Funds Distribution, Control Point Activity, Accounting and Procurement (IFCAP) system. IFCAP data is difficult to analyze due to numerous standardization issues. From sample IFCAP data from five VISNs (VA, FY2014a), the assessment team estimates six percent of total pharmaceutical spend is purchased on the open market.[5] However, this number may be inflated because the data also includes some purchases of clinical supplies and diagnostic kits, which are hard to exclude.

Open market prices tend to be significantly higher than contracted prices. Indeed, analysis of VA data shows that on a like-for-like basis, open market prices for generics (80 percent of open market purchases) tend to be more than two times higher than FSS prices. However, VA can negotiate off-contract generic drug purchases through the PPV if those drugs have a published Wholesaler Average Cost (WAC) price, are approved by the FDA, and are Trade Act Agreement (TAA) compliant (VA OIG, 2012a). WAC Based Priced Generics pricing is similar to that achieved on the open market (Table 3-2). Bringing these purchases onto national contracts with better pricing terms represents an opportunity, albeit one that is likely hard to capture for reasons outlined later in this section.

b. VA faces regulatory constraints, operational contracting challenges, and drug shortages that limit its ability to consistently access the lowest available price.
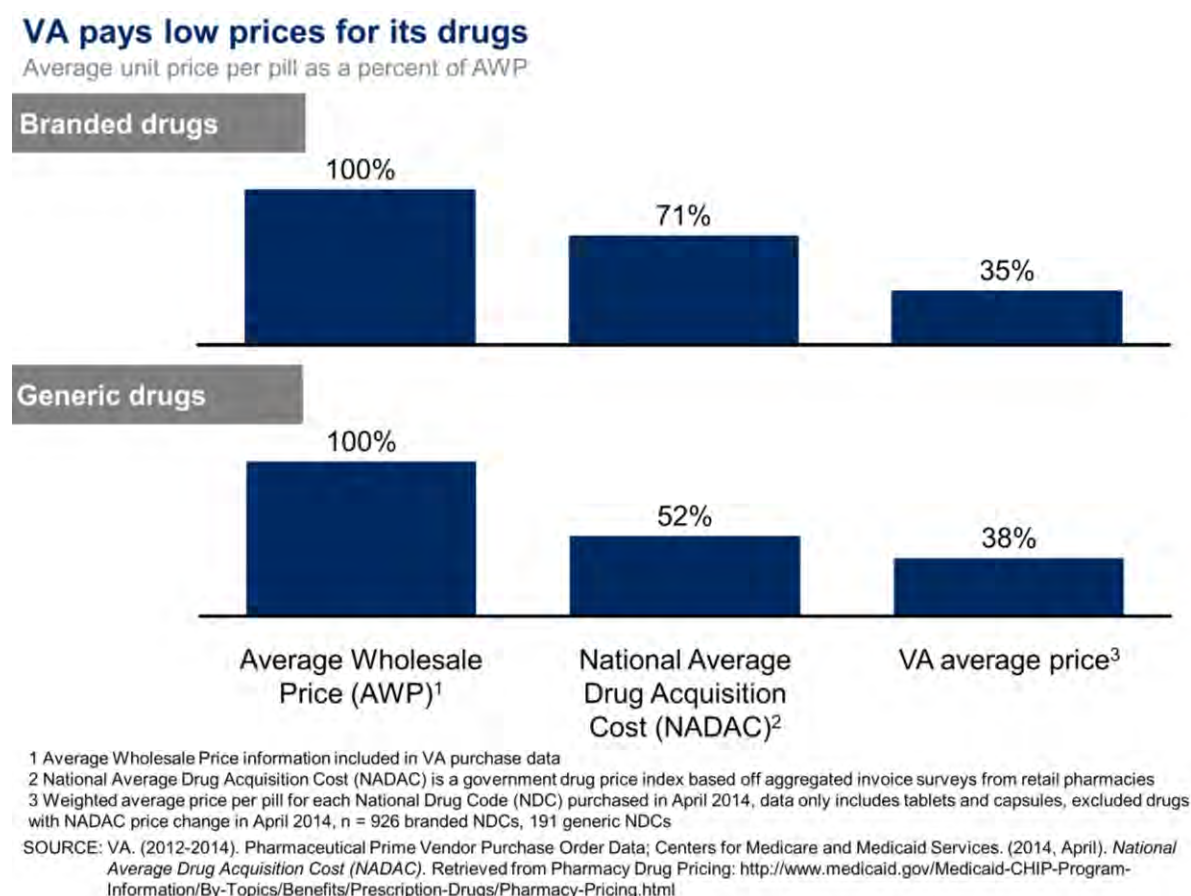
VA achieves relatively low prices on most of its pharmaceutical purchases but it is not always able to access the lowest price. While 80 percent of all spend is made within 25 percent of the lowest price, approximately nine percent of all spend in 2014 ($434 million) was made at prices more than 2x the lowest price paid in that time period (Figure 3-8) (VA, 2012-2014). Reasons for not being able to access the lowest price include VA Acquisition Regulations (VAAR) priorities for procurement vehicles, statutory restrictions on purchasing from certain countries, product availability due to drug shortages, and lapses in contracts.

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[5] In FY2014 for five VISNs, there were $40.7 M open market purchases from vendors (including from PPV) without contract numbers in IFCAP, $18.6M in spend with contract numbers, and $627 M in PPV spend (VA, FY2014a).

Figure 3-8. Cumulative VA Pharmaceutical Spend by Price Point

VA buys a significant proportion of drugs above the lowest available price[1,2]

Cumulative share of spend
Percent

$434 million (9%) spent at >200% of lowest price point

$3.7 billion (80%) spent at <125% of lowest price point

$483 million (11%) spent at 125 - 200% of lowest price point

Price point
Percent of lowest purchase price
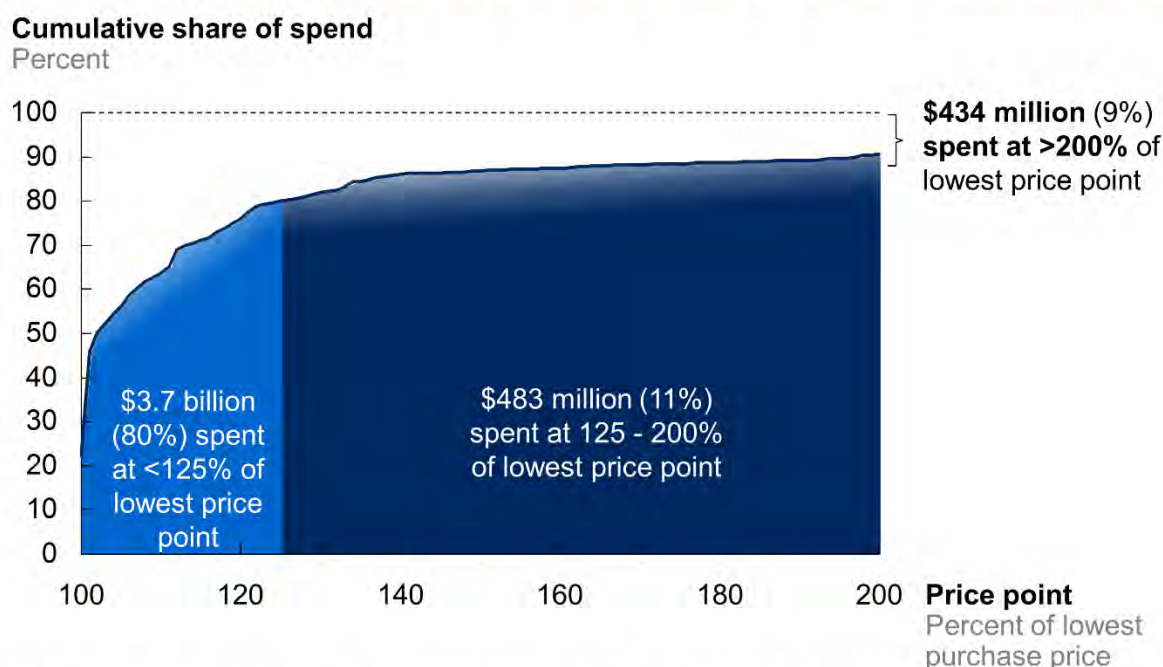
1 Includes all generic and branded drugs, CY2014. Lowest price point defined as lowest cost per pill for an individual transaction
2 Low outliers and high outliers excluded. Low outliers defined as a price point <10% of the average price point. High outliers defined as a price point equal to 1000% above average price point for the year (volume weighted)

SOURCE: VA. (2012-2014). Pharmaceutical Prime Vendor Purchase Order Data

According to section 8.002 of the VAAR, VA contracting officers are required to purchase supplies through a hierarchy of sources which places FSS contracts above open market commercial sources. However, in some instances only a single FSS supplier is available for a pharmaceutical, allowing them to command prices from VA above what other open market suppliers may charge. Senior PBM leadership stated that this is one major reason VA cannot access the lowest prices available (VA Pharmacy Benefit Management, 2015). Recognizing this issue in other contexts, federal agencies changed the Federal Acquisition Regulations (FAR) in January 2014 to clarify that non-mandatory FSS sources are not subject to a required prioritization above open market competition (although they are encouraged) (Federal Acquisition Regulation; Prioritizing Sources of Supplies and Services for Use by the Government, 2013). While VAAR is based on the FAR, the VAAR prioritization language remains in place and likely limits contractors' willingness to compete suppliers, even when it might be in VA's best interest.

The VA's purchasing flexibility is currently limited by the Trade Agreement Act (TAA) (19 USC 2501) which states that Federal agencies "may only acquire U.S.-made or designated country end products or U.S. or designated country services. Products/services offered under the VA Schedule Program that are end products/services of countries other than the United States or identified designated countries will not be considered for award." This poses a challenge because India and China are major producers of generics. Forty percent of all new FDA generic drug applications were from an Indian manufacturer in 2013 (FDA, 2013), and China and India

produce a substantial portion of the active pharmaceutical ingredients (API) used by other manufacturers (59 percent of the world API market in 2010) (Chemical Pharmaceutical Generic Association, 2012). However, TAA restrictions mean that, under normal circumstances, VA cannot source medications from those countries, or those containing API produced there, even if they are FDA-approved.

TAA restrictions are most critical in times when FSS or other contracted suppliers cannot supply VA with needed pharmaceuticals. In these instances, VA must procure drugs at open market prices or from other non-preferred suppliers at sub-optimal prices. Drugs that have recently been affected by TAA restrictions include baclofen, donepezil, mesalamine, and cefepime. In some cases, suppliers seek cheaper sources of API, and drugs which were TAA compliant become non-compliant. For example, beginning in July 2014, the producer of cyclophosphamide tablets changed its product to a capsule form with API produced in China. Price per pill and total spending increased more than six times as it was no longer on contract and had to be sourced on the open market. This was the sole producer of a life-saving cancer treatment and there were no alternatives.

National drug shortages also limit VA's ability to consistently access the lowest available price. Interviewees who were familiar with pharmacy issues uniformly stated that national shortages were becoming more widespread. Between 2012 and 2014, the FDA had 205 reported shortages (FDA, 2015). In shortage situations, VA must either source drugs from non-preferred suppliers (often at open market prices) or do without and use alternative treatments. As a specific example, in the second quarter of 2014, VA experienced a drug shortage from its only contracted supplier of bumetanide tablets. As a result, there was a rapid, nearly uniform shift in spend from contracted suppliers to off-contract suppliers. This shift led to prices that were approximately 10 times higher than contract prices for the remainder of the year.

Interviews with PBM leadership, CMOP leadership, and facility purchasers suggested that in some cases, failure to manage contract expirations and long contracting times led to extended periods of open market purchasing. PBM leadership stated that the most common reason FSS contracts expire is due to products being divested to a different manufacturer that did not have a contract with the government (VHA Pharmacy Benefits Management, 2015c). Two challenges were highlighted across these interviews:

- **Generalist approach.** The NAC is a centralized contracting organization that has historically operated as a team of generalists. Several interviewees believed that the perceived "one-size-fits-all" approach to contracting limited the NAC's ability to tailor response times to clinical priorities. Interviewees believed there was a lack of category prioritization (for example, for critical supplies that are close to contract expiration) and little familiarity with local needs or preferences (due to Veteran demographics or geographical differences in drug utilization, for example). Recently, FSS contractors have aligned with schedule categories, but it is too early to judge the effectiveness of this transition.

- **Perceived lack of responsiveness.** One hundred and twelve out of 182 interviewees reported instances when the NAC's responsiveness to contracting requests and its communication did not meet expectations. There was also a perception among field

procurement teams that the NAC does not have, or cannot demonstrate, a sense of urgency for contract renewals and emergency sourcing (for example, during drug shortages). According to leadership, there are long backlogs of contract packages and an average time of 283 days from receipt of completed packages until FSS contracts are in place. VA standard is 180 days for new FSS contracts. FSS contracts are awarded on a five-year base period with an optional five-year extension. Contracting leadership emphasized that it was a "*vendor's responsibility for them to submit extensions early and appropriately to avoid contract lapses. This does not happen frequently – leading to products falling off contract.*" It was unclear from leadership interviews what supplier management tools (for example, notifications) were in place to help suppliers maintain continuity of coverage.

In October 2013, certain components of CMOP contracting were transferred to the NCO 15 contracting offices as leaders sought to improve contracting speed and responsiveness for procurements requiring Requests for Quotes (RFQs) in open market solicitations. Since the transition, pharmacy leaders report higher satisfaction with contracting, driven by better customer service and efficiency in contracting processes. Interviewees suggested that NCO 15's performance is related to its relative category expertise, clear roles and responsibilities (e.g., single focus on CMOP contracting), and commitment to customer responsiveness. NCO 15 is also located directly opposite Leavenworth CMOP, which likely supports alignment, effective communication, and drives greater accountability.

3.2.2   VA's Distribution of Pharmaceuticals is Efficient and Effective

VHA has established an advanced distribution model to its facilities and onwards to Veterans. It receives the vast majority of its pharmaceuticals from its prime vendor – a distributor that sources medications from suppliers and delivers them to VHA's facility-based pharmacies and Consolidated Mail Order Pharmacies (CMOPs). Drugs are then distributed to Veterans from VA's CMOPs or from "windows" at pharmacies in VA's medical centers and clinics. Overall, VA's pharmaceutical organization performs well on distribution and its distribution model received near uniform praise from interviewees at all levels.

Specific findings include the following, which are described in more detail below:

a. VA's Consolidated Mail Outpatient Pharmacies (CMOPs) and outpatient pharmacies are efficient and achieve high Veteran satisfaction scores, but there may be opportunity for ongoing efficiency improvement.

b. VA's pharmaceutical prime vendor is well utilized and the model provides a good level of service to VHA's facility-based pharmacies and CMOPs.

a. VA's Consolidated Mail Outpatient Pharmacies (CMOPs) and outpatient pharmacies are efficient and achieve high Veteran satisfaction scores, but there may be opportunity for ongoing efficiency improvement.

Around 80 percent of VA's outpatient prescriptions are dispensed by VA's network of CMOPs (VA, 2015b). This represents around 128 million prescriptions annually. The remaining 20 percent are dispensed from outpatient window pharmacies in VA medical centers (VAMC) and clinics.

Veteran satisfaction with VA's CMOPs is high; VA's CMOPs received the highest overall customer satisfaction score of all mail order pharmacies in the 2014 J.D. Power survey (Figure 3-9) (J.D. Power, 2014).

Figure 3-9. CMOP Customer Satisfaction

Veterans are highly satisfied with VA CMOP service
Results of 2014 J.D. Power's Pharmacy Overall Satisfaction Study (mail order)
Points out of 1,000

Department of Veterans Affairs	871
Kaiser Permanente Mail Pharmacy	865
Humana RightSourceRx	862
Walgreens Mail Service	844
Mail Order Average	822
Aetna Rx Home Delivery	820
Express Scripts	817
Caremark	807
OptumRx	794
Prime Therapeutics	793
Cigna Home Delivery	779
Walmart Pharmacy Mail Services	774
Catamaran	752
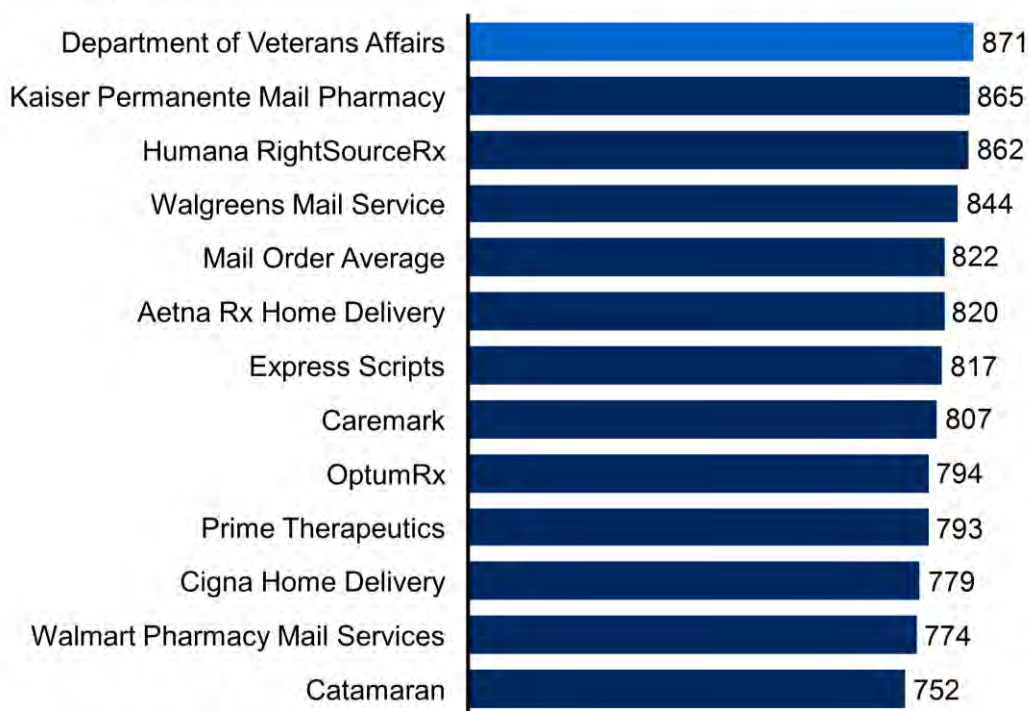
SOURCE: J.D. Power. (2014). *2014 Retail Pharmacy Study – Mail Order*

The assessment team visited two CMOPs during this assessment. Both were impressive in their scale, degree of automation, and low error rates. The CMOPs' annual operating budget is ~$191 million and they typically spend around $1.53 on average to fulfill a prescription (excluding drug and shipping cost) (VA, 2015c). Benchmarks from other mail order pharmacies are not published but expert interviews suggest this cost is comparable to the private sector.

However, total operating costs and cost per prescription varies across CMOPs and data would suggest there may be some economies of scale (Table 3-3); the two CMOPs with the highest volume have the lowest fulfillment cost. Also, expert interviews suggest that private sector mail order pharmacies typically process 25-30 million prescriptions per facility annually (Expert interviews, 2015) vs. VA's 9.4 – 26.5 million prescriptions per facility annually (VA, 2015c). Therefore, there may be an opportunity to consolidate VA's CMOPs to achieve greater scale and increase each remaining CMOP's utilization. This should be weighed against the potential impact on mailing costs, delivery times, and redundancy needed in the system to accommodate downtime or emergency preparedness plans.

Table 3-3. CMOP Operating Performance

CMOP	FY2014 prescriptions (M)	Total operating cost ($ M)	Non-drug cost per prescription[6] ($)	Time to fill (hours)	Time to deliver (hours)	Total time to Veteran (days)
A	26.5	36.4	1.37	38	49	3.6
B	25.5	36.7	1.44	40	54	3.9
C	18.5	31.7	1.72[7]	36	51	3.6
D	14.9	23.6	1.59	39	51	3.8
E	13.0	21.0	1.62	41	50	3.8
F	11.3	17.6	1.55	35	51	3.6
G	9.4	14.7	1.57	31	55	3.6

Overall, the delivery of medications to Veterans is near best-in-class (J.D. Power, 2014). Average order to Veteran times across all CMOPs is ~89 hours (range of 86-94 hours) or nearly four days. Industry research suggests that major mail order pharmacies take three to five days to refill prescriptions once received electronically.

Finally, while the assessment team believes CMOP error rates are low, there is scope to increase automation to further reduce error rates. The primary area for increased automation is at the end of the mail order process – packing and shipping. CMOP leadership already have plans in place to automate those steps and also to gradually upgrade the existing automation, and we would recommend they continue implementing those improvements.

Interviews and site visits also suggest that VA's outpatient pharmacies provide effective and timely distribution of pharmaceuticals to Veterans. While central data for window wait times was unavailable, pharmacists at VAMCs visited stated Veteran wait times for prescriptions were usually below their 30-minute target, on average. Our observations and interviews in eight pharmacies confirmed that, at any point in time, only a handful of Veterans were waiting for medications, if any were waiting at all. However, pharmacists said that wait times can rise during busy periods, which may represent an opportunity to improve service levels by, for example, establishing more flexible staffing models to meet demand or by improving the physical layout of pharmacies. There is also an opportunity to take pressure off outpatient pharmacies by directing more prescriptions to the CMOPs, particularly for non-urgent refills, as at least 18 percent of window prescriptions are for refills (VHA Pharmacy Benefits Management, FY2014). The actual number is likely larger, as physicians often write new

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[6] Excludes mail cost

[7] Operating costs for this CMOP are temporarily higher as it transitions to a new facility and receives needed technology upgrades. Also reflected are additional costs for packaging slip printing that is outsourced because of space constraints in the existing facility.

prescriptions for existing medications during visits to ensure patients have an adequate number of refills. These are not counted in the system as refills.

In addition, a small volume of prescriptions is mailed to Veterans from VA Medical Center pharmacies. This practice is typically for medications that are not stocked at the CMOPs, such as certain controlled substances and specialty medications. There may be an opportunity to centralize dispensing and mailing of these prescriptions within a region to improve efficiency. We observed this practice on one site visit, which could be evaluated for its applicability more broadly across VHA.

b. VHA's pharmaceutical prime vendor is well utilized and the model provides a good level of service to VHA's facility-based pharmacies and CMOPs.

VA's prime vendor is a distribution company that is contracted with VA to source required pharmaceutical products from suppliers and distribute them to VA facilities. VA's current prime vendor contract was signed into effect in May 2012 for two years with options for three additional two-year renewals (eight years total). VA purchases around 90 percent of all pharmaceuticals through its prime vendor (around $4.5 billion of the more than $4.9 billion pharmaceutical budget) (VA, 2012-2014; VA, 2015a). Throughout site visits and interviews, VA personnel provided consistent feedback that they believed the current prime vendor provides high levels of service, accuracy, and satisfaction. Furthermore, stakeholders reported that the prime vendor consistently meets its contractual expectations in the following areas:

- **Standardized data:** VA has access to a standardized purchase order database that is provided by the prime vendor. This data provides VA with a structured and minable dataset that is used to inform purchasing decisions and contracting, and to monitor / track utilization.

- **Automated purchasing software:** The prime vendor's ordering system allows VA to consolidate purchasing to a limited number of suppliers while also locking-out sub-optimal pricing. This software also ensures that pharmaceuticals are ordered on-contract whenever possible.

- **Logistics support:** The prime vendor provides barcode scanners to support management of inventory in CMOPs and VAMCs while also providing purchase recommendations (for example, through predictive analytics) for pharmacy purchasing teams.

- **Performance management:** VA receives standard performance reports for both vendor service levels (self-reported by the prime vendor) and VA utilization patterns which are consistently reviewed and used by VA PBM to manage pharmaceutical spend.

- **Quality assurance:** VA's prime vendor contract ensures that all drugs provided are both FDA approved and TAA compliant. VA maintains the right to return, at no cost to the government, any drugs with expiration dates that fall within six months of delivery, are incorrectly shipped, or are damaged.

Throughout the pharmaceutical organization, purchasing processes are largely centralized and standardized. The prime vendor's ordering system provides a handheld device that is used at the point of ordering which is compatible with barcoded labels on nearly all pharmaceuticals. This system enables web-based ordering which is transmitted directly to the distributor. Under

its contractual obligations, the prime vendor provides maintenance and training for VA pharmacies (both CMOP and VAMC) to support its ordering system. Additional features of the prime vendor's ordering system include real-time pricing, accurate information regarding quantity available for purchase by vendor, and IT-supported approval processes for satellite facilities.

As per VA's contract, the prime vendor must perform next-day delivery for orders made before 6 p.m. and ensure a 97 percent fill-rate for indefinite delivery, indefinite quantity (IDIQ) of pharmaceutical products. The prime vendor does have exception clauses for manufacturer backorders (MBO) and spike volume requests (defined as orders exceeding 150 percent of prior month's total volume). However, it cannot divert product intended for VA to gain profit from price arbitrage within the market. Upon review of the VA's most recent prime vendor business metrics, it appears that the VA's prime vendor relationship provides high quality, reliable, on-time, and accurate delivery of pharmaceuticals with fill-rates of more than 98 percent (Figure 3-10).

In addition to efficient delivery, the prime vendor provides high quality customer service to CMOPs and VAMCs. Interviewees in both locations cited their ability to receive same-day emergency shipments (often within four hours) which supports timely delivery of care to Veterans. It is important to note that this delivery time can be met for both on-formulary as well as off-formulary medications.

VA's inventory management system benefits from VA's ability to receive reliable delivery of pharmaceuticals and is able to operate a near just-in-time inventory management system. During VAMC interviews, pharmacists reported having an average of approximately three to four days of stock on hand at most facilities. They cited robust visibility into inventory as a key driver, facilitated by the prime vendor's inventory system. Interviewees reported that stock-outs occur rarely at VAMCs and are largely driven by manufacturer and / or national shortages rather than distributor deficiencies.

Figure 3-10. Pharmaceutical Prime Vendor Service Levels for 2Q2013 – 1Q2014

The pharmaceutical prime vendor's fill rate is 98.6%
Millions of orders
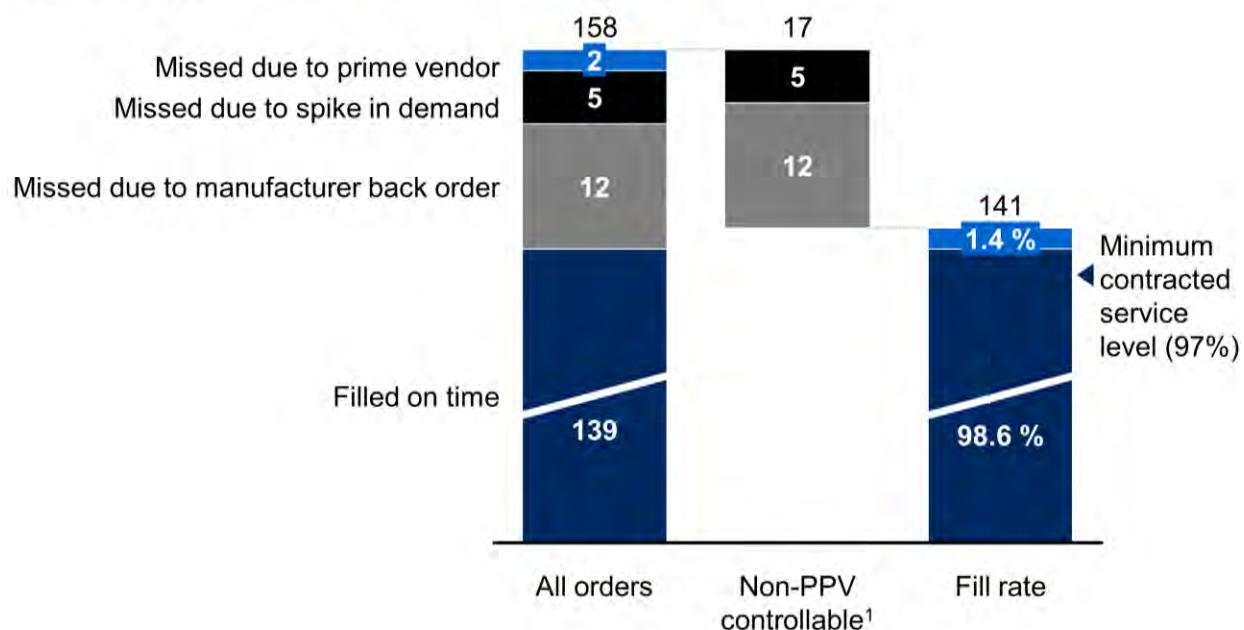
1 Contractually, manufacturer back orders and quantities in 150% in excess of previous month's demand do not count towards the PPV fill rate

SOURCE: Pharmaceutical Prime Vendor. (2014, November 13). *Business Review for Period: 3rd Qtr 2012 through 2nd Qtr 2014.*

3.2.3 VA has Developed Effective Mechanisms to Drive Appropriate Utilization Such as its Formulary, Clinical use Guidelines, and Involvement of Clinical Pharmacists

Overall, VA is a leader in formulary decision-making and evidence-based clinical usage of pharmaceuticals. Specific elements supporting this finding include the following:

a. VA's use of pharmaceuticals is guided by a robust, evidence-based formulary that has achieved widespread buy in.

b. VA has established an effective two-way cascade of decision-making, feedback, and implementation throughout the organization.

c. VA clinical pharmacists are well integrated into the care team.

d. VA's formulary process is sufficiently flexible to give Veterans access to all FDA-approved medications if clinically indicated.

e. VA's utilization of generic medications is high overall, but there may be opportunity to increase generic utilization and better standardize drug choice in certain drug classes and geographies.

a. VA's use of pharmaceuticals is guided by a robust, evidence-based formulary that has achieved widespread buy in.

A formulary is a list of medications that have been approved by an organization to be used to treat specific conditions in a particular patient population. Decisions on which medications to list on a formulary are typically based on factors such as efficacy, safety, and cost effectiveness. Therefore, formularies help to drive high-quality high-value prescribing.

Interviews and site visits demonstrated a strong belief in the value and relevance of the VA's formulary from stakeholders along the entire pharmaceutical value chain (physicians, pharmacists, PBM leaders, and contracting). Most physicians interviewed did not believe the formulary was too restrictive and one psychiatrist said VA's formulary was actually significantly less restrictive than the formulary she had used previously in a large Midwest municipal health system. Even 14 years ago, an Institute of Medicine report supported this less restrictive view of VA's formulary and gave favorable reviews overall of the formulary management, utilization, and clinician buy in (Blumenthal & Herdman, 2001).

b. VHA has established an effective two-way cascade of decision-making, feedback, and implementation throughout the organization.

VA formulary decisions and implementation are driven by three groups (Figure 3-11): (a) VAMC Pharmacy and Therapeutics (P&T) committees, (b) VISN P&T committees with membership from VAMC committees led by a VISN Pharmacy Executive, and (c) a national P&T committee composed of the national Medical Advisory Panel (MAP) and the VISN Pharmacist Executive Committee (VPE). The extensive governance structure with high physician and pharmacist engagement, together with evidence-based reviews, drives stakeholder alignment. Contract adherence for "closed" drug classes is reported to be rapid and extensive, reaching 90 percent in three months and greater than 98 percent within six months (Good & Valentino, 2014).

Site visits confirmed that Pharmaceutical and Therapeutics (P&T) committees meet at each site to help support adherence to standard processes and protocols implemented by the VA's PBM organization. P&T committees convene monthly at VAMCs to discuss treatment protocols, develop facility-level initiatives, and make recommendations to VISN and national-level PBM committees regarding formulary modifications. Facility-level proceedings and successful initiatives are effectively raised to VISN and national leadership through structured committees at all levels (Figure 3-11).

Figure 3-11. VA Formulary Governance Bodies and Responsibilities
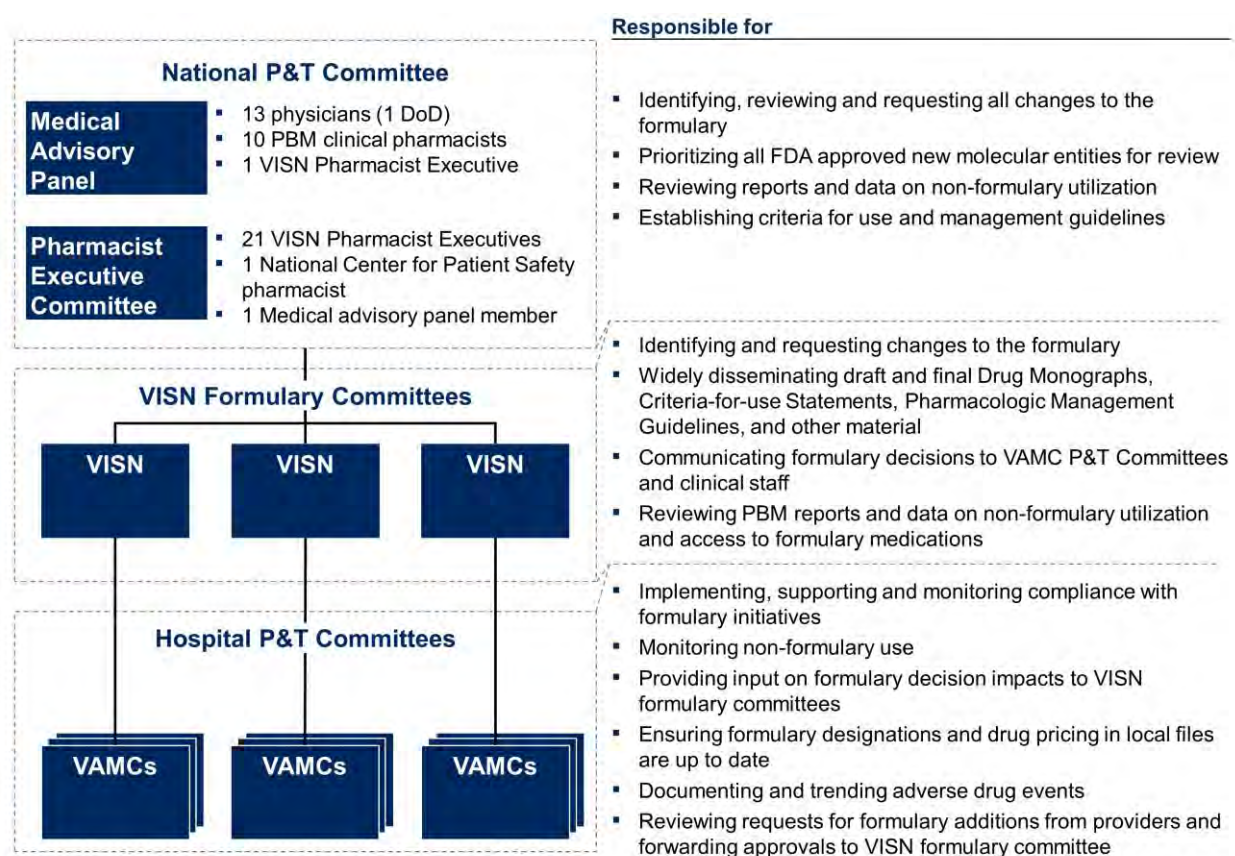
SOURCE: VA Pharmacy Benefit Management. (2015, May). Leadership interviews; VHA. (2009). Handbook 1108.08 VHA Formulary Management Process.

c. Clinical pharmacists are well integrated into the care team.

VA pharmacy practice is recognized by industry leaders as being among the best in the nation: *"Overall from a pharmacy practice perspective, generally the pharmacy practice in the VA is more advanced than other practices within the public and private sectors in terms of delivery of care and utilization of pharmacist professionals in the care and treatment of patients"* (American Pharmacists Association, 2015). Recruitment and development of talent is a critical component of this success, exemplified by VA's hiring of talent with PharmD degrees, support for 500 paid residencies (VA Pharmacy Benefit Management, 2015), credentialing, and additional training such as scope of practice boot camps that enable VA pharmacists to work at the top of their licenses to provide relief to doctors and other clinical staff.

PBM also supports clinicians with key initiatives such as an Academic Detailing Service that spreads best practices and improves health care by combining the interactive, one-on-one communication used by medical salespeople with the evidence-based, noncommercial information generated by medical experts. The current focus of VA academic detailing is on opioid drug usage and pain management, and PBM has developed a physician outreach plan and prepared a packet of information to educate clinicians and patients with the latest guidelines and evidence on therapies (VA Pharmacy Benefit Management, 2015). These efforts should further impact trends seen in section 3.2.5. Other best practice sharing tools include a

national clinical pharmacy file and information sharing site that includes content for over 50 job areas (VHA Pharmacy Benefit Management, 2013).

VA has moved to a Patient Aligned Care Team (PACT) model in which clinical pharmacists are core members of a multidisciplinary team, and often bridge primary and specialty care teams. Of the approximately 6,700 pharmacists examined by VHA, over 2,600 have a scope of practice allowing them to assist physicians in certain clinical activities such as initiating, managing, and monitoring a patient's drug therapy for specified chronic diseases. More than two thirds of those pharmacists spend the majority of their time on these clinical duties (VHA Pharmacy Benefit Management, 2013). Site visits, observations, and interviews with physicians and pharmacists confirmed that clinical pharmacists play a key role in decision making around prescribing and patient education. Several physicians commented that VA pharmacists play a more integral role in providing care than they have seen in other health care settings. In addition, pharmacists reported that they value the clinical role and potential for expanded scope of practice at VA relative to opportunities they may have elsewhere. VA pharmacists improve patient outcomes through their interventions, such as reducing costs and reducing cardiovascular events, foot ulcers and other complications for chronic disease management of patients with diabetes (Ourth, Morreale, & Groppi, 2015; VHA Pharmacy Benefit Management, 2013).

d. VHA's formulary process is sufficiently flexible to give Veterans access to all FDA-approved medications if clinically indicated.

While the formulary is strictly controlled by VHA's PBM organization, off-formulary drugs are available when needed for Veteran care through a standardized off-formulary request process that takes into account the clinical needs of each individual patient. Non-formulary approval requests are submitted electronically by prescribing physicians and are reviewed by pharmacists dedicated to specific therapeutic classes, with further expert involvement as needed. Nearly 99 percent of decisions are made in under 96 hours and, on average, 80 percent of non-formulary requests are approved (VA, FY2014b). For the 20 percent that are not approved, an appeal process is in place to escalate to the VISN Chief of Pharmacy. Therefore, Veterans have access to all drugs approved by the FDA whether those drugs on or off formulary; the formulary simply acts as a mechanism to steer physicians towards medications that are deemed by VA to be the most clinically effective, safest, and highest value drugs available on the market.

As a result of this process, 4.8 percent of outpatient prescriptions dispensed by VA are for non-formulary medications on average across VA overall (Figure 3-12), although this ranges from 2.5 to 9.1 percent among VAMCs (VA, 2010-2014b). Data was not available for inpatient prescriptions.

Figure 3-12. Formulary Compliance by VISN

Formulary compliance is quite consistent across VISNs
Percent of total 30 day outpatient prescriptions dispensed

Off formulary
On formulary

VISNs

	On formulary	Off formulary
	96	4
	96	4
	96	4
	96	4
	96	4
	96	4
	96	4
	96	4
	95	5
	95	5
	95	5
	95	5
	95	5
	95	5
	95	5
	95	5
	94	6
	94	6
	94	6
	93	7
	93	7
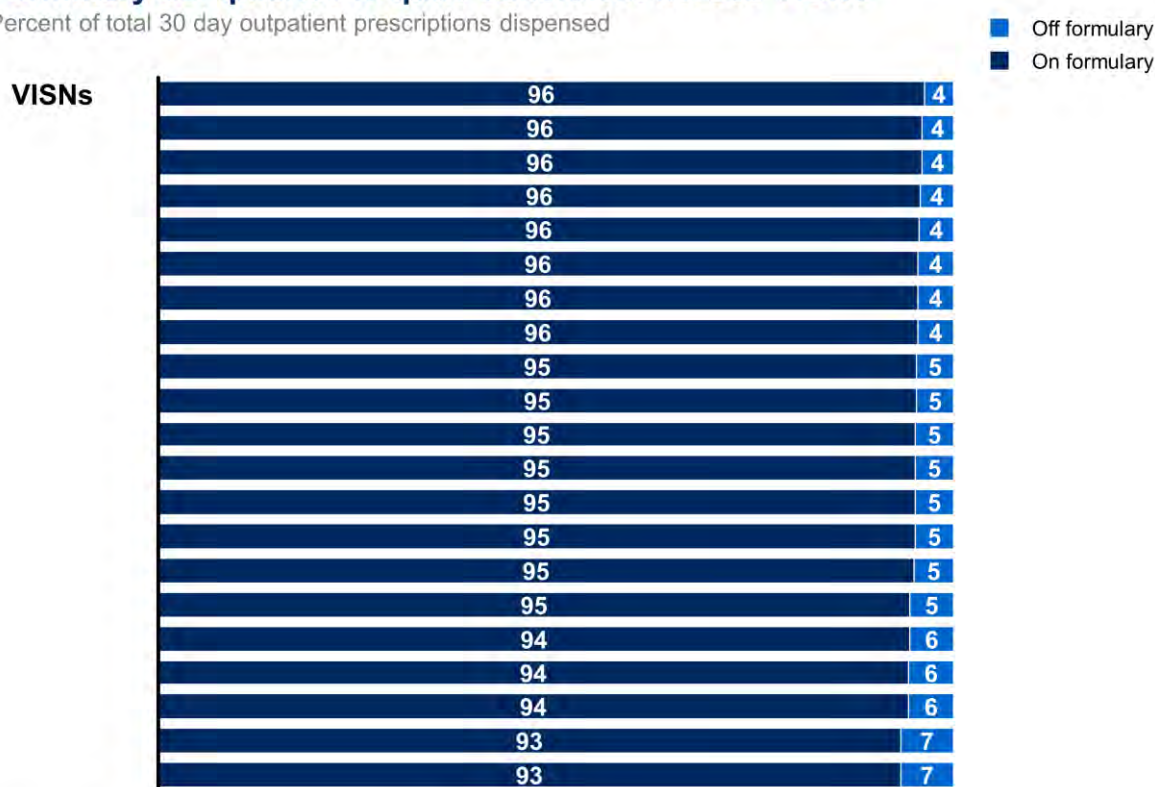
SOURCE: VA. (2010-2014b). Outpatient prescription data.

e. VHA's utilization of generic medications is high overall, but there may be opportunity to increase generic utilization and better standardize drug choice in certain drug classes and geographies.

Generic medications are typically significantly less expensive than their branded equivalents. Higher generic utilization is important because it helps VA control its drug costs while still ensuring Veterans get access to high quality, FDA-approved medications.

Ninety-seven percent of all pills or pill equivalents bought by VA are generic formulations when a generic exists (VA, 2012-2014), which the assessment team believes is high relative to other integrated health care delivery organizations. For example, Kaiser Permanente claims it dispenses 99 percent of its prescriptions as a generic when a generic exists (Kaiser Permanente, 2015), and its generic purchasing rate will likely be similar. Unfortunately, VA cannot accurately measure or report the generic dispensing rate as does the rest of the industry (generic prescriptions dispensed divided by total prescriptions), as pharmacy dispensing data is not specific for individual National Drug Codes. Therefore, we are unable to do a fair and true comparison to the industry standard benchmark. In general, however, a generic dispensing rate

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

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of around 80 to 90 percent would be considered normal in the industry.[8] VA's "true" generic dispensing rate (total generic prescriptions per total prescriptions) is likely to be as good as or better than that benchmark, given its high generic purchasing rate (91 percent of all pills or pill equivalents purchased are generic) (VA, 2012-2014).

VA's generic utilization is supported by strong adherence to the formulary (as described above), policies that automatically dispense a generic formulation when available, and dedicated pharmacist clinical decision support (through non-formulary review, involvement in inpatient clinical decision-making, and outpatient pharmacy dispensing, for example).

There is remarkable consistency in the generic purchasing rate across VISNs, with only around a four percentage point difference from the lowest to highest generic utilizer. More variation in generic purchasing is seen when comparing individual facilities. Much of this variation will be due to differences in case mix and usage of different drug classes with different levels of generic availability. For example, facilities that serve a large oncology population are likely to spend relatively more on branded medications because many oncology drugs are not yet available in a generic formulation.

However, data analysis also highlighted that geographic differences exist in prescribing patterns within drug classes (Figure 3-13) that not only reflect the generic dispensing rate, but will also lead to different costs to treat the same condition depending upon where a Veteran receives care.

As a concrete example, VA's drug purchase data showed that in 2014, several VISNs used significantly more of a branded medication than other VISNs within one drug class (Figure 3-14). The choice of the branded drug led to a significantly higher cost to treat a patient with a drug in that class – $70 per patient annually for the branded drug versus around $20 for the generic. Interviews revealed that VISNs have authority to drive prescribing towards specific drugs within a class within their VISN, provided those drugs are on formulary. In this case, pharmacy leaders believed the VISNs that used more of the branded drug may have been slower to drive towards the generic substitute than other VISNs because of practices established when both drugs were branded and on contract.

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[8] Industry PBMs ~84% (CVS Caremark, 2015; Express Scripts, 2015), 77.7% national average in 2012 (Martin, Hartman, Whittle, & Catlin, 2014), 80% for Medicaid in 2012 (Bruen & Young, 2014), 88% for health exchange plans (Brennan, et al., 2014).

Figure 3-13. Generic Purchasing Rates by VA Drug Class for VISNs

Generic purchasing rates vary by drug class between VISNs

Percentage of pills or pill equivalents purchased that are generic

Legend:
- Max VISN
- Median
- Min VISN
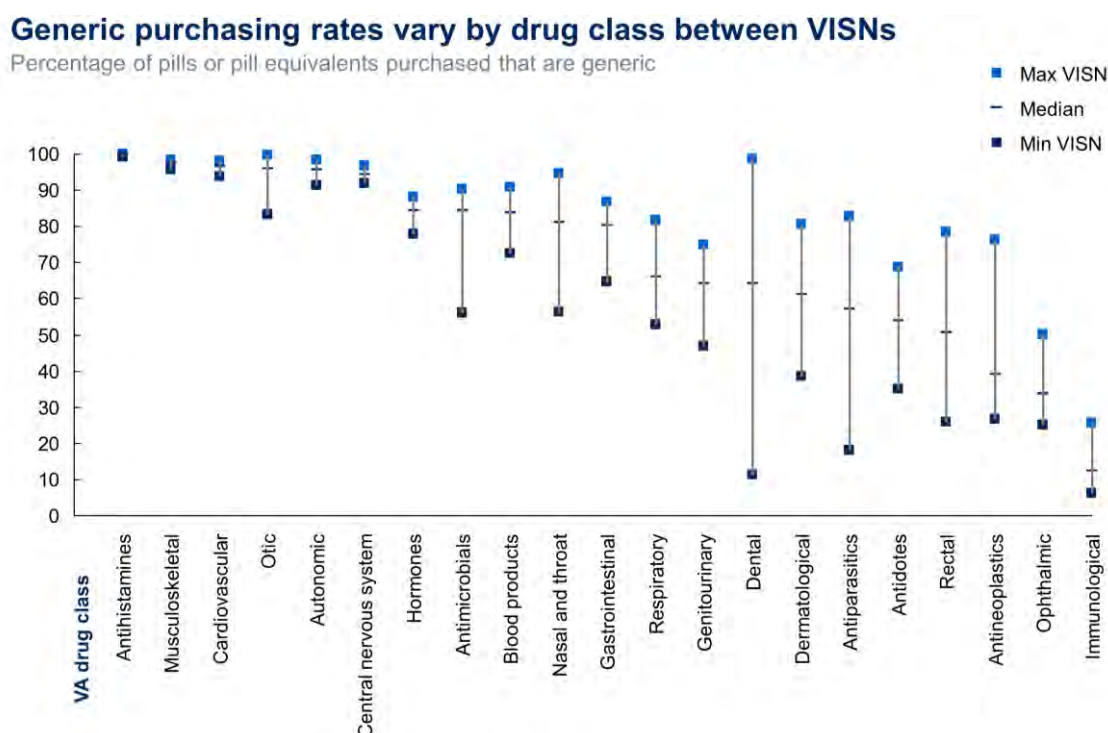
SOURCE: VA. (2012-2014). Pharmaceutical Prime Vendor Purchase Order Data

Figure 3-14. Variation in Angiotensin II Receptor Blocker (ARB) Selection by VISN

Some VISNs use a high share of branded drugs within some drug classes

Percent of ARB pills purchased

Legend:
- Generic
- Branded

VISNs	Branded	Generic
	59	41
	69	31
	72	28
	74	26
	77	23
	80	20
	85	15
	89	11
	89	11
	89	11
	89	11
	90	10
	90	10
	91	9
	92	8
	92	8
	93	7
	94	6
	95	5
	96	4
	97	3

SOURCE: VA. (2012-2014). Pharmaceutical Prime Vendor Purchase Order Data

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.
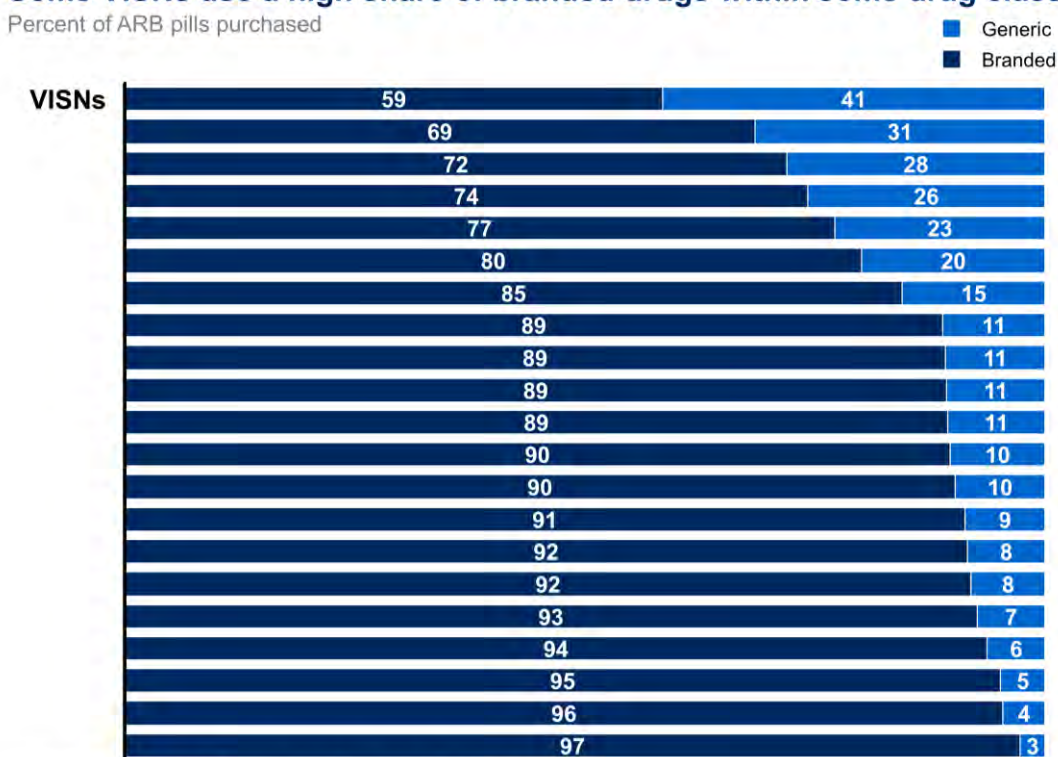
3.2.4 VA has Implemented Policies and Processes to Improve Patient Transitions from the Department of Defense to VHA but Challenges Remain

Several prior reports have highlighted some of the challenges Veterans face when transitioning directly from DoD care to VA care, including:

- Potential gaps in transitioning servicemembers' medication coverage due to formulary differences
- Poor interoperability between DoD and VA electronic medical records

A number of guidelines, directives, and programs have been developed over the last decade to improve Veterans' transitions from DoD, which are summarized in the following table (Table 3-4).

Table 3-4. Timeline of Developments Related to Transitioning Servicemembers

Year	Developments related to servicemembers transitioning to VA care
2007	▪ VA and DoD release the CHDR (Clinical Health Data Repository) interface that all DoD sites and 102 of 128 VA sites can access, with limited medical info exchange (outpatient pharmacy meds and allergies)
2008	▪ National Defense Authorization Act issues requirements for DoD and VA to increase health information sharing and reach full interoperability
2009	▪ VA establishes procedures for transitioning care of OEF/OIF Veterans ▪ VA and DoD begin work on the Virtual Lifetime Electronic Record initiative
2011	▪ VA and DoD release Integrated Mental Health Strategy ▪ *inTransition* program implemented (referral required for enrollment) ▪ VA and DoD Secretaries commit to developing an integrated electronic health record system by 2017
2012	▪ President signs Executive Order expanding VA services for suicide prevention, mental health, and substance abuse treatments ▪ Interagency Taskforce established to review Departmental activities for improvement
2013	▪ VA and DOD begin work on the Joint Legacy Viewer – a program to improve access to health information for transitioning servicemembers to include medications, progress, and discharge notes
2014	▪ VA and DoD sign MOU for complex care coordination teams and to improve policies and procedures for transitioning servicemembers ▪ President announces 19 new executive actions to improve medication continuity during transitions between DoD/VA care, including automatic enrollment into VA's *inTransition* program

Year	Developments related to servicemembers transitioning to VA care
2015	▪ VHA issues Directive 2014-02, mandating mental health medications for transitioning servicemembers not be switched solely due to differences between VA and DoD formularies, VA Criteria-for-Use, or cost ▪ Non-formulary justifications are not required for processing if a designation of "Transitioning Veteran" is made

Specific findings of this assessment include the following, which are detailed below:

    a. Veterans have long wait times to see a primary care physician

    b. There is limited interoperability between DoD's and VA's health information

    c. Differences exist between DoD and VA formularies that can lead to challenges ensuring continuity of care

a. Veterans have long wait times to see a primary care physician.

Data released by VA in October 2014 show new VA patients wait on average 43 days to see a primary care physician, with a range of 2 to 122 days across facilities (VA, 2014c). A 2012 GAO report found that the average time between servicemember discharge date and first VA appointment was 81 days (GAO, 2012). Many prescriptions are written for less than the 81 day average, as evidenced by 54 percent of VA's own prescriptions being for 30 days or less (VA, 2014d). Even in the case where patients are given refillable prescriptions for up to 90 days, patients could run out of medication while they are waiting to see a VA physician if the DoD prescription is dispensed with some time prior to discharge, followed by a period for VA care enrollment, followed by the average new patient wait time. VA has procedures and policies in place to provide transitioning servicemembers and other Veterans with medications in case of shortages (GAO, 2012; Staff interviews, 2015), but improving access may make them less necessary. Access to physicians is beyond the scope of this assessment but is covered in detail in Assessment B and scheduling practices in Assessment E.

b. VA physicians cite poor access to DoD medical records as the primary challenge related to patient transitions.

In line with findings from previous reports (IOM, 2010; GAO, 2012), physicians and administrators consistently said that one of the biggest challenges they face when patients transition directly from DoD is getting access to their medical records and medication history.

Without access to previous medical records, they reported challenges understanding why patients were taking certain medications. Access to such information can be critical to ensure Veterans continue to receive their medication. For example, a physician may need a patient's medical history to be comfortable prescribing a medication such as a high risk or high potency drug or to prescribe an off-formulary medication (which requires a physician's clinical justification).

While a detailed assessment of data sharing capabilities for electronic health records was not in scope of this assessment, we did research initiatives VA and DoD have implemented to improve interoperability and information sharing. Table 3-5 highlights some of those programs

(Modified from: Defense Medical Information Exchange Program Office, 2014). The DoD and VA have been working on systems for interoperability since 1998 (Congressional Research Service, 2013). Many of the older tools provide only limited data and records (for example, only an outpatient medication list and not inpatient medications or clinical history). In 2008, the National Defense Authorization Act (NDAA) required DoD and VA to increase health information sharing and reach full interoperability between their medical record systems. While DoD and VA committed to developing a single integrated electronic health record in 2011, they have since developed plans for separate systems (a commercial off the shelf system for DoD and the VistA Evolution program for VA which includes the electronic Health Management Platform [eHMP]) due to cost and timing estimates (GAO, 2014). Common capabilities and interoperability are to be jointly developed by the Departments despite having separate systems.

Table 3-5. Data Sharing Programs between VA and DoD

Data sharing program	Year started	Intended purpose	Examples	Scale
Federal Health Information Exchange (FHIE)	2002	Monthly transfer of discharged servicemembers' clinical data from DoD to VA	Pharmacy, radiology, lab results	6.1 M service-members' clinical data transferred
Clinical Data Repository/ Health Data Repository Exchange (CHDR)	2003	Two-way exchange between DoD and VA of actionable outpatient pharmacy medication, allergy, and allergy reaction data for beneficiaries that use both DoD and VA health facilities, allowing the information to become part of the patients' permanent medical records	Outpatient Pharmacy, Allergy, and Allergy Reaction	2.1 M beneficiaries
Bidirectional Health Information Exchange (BHIE)	2004	Real-time read-only viewing of DoD and VA patient clinical data	Consultations, patient history and physical reports, theatre clinical data	5.1 M patients
Virtual Lifetime Electronic Record (VLER)	2009	Intended to allow public sector (VA, Social Security Administration) and private sector health care providers'	Continuity of care documents	

Data sharing program	Year started	Intended purpose	Examples	Scale
		secure access to a patient's health record		
Joint Legacy Viewer (JLV)	2013	Intended to provide easy access to integrated view of patient information, including information required for most clinical decisions	Medications, progress, and discharge notes	Currently available at all VAMCs with limited user access

As a bridge to eHMP development and to support interoperability, VA and DoD launched the Joint Legacy Viewer (JLV) program which includes mapping of data to national standard codes, access to more information (such as full exam reports), and a user friendly graphical interface. The JLV pilot program is being expanded to meet the full interoperability requirements issued again in the 2014 NDAA. During the pilot period there were ~700 test users across seven VAMCs and three DoD facilities. It is available at all VAMCs and was offered to all Chiefs of Staff or their designees as of October 1, 2014, but it is unclear how it is being received and used given the limited user access. Additional technical capacity is expected to be added to increase the user base across the enterprise on a rollout schedule (DoD and VA, 2014).

Given the early phase of JLV's rollout, it is unclear whether it will successfully address physicians' and administrators' needs to access clinical information from DoD systems. Previous programs had difficulties due to poor strategic planning, program management, and investment management (Congressional Research Service, 2013; GAO, 2014). Assessment H section 12.3 discusses these issues in more detail. Additionally, Assessment H found the JLV program rollout includes a lack of engagement and stakeholder awareness that raises concerns about its eventual success.

c. Differences exist between DoD and VA formularies that can lead to challenges ensuring continuity of care.

DoD's and VA's formularies and formulary processes are different. For example, DoD has a three tiered formulary, of which the third tier is considered non-formulary and not stocked on military bases. Instead, these non-preferred medications are only available through community pharmacies or mail order, and a large co-pay applies. All FDA-approved medications, until reviewed, are required by law to be placed in the second tier. On the other hand, VA has one national formulary and no tiers, and almost all medications are dispensed by VA pharmacies or CMOPs. While different, there is substantial overlap in the formularies, particularly for commonly prescribed mental health and pain medications (GAO, 2012). The DoD and VA both have mechanisms to provide access to off-formulary medications however, if clinically indicated.

Recent reports in the media have raised concerns that formulary differences may lead to VA physicians switching transitioning servicemembers' medications inappropriately. Accurately understanding the rate in which transitioning servicemembers' medications are changed due to

formulary differences would require a prospective study (which is beyond the scope of this report). However, an internal VA audit of 2,000 new patients showed only 21 patients transitioning from DoD had a medication switched by VA physicians without documented clinical justification if they received VA care within a year of discharge (759 patients in the examined cohort) (VHA Pharmacy Benefits Management, 2015a). Deeper analysis of those cases was not available, but several factors could have driven the switch, including undocumented clinical reasons, a patient's request to try a new medication, or a physician's desire to adhere to VA's formulary.

Several initiatives have been implemented to help facilitate smoother transitions. As noted in Table 3-4, VHA issued a directive in January 2015 that clinicians should maintain transitioning servicemembers' behavioral health medications if clinically appropriate (VHA, 2014). This formalized a policy that PBM leadership states was in effect since 2006. The directive states:

> *"A VA provider must not discontinue mental health medications, initiated by a DoD authorized provider, solely because of differences between the VA and DoD drug formularies, VA Criteria-for-Use, or the cost of the drug."*

It further allows physicians to switch medications if it is no longer safe, clinically appropriate, or effective based on the servicemember's current condition. If a switch occurs, clinical reasons must be documented.

In addition, on August 26, 2014, President Obama issued executive actions that mandated increased support for soldiers transitioning from the DoD to VA. The executive actions served to ensure that all servicemembers with mental health conditions are automatically enrolled in the DoD's *inTransition* program which provides dedicated support by mental health professionals during the transition period. Prior to this announcement, servicemembers were either referred by their providers or self-enrolled in the program. This passive enrollment led to potential gaps in clinical care which resulted in adverse outcomes for some transitioning servicemembers. In addition to the changes to the *inTransition* enrollment process, the executive action aimed to increase the continuity of all mental health medications during the transition period if clinically appropriate, regardless of the VA formulary status of a servicemember's medications. Prior to the executive action and the January 2015 directive promulgating the policy within VA, prescribers were required to seek formulary waivers for active mental health medications, which some prescribers may have found cumbersome.

All physicians interviewed during site visits said it had been their practice for many years to keep transitioning patients on DoD-initiated behavioral health medications regardless of formulary status unless there was a clinical indication to change. They believed that was also the practice of most of their colleagues. Interviews with pharmacists suggested that this was the most common practice, although it was not yet universal. Physicians who did report transitioning patients to on-formulary medications said they did so for clinical efficacy and safety reasons, not for cost or convenience, which is largely consistent with PBM's internal audit.

However, some physicians did cite examples of when medication switches had been made for clinical reasons that had been poorly explained to patients. This represents an opportunity for

VA to improve the training of its physicians and to involve clinical pharmacists more proactively with transitioning Veterans to ensure any changes to medication regimens are fully understood and agreed with.

To support implementation of the directive above and to help improve the efficiency of Veterans' transitions, some VAMCs have also implemented changes to prescribing systems to make it easier for physicians to prescribe off-formulary medications. For example, some VISNs have enabled physicians to bypass the off-formulary prescribing process for psychiatric medications if a patient is known to be a recent transition from DoD.

3.2.5 VA has Implemented Programs to Reduce Utilization of High Risk Medications and Early Results are Promising

Narcotics and sedatives such as opiates and benzodiazepines are drugs at high risk of abuse and complications, particularly when used in combination. VA's patient population is known to have relatively high utilization of opiates and benzodiazepines, and several reports have highlighted the need to better manage the utilization of those classes of drugs (Wu, 2010; VA OIG, 2014a).

In response, VHA's PBM developed and implemented an opioid reduction program and physicians interviewed also reported a greater focus on benzodiazepines. The opioid reduction program has achieved widespread reduction in opioid utilization as measured by the percent of unique patients dispensed an opioid (VHA Pharmacy Benefits Management, 2015b). Figure 3-15 shows how the overall rate of prescriptions has fallen by 2.6 percentage points since 2012 for opioids. A similar decline was also seen for opioids with benzodiazepines (not shown).

Figure 3-15. Percent of VA Patients Prescribed an Opiate
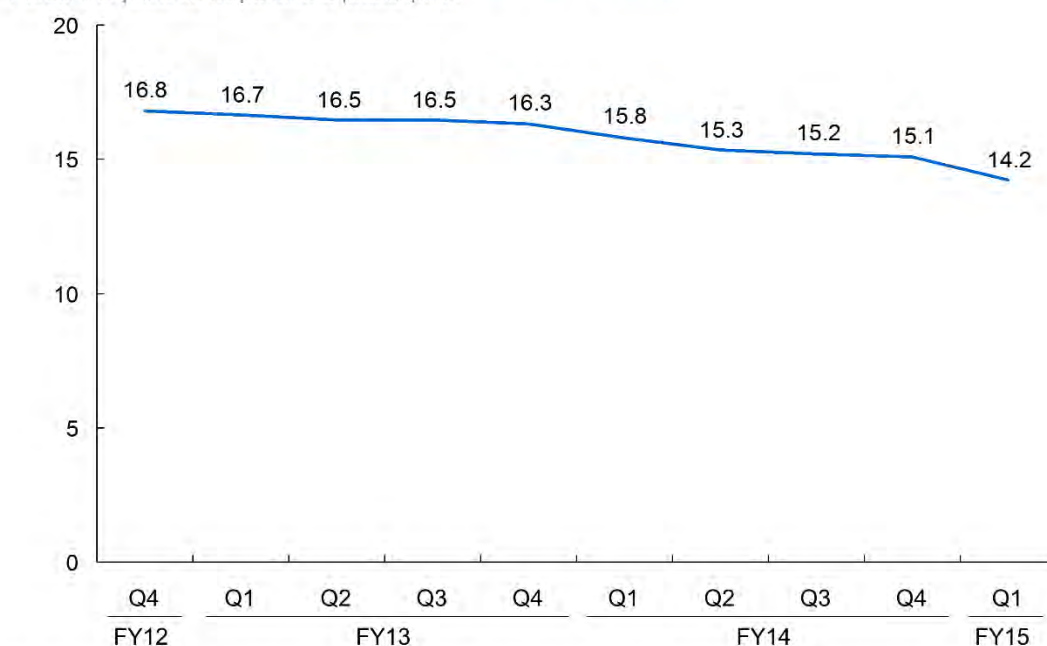
SOURCE: VHA Pharmacy Benefits Management. (2015b). VISN Opioids over time Q4 Fy 12 to Q1 Fy 15.

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This clearly highlights the organization's ability to drive changes in prescribing patterns and treatment paradigms. However, the metric used to measure opioid utilization is blunt. It does not take into account the type, strength, or dosage frequency of the opioids given, or whether an opioid is prescribed acutely (after a dental procedure, for example) or chronically (like for long-term pain). A more sensitive measurement approach that takes these factors into account (for example, converting all opioid regimens to a "morphine equivalent" to enable accurate comparisons) could help VA better understand and manage the titration process associated with opioids and other higher-risk drugs more effectively. Furthermore, programs similar to the opioid reduction program could be developed and implemented to improve safety in other drug classes that have adverse side effects or potential for abuse.

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4 Clinical Supplies, Medical Devices, and Related Services

4.1 Context

4.1.1 Context & Key Trends

In FY2014, VA spent approximately $3.4 billion on clinical supplies, medical devices, and prosthetic appliances (Figure 1-1, page 4). From FY2012 to FY2014, spend in those categories grew by 5.9 percent per year in total, with 5.4 percent growth in clinical supplies and 6.3 percent in prosthetic appliances and medical devices (VA, 2014a; VA, 2015a). In contrast, health care spending on clinical supplies in the U.S. increased by 2.9 percent per year, while medical devices grew by 3.6 percent per year and durable medical equipment (a major component of prosthetic appliances) grew at 4.9 percent over a similar time period (Donahoe & King, 2014).[9] One possible explanation for VA's faster growth in these categories is Assessment A's finding that Veterans who use VA health care are older and sicker than non-Veterans or Veterans who do not use VA health care.

Clinical supplies is a diverse category that contains products ranging from commodity supplies such as exam gloves, syringes, gauze, and bandages, to higher physician preference items such as endoscopic staplers and surgical clips. Clinical supplies are typically single use and tend to be disposed of or go through reprocessing after use.

For the purposes of this report, medical devices are defined as items that directly interface with or are implanted into a patient's body and would only be used by those to whom they were prescribed (for example, surgical implants, limb prostheses, sensori-neuroaids, and orthotics). Durable medical equipment, such as wheelchairs, crutches, and CPAP / BiPAP machines are excluded from this assessment because they are a category that is distinct from the industry's typical definitions of medical devices and clinical supplies. Under this definition, medical devices account for ~$1.2 billion, or 62 percent, of the prosthetic appliance budget and 37 percent of the total supply spend (Figure 4-1).

VA's Prosthetics and Sensory Aids Service (PSAS) is responsible for procuring[10], distributing, and facilitating use of medical devices, prosthetic appliances[11], and certain Veteran benefits such as home or vehicle modifications and VA's clothing allowance. These items and benefits are ordered by clinicians for specific patients and those orders are tied to specific cases.

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[9] Medical device growth based on a constant share of National Health Expenditures as found in Donahoe and King (2014). Note that in this time period National Health Expenditures overall grew at 3.6 percent, non-durable medical supplies grew by 2.9 percent and durable medical products grew by 4.9 percent (Centers for Medicare and Medicaid Services). 2013 is the most recent year available as of the time of writing.

[10] PSAS only procures prosthetic appliance items less than $3,000. Other procurements are done by NCOs.

[11] VA defines "prosthetic appliances" as artificial limbs and any devices that support or replace a body part or function, including sensory aids and mobility aids such as wheelchairs and walkers.

Figure 4-1. VA Spend on Clinical Supplies and Devices (FY2014)
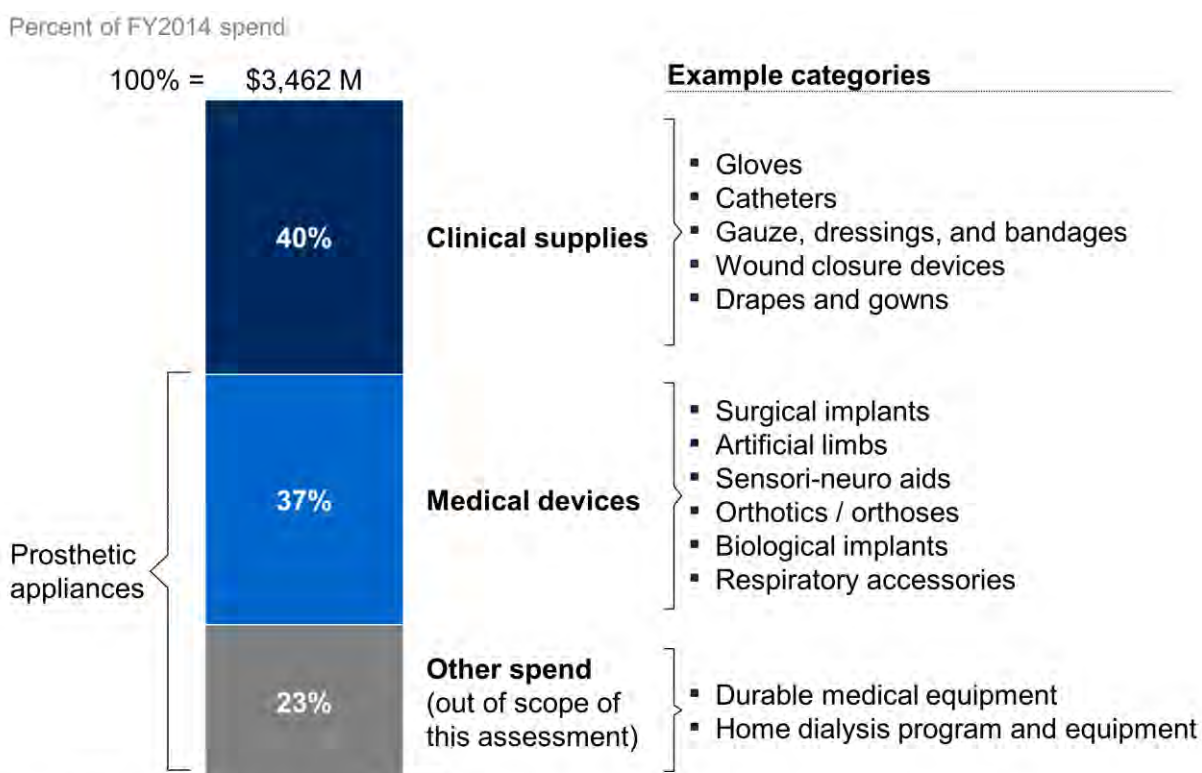
SOURCE: VA. (FY2014c). Prosthetic appliance purchase orders (VistA Table 660); VA. (2014a). Congressional budget submission. Volume II - Medical programs and information technology programs.

Health care-related services are defined as services that are directly related to the purchasing, distribution, and use of the product categories within scope. Physician services and other services directly related to the delivery of clinical care are not covered in this report.

Within the context of clinical supplies and medical devices, the most important services are those provided through VA's Medical Surgical Prime Vendor (MSPV) program. MSPVs are distribution companies that are responsible for sourcing products from suppliers and distributing them to VA's facilities. They also provide value-added-services such as data reporting, just-in-time inventory management services, electronic ordering platforms, and warehousing.

The structure of VA's supply chain management organization that is responsible for clinical supplies and medical devices is complex (Figure 4-2). VA and VHA both contain organizations that play a role in the management of VA's medical supply chain. VA's Office of Acquisition, Logistics, and Construction (OALC) is subdivided into two organizations – the Office of Acquisition and Logistics (OAL) and the Office of Acquisition Operations (OAO). VHA's medical supply chain consists of three organizations – the Procurement and Logistics Organization (PLO) that is responsible for clinical supplies, Prosthetics and Sensory Aids Service (PSAS) that is responsible for medical devices, and the Pharmacy Benefits Management (PBM) organization that is responsible for pharmaceuticals. These three organizations are responsible for additional product categories that are outside the scope of this assessment.

Figure 4-2. Organizations Comprising VA's Supply Chain
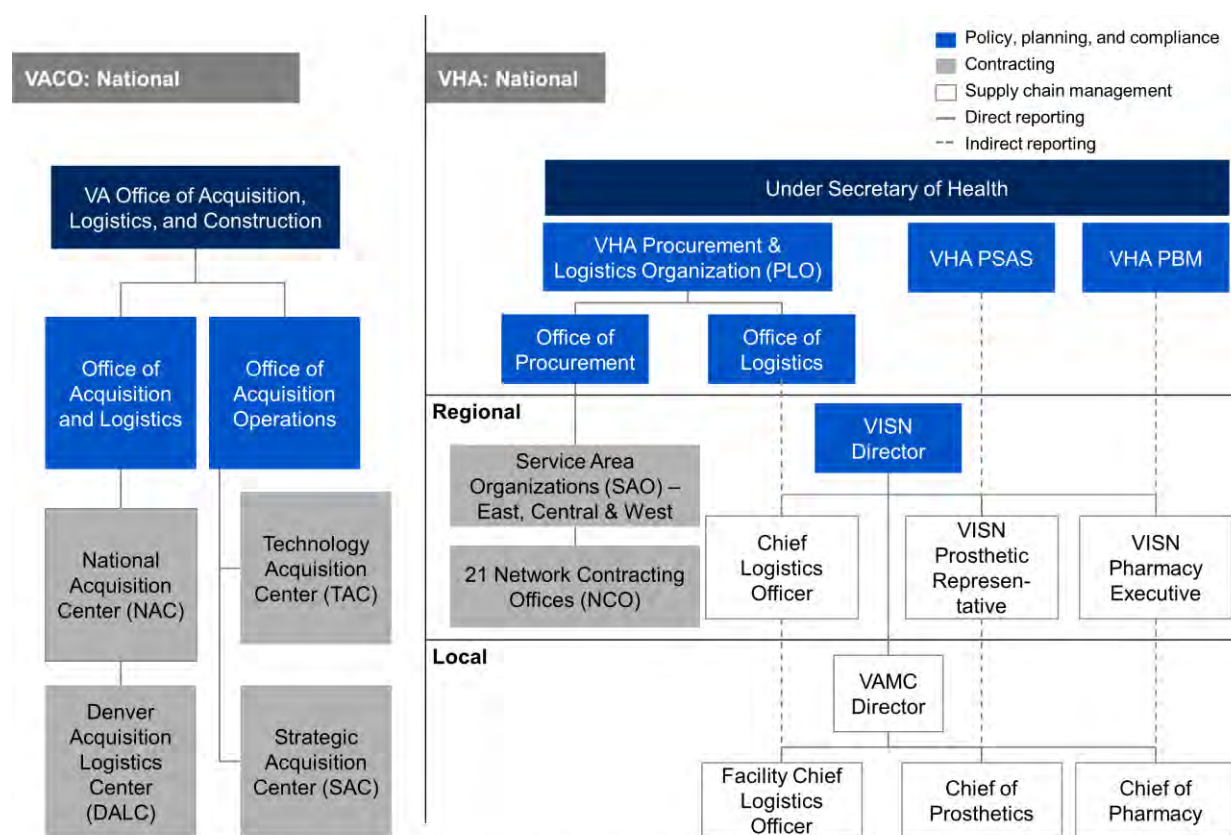
Note: Some VISNs may have different reporting relationships with facility prosthetics staff

SOURCE: Staff interviews. (2015). Site visits.; VA. (2014f). *VA Functional Organization Manual v2.0a.*

Within PLO, the procurement and logistical management of clinical supplies are managed by two separate groups – the Office of Procurement and the Office of Logistics respectively – and the reporting structure is different for each group. Procurement personnel report through VHA's regional contracting offices – the Network Contract Offices (NCOs) and Service Area Organizations (SAOs) – to the VHA's national Office of Procurement. In contrast, facility-based and regional logistics personnel do not report up to VHA's national Office of Logistics. Instead, they report into their local VAMC or VISN Director respectively.

Purchasing

Together, VA and VHA have 28 entities involved in aspects of contracting in some way (Figure 4-2). There are 4 contracting entities within VA – the National Acquisition Center and Denver Acquisition and Logistics Center that sit within OAL, and the Strategic Acquisition Center and the Technology Acquisition Center that sit within OAO. There are 24 contracting entities within VHA's medical supply chain – 21 Network Contracting Offices and three Service Area Organizations. The key roles of each of these contracting organizations in the procurement of clinical supplies, medical devices, and related services is summarized below:

- National Acquisition Center (NAC): Responsible for managing the Federal Supply Schedule (described below), establishing VA national contracts, and facilitating VAMC ordering of pharmaceuticals, clinical supplies, and medical equipment.

- Denver Acquisition and Logistics Center (DALC): Responsible for establishing contracts for and procuring select clinical supplies and health care services, and distributing some items direct to Veterans, such as hearing aids and hearing aid batteries.

- Strategic Acquisition Center (SAC): Responsible for acquisition of supplies, equipment, and services.

- Technology Acquisition Center (TAC): Responsible for procuring enterprise-wide information technology systems.

- Service Area Organizations (SAOs): Responsible for regional contracting by establishing contracts on behalf of multiple VISNs. SAOs are geographically aligned to the western, central, and eastern regions of the country. In 2009, VHA centralized its contracting organization into this structure.

- Network Contracting Offices (NCOs): Responsible for local contracting by establishing contracts on behalf of VISNs or individual VAMCs. Contracting officials in the NCOs and SAOs are sometimes physically located within VAMCs.

The basic instrument for government-wide purchases is the Federal Supply Schedule (FSS). The FSS is an indefinite delivery, indefinite quantity contract that, by statute, requires the supplier to provide the government with pricing at least equal to its most favored customer. However, as an indefinite quantity contract, those prices are often determined on a single unit quantity. FSS is an open solicitation and vendors can apply at any time. Terms are generally five years, with an optional five year extension. The federal government has delegated authority to the NAC to manage nine multiple award schedule programs for medical equipment, supply, and other health care-related contracts.

There can be multiple vendors on FSS for any given item. Purchases for items on FSS may be bid out among several FSS vendors to negotiate further price reductions. Additionally, blanket purchase agreements (BPAs), can be established by both national and regional contracting organizations based on FSS contracts to secure additional price reductions with definite quantity terms or other tools. BPAs can also enable streamlined purchasing. Finally, for items not on FSS, national, regional, or local contracts may be established for repetitive purchases. VA purchasing agents can also access non-VA government contracts such as those from the Defense Logistics Agency within the DoD.

VAMCs order supplies through three primary methods:

- **Request for Quotations (RFQs):** Purchasing agents use IFCAP and Electronic Data Interchange (EDI) functionality to electronically send an RFQ to one or many vendors and receive bids electronically, evaluate bids, award the order, and generate the purchase order. RFQs are almost all exclusively for purchases over $3,000.

- **Direct supplier order with purchase cards:** Service level and logistics staff place orders using phone, fax, or supplier websites, then generate purchase orders against assigned purchase cards. Charges are passed electronically from the Austin Credit Card System to IFCAP and users reconcile payments. The assigned Approving Official then approves reconciled orders. Approximately 98 percent of clinical supplies purchases are made this way (VA, FY2014a).

- **Delivery orders:** Service users generate purchase orders for on-contract items which, if configured at the site, allows orders to be expedited by bypassing VA's manual obligation process and obligated at time of signing by service-level staff (logistics or prosthetic purchasing agents for example). Invoices are sent directly to the Austin Financial Service Center and are reviewed against the inventory record when received. Payment is made through electronic funds transfer.

Orders that exceed $3,000 (the "micro-purchase threshold") must be submitted to contracting – typically to the NCOs initially. If the item requested is not already on contract, it must be competitively sourced by a VA contracting organization. VHA Procurement and Logistics Organization (PLO) manages the majority of these purchases using contracting vehicles it has established locally or regionally, or by accessing national contracts established by VA national-level organizations (NAC, SAC, DALC, and TAC). VAMCs are responsible for developing and submitting packages to contracting that contain, among other things, the specifications of the products they would like to buy. These packages and the subsequent contracting activities are processed and managed by Contracting Officers (COs).

The scale of VA and the breadth of services provided gives it a unique potential to negotiate prices paid for clinical supplies, medical devices, and related services. In essence, it acts as its own group purchasing organization (GPO). Instead of paying fees to an external GPO, VAMCs pay fees internally to the national contracting organizations with every purchase made on national contracts. These cover the costs associated with negotiating and securing contracts and managing the contracts thereafter. Those fees are typically paid from appropriations to VAMCs to the national contracting entities via the supply fund, as a percentage of the value of items procured. The percentage paid is dependent upon contract type but ranges from 0.5 to 4 percent, which is in line with fees levied by third party GPOs. VHA contracting organizations have a fixed budget and receive little funding from the supply fund.

Distribution

In the past, VA had an extensive network of depots that received goods and distributed them to VA facilities. VA has largely abandoned its depot model and has moved to a direct-to-facility distribution model. Currently, VA facilities receive clinical supplies and medical devices from two primary sources: direct from manufacturers or from third party distributors.

At any facility, its primary distributor is its Medical Surgical Prime Vendor (MSPV). Approximately 22.5 percent (by value) of clinical supplies are delivered to facilities by the MSPV (VA, FY2014a).[12] VA currently has six MSPVs that each cover different parts of the country. Their geographic coverage and contractual arrangements are summarized in Figure 4-3 and Figure 4-4.

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[12] Based on full FY2014 purchase data for five VISNs (range 16 to 32 percent) and budget object code 2632. Note that VHA typically measures MSPV utilization in only four cost centers that cover 79 percent of BOC 2632 spend and only for items with a contract number (37 percent of BOC 2632 spend). Additional discussion can be found in Section 4.2.3.

Figure 4-3. Medical Surgical Prime Vendor VISN Coverage

SOURCE: VA. (2010, 2011). Medical Surgical Prime Vendor Contracts, VA797P-0188, VA797P-0189, VA797P-0190, VA797P-0191, VA797P-0192, VA797P-0193, VA797P-0195.
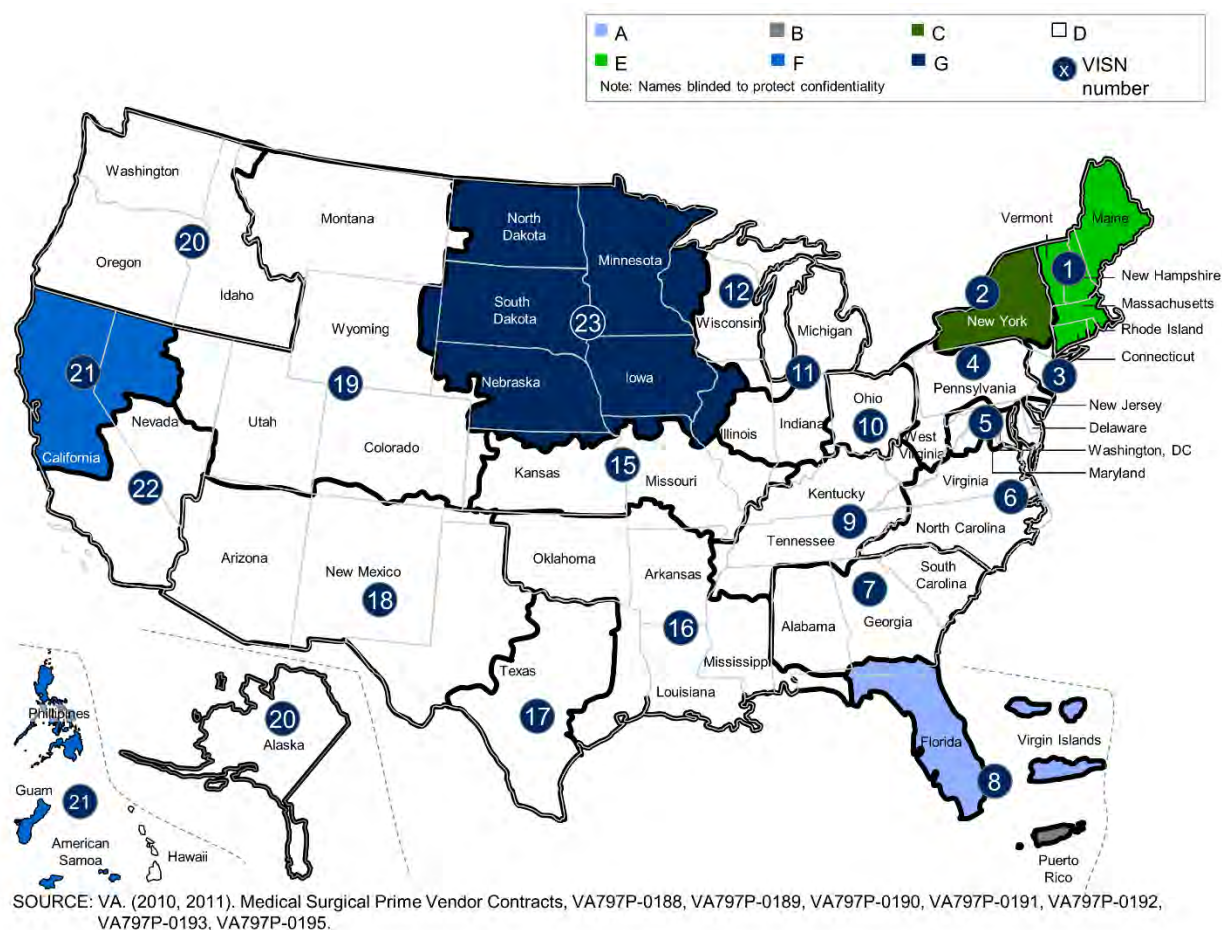
Figure 4-4. Summary of Medical Surgical Prime Vendor Contractual Terms

Awardee[2]	A	B	C	D	E	F	G
Date of award	3/9/2010	3/9/2010	3/9/2010	3/9/2010	3/9/2010	3/9/2010	3/24/2011
Contract number	VA797-P-0188	VA797-P-0189	VA797-P-0190	VA797-P-0191	VA797-P-0192	VA797-P-0193	VA797-P-0195
Payment terms	30 days	30 days	30 days	30 days	30 days	30 days	30 days
VISNs	8	Puerto Rico	2	3-7,9-20,22,HI,AK	1	21	23
Value of products[1]	$17,664,487	$6,195,583	$8,305,473	$247,860,965	$10,677,661	$8,122,640	$3,593,408
Value of Distribution fees[1]	$847,895	$660,015	$449,329	$9,656,474	$538,261	$576,720	$249,490
Distribution fee - Conventional	4.40%	9.00%	4.80%	2.55% (continental U.S.)	4.99%	3.50%	4.90%
Distribution fee - JIT	8.40%	13.50%	10.90%	10.17%	5.50%	7.50%	7.25%
Fill rates - Conventional	95%	95%	95%	95%	95%	95%	95%
Fill rates - JIT	98%	98%	98%	98%	98%	98%	98%
Number of emergency deliveries included per month	2	3	2	4	3	4	2
Additional fee for delivery trip	$150	$50	$175	$145	$300	$125	$150

1 Initial term only
2 Blinded to protect confidentiality

SOURCE: VA. (2010, 2011). Medical Surgical Prime Vendor Contracts, VA797P-0188, VA797-P-0189, VA797-P-0190, VA797-P-0191, VA797-P-0192, VA797P-0193, VA797-P-0195.

In private industry, primary distributors such as VA's MSPVs offer many value added services including those that support:

- Purchasing: web-based, user friendly ordering tools with integrated catalogs; invoicing services; and automated re-ordering through systems integration

- Distribution: warehousing of commonly used items for just-in-time replenishment and lean facility inventories; low unit of measure or unit of use repackaging; distribution and management of inventory on service wards; and advanced tracking and item management tools

- Use: custom labeling to support use and tracking; standardized purchasing data reports and product nomenclature; and advanced analytical tools for understanding utilization patterns

VA currently only takes advantage of a limited number of these value added services (barcode labeling, just-in-time replenishment, and low unit of measure deliveries in some facilities).

VA also has some capacity to distribute clinical supplies and medical devices to Veterans. For example, the Denver Acquisition and Logistics Center distributes hearing aids and batteries to Veterans around the country.

Use

In contrast to pharmaceuticals, usage of clinical supplies and medical devices is not strictly monitored or managed in VA. In general, clinical staff (typically physicians and nurses) can choose whichever products they believe are best for patients and the supply chain organization's role is to make those items available.

There are some efforts underway to standardize towards a smaller set of products or to an individual product within a category. These efforts are described below.

4.1.2   Previous Assessments and Reform Efforts

The purchasing, distribution, and use of medical products by VA has been the subject of numerous reports by the Office of the Inspector General (OIG), the Government Accountability Organization (GAO) and other third parties. These reports are listed and summarized in Appendix B.1. Common themes that cut across these reports include:

- Inefficiencies due to fragmented oversight, systems, and processes
- Archaic IT systems that are inadequate for effective supply chain management
- Inadequate policies, training, and oversight related to procurement and inventory management
- Poor history of implementing recommended changes

These past assessments have tended to focus on specific issue areas and/or individual facilities, separately developing recommendations for improvement in discrete areas. In contrast, we tried to take an end-to-end view of inpatient clinical operations across five key sub-assessment areas and all high- and medium-complexity VAMCs.

4.2   Findings

The performance of VA's supply chain management of clinical supplies, medical devices, and related services is poor, particularly when compared with VA's pharmacy organization and best practice supply chain management organizations. The findings of this assessment can be summarized by the following seven themes:

1. The organizational structure of VA's supply chain enterprise is unduly complex and duplicative.

2. VA's current IT systems, data systems, and analytical capabilities related to finance, inventory management, and purchasing are major impediments to effective supply chain management.

3. The performance of VA's contracting organization does not meet customers' expectations, so frontline staff have developed workarounds.

4. VA has not taken full advantage of its scale or potential for standardization to achieve optimal pricing and efficiency.

5. Inventory management process, practices, and systems are neither integrated nor optimized.

6. VA struggles to attract, hire, and retain high caliber supply chain talent.

7. There are pockets of good performance and innovation in VA that could be replicated across its supply chain.

Each of these seven themes is outlined in more detail below.

4.2.1 The Organizational Structure of the VA's Supply Chain Enterprise is Unduly Complex and Duplicative

A major barrier to VA's supply chain management is the siloed and duplicative nature of its organizational structure. In contrast to best-in-class supply chain organizations:

a. The organization is fragmented and consists of multiple, overlapping entities, which leads to duplication of efforts and lack of role clarity.

b. Medical devices and clinical supplies are managed separately, which adds unnecessary complexity.

a. The organization is fragmented and consists of multiple, overlapping entities, which leads to duplication of efforts and lack of role clarity.

All the senior leaders in VA's and VHA's supply chain organizations who were interviewed said that the current organizational structure is too complex and should be simplified. Many field-based supply chain personnel agreed. In addition, national supply chain leaders expressed lack of clarity regarding the scope of responsibilities of the entities for which they are responsible, which had led to some tension and what one leader described as a "turf war." Others described a vacuum of ownership and accountability, and lack of clarity on roles and responsibilities.

Over the years, however, the number of national, VA-level contracting organizations has grown. VA now has four national-level contracting bodies – the SAC, NAC, TAC, and DALC. They were established to fulfill strategic sourcing, GPO-like functions by consolidating spend and establishing national contracts from which VHA could procure goods and services at optimal prices. However, there is overlap in the products and services covered by those national contracting organizations and there is overlap between them and the regional VHA-level contracting organizations, as shown in Figure 4-5. There is little (if any) overlap between the DALC's contracting responsibilities and those of other organizations. This clarity and independence likely plays a role in the DALC's success.

Figure 4-5. Acquisition Organization Areas of Responsibilities and Activities

There is substantial overlap in contracting offices' areas of responsibility

X Officially assigned to organization
▓ Overlap identified

SOURCE: Principal Executive Director, OALC. (2013, March). Strategic Sourcing Contracting Support (VAIQ 7277508).

Products and Services	VA Office of Acquisitions, Logistics & Construction (OALC)				VHA
	Office of Acquisition Operations (OAO)		Office of Acquisition and Logistics (OAL)		P&LO
	Technical Acquisition Center (TAC)	Strategic Acquisition Center (SAC)	National Healthcare Acquisition Center (NAC)	Denver Acquisition and Logistics Center (DALC)	SAOs/NCOs
IT Products and Services	X				
General Medical Products and Services		X			X
General Surgical Products and Services		X			X
Advanced /High-Tech Medical Equipment/Systems			X		
Medical Specialty Products and Services		X			X
Surgical Specialty Products and Services		X			X
Pharmaceuticals			X		X
Prosthetics (General)		X			X
Prosthetics (socks and select orthotic soft goods managed by the DALC)				X	
Dental Products and Services		X			X
Patient Mobility Products and Services		X			X
Tele-Health Products and Services				X	
Hearing Products and Services (including batteries)				X	
Facilities Maintenance and Repair Products and Services		X			X
Medical Federal Supply Schedule (FSS) Contracts			X		
Allied Health Products and Services				X	X
Subsistence			X		
All Other Products and Services (Including Extended Care Services)		X			X

Many interviewees expressed lack of clarity on the purpose, function, roles, and responsibilities of the NAC and the SAC in the course of this assessment. This included both users (PLO, VISN, and VAMC) and members of leadership in the acquisition centers themselves. The TAC's scope was relatively well understood by interviewees – procurement of IT products and services. The DALC – a small and specialized group that manages national procurement and direct-to-Veteran distribution of a handful of product categories – was regarded as the most well-managed and effective national contracting entity by field logistics personnel as well as senior VA and VHA supply chain leaders for the integrated approach it takes. More depth on the DALC can be found in section 4.2.7.

The SAC is a relatively new office established in 2011 with a similar mission to that of the NAC. In a memo to VA leadership in March 2013 from the OALC (Principal Executive Director, OALC, 2013), a number of procurement responsibilities formerly handled by the NAC were transitioned to the SAC, including general and specialty clinical products and services. However, as of March 2015, the NAC's leadership and website (VA, 2015h) still described its responsibilities as awarding national committed use contracts and BPAs for clinical supply commodities, and for managing these products' standardization. Contracts published in the Federal Procurement Data System (FPDS) and NAC leadership confirmed that it still participates in these activities. In the four years since the SAC was established, it has awarded 69 contracts worth $1.2 billion, the NAC has awarded 394 contracts (excluding FSS contracts) worth $15

billion, and the DALC has awarded 122 contracts worth $13 billion. Clinical supplies and device contracts make up 14 percent and 28 percent of NAC and SAC awards respectively by value, but 27 percent and 48 percent by volume (Figure 4-6).

Examples of the overlap between the NAC and SAC include the following:

- Urinary supplies: The SAC established contracts for urinary catheters and catheter trays, while the NAC has established contracts for urine collection bags and urinary closed drainage systems (containing a catheter and bag).
- Operating room supplies: The SAC has contracted for operating room towels, while the NAC has contracts for other disposables used in operating rooms including surgical gloves, masks, scrubs, and blades.

Figure 4-6. Share of Contracting Activity by Product Category
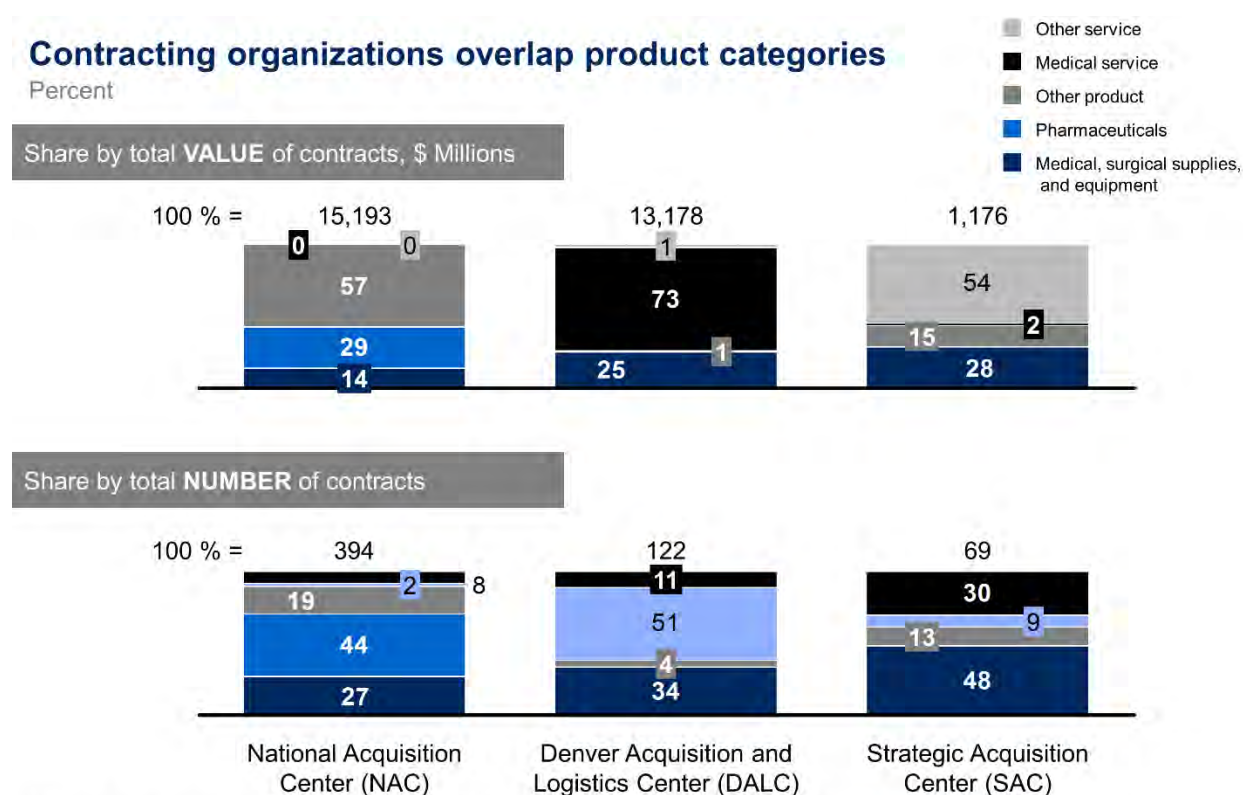
SOURCE: VA Contracts in the Federal Procurement Data System. (2010-2015). Retrieved June 2015, from http://www.fpds.gov.
Excludes FSS contracts, categories determined by PSC code (6515, 6520, 6532, 6545 for Medical, surgical supplies, and equipment); Imaging (6525) placed in "other product" as it was mainly large capital equipment, ceiling price was taken as contract value

The OALC has embarked on a transformation program to build a strategic sourcing capacity (Haggstrom, 2014), which includes hiring more staff and providing additional professional development. This overlaps somewhat with the original intent of the SAC. This may exacerbate role confusion further.

Best-in-class supply chain organizations typically have a single group responsible for the strategy, sourcing, procurement, and logistics of clinical supplies and medical devices. The organization is typically led by an executive-level leader, and personnel are aligned along

product categories to develop and utilize deep expertise in the products and suppliers they manage. Furthermore, to be effective, there is strong engagement with the users of the goods they procure. In this way, the needs of users are incorporated into strategic sourcing plans and integrated sourcing initiatives (standardization, for example) gain traction with clinicians.

b. Medical devices and clinical supplies are managed separately, which adds unnecessary complexity.

In most health care organizations, the integrated supply chain group described above manages the procurement and distribution of all clinical supplies and medical devices (as well as other supplies). However, in the VA, clinical supplies are managed by the logistics organization while medical devices are managed by the Prosthetics and Sensory Aid Service (PSAS).

VA's separation of clinical supplies and prosthetics/medical devices causes issues within VAMCs, particularly in relation to coordinating products needed for procedures. Several examples of issues were shared during site visits (Staff interviews, 2015). For example, if a patient undergoes a coronary stenting procedure in the catheterization (cath) lab, PSAS procures the stents and makes sure they are available when needed, while logistics procures and manages almost everything else that is used in the procedure (e.g., the gloves, gowns, drapes, introducer, guide wire, catheter, and other supplies for the procedure). PSAS typically operates an "office hours" schedule, and every site visited stated that getting implants such as cardiac stents in an emergency can be challenging. Cath lab directors reported that this had led to a culture of carrying as many sizes of everything as they could "just in case" and, in some cases, needing to "borrow" supplies from a nearby facility (often the local academic medical center) to deliver the required medical care. Several VA personnel who work in cath labs and ORs cited recent examples of when they, or one of their colleagues, had to do that so that a Veteran could receive timely and appropriate care. However, VA does not track stock outs nor delays in care due to such events, so the assessment team was unable to quantify these occurrences.

In the private sector, many health care organizations are moving to consignment stock for high cost medical devices. Under a consignment stock model, items remain the property of the supplier but are stored on hospital shelves so are easily accessed by clinical staff. Items are paid for only when they are used. In this way, suppliers ensure hospitals are adequately supplied with all the sizes they may need of a given product and hospitals avoid managing expensive inventory.

We observed a handful of consignment situations within VA (all in cath labs) but the range of products under consignment was small. Cath lab directors said they would like to have more inventory on consignment but reported challenges establishing the consignment agreements with suppliers because of contracting complexity.

In addition, PSAS' current role does not appear to be fully in line with its core mission, which *"is to provide comprehensive support to optimize health and independence of the Veteran"* (Prosthetic & Sensory Aids Service, 2015). A substantial amount of work in PSAS involves procuring and managing inventory, which is typically not a core competency of prosthetic techs. Indeed, in 2012, the OIG published a report (VA OIG, 2012b) detailing problems in prosthetics

inventory management including over stock and shortages, partly due to poor training and system integration (see section 4.2.5 for more discussion on inventory management practices and system integration).

During site visits and interviews, most facility prosthetics staff stated that keeping up with the backlog of requests for prosthetic appliances, particularly commodities such as eyeglasses, was challenging. The workload of procuring and managing prosthetics inventories takes valuable resources from activities such as advising clinicians, managing specialized programs, and providing personalized customer service to Veterans. Particularly for commodity prosthetic supplies, it also creates duplication of efforts, infrastructure (for example, separate inventory control points), and systems (like two inventory management databases and software packages).

Recently there have been pilots to streamline and consolidate management of the prosthetics and clinical supply chain. In VISN 20, logistics now manages prosthetics commodity items. The program was rolled out to eight facilities over a period of two and a half years, with facility logistics adding ~300 items directly to existing inventory control points. Fiscal transparency was increased through use of the General Inventory Package (GIP; inventory management software) and, as the existing inventory points were managed with point of use technology cabinets, the reordering of many prosthetic commodity items became automated. Logistics and PSAS developed a core list of standardized items during this period based on usage patterns and worked with the MSPV to optimize supply.

The VISN also established a VISN mail out center (VMOC) to distribute prosthetics directly to Veterans. This was to ensure that Veterans get timely access to their prosthetics if they are not able to pick them up in person. Prior to the pilot, PSAS had to pack and send items to patients, usually by shipping them or, in extreme cases, dropping them off themselves on their way home from work. This increased the burden on PSAS resources at facilities and took them away from patient-facing activities. Prior to the VMOC, each site mailed out items individually with mail out times taking an average of 13 days, a significant portion of which was due to delays in receipt of the initial request for mail out (VISN20 Logistics, 2015).

The impact of these pilots in VISN 20 has been substantial. With the VMOC, requests are printed at the facility immediately upon physician approval, and items are picked, packaged and mailed within 3 days (VISN20 Logistics, 2015). Centralization of prosthetic purchasers at the VISN allowed 17 additional Prosthetic Representatives to be staffed within facilities, increasing customer service and decreasing Veteran and Congressional complaints received by the Patient Advocate by 27 percent from FY2013 to FY2014 for one facility. Open prosthetic requests fell from 9,111 in December 2012 to 5,467 in May 2015 and prosthetic inventory management has seen a reduction in inventory space required (27 percent), stock on hand (21 percent), and purchase issues (17 percent), all while increasing issues from stock (23 percent).

Additional pilots to consolidate management of prosthetic supplies with clinical supplies are underway in two other VISNs.

4.2.2   VA's Current IT Systems, Data Systems, and Analytical Capabilities Related to Finance, Inventory Management, and Purchasing are Major Impediments to Effective Supply Chain Management

It is commonly said that an organization cannot manage what it cannot measure. This is largely true of VA in relation to clinical supplies, medical devices, and supporting services. VA lacks visibility into supplies and devices spend at the level of granularity typically seen in the private sector. For example, in the private sector, it is typically possible to measure clinical supply spend and utilization at the service, patient, or physician level. However, this is not possible in VA because it does not capture such data. Therefore, supplies spend per case can only be calculated in aggregate, which is relatively meaningless and does not allow for fair comparison across hospitals, services, or physicians. This inhibits VA's ability to manage utilization and to understand fully the impact of product standardization efforts.

System fragmentation and lack of data standardization are primary drivers of VA's lack of data transparency. VA has at least 130 instances of VistA across the system (VA, 2015e), each with its own product nomenclature and numbering system (also known as the Item Master File [IMF]). This situation is a massive impediment to effective management of VA's purchasing, distribution, and use of supplies and devices.

Specific findings in relation to these topics are the following, which are described in more detail below:

a. VA's supply chain management systems are antiquated and are neither integrated with one another, nor into the clinical and financial systems.

b. VA's supply chain data related to clinical supplies and devices is not standardized and is incomplete.

c. VA has limited ability to analyze its data centrally to generate insights that will inform strategic decisions.

d. Recent investments in supply chain IT do not appear to be aligned with a broader strategy.

a. VA's supply chain management systems are antiquated and are neither integrated with one another, nor into the clinical and financial systems.

The underlying information technology at VA is the Veterans Health Information Systems and Technology Architecture (VistA). It is an open source, modular software system developed in the 1970's and was a pioneer in electronic health record systems. Nearly all VA facilities have their own instance of VistA. As a result, there are at least 130 separate and independently maintained databases across facilities (VA, 2015e). While data is pooled centrally, there is limited ability to push changes to item master files, synchronize data across facilities, and maintain control over the quality and consistency of data. There is more information on the data challenges associated with this fragmentation in the next section.

Several core modules sit on top of VistA. Those that are relevant to the supply chain include:

- **Integrated Funds Distribution, Control Point Activity, Accounting and Procurement (IFCAP) system**: module for requesting and establishing purchase orders, obligating funds, managing payments, and recording the receipt and acceptance of goods.

- **General inventory package (GIP)**: IFCAP Module used to manage inventory stock. It can establish and track primary and secondary inventory control points for medical and surgical supplies, dental, imaging, laboratory, environmental management service, and engineering. Supports barcode reading and automated inventory reordering through IFCAP

- **Prosthetic inventory package (PIP):** Graphical user interface software to track quantities of prosthetic items located in the PSAS inventory of each facility.

Additionally, VA has other systems relevant to the supply chain, including:

- **Financial Management System (FMS):** VA's legacy core accounting system

- **Electronic Contract Management System (eCMS):** A commercial, off the shelf system used by VA to manage requirements packages, proposals, solicitations, contract execution tracking, and other contracting activity

These systems are not integrated and have limited interoperability with one another. This is a major impediment to effective supply chain management. For instance, IFCAP is not integrated with FMS nor eCMS. This limitation results in significant operational challenges and manual work, including:

- Inability to perform commitment accounting: For example, budgets are not debited when a procurement request is made nor while that request goes through contracting. Therefore, a purchase order may not have funds available to be obligated to buy anything off the contract that is awarded.

- Clerks check fund availability in FMS and obligate funds if available (they receive nightly batch transmissions from contracting officers of obligation requests). Additional steps increase processing time and chance for errors.

- Manual linkage of obligations with contracts: On some contracts, VA is limited in the number of items it can purchase in a given timeframe. Any additional orders or funds obligated above this threshold are unauthorized and should be ratified. However, there is no mechanism to inform contracting that it should decrement a contract ceiling when an invoice is received.

Moreover, the text console display and free text entry format make performing tasks time consuming and training intense.

As described above, PIP and GIP manage prosthetics and other inventory respectively. Both IT systems are fragmented, archaic, and interoperability between them and other systems is limited. They require manual inventory tracking and neither integrates with FMS, requiring additional manipulations. PIP does not integrate with IFCAP or CPRS (VA's electronic medical record), and when supply staff record receipts in IFCAP, or clinical staff record use of prosthetic inventory, PIP is not automatically updated. A 2012 OIG report found evidence that this additional manual work led to oversupply and shortage errors (VA OIG, 2012b).

In addition, GIP does not capture performance measurements such as perfect order fulfillment, stock outs, or wastage. Cross-leveling inventories can only occur through phone, fax, or email communications. Free text entry and lack of data standardization across facilities complicates system-wide tracking of inventories as well.

Some VAMCs have explored add-on technologies to improve the user interface of the inventory management system and to add much needed functionality to help logistics leaders manage inventory more effectively. Broader deployment of such software could increase the system's user-friendliness and utility at each site, but the issue of disparate nomenclature and SKU numbering would remain.

Many health care systems today either have or are moving towards operating with integrated Enterprise Resource Planning (ERP) systems, which give them end-to-end visibility into the operational and financial performance of their supply chains. High performing health systems integrate their clinical and supply chain systems such that it is seamless to the end user, increasing the accuracy of supply utilization, capture, and accuracy of both billing and inventory on hand (High performing health system interviews, 2015). This enables more effective budgeting, forecasting, and inventory management, as well as automation of key supply chain processes such as ordering. Best in class health care systems build advanced business intelligence capabilities on centralized and standardized data systems, allowing them to perform sophisticated analysis on spend and utilization.

Better IT and data will be critical enablers of many of the improvements outlined in this report.

b. VA's supply chain data related to clinical supplies and devices is not standardized and is incomplete.

The data provided by VA's supply chain management systems is not standardized across VA, making cross-site comparisons and generation of other business intelligence almost impossible. This is critical for modern day supply chain and utilization management. With more than 130 databases, there is a proliferation of naming formats, incomplete data records, and essential data that is not tracked. Effective supply chain management, sourcing, and utilization management depends on reliable data to generate insights that create sustained value, efficiency, and quality improvements. VA is far behind the curve, which limits its ability to manage its supply chain in a modern way.

IFCAP (the purchasing module of the VistA system) is based on free text entry in a console. Each facility maintains its own locally-hosted architecture and there are no standards for data entry. As a result there is a proliferation of field entry formats (Figure 4-7) that make tracking purchases and analyzing spend particularly difficult (VA, FY2014c). Furthermore, while contract numbers are supposed to be entered for every item, this field was empty for 63 percent of the FY2014 transactions across the five VISNs examined (VA, FY2014a).

Figure 4-7. Number of Supplier Name Variations in IFCAP across VA

Poor data entry standards have led to vendor name proliferation

Number of suppliers with X different formats of their name in VA's system[1]		Average spend per supplier $ Millions	Total spend $ Millions
X=... 1	9,633	<0.1	274
2-3	1,485	0.1	162
4-5	416	0.2	92
6-10	356	0.8	271
11-20	154	2.2	341
21-50	62	5.0	310
51-100	7	11.4	80
>100	5	43.9	220
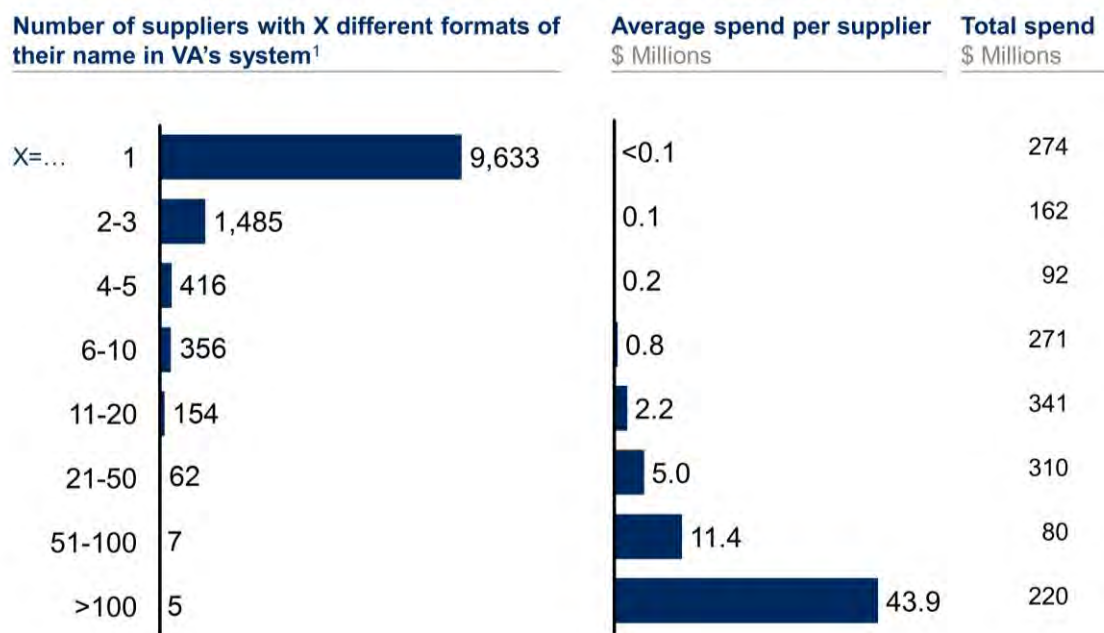
1 Equivalent pairs of vendor names from FY2014 prosthetic purchases were identified with fuzzy string matching, clustered and manually inspected to produce sets of equivalent vendor formats. >23,000 entries were reduced to ~12,000, some additional redundancy likely remains

SOURCE: VA. (FY2014c). Prosthetic appliance purchase orders (VistA Table 660).

Data completeness and format proliferation make analysis of spending patterns and matching of equivalent items nearly impossible. The example in Table 4-1 highlights how multiple purchases are made across the system for the same item through different vendors. Each site had its own product code (vendor stock number) used for purchases. Some have more than one. Some vendors (E and F, in the example) are actually equivalent but have differing names because one may be a subsidiary of the other. These variations in data make it difficult to identify price variations like that shown below, or to analyze total spend through a vendor to support price negotiations. Moreover, compliance with contract usage is nearly impossible to track.

During our analysis of pricing for like items across VA, we also evaluated the integrity and cross comparability of the data we received from VA's systems. In an effort to compare like items and the price paid for them both within and between VISNs, we applied a data normalization and matching algorithm to clinical supplies purchases, as well as medical devices within prosthetic purchase data for two VISNs (see Appendix A.2.3 for methodology). During this analysis, 68 percent of prosthetics spend data was excluded because of missing data fields (primarily manufacturer or vendor item codes), while 3.4 percent of clinical supply spend was excluded (primarily due to a line item being non-medical in nature). In other health care organizations, typically less than 1 percent of data needs to be excluded because of issues with missing data when this analysis is run.

Table 4-1. Example: Purchases of the Same Supply from Multiple Vendors, Using Different Product Codes and Prices

Example vendor stock number[13]	Vendor	Contract # present	Relative price point
NE-SDQ-CMP-QFP	A	Yes	1.00
NEDSDQCMPQFP	B	No	0.82
	C	No	0.82
BAY-SDQ-CMP-QFP	B	No	0.82
SDQ-CMP-QFP	A	Yes	1.00
	B	No	0.82
	D	Yes (but non-covered item)	1.35
	E (= F)	No	0.97
	F (= E)	No	0.97
	G	No	1.48
SDQCMPQFP	E	No	0.97
643129	H	No	1.09 – 1.14 (4 prices)

Despite the data normalization and matching algorithm, 48 percent of products and 19 percent of spend had no match between facilities compared (Figure 4-8). We typically see a match of 90-95 percent of the spend between facilities in other health care organizations. Of the matched data, most matches were found between facilities within VISNs. Some of the matching challenge was due to variations and omissions in the data, which exceeded the algorithm's tolerance.

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[13] Items were determined to be equivalent based on item description and other descriptive fields in purchase order data. This item was purchased by four of the five VISNs in the data. Price per unit was indexed to the item on FSS contract. Stock numbers and prices are examples of actual variation observed, however they have been blinded and do not correspond to a specific product given sensitivity of pricing data.

Figure 4-8. Matching of Purchase Data across Facilities in Two VISNs
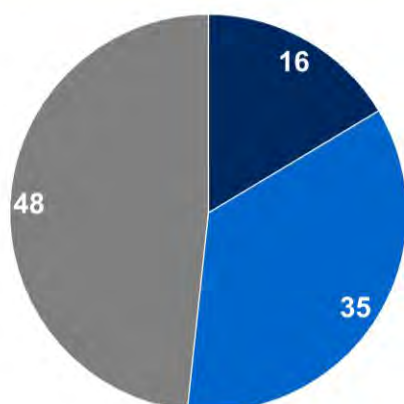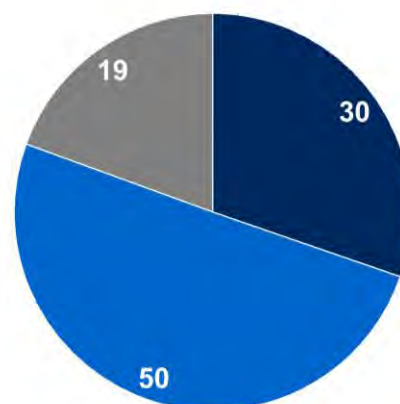
1 For medical and surgical supplies, all BOC 2632 spend was included. For Prosthetics, only surgical implants, prosthetic limbs, neurosensory devices, biological implants, orthoses/orthotics, and respiratory accessories were considered; DME and equipment were excluded; 64% of in scope prosthetic spend was excluded due to missing data fields (primarily manufacturer and vendor SKU codes)

SOURCE: VA. (FY2015, October - January). IFCAP purchase data for clinical supplies with an IMF number; VA. (FY2014c). Prosthetic appliance purchase orders (VistA Table 660).

The variability in data is a substantial barrier to understanding purchasing patterns, identifying opportunities, and making strategic sourcing decisions at VA. However, some of the mismatch is also likely because different VISNs buy different products (due to regional contracts and preference), which reflects the lack of product standardization as highlighted below.

VA has attempted to standardize product nomenclature and numbering centrally through the National Item File (NIF) program. Under this program, VA established data standards for select items and started to push standardized data onto each instance of the inventory database. Over time however, the standardization has been lost as each facility has manually changed data entries. Logistics subject matter experts gave examples of data elements that had been locally modified after the NIF standardization process. In some cases, those modifications were justified because local data instances were automatically identified by fields that incorrectly matched the NIF item. Frontline interviewees also reported that the NIF field was not helpful to them as they could not search or cross reference data based on that field. This reduced the incentive for them to ensure the field was complete and accurate.

c. VA has limited ability to analyze its data centrally to generate insights that will inform strategic decisions.

VA lacks visibility into supplies and devices spend at the level of granularity typically seen in the private sector, which further limits its ability to measure and manage utilization. For example, in the private sector, it is typically possible to measure clinical supply utilization at the service, patient, or physician level. However, this is not possible in VA because it does not capture such

data. Therefore, supplies cost per case can only be calculated in aggregate, which is relatively meaningless and does not allow for fair comparison across hospitals, services, or physicians.

Measurement of prosthetics utilization at the patient level is possible, but the VA's data systems and analytic capabilities limit the organization's ability to use it to generate meaningful insights. For example, we tried to calculate individual orthopedic surgeons' average hip implant cost per case in the hip replacement cases they performed, to understand the degree to which each surgeon's clinical choice and utilization drove cost. However, we were unable to complete the analysis because, while purchase data can be tied to individual patients and episodes, physician identifiers are not captured. This is a routine analysis in high-performing health systems that enables significant savings by standardizing utilization practices while maintaining clinical quality.

d. Recent investments in supply chain IT do not appear to be aligned with a broader strategy.

Substantial changes will be required to VA's IT systems, data quality and integrity, and analytic capabilities to effectively measure and manage spend on supplies and devices. To that end, VA has piloted the use of a new strategic asset management system for inventory management and procurement (SOARD project). Substantial development is needed to make it operational to manage clinical supplies and to integrate it with the VA's FMS. Two previous projects, CoreFLS and FLITE, were based on the same platform as SOARD, and both were unsuccessful. Factors contributing to failure have been reported by GAO and VA Office of Inspector General, and include weak program management, poor oversight, and problems modifying the software for existing data and infrastructure (VA OIG, 2010; VA OIG, 2004; GAO, 2009). While significant resources have been devoted to development of this new system for use in the VA, the assessment team was not aware of any health care facilities outside VA using this software for tracking supply inventories. Funding for continuing the development and rollout of the system to other facilities is also lacking.

Other IT system improvements are underway as well, but are not being considered as part of a broader strategy. Implementation of Real Time Location Service (RTLS) and Point of Use (POU) inventory management systems are being piloted. VAMC facilities are preparing for RTLS through the installation of wireless technology. POU weight-based bin technology is being piloted in 11 facilities with an inventory segmentation approach and system integrator. These are improvements to address select, long-standing inventory management issues, but their development and implementation have been ad hoc, and not part of an integrated strategy or implementation plan. Including SOARD, these IT projects are being managed by three different program offices.

4.2.3 The Performance of VA's Contracting Organization Does not Meet Customers' Expectations, so Frontline Staff Have Developed Workarounds

Veterans' access to clinical supplies and devices depends on frontline staff procuring products in a timely manner. However, government acquisition regulations and the contracting organization present challenges to efficient management of the supply chain:

a. Service levels provided by contracting entities do not meet customers' expectations.

b. Systems used to measure and manage contracting performance are not transparent and data can be changed manually by contracting staff.

c. Frontline staff have developed practices that reduce the need to use contracting services.

a. Service levels provided by contracting entities do not meet customers' expectations.

Largely unprompted, 77 out of 101 interviewees for clinical supplies and medical devices, expressed concerns about VA's contracting capability. Those who voiced concerns were typically individuals directly involved in the procurement process, such as logistics personnel, or staff who were directly impacted by product availability, such as cath lab directors. In most interviews with front line staff, the time it takes to procure simple items through contracting (one to three months) was cited as an issue. For example, a surgical nurse commented that heart valve surgery can be delayed because of the need to go through contracting. Some heart valves cost more than the micro-purchase threshold ($3,000) which therefore requires the use of contracting. Hospitals need to have multiple sizes on hand to ensure the patient gets the valve that is the best fit relative to their anatomy.

Purchases above the micro-purchase threshold must go through contracting to be competitively bid and contracted. In FY2014, VHA network contracting offices placed more than 66,000 orders and $1.75 billion in medical, surgical supply and device orders for more than $3,000. These include delivery orders placed against FSS and blanket purchase agreements (BPAs), definitive contracts, and purchase orders made on the open market.

The key metric used by contracting to measure its performance is the Procurement Administrative Lead Time (PALT), which is defined as the time from contracting's receipt of a complete package to ultimate contract award with a supplier. This is similar to the definition used by other government agencies such as DoD and the U.S. Coast Guard (US Department of Defense , 2014; US Department of Homeland Security – US Coast Guard, 2010).

In general, VA's PALT target is 30 to 60 days, although this can be higher for different contract types or larger awards (see below). Private sector organizations also release Requests for Proposals to get bids from suppliers and industry experts who were interviewed in the course of this assessment stated that PALT times in the private sector were around the same as those reported by VA. It is worth noting that VA's acquisition process is more complex than most private sector organizations because of acquisition regulations.

However, it is also likely that the 30-60-day PALT times quoted by VA's contracting organization substantially underestimates the end-to-end time to complete a purchase. PALT does not include any time associated with the market research, preparation, and review of the acquisition package (developing specifications, for example). Multiple interviewees stated that end-to-end lead times for simple procurement actions could take significantly longer than 60 days, such as in the case of heart valves described above. Furthermore, they pointed to frequent return and cancellation of procurement requests as a problem to getting what Veterans need.

To validate the issue, we reviewed 12 months of the electronic Contract Management System (eCMS) procurement request transmissions for one facility (VAMC site visit, 2015). The review revealed that, of 1,100 packages submitted to contracting during that timeframe, 43 percent were returned at least once or were cancelled by contracting. When a package was returned, its initial return happened on average ~20 days from the date of initial submission. For those that were ultimately cancelled, the initial response (whether a cancellation or return) was 39 days after submission. Several submissions incurred significant back and forth between contracting and the facility. Figure 4-9 shows the point-in-time findings of the review (final status after February 2015 is unknown).

Figure 4-9. Point in Time Status of Procurement Packages Sent to Contracting Over 12 Months from One Facility

There are long response times for procurement requests with issues

	100 % = 1,107	Average number of steps	Median time to first response Days	Median total duration[2] Days
With VAMC after at least one return from contracting[1]	13 %	2.40	21	23
Cancelled by contracting	20 %	2.45	39	62
With contracting after at least one return to VAMC	11 %	3.21	22	35
With contracting; no return or cancellation to date[3]	57 %	1		
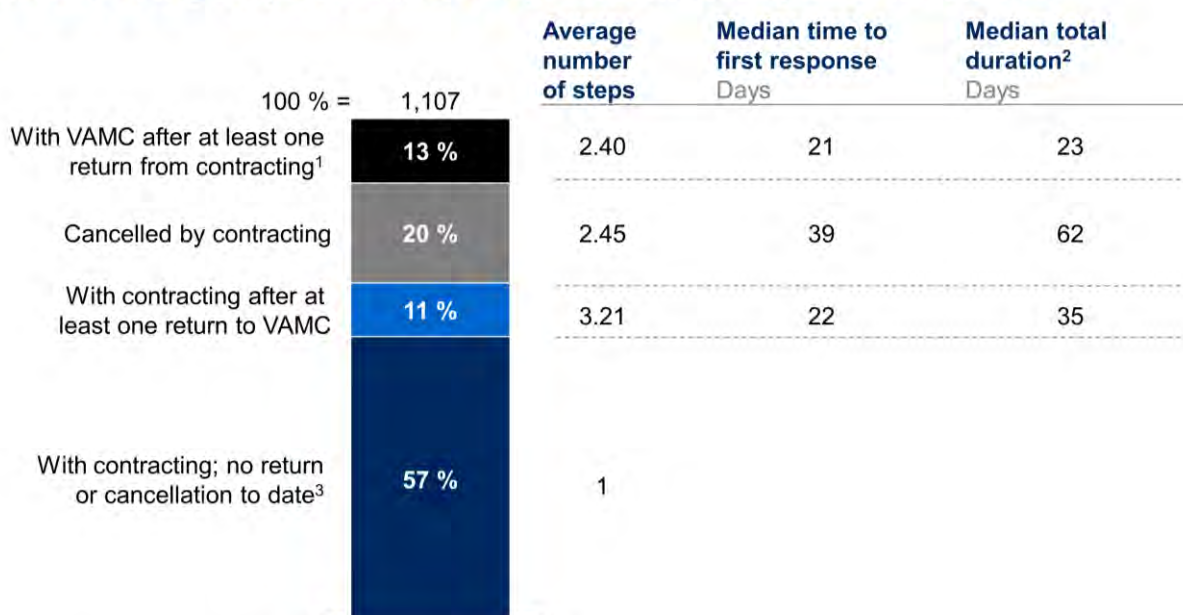
1 Returned to Accountable Officer or Control Point in VAMC
2 From first submission to final status
3 Final disposition (awarded or not) was not determined

SOURCE: VAMC site visit. (2015). IFCAP/eCMS transmission log received during site visit.

We also evaluated a snapshot of the outstanding procurement actions in eCMS across VA. Of the total 117,163 procurement actions in eCMS as of February 17, 2015, 2,468 (2.1 percent of total) were marked as draft or in error status (VHA, 2015a). One third of those were more than 30 days outstanding.

Interviewees at facilities consistently expressed concern about the NCOs' and SAOs' ability to be as responsive as they believe is required of a health care delivery organization and also expressed concerns about the quality of contracting's communication with them. They said that the reason for return or cancellation of submissions was not always clear and expressed frustration that it took several weeks, on average, after submission to find out that a package

was incomplete, as described above. Lack of clarity regarding contract status was a complaint shared by many facility staff.

Customer satisfaction surveys confirm the organization's dissatisfaction with contracting's communication. Overall communication effectiveness, and whether procurement staff keep requestors informed of their packages statuses, received the lowest scores (3.3 average score out of 5, ranging from 2.7 to 4.0 for overall effectiveness and 2.8 to 3.8 for status updates for NCOs) (VHA, 2015a).

NCO contracting staff also expressed frustration, particularly with regard to workload and quality of submitted packages they received. They also sympathized with the facility-based staff who had to complete the requirements and paperwork prior to a contracting submission, realizing that for many, this requirement was in addition to their core role.

External audits, and an internal PLO study on acquisition operations (summarized below), also highlighted issues in the acquisition process (Table 4-2) (GAO, 2013a; VA OIG testimony, 2010; VHA Procurement and Logistics Office, 2015a).

Table 4-2. PLO Identified Issues in Contracting Process

- Lack of certified Contracting Officer Representatives (CORs) to meet facility needs
- Lack of resources to aid staff with procurement packages
- Failure to address needs and contract renewals in timely fashion
- Lack of standardized tools and templates
- Lack of performance standards that address COR responsibilities
- Lack of standardized procedures and processes
- CORs not adequately reviewing invoices prior to certifying payment, systematic poor acquisition planning and inadequate contract monitoring, by ineffective performance monitoring controls
- Lack of communication between services and contracting product lines
- Poor procurement packages, frequent errors and omissions
- Increase in administrative time required when serving as COR
- eCMS technical difficulties
- Guidance, training, and oversight needed to improve clinical contract monitoring

These audits identified the root cause as poor standards, training and capacity of Contracting Officer's Representatives (CORs) at facilities. CORs are line chiefs, business managers, or administrative officers who help develop acquisition packages, submit into the eCMS planning module and are responsible for the ongoing contract monitoring.

Evidence suggests that the PLO has taken some steps to address issues by (VHA Assistant Deputy Under Secretary for Health Administrative Operations, 2014; VHA Procurement and Logistics Office, 2015b; VHA Procurement and Logistics Office, 2015c; VHA Procurement and Logistics Office, 2015d):

- Recommending contract liaison positions in each facility that can provide the process expertise and best practice sharing to reduce errors and improve the quality of submissions
- Establishing Customer Relationship Management Teams within NCOs to offer strategic advice and tactical acquisition consulting services
- Implementing customer service agreements between contracting offices and some organizations within VHA (e.g., Office of Informatics and Analytics)
- Developing the VA Acquisition Business Intelligence Tool (VABIT) to document and codify best practices for contracting (e.g., with product line-specific templates, example contracting documents)
- Organizing "Acquisition Planning Days" in SAO East to educate, train, and gather feedback from contracting customers

The effectiveness of these changes is unclear so far, although contract liaisons appear to be effective in pilot sites (during some site visits they were highlighted as improvements). However, we believe VA should consider how to streamline and error-proof the acquisition process rather than add personnel to manage the system.

b. Systems used to measure and manage contracting performance are not transparent and data can be changed manually by contracting staff.

PALT is defined as the time from which a complete package is received to when the contract is executed. Each contract action type has a defined PALT (Table 4-3) (VA, 2013), and for FY2015 through January 31, overall PALT for VHA was 99.1 percent on time or within five business days of on time.

Table 4-3. Procurement Administrative Lead Time (PALT) Guidance from Contracting

Acquisition Type	Action	Dollar Value	PALT Range
Blanket Purchase Agreements (BPA)	Off Existing FSS or GSA Contracts	ANY	30 – 90 days
	New	ANY	120 – 180 days
	Orders	ANY	30 – 60 days
Commercial Contracts	Competitive Proposals	<$150,000	30 – 60 days
		>$150,000 but not to exceed $6.5M	60 – 120 days
		>$6.5M	120 – 240 days
	Noncompetitive Actions (Sole Source)	< $150,000	30 – 60 days
		≥ $150,000	60 – 90 days
Indefinite Delivery Indefinite Quantity (IDIQ) Contracts	OAO Enterprise Contract Basic	< $50M	120 – 180 days
		≥ $50M	180 - 240 days

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Acquisition Type	Action	Dollar Value	PALT Range
Task or Delivery Order	FSS	< $150,000	30 days
		≥ $150,000	45 – 60 days
	OAO Enterprise Contract	<$150,000	30 days
		≥ $150,000	45 – 60 days
	GWAC	<$150,000	30 days
		≥ $150,000	45- 60 days
Negotiated Procurement	Competitive (Full and Open) includes 8a set asides	>$150K but not to exceed $6.5M	153 days
	Competitive (Full and Open) includes 8a set asides	>$6.5M	180 – 215 days
	Negotiated Sole Source, includes 8a set-asides	>$150K but not to exceed $6.5M	149 days
Simplified Acquisition Procedures	Purchase Order	<$25K	40 days
	Purchase Order	>$25K but not to exceed $150K	51 days

Frontline interviewees and PLO leadership agreed that PALT does not capture the end-to-end process that is relevant to meeting users' needs. They believed it should reflect the time from initial submission of a package to when the required product is received, which would be more customer-centric. VA does not currently capture data in this way. For prosthetics acquisitions, however, PLO has developed a tool in conjunction with PSAS which measures the end-to-end process from initial request for the item to eCMS award, and has the ability to analyze the data by facility and by PSAS category. Due to its recent development, the assessment team was unable to assess the impact, if any, the tool may be having on the acquisition process.

Contracting leaders did report that there were issues in the contracting data collection systems that could lead to inaccurate reporting of PALT. For example, in the current system, contracting staff have the ability to change dates manually. Doing so could impact the accuracy of the PALT that is reported. Contracting leaders are working on both improving the system as well as the metric definitions used to improve the accuracy of reporting and, therefore, contracting's accountability for its performance.

c. Frontline staff have developed workarounds to avoid purchasing through contracting.

Because of the issues described above, frontline staff reported that they had developed practices that minimize their need to use contracting, primarily the extensive use of VA-issued purchase cards to buy supplies and devices.

VA purchasing is highly dependent on government purchase cards – $8.4 billion was spent using VA purchase cards in FY2014 (GSA, 2015). Analysis of five VISNs showed that approximately 98

percent of their purchases of clinical supplies and medical devices were made on purchase cards, which accounted for around 75 percent of their spend on those categories (Figure 4-10) (VA, FY2014a).

Figure 4-10. Supplies Purchasing by Method of Processing
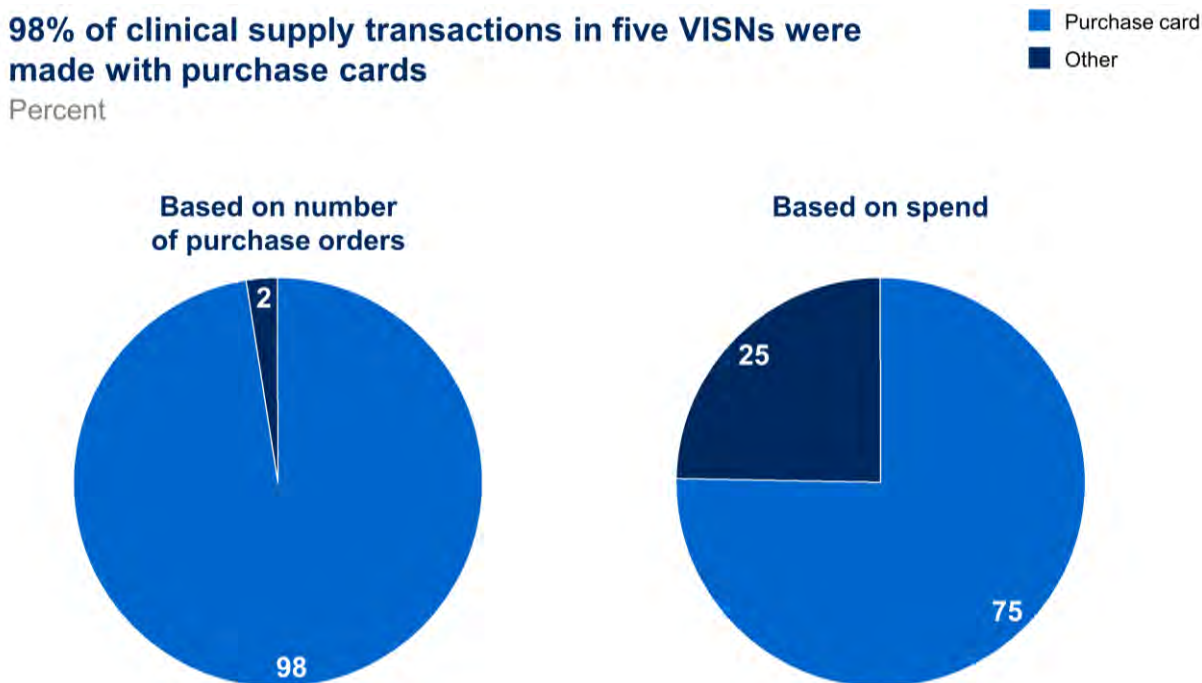
98% of clinical supply transactions in five VISNs were made with purchase cards

Percent

Based on number of purchase orders

Based on spend

SOURCE: VA. (FY2014a). IFCAP Purchase Data for Five VISNs. Represents transactions for BOC 2632 across 5 VISNs; FY2014

It is government policy to maximize the contracting officers' use of purchase cards to the extent possible to receive refunds and reduce administrative costs.[14] In VA's context, the use of purchase cards does deliver those benefits. VHA receives a substantial refund on their government purchase card use (estimated at 1.65 percent in FY2007) (VA OIG, 2008). However, industry experts report that suppliers typically increase prices for customers who pay primarily with purchase cards because of the fees levied by credit card companies. This could offset rebates provided by the purchase card companies.

Purchase card use also helps expedite purchases and reduces the workload demands on contracting. The greatest downsides of widespread purchase card use relate to the challenges associated with driving and monitoring compliance with purchasing regulations (such as buying products on the correct contract at the optimal price) and managing spending. These challenges have been presented previously in several Inspector General audits, GAO reports, and Congressional hearings (VA OIG, 2014b; GAO, 2004; US House Committee on Veterans Affairs Subcommittee on Oversight and Investigations , 2015). As an example of this issue, prior to 2013, PSAS purchasing agents with authorized purchase cards were allowed to buy prosthetic

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[14] FAR Subpart 13.301 – Simplified Acquisition Methods, Government Purchase Cards

inventory and medical devices up to $25,000. Due to concerns of non-compliance with contracting guidelines, however, their warrants were rescinded and purchases above the $3,000 micro-purchase threshold are now managed by PLO and facility logistics.

Part of this challenge relates to the complex process associated with any purchase card purchase. Purchase card holders are required to verify receipt of goods, reconcile transaction charges, and maintain documentation that purchases were for official government use. An internal VA study estimated that the total processing time for order generation to reconciliation of a standard purchase card order places a large administrative burden on purchasers (Coates, 2014) and takes time and resources away from more value-added activities. The prohibitive complexity of this process, the time required to complete it, and the difficulty in monitoring it also likely contributed to past compliance challenges.

In contrast to the inefficiencies of purchase card ordering, the internal VA study found that ordering through electronic data interchange (EDI) from the MSPV and other equipped vendors was about six times faster. Processing, payment, and reconciliation occur electronically and do not involve the purchaser. Additionally, EDI improves data accuracy and fiscal oversight, and reduces overall order cycle time, paper handling and storage. At the end of each month, purchase card holders are required to reconcile purchases and validate their bank cards, which can take significant time.

Electronic ordering can deliver significant savings. A study funded by the Health Industry Distributors Association found that processing costs to order through distributors were three times less per line item, mainly due to EDI integration (HIDA, 2012).[15] This is similar to the findings of a study on processing costs for DoD's MSPV as compared to local purchases (LMI, 2008).[16]

Across industries, best-in-class organizations use purchase cards on only ~1.7 percent of their total spend (CAPS research, 2014) and typically maximize EDI usage to the extent possible (High performing health system interviews, 2015). However, to do so requires significant technology enablement. In the private health care sector, use of purchase cards has declined sharply as hospitals have moved to more electronic and automated purchasing and inventory management systems.

Currently in VA, EDI is used mainly for larger entities such as the MSPV. While VA may be limited in its ability to approximate the EDI utilization seen in the private sector due to small business requirements[17], there is scope to expand this ordering method by: (a) ordering more items from EDI equipped vendors such as the MSPV, (b) increasing staff usage of EDI ordering methods over manual methods for those vendors already equipped, and (c) increasing the number of vendors with EDI capabilities.

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[15] HIDA (2012). Hospital Procurement Study

[16] LMI (2008). Summary Slides: Task # DL733, "Comparing the Cost of Medical Materiel Acquisition Procedures" presented to Directorate of Medical Materiel, Defense Supply Center

[17] Small businesses may have difficulty implementing EDI due to financial barriers and technological sophistication. The extent to which this is true for health care suppliers is unclear.

To evaluate the first opportunity in VA, we analyzed purchasing data from five VISNs that showed they currently buy 22.5 percent of their clinical supplies through their MSPV (based on total clinical supply spend in five VISNs, ranging from 16 to 32 percent) (VA, FY2014a). Industry experts who were interviewed stated that typical MSPV utilization in the private sector is around 30 percent, although this can vary based on individual health system supply chain strategies. Increasing spend through VA's MSPVs in regions where MSPV utilization is low could be a relatively easy first step towards greater electronic purchasing and lower use of purchase cards.

However, VA's methodology for measuring MSPV utilization creates challenges in accurate reporting. VA currently measures MSPV utilization based only on line items with a contract number (~40 percent of total clinical supply spend) and only for certain cost centers and fiscal control points (~80 percent of total clinical supply spend). Using this methodology, reported MSPV utilization rates for VISNs are in the range of 61 to 82 percent (VHA, 2015c). However, because of data integrity issues in the contract number field, the utilization metric is not comparable across facilities, nor is it something that can be compared with the private sector.

The final finding relates to the micro-purchase threshold and how it drives certain purchasing practices to avoid using contracting. As context, government employees who do not have a contracting warrant to use a purchase card can only make purchases below the $3,000 micro-purchase threshold[18]. In cases where purchases would be just above the micro-threshold limit, the item would have to be competitively sourced through contracting, as described above.

The micro-purchase threshold was cited as a problem in numerous interviews. Frontline staff almost unanimously wanted VA to increase the threshold to make the process easier than going through contracting. Several interviewees who made purchases on purchase cards also suggested they deliberately place multiple orders close to but under the $3,000 threshold to avoid involving contracting.

To validate this, the team analyzed purchasing data from five VISNs (VA, FY2014a). In FY2014, 237,829 purchase orders for clinical supplies totaling $274 million were generated, which were paid on purchase cards. Of these purchases, a disproportionate number of transactions appeared to occur near the micro-purchase threshold (Figure 4-11), two to three times what is expected, suggesting that staff were indeed optimizing purchase orders to be just under the threshold. Due to data limitations, the total extent to which order splitting may be occurring is unknown. However, the assessment team believes that some commonly used items may be purchased more frequently and in smaller batches than is ideal to avoid exceeding the threshold.

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[18] FAR Subpart 2.1 – Definitions

Figure 4-11. Clinical Supplies Purchase Orders by Total Costs for Five VISNs
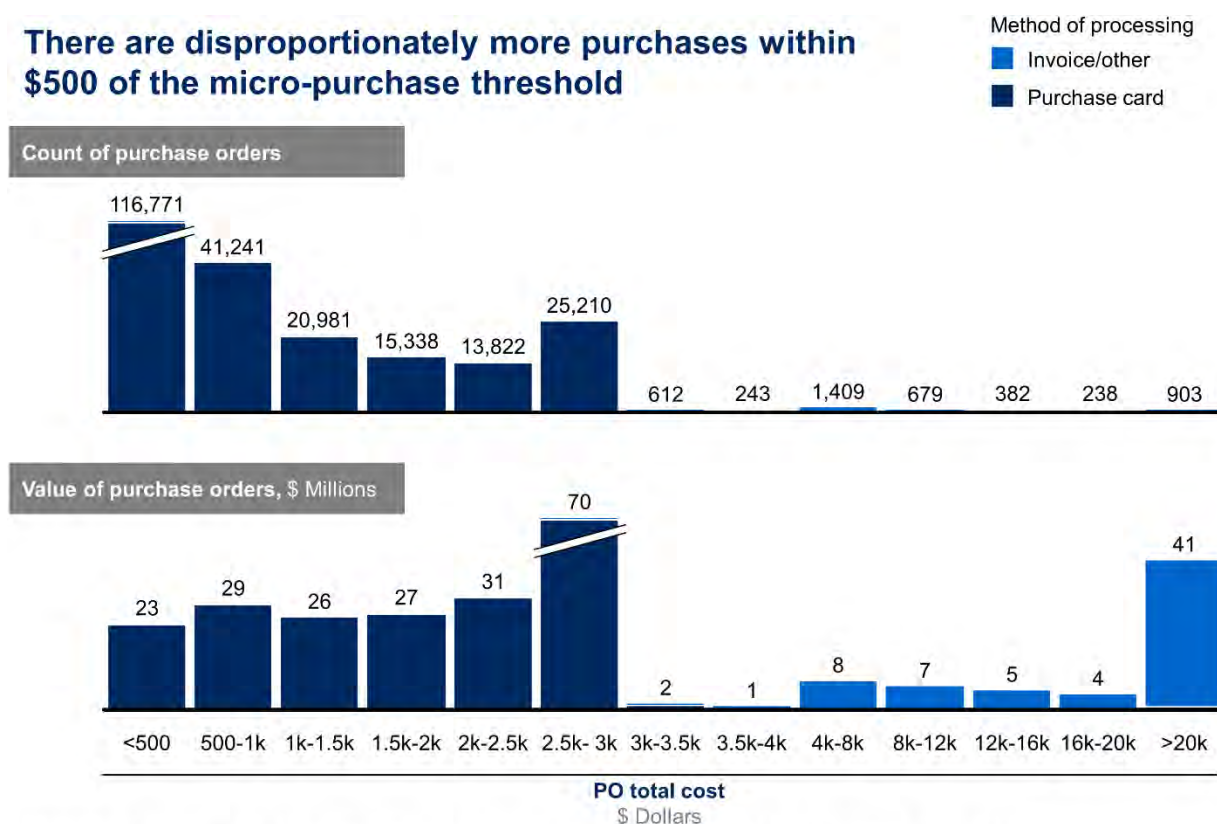
SOURCE: VA. (FY2014a). IFCAP Purchase Data for Five VISNs. Represents transactions for BOC 2632 across 5 VISNs; FY2014

In numerous interviews with frontline staff, interviewees asked that the micro-purchase threshold be increased to at least $5,000, so that they could avoid the complex, time-consuming and restrictive contracting policies for critical supplies and devices. The micro-purchase threshold has been at $3,000 since 2006. Given the cost of medical care commodities has grown at 2.6 percent per year since 2006 (US Department of Labor, Bureau of Labor Statistics, 2015), the purchasing power of the government purchase card has declined by approximately $550 or 18 percent in the last nine years. Thresholds for acquisitions are reviewed every five years to adjust for inflation. The FAR micro-purchase threshold will increase in October 1, 2015 as a result of the most recent review to $3,500 (Federal Register proposed rule change, 2014).

Regardless, the assessment team believes that VA's widespread use of purchase cards is a workaround that is symptomatic of its manual ordering processes and slow, burdensome contracting process. As one VA leader stated, purchase cards are "*the easy button*" (Staff interviews, 2015). It is likely that if contracting was to be rationalized and streamlined, and ordering and purchasing was to be more automated, use of purchase cards would decline, the micro-purchase threshold would become less relevant, and management of spend would be easier and more effective.

VA is taking steps to facilitate the ordering process through its next generation MSPV program which is currently out for solicitation. The statement of work requires EDI ordering and

electronic fund transfer payments. This will be facilitated by an electronic catalog component and supply chain management tools to be provided by the MSPV. These are elements which are key success factors for VA's pharmaceutical purchasing.

4.2.4 VA has not Taken Full Advantage of its Scale or Potential for Product Standardization to Achieve Optimal Pricing and Efficiency

The consequences of organizational dysfunction, and variable and suboptimal purchasing practices, have contributed to the following findings:

    a. VA does not consistently access the lowest prices available.

    b. Limited product standardization has been achieved across VA to date.

a. VA does not consistently access the lowest prices available.

Unlike pharmaceuticals, no external unit price benchmarks exist for clinical supplies, medical devices, and related services. Therefore, as a proxy, the team evaluated two key components of VA's purchasing performance to understand the likely opportunity related to prices paid for these items:

- Variation in unit prices paid for like items across VISNs and VA facilities
- Share of purchases made on government contracts

To understand price variation, we used a proprietary product matching tool to analyze the product purchases for two VISNs during FY2014. Detail on the methodology is provided in appendix A.2.3. In short, VA had to extract purchasing data from each hospital's system and collate it into one file. We then evaluated and cleaned the data so we could run as much of it as possible through the matching algorithm. The data was matched using a proprietary algorithm that took into account several data elements related to each product, in an effort to match products used at one facility to identical products at other facilities. Examples of the elements taken into account include name, catalog number, and unit price. For some items, data sets had to be manually reconciled to make them comparable.

The analysis showed significant variation in the prices paid for like items. If all facilities included in the analysis were to access the lowest price in those two VISNs more of the time, a conservative estimate suggests that they could yield savings around three percent of examined spend. Some of the variation in prices paid for like products is shown in Figure 4-12.

Figure 4-12. Purchase Price Variation in One VISN for Top Medical Supply Products

Price variations lead to additional costs for clinical supply products

Legend: Low price (dark blue), Middle prices¹ (grey), High price (blue)

Top 15 products in one VISN by spend at each price point — $ Thousands
Savings if all purchases were at minimum price — $ Thousands / Percent

Product	Spend ($ Thousands)	Savings ($ Thousands)	Percent
ECG leadwire	480	22	4.7
Syringe, 200mL kit	360		0.0
Disp. Blood pressure cuff	354	149	42
Oxygenator	308		0.0
IV Statlock	268	19	7.2
Exam glove, Nitrile (M)	267		0.2
Cable, cardiac monitor	252	27	10.7
Face mask, medium	250	15	6.1
Sensor, pulseOx	240	2	1.0
Phaco kit	233	131	56.2
Suture closure system	228	73	31.9
Exam glove, Nitrile (S)	225		0.2
Bead emobilization	222	2	0.9
Syringe, 200mL kit	214	66	30.6
Exam glove, Nitrile (L)	205	1	0.4

1 Some products had more than one mid-price point; the total spend for all middle prices is shown
SOURCE: VA. (FY2014a). IFCAP Purchase Data for Five VISNs. Represents IFCAP FY14 medical and surgical supplies purchases for one VISN (total spend in FY14 of $91 M)

An example of this variation is the price paid for one type of disposable blood pressure cuff (third product in Figure 4-12). In one of the VISNs evaluated, that disposable blood pressure cuff was purchased from six different suppliers. The prices paid to those suppliers varied significantly – the highest price paid was 207 percent higher than the lowest price paid. More than 35,000 cuffs were purchased from suppliers at prices above the lowest available price. This represented a total potentially avoidable spend of $149,300 on this one item alone across five facilities. While the vendor stock codes were identical to each other and an identifiable manufacturer part number, the assessment team was unable to determine the potential impact (if any) of brand substitution by distributors on price variability. However, this finding is illustrative of the opportunity that is present from price variations on functionally identical products across facilities.

Therefore, the assessment team believes there is significant opportunity for VA to establish mechanisms to help it identify and access its lowest available price more consistently. In part this could be achieved by improving compliance with the contract hierarchy as discussed below. This would reduce supply costs in the short term and in the longer term could potentially help support future negotiations, by driving more volume to the supplier that is willing to offer the most attractive price.

Secondly, the team undertook an analysis to understand the share of purchases that were made on or off contract and, for those that were made on contract, which contract was used.

As context, the government has a contract hierarchy that should be followed when making purchases (Table 4-4).[19] Buyers are required to use the highest priority contract that exists for a given product. Purchasing on higher-priority contracts enables the government to consolidate spend on the most attractive purchasing vehicle which, in turn, supports future price negotiations. Purchasing at open market prices should be the option of last resort.

Table 4-4. Priorities for Use of Government Supply Sources

In order of priority:

1. National committed use contracts
2. Blanket purchase agreements on FSS contracts awarded by NAC
3. Regional or local BPAs issued against FSS contracts
4. FSS contracts without BPAs
5. Regional IDIQ awards
6. Local IDIQ award
7. Open market purchases

Note: Contracting officers have ability to use lower priority arrangements when there is unusual or compelling urgency, but must provide justification

Figure 4-13 shows the share of clinical supply purchases that were made through each contracting vehicle during the first 4 months of FY2015. The largest share of clinical supplies are purchased through FSS awards, which are indefinite delivery, indefinite quantity (IDIQ) contracts based on "most favored customer" pricing. Under this arrangement, suppliers must reveal to VA the prices they charge other customers for their products and must make a price available to VA that is equal to or better than the lowest of all its other prices. However, the prices revealed and offered to VA are based on a unit size order of one – i.e., the price a customer would pay if he/she bought only one item, with no volume discounts applied. Therefore, the "lowest" price revealed to VA likely does not reflect the true price paid by customers, because those customers would likely buy multiple units and negotiate a discount based on that.

Because of that, the FAR and VAAR require FSS contracts to be competed against one another for additional savings unless there is an existing national contract or blanket purchase agreement (BPA) in place.

However, our analysis showed that at least one-quarter of spend on clinical supplies was at open market prices (VA, FY2015), with the majority of those purchases made using government purchase cards (Figure 4-13). An audit of open market purchases by OIG in 2009 found a similar rate of open market purchases and showed that the same or similar items that were bought at

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[19] VAAR Subpart 808.002

open market prices were also available on a FSS contract (VA OIG, 2009). A waiver is technically required for open market purchases, even if below the micro-purchase limit, yet the OIG report found only a single waiver filed in the time period they examined. To put this into context, high performing private sector health care providers aim to make 80-90 percent of their clinical supply purchases through some type of negotiated contract (High performing health system interviews, 2015).

Figure 4-13. Sources of Clinical Supply Purchases
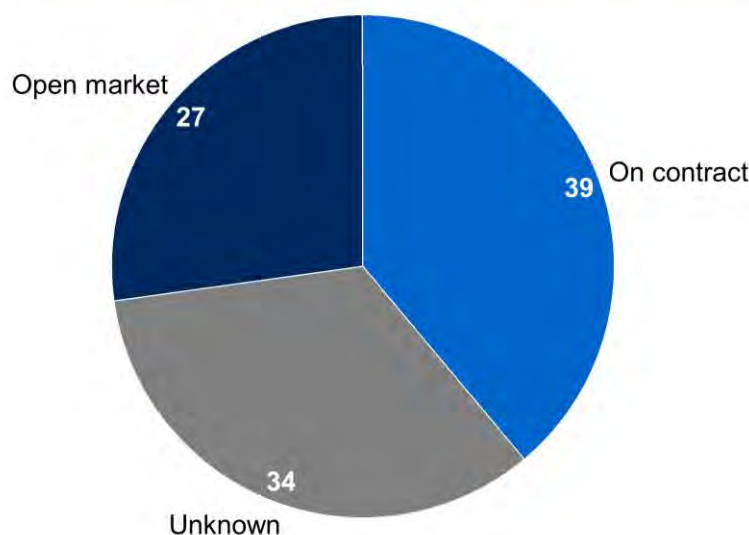
Note: BOC 2632 spend for line items with IMF number, and cost centers associated with medical/surgical supply spend, but excluding pharmacy control points, all facilities October 1, 2014 through January 31, 2015

SOURCE: VA. (FY2015, October - January). IFCAP purchase data for clinical supplies with an IMF number.

Interviews and observations revealed that there are two primary reasons for VA's relatively high share of open market purchasing in these categories. First, VA's purchasing processes rely on buyers to do the work of finding out whether an item is on contract, and through which contract the purchase should be made based on the mandated hierarchy. To that end, buyers must search the NAC's Contract Catalog Search Tool (CCST) in a web browser to identify the latest pricing and national contract information for the items of interest. The purchase information then must be separately entered into IFCAP systems to make the purchase. It is also easy to simply repeat previous purchases that were made in IFCAP. This can create additional problems, as it is easy to avoid looking up contract information and there is no mechanism to inform when products fall off contract or purchasing instruments change, so users may repeat previous transactions that are no longer optimal. The CCST also only includes national contracts and FSS schedule items managed by VA. Even in VA's electronic ordering system, and in contrast to the system used for pharmaceutical purchasing, there is no mechanism to lock-out off-contract purchases or to direct a buyers to the most optimal price, because contracts and pricing data are not linked to IFCAP.

Second, VA has limited ability to monitor and drive compliance with the contract hierarchy described above. Free text data entry and the ability to not enter certain information such as contract numbers makes evaluating whether product purchases were made under an appropriate contract very difficult.

Driving higher contract compliance and strategically negotiating national volume-based contracts for specific products represents a significant opportunity for VA. The national contracting entities have been able to negotiate significant discounts for the contracts they manage. As examples, the NAC and DALC collectively manage 178 national contracts and BPAs across 133 categories as part of the National Contract Service standardization program (VA, 2015i). Categories range from adult diapers to coronary drug eluting stents. The NAC establishes BPAs with lower prices for items on FSS through defined quantity agreements. For the items covered under 49 BPAs in the MedSurg National Contracting Catalog Search Tool (CCST), the average discount off FSS pricing was 15.1 percent (VA National Acquisition Center, 2015)[20], highlighting this as an effective tool to negotiate better pricing based on defined quantities.

However, poor contract compliance and VA's lack of rigor to identify products for which national contracts should exist would suggest that VA is not achieving optimal prices for its clinical supplies or medical devices, and therefore, there is likely opportunity to negotiate additional discounts.

To achieve the target of 80-90 percent of purchases on contract, best-in-class strategic sourcing functions identify products and categories that would benefit most from central contracting. This is typically done by analyzing purchasing data to identify products with high aggregate cost that are currently being bought off contract, and collaborating closely with clinical teams to understand evolving clinical practice and prospectively identify the supplies and devices that will be needed to support patient care.

In VA, development of national contracts is usually initiated by program offices and services (for example, PLO and PSAS) who partner with acquisition centers for the development of requirements and the solicitation process. However, in VA there is no robust mechanism for programmatically identifying key categories that should be targeted for national contracts. Several efforts to address this have been initiated, including within SAC and the PLO's Program Executive Office (PEO). However, leadership interviewed cited staffing issues and policy constraints (PLO cannot create its own national contracts, for instance) as barriers to effectiveness. Also apparent in the interviews was the distrustful and non-collaborative relationship between organizations at VA and VHA (see Finding 4.2.1). A strong relationship is needed for a best-in-class approach with integrated product teams. Poor relationships could also lead to poor output. Indeed, of three product categories highlighted in a 2007 OIG report as potential targets that could benefit from a national contract, only coronary stents currently

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[20] Price discount from FSS for items on BPAs were calculated. The median discounts for each contract were averaged to find the average per contract discount

have a national contract and the initial solicitation occurred nearly three years (in 2010) after the report was published (VA OIG, 2007).

Local and regional systems in VA also have the ability to negotiate prices with suppliers. In our experience, these local contracts can, at times, yield better prices for some products than nationally negotiated contracts. High performing organizations are typically very thoughtful and strategic in defining which products should be negotiated nationally versus regionally. In general, national contracts achieve the most favorable pricing, hence VA's contract hierarchy above. However, under certain circumstances and for certain products, organizations can negotiate more favorable pricing by adopting a regional approach. For example, a supplier may be unwilling to provide large, widespread price concessions to a customer that represents a significant share of its business because of the dramatic impact that might have on earnings, but may be willing to offer deeper discounts in certain regions. In addition, suppliers that have multiple manufacturing or distribution locations around the country may have geography-specific pricing that reflects their cost structure in each location.

To that end, VISNs 17-22 established the Western States Network Consortium (WSNC), which is a regional purchasing organization aligned with SAO West. It was established in the 1990's to facilitate collaboration to reduce costs and increase efficiencies across all of its VISNs. WSNC seeks to award BPAs off existing FSS contracts with additional price discounts based on projected usage. When FSS contracts are not available, the WSNC will award open market BPAs and/or IDIQ contracts in order to meet the region's needs. In FY2014, 10 WSNC BPAs saved nearly nine million dollars compared to FSS pricing for supplies, prosthetics, diagnostics, lab services, and engineering supplies (WSNC Program Officer, FY2014).

While the WSNC has delivered savings, its genesis was opportunistic, and driven through necessity, versus the result of a more national strategic sourcing strategy. Therefore, its existence likely adds to VA's organizational complexity and results in WSNC negotiating prices for some items that should be negotiated nationally, to deliver benefit beyond the western region.

b. Limited product standardization has been achieved across VA to date.

In 2001, VHA Directive 1761.1 and its associated 2003 published handbook established procedures for a national Standardization User Group to identify items for standardization based on national procurement data for more focused user-based groups to review. To date however, national product standardization for commodity medical supply products has been achieved in only a limited number of categories, through 61 single award medical/surgical national contracts, BPAs, and Blanket Order Agreements (BOAs) (VA, 2015i).

In 2011, VHA required that VAMC facilities establish Clinical Product Review Committees (CPRCs) to: (i) Review and approve new clinical items and reusable medical equipment (RME) prior to use at the Medical Center; (ii) Maintain a list of approved expendable clinical supplies and RME by establishing and maintaining a Medical/Surgical Supply Formulary, and (iii) ensure compliance with nationally standardized contracts and BPAs. In all sites visited, CPRCs exist and meet regularly to review and approve items. CPRC interviews and data review revealed that CPRCs typically review around 30 genuinely new item requests per month. Reviews were
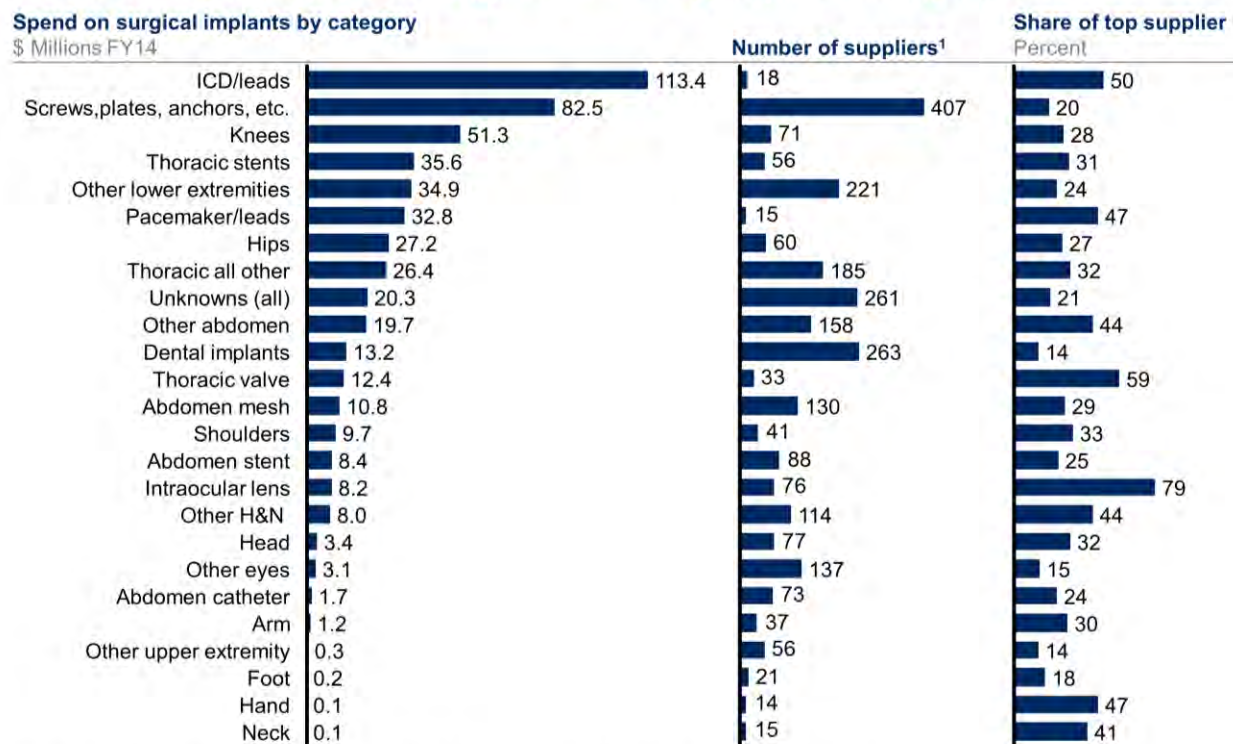
generally formalities as long as the products were replacing existing items and/or budget neutral.

The 2011 changes also required that VISN offices establish commodity standardization committees with relevant subcommittees to review the actions of VAMC CPRCs and take further standardization activities. These include identifying new opportunities, facilitating standardization within the VISN, and tracking and reporting benefits of standardization. However, no evidence for VISN level standardization activity was found in any interviews conducted with CPRC participants. A similar finding was reported by the GAO in 2013 (GAO, 2013b).

High physician preference items such as medical device implants are high cost items that can vary substantially in price. VA currently spends $525 million on surgical implants. In some categories, vendors are consolidated, but this may correspond to the structure of the industry. There are opportunities for vendor rationalization in many other categories (Figure 4-14). Standardization of these types of items requires strong physician engagement and education, supported by robust data collection and analysis on case-based usage patterns. VA's fragmented and complex organizational structure and the history of poor collaboration is a substantial barrier to achieving this level of physician engagement, and its data systems are inadequate to provide the insights needed to support standardization.

Figure 4-14. Vendor and Product Fragmentation for Key Medical Device Categories

VA has a large number of suppliers in many implant categories

	Spend on surgical implants by category $ Millions FY14	Number of suppliers[1]	Share of top supplier Percent
ICD/leads	113.4	18	50
Screws, plates, anchors, etc.	82.5	407	20
Knees	51.3	71	28
Thoracic stents	35.6	56	31
Other lower extremities	34.9	221	24
Pacemaker/leads	32.8	15	47
Hips	27.2	60	27
Thoracic all other	26.4	185	32
Unknowns (all)	20.3	261	21
Other abdomen	19.7	158	44
Dental implants	13.2	263	14
Thoracic valve	12.4	33	59
Abdomen mesh	10.8	130	29
Shoulders	9.7	41	33
Abdomen stent	8.4	88	25
Intraocular lens	8.2	76	79
Other H&N	8.0	114	44
Head	3.4	77	32
Other eyes	3.1	137	15
Abdomen catheter	1.7	73	24
Arm	1.2	37	30
Other upper extremity	0.3	56	14
Foot	0.2	21	18
Hand	0.1	14	47
Neck	0.1	15	41

1 Vendor name formats were standardized from >23,000 entries to ~12,000. However, some redundancy may remain.
SOURCE: VA. (FY2014c). Prosthetic appliance purchase orders (VistA Table 660).

High performing health care organizations have typically taken a two-pronged approach to product standardization, treating commodity clinical supplies and devices differently than high physician preference ones. For commodities such as gloves, gowns, drapes, gauze, etc., they have pushed regional or, in some cases national, standardization towards one supplier – often the private label products available from their prime vendor. For high preference supplies and devices, such as surgical implants and disposable endoscopic surgical instruments, they have taken one of two approaches depending upon their culture and the degree of alignment between the procurement organization and physicians.

- One approach is to establish multi-disciplinary teams within a specialty that decide on the one or two products within a category they will use across the system. For example, they might consolidate down to a limited number of manufacturers, and aim for high utilization (such as 80 percent) of the highest priority manufacturer. (Lyden, 2015; High performing health system interviews, 2015)

- The second approach is to allow all manufacturers to participate, but use mechanisms such as price transparency or ceiling pricing to drive behavior. For example, a hospital system might make surgeons aware of the price of each high preference product and rely on their good will to select the product that delivers the best quality for the price for each individual patient. Alternatively, they might set tiered price ceilings for a product category of different types, and invite suppliers to participate, such that all products of a given type are roughly the same price and surgeons can continue to use what they have always used. (Okike, et al., 2014; High performing health system interviews, 2015)

Clearly, either of the approaches to standardization outlined above requires deep product expertise, not only on the part of the users (for example, nurses, physicians, sterile processing), but also on the part of those involved in contracting, purchasing, and supplier management. High performing strategic sourcing teams typically align their resources to product categories so that their personnel develop the category and clinical expertise needed to understand the product market landscape and clinical utilization to best drive value. Procurement and contracting personnel in organizations that are truly distinctive at strategic sourcing often understand their product categories more deeply than the suppliers' representatives who serve them.

Other than the DALC, VA's procurement group is limited in its degree of product or category specialization. This represents a real opportunity for VA to support its move to product standardization and strategic sourcing. Developing this capability would also likely reduce the burden on clinical staff to develop and submit specifications to contracting because, in such a system, the contractors would have significantly more knowledge and understanding of the products and suppliers they are evaluating and procuring.

4.2.5 Inventory Management Process, Practices, and Systems are Neither Integrated nor Optimized

VA uses two separate inventory management systems. The Prosthetic Inventory Package (PIP), which is used to manage prosthetic inventory, and the General Inventory Package (GIP), which

is used to manage inventory of everything else.[21] Each site has its own instance of PIP and GIP, making central analysis of inventory or system-wide inventory optimization almost impossible. Inventory control metrics such as inventory accuracy (percentage of correct items and quantities present per count) and stock out percentage are not routinely captured by GIP.

Site visits, interviews, and data analysis also showed that VA's inventory management practices vary significantly from site to site. The number of items managed in GIP ranges from a few hundred at small community based facilities to over 10,000 at large high complexity medical centers (VA, 2015f). However, system limitations in GIP may exaggerate the variation observed. For example, in GIP, a secondary inventory control point (like a supplies closet on a nursing unit) can only receive inventory from one primary control point (for example, a central store room), leading to situations where five secondary inventory control points may be present in GIP but those inventories are in the same room. To deal with this, some VISNs and facilities have created one "super" primary inventory for all clinical items in GIP. These limitations and differences in practice could lead to some of the variation observed in inventory metrics.

VA aims to maintain an average of 36 days of inventory on hand with a turnover rate of 10 times per year (VHA, 2009b). While the VA weighted average meets this target (32 days), the performance across VISNs varies (Figure 4-15) and the range for individual facilities is considerable. Despite an Inspector General report from 1999 recommending VAMCs should maintain less than a 30-day supply, and optimally a seven-day average supply (VA OIG, 1999), 47 percent of facilities have more than a 30 day supply. However, given the current supply chain systems and processes, such a reduction in inventory would create significant risks of shortages and stock outs.

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[21] VISN 20 does use GIP for prosthetic commodities as discussed in Section 4.2.1

Figure 4-15. Inventory Management Metrics by VISN
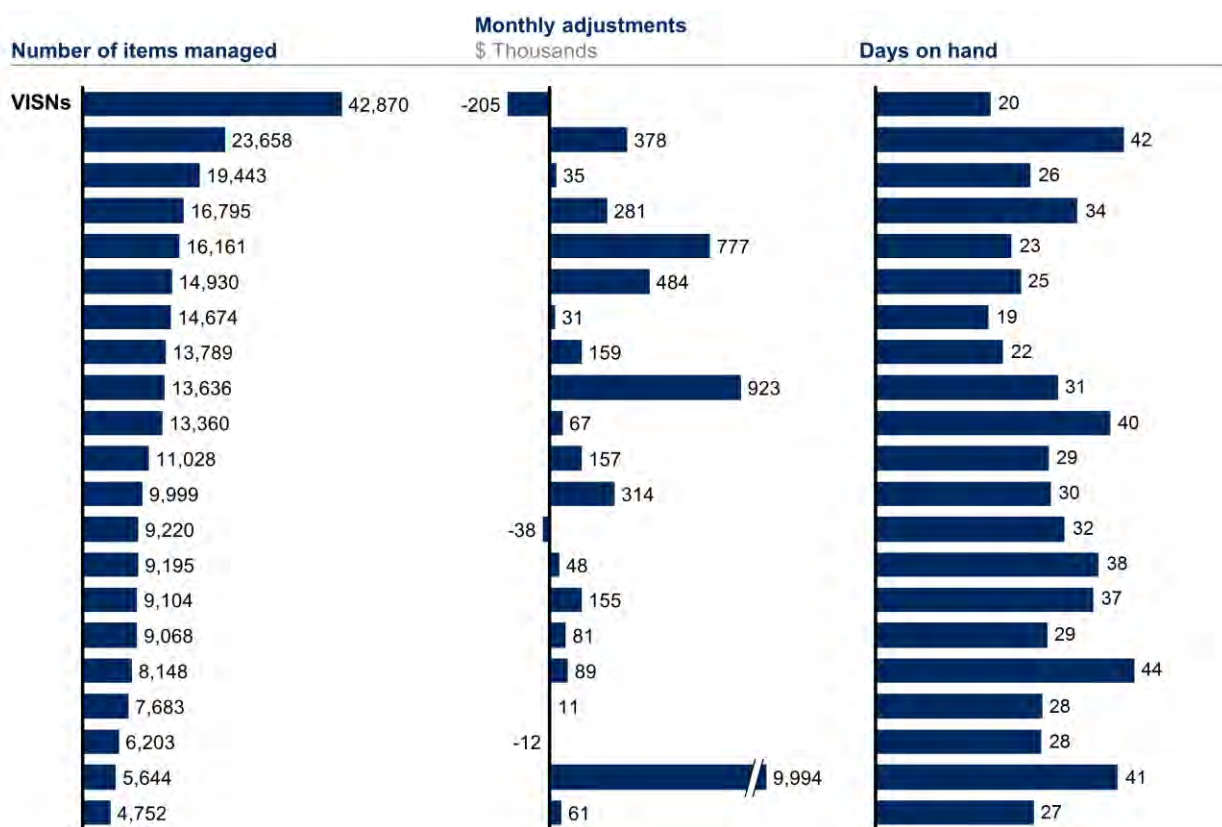
SOURCE: VA. (2015f, February). GIP Inventory Days of Stock on Hand Report.

Manual adjustments also limit the ability to interpret the data with any one point in time comparison, given that inventories may not correctly reflect reality. In any given month, there is a gap in some facilities' closing balance after accounting for the items purchased and distributed. Monthly adjustments are not problematic per se, but they are symptomatic of larger system issues that create inefficiencies and rework. Adjustments are made throughout the month due to errors, process failures, and system challenges, including:

- Adding items back into a primary inventory that were no longer needed in a secondary inventory point
- Providing clinicians with items not stocked in their secondary inventories, and then manual adjustment of GIP primary inventory numbers rather than adding the item to the secondary inventory and creating a picking ticket
- Counting inventory manually and adjusting primary inventories that are points of use (the only way these inventory supplies get decremented in GIP)
- Correcting inaccuracies within GIP which occur for a variety of reasons (like manual entries and calculation mistakes)

Many best practice hospital systems utilize Low Unit of Measure (LUM) or Unit of Use (UOU) shipments five days per week to cut down inventory carrying costs. They also integrate their inventory management systems with POU technology or other utilization tracking mechanisms

to automate reordering as much as possible. VA established the MSPV program in 2002 to move from a supply depot driven logistics organization to a leaner, just-in-time supply chain. Logistical support is provided through frequent conventional bulk or LUM shipments, three or five days a week respectively, although VAMCs do have flexibility in arranging more or less frequent deliveries. A core list of products is set by each facility, which MSPVs must be able to provide routinely. This was intended to reduce the number and stock of items being managed on site, saving inventory space, reducing wastage from expirations, and simplifying staffing.

During interviews, staff generally reported that the performance of their MSPVs had generally been good in this regard. As discussed above, 22.5 percent of clinical supply spend is through the MSPVs (VA, FY2015). Over 85,000 orders (922,000 line items) were placed with the largest MSPV in the twelve months from Feb 2014 – Jan 2015, with 60 percent of purchase spend on VAMC core items (VA MSPV, 2015). The prime vendor was also able to meet or exceed their fill rate requirements with over 97 percent of core line items filled in the twelve months (95 percent is required for conventional orders).

To date, only one VISN is currently operating with LUM deliveries five days per week. This VISN, as well as a few others, utilize Point of Use (POU) cabinet technology to track inventory and automate re-ordering. However, we observed that cabinet technology is being used for commodity items such as gauze and IV fluids in high-paced environments such as Intensive Care Units and Emergency Departments. This can cause challenges and delays for clinical staff because the cabinets require keypad entry of codes for access and pushbutton tracking of inventory use. In such situations their controls may be circumvented (for example, by leaving cabinets unlocked, and not pushing the usage button appropriately) and the assessment team received several reports from staff that this behavior happened frequently. The assessment team also directly observed such behavior more than once during the assessment. In such situations, inventory levels in the system will be inaccurate and automatic reordering will likely not occur as intended. VHA has plans to roll out newer, scale-based POU technology for frequent, "A" class, inventory and a Kanban card reordering system for less frequently used, "B" class, items.

4.2.6 VA Struggles to Attract, Hire, and Retain High Caliber Supply Chain Talent

A key success factor for best-in-class sourcing and supply chain organizations is the talent they employ. Talent management in VA's supply chain organizations is challenging because:

 a. There are many unfilled positions in the procurement and logistics organization.
 b. VA struggles to fill positions and retain supply chain talent.

a. There are many unfilled positions in the procurement and logistics organization.

Interviewees at the sites visited estimated that 20-30 percent of positions in logistics were currently unfilled, which required higher staff overtime to ensure timely delivery and distribution of supplies. In some interviews with staff in smaller clinics, nurses noted that the move towards a leaner inventory management model has led to some issues getting required product because of staffing shortages amongst item managers. The team did not have data to evaluate this claim. One outpatient clinic manager reported that there was one item manager

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and supervisor to cover three clinics, and that they were therefore short of two item managers. In that clinic, three-day inventory levels were set, but because of short staffing, the item manager could only restock every seven days, leading to shortages about once per week. The clinic would manage such shortages by driving to the nearest VAMC or borrowing from another clinic.

VA Medical Supply Aides & Technicians (Series 622) are designated as a critical occupation in VHA as they provide wards, clinics, operating rooms, and other hospital facilities with clinical supplies, instruments, sets, and equipment. As of May 22, 2015 there were 563 vacancies (VHA, 2015d) which is three to four per VAMC on average, or roughly 20 percent of all Series 622 positions in VA (VA, 2014e). The number of vacancies in these positions varies across VISNs from two to 45 positions currently unfilled.

It should also be noted that VA's high staffing needs are driven in part by cumbersome systems and processes. In addition, the assessment team could not find guidelines to help leaders determine appropriate staffing given the workload at their facilities. This was reflected in data. The number of logistics staff in each facility varied widely and the team could not find a correlation between the number of logistics personnel and number of hospital admissions, number of inpatient days, or the number of outpatient visits.

b. VA struggles to fill positions and retain supply chain talent.

Logistics leaders voiced concern about their ability to fill positions in a timely way and to retain those they recruit. They highlighted three potential contributing factors:

- Recent downgrades: Several supply chain positions were recently downgraded by the Office of Human Resources Management (OHRM) or not approved at a level requested. For example, logistics leadership designed a Business Program Coordinator to be a high level facility position to aid in contract and procurement management, but the position was classified at a lower level. At various facilities, supply chain positions that were downgraded within the last year included Supply Technician, Mail Manager, Draft Administrative Officer, and Materials Handler. It is beyond the scope of this work to determine the appropriate classification of these positions. However, supply chain leaders have the perception that the downgrades impacted morale and made certain positions less attractive to potential recruits.

- Variable responsiveness of HR: Sixty percent of interviewees across supply chain management and contracting also expressed concerns about the time it takes HR to fill open positions. They cited both long lead times from HR and a small eligible applicant pool. Data on speed of hires received by the assessment team did not break out supply-chain-specific positions to enable an evaluation of interviewees' claims, nor is it the scope of this report to evaluate HR processes. However, interviewees mentioned VA recruiting regulations preference Veteran and internal hires, which can restrict VA's access to a potential pool of talent who do not meet those criteria. Supply chain leaders also said they would like to bring fresh perspectives and experience into the organization to fill increasingly specialized positions in the supply chain organization.

- Lack of clear supply chain career paths: Several Chiefs of Logistics described individuals who had left the supply chain organization because there was no clear path for career progression within it. Because of that, two Chiefs of Logistics described ways in which they had created career paths and training programs to help retain their high performers. Succession planning was also an issue in some VAMCs visited. For example, one VAMC said that nearly a quarter of its supply chain workforce (including logistics leadership positions) was eligible for retirement (see Assessment L section 3.2 for more information).

It is well known in the health care industry that there is a shortage of supply chain talent currently. The private sector organizations interviewed during this assessment stated that they are recruiting more highly trained individuals than they did in the past and, because of competition for talent, are paying them more than they used to. This may be contributing to VA's recruitment and retention challenges.

4.2.7 There are Pockets of Good Performance and Innovation in VA That Could be Replicated Across its Supply Chain

The Denver Acquisition and Logistics Center (DALC) is a bright spot within VA's supply chain organization. It has developed an integrated operating model that brings together clinicians, contracting, finance, logistics, and program management. That integrated team makes decisions on product and vendor selection based on a holistic view of what is best for Veterans and for VA. In addition, VA medical centers and VISNs have a degree of autonomy to test and pilot new processes, management approaches, and technologies.

The DALC sources select prosthetic items and deliver them directly to Veterans. Its scope includes hearing aids and batteries, telehealth equipment, prosthetic socks, and a number of other goods. In total, the DALC manages around 3,750 line items and achieves average turn times of 1.7 business days for its commodity products (VA, 2015g). The DALC is also responsible for securing certain ancillary services at a national level such as dialysis services. Veterans have several options for how to place their orders; its call center staff field more than 20,000 orders per month for batteries, hearing aid accessories, and prosthetic socks.

To support its mission, the DALC has recruited and developed sourcing personnel who have expertise in telehealth and neuro-assistive devices such as hearing aids and cochlear implants. With category-aligned contracting officers and a close relationship with all stakeholders along the value chain (program office, logistics, finance, IT and clinical users, for example) using integrated product teams (IPTs), the DALC has been very successful in developing, negotiating, and executing programs that drive value while delivering high quality services, devices, and supplies to Veterans. As an example, the DALC reported that it saved Veterans $106 million on hearing aid batteries relative to typical retail prices Veterans would otherwise have had to pay. The dual functions of the DALC – contracting and logistics – work closely together to develop their products and services and also interact directly with clinicians and Veterans. Staff were very proud of their customer service and interactions with Veterans, including with those who choose to come to the Denver facility in person to pick up battery refills rather than receive them by mail.

The benefit of integrating sourcing decisions with logistics and other functions is highlighted by the DALC's ability to develop new contracts that address issues in the services they provide. A February 2014 OIG report highlighted long wait times for hearing aid repair service offered by the DALC (VA OIG, 2014c). To address the issue, the DALC negotiated new contracts with its hearing aid repair vendors that required them to handle earmold service with the repair of a hearing aid. This significantly reduced the workload on DALC repair staff and brought DALC's repair time down from 24 days in FY2012 to 5 days in FY2014 (VA, 2015g).

The success of the DALC's programs is due not only to its integrated project team planning, but also to its ability to develop and implement customized IT and financial solutions that make ordering and billing of its goods and services transparent and easy for the customer. They have developed a web-based Remote Order Entry System (ROES) as the cornerstone of their information management system. DALC customer, order, and inventory data is centralized such that standardization is not an issue. They are able to provide patient order history information, provide an integrated catalog, prevent inappropriate ordering off contract, and track accurate inventories.

Best-in-class sourcing organizations take several approaches to strategically acquire and deliver value for their organizations, which have been replicated in the DALC:

(a) They support their mission with deep category expertise.
(b) They ensure value with an integrated approach to meet the needs of the end user.
(c) They manage an ecosystem of suppliers to improve relationships and contracts over time.

While there are elements of the DALC model that may not be scalable to other parts of VA (like in-house IT development to support ordering and logistics), their integrated working model and category specialization are concepts that should be shared. The use of IPTs has been mandated by OAL for all contract programs valued at more than $5 million (VA Deputy Assistant Secretary for Acquisition and Logistics, 2013). However, several interviewees questioned their effectiveness, in part because of lack of space and challenges getting the required individuals in the same place at the same time to physically "touch and feel" new products.

In addition to the DALC, VA's ability to innovate locally is a strength that could be leveraged. VA medical centers and VISNs have a degree of autonomy to test and pilot new processes, management approaches, and technology. The assessment team observed several examples of local innovation that could deliver value across VA. Examples of these pockets of innovation include the following:

- Just-in-time (JIT), low unit of measure (LUM), and unit of use (UOU) inventory management that leverages automated technology and prime vendor relationships to improve purchasing and logistics service while reducing inventory holding costs

- Software and advanced point-of-use technology to improve logistics IT and data quality and availability to better manage inventory

- Pilots to integrate purchasing and inventory management of prosthetics appliances with clinical supply logistics, which allows Prosthetic Representatives to focus on patient-facing activities rather than on ordering, inventory management, and other administrative tasks

The willingness and ability to experiment locally is a VA source of strength, particularly because it is built upon a desire to deliver better service to Veterans. This represents a real opportunity for VA to learn from within.

However, the assessment team saw little evidence that findings from such experiments were systematically captured, codified, prioritized, and if appropriate, scaled across VA. Observations and interviews highlighted two primary reasons for this. First, no formal mechanism exists to collect and synthesize findings of these experiments and develop a plan for scale-up, nor is there a mechanism to evaluate, prioritize, and coordinate the pilots that are running across VA at any given time. Second, some individuals responsible for developing and implementing some of the innovations said they did not want to "advertise" their innovations too broadly because they thought the new practices may be deemed non-compliant or misaligned with a VISN or national objective.

5   Recommendations and Implementation Considerations

We would recommend VA considers the recommendations below. As VA further develops these recommendations, special attention should be given to the impact of each one on the rest of the organization to ensure that high performing areas are not negatively impacted. This is most relevant for any recommendations related to organizational structure, roles and responsibilities, IT, and data systems, because any changes will likely span pharmaceuticals, clinical supplies, medical devices, and health care-related services.

5.1   Pharmaceuticals and Related Services

Overall, VA's ability to efficiently and effectively purchase, distribute, and use pharmaceuticals is high. However, there are some areas where VA could build upon its strengths and address some weaknesses to further improve its performance. Specifically, we would make the following recommendations:

1. Establish mechanisms to ensure VA secures a reliable supply of pharmaceuticals and accesses the lowest possible pricing more consistently.

2. Continue driving efficiency through VA's CMOP network.

3. Develop strategies to improve the transition of patients from the Department of Defense to VA care.

4. Continue building more sophisticated approaches to drive appropriate utilization of pharmaceuticals.

5.1.1   Establish Mechanisms to Ensure VA Secures a Reliable Supply of Pharmaceuticals and Accesses the Lowest Possible Pricing More Consistently

a. Modernize VA Acquisition Regulations to enable access to lower priced commercial sources when possible.
b. Identify pharmaceuticals at highest risk of shortages and price spikes, and develop specific strategies to limit impact.
c. Improve lifecycle management of contracts to prevent lapses.

a. Modernize VA Acquisition Regulations to enable access to lower priced commercial sources when possible.

Currently the VAAR requires the use of FSS sources before considering commercial/open market sources. In some cases where only a single supplier may be on FSS contract, the supplier's prices may meet the FSS's "most favored customer" requirements, but the supplier could still charge VA higher prices than its open market competitors. The FAR upon which the VAAR is based were modified in January 2014 to allow GSA, DoD and NASA to allow open market competition in such situations. Other contracting rules in the VAAR may also be outdated as compared to the FAR. While a full legal review of FAR and VAAR differences is beyond this assessment, such conflicts are likely to cause confusion among VA contracting

officers. VA should consider updating the VAAR, including options to update VAAR 808.002 "Priorities for use of government supply sources" to ensure fair competitive prices are obtained. Options such as a class deviation for purchasing supplies (e.g., specific exemptions for generic drugs) when commercial source prices are lower than FSS contract sources, or aligning the language of the VAAR with the updated FAR should be explored.

b. Identify pharmaceuticals at highest risk of shortages and price spikes, and develop specific strategies to limit impact.

VA should use fact-based criteria to categorize drugs based on how likely VA is to experience price spikes or shortages over time, and the likely impact of those events. Based on that, VA should then develop strategies to secure supply at current price or as-close-to-current-price as possible for the highest risk drugs. Depending upon need, such strategies could include securing contracts with alternative suppliers, seeking permanent exemptions from TAA restrictions for certain drugs, establishing a safety stock, or balancing internal inventory.

VA's pharmaceutical prime vendor may be able to offer value added services such as more sophisticated inventory management, inventory balancing across sites in shortage situations, as well as more granular reports and information to support VA's risk-stratification of pharmaceuticals.

c. Improve lifecycle management of contracts to prevent lapses.

VA should view any lapse in contract on any drug as a system and process failure, because such lapses can lead to unnecessary expenditures and potentially impact Veteran access to medications. Therefore, VA should establish mechanisms to more proactively and strategically manage contract lifecycles.

Tactically, that could include developing an automated contract lifecycle management calendar that alerts contracting personnel when key activities need to take place based on an expected timeline. It could also include building strategic partnerships with suppliers, automated reminders, and establishing special bridge arrangements in the case of specific changes (like when a medication changes from a tablet to a capsule).

5.1.2 Continue Driving Efficiency through VA's CMOP Network

a. Drive more volume through CMOPs, particularly for prescription refills.
b. Continue to automate processes in the CMOPs.
c. Evaluate consolidation of CMOPs to drive efficiency and higher utilization.

a. Drive more volume through CMOPs, particularly for prescription refills.

While VA already delivers 80 percent of its outpatient prescriptions via its CMOP network, there is scope to increase that further, particularly for repeat prescriptions. Therefore, VA should push for greater utilization of CMOPs for repeat and non-urgent prescriptions to reduce demand on window pharmacies. This could include implementing a policy whereby refills are automatically sent from CMOPs unless a patient specifically requests that it be filled at a window pharmacy.

b. Continue to automate processes in the CMOPs.

VA should continue its drive to increase automation in its CMOPs. While the CMOPs' error rate is low overall, automation of steps in the process that are currently manual (like packing and labeling) could reduce the error rate further. Automation may also reduce costs over the longer term.

c. Evaluate consolidation of CMOPs to drive efficiency and higher utilization.

VA should evaluate the pros and cons of consolidating its CMOP network to fewer sites. Consolidation may enable VA to reduce costs associated with mail order and run the CMOP network to a higher level of utilization. CMOPs are equipped with different levels of automation and facilities at different ages. Consolidation options should be part of the evaluation process when considering equipment upgrades that may be needed.

5.1.3 Develop More Robust Mechanisms to Improve the Transition of Patients from the Department of Defense to VA Care

a. Improve access to primary care for transitioning Veterans as per Assessment B and Assessment E.
b. Improve sharing of medical records and medication history between DoD and VA and make it a strategic priority (see Assessment H).
c. Explore opportunities to align and integrate formularies taking into account clinical evidence and economic impact.
d. Develop drug-class-specific guidance for medication changes related to transitions.
e. Develop mechanisms to track transitioning DoD servicemembers.
f. Improve communication with Veterans about their medications during transitions.

a. Improve access to primary care for transitioning Veterans.

Access standards are covered in Assessment B and scheduling improvements that might improve access are found in Assessment E. The assessment team recommends VA considers the recommendations contained in those assessments and ensures that any changes to primary care that are implemented as a result improve transitioning Veterans' timely access to primary care.

b. Improve sharing of medical records and medication history between DoD and VA and make it a strategic priority.

VA and DoD should continue working together to improve information sharing between the two health systems through interoperability of their electronic medical records. In the meantime, they should develop a more robust bridge between the two systems. In particular, mechanisms should be established such that VA physicians and administrators have real-time access to Veterans' medical records for care provided in the DoD system and, as a matter of routine, have a patient's DoD medication history available to them prior to that patient's initial VA appointment. This should include the list of current medications, the indication for each medication, and any medication history that might exist. Improvements could be based upon

existing systems such as the CHDR or the newer JLV, and ultimately should be integrated into a broader IT strategy. There should be robust stakeholder engagement and education to ensure the success of these initiatives as well as implementation of the recommendations found in Assessment H section 5.2.

c. Explore opportunities to align and integrate formularies taking into account clinical evidence and economic impact.

VA should carefully examine the differences between formularies and, where alignment can be justified by clinical evidence, the needs of the population served, and the realities of the budget met, it should be pursued. This may also support the recommendations above.

d. Develop drug-class-specific guidance for medication changes related to transitions.

VA should formalize local clinical practices and continue to develop clearer guidance for prescribers on how to effectively transition patients from DoD into VA. Specifically, it should lay out, by drug class, the criteria prescribers should use to make a determination as to whether it is appropriate to keep a patient on a non-formulary medication that was started in DoD or to make a switch to an on-formulary medication.

e. Develop mechanisms to track transitioning DoD servicemembers.

VA should establish formal mechanisms to collect data on the transition of former servicemembers to its care. This could take advantage of the existing non-formulary approval process for those designated "Transitioning servicemembers," as well as linkages to OEF/OIF/OND transition programs and patient care teams to monitor when, where, and why medication switches occur. This data could help target areas where clinical guidelines might be most appropriate and effective, as well as provide a fact base for improving continuity of care with DoD.

Such data collection would also support a more fact-based determination about whether greater alignment between DoD and VA's formulary would materially improve transitions or whether other strategies such as process improvements, more robust tracking of transitions, and better communication with Veterans would have the most impact.

f. Explore opportunities to improve communication with Veterans about their medications during transitions.

Although anecdotal, it is likely that communication with Veterans could be improved to smooth Veterans' transitions. In particular, VA should improve communication with Veterans prior to or immediately upon entering the VA system about VA's pharmacy benefits, the role of the formulary, and how to access medications (CMOPs and window pharmacies). This would be prudent in any transition from one health system to another.

This recommendation may require more involvement of clinical pharmacists early in a Veteran's transition to educate him/her about how to navigate the VA system and how to ensure no gaps in care during that transition.

5.1.4 Build Sophisticated Approaches to Drive Appropriate Utilization of Pharmaceuticals

a. Incorporate evidence-based prescribing guidelines into clinical protocols and pathways, building upon recommendations in Assessment F.
b. Invest in IT and analytic capabilities to support outcomes-based data analysis.
c. Drive appropriate data interpretation and utilization through peer review.
d. Build utilization rules into prescribing system to facilitate appropriate use.

a. Incorporate additional evidence-based prescribing guidelines into clinical protocols and pathways, building upon recommendations in Assessment F.

In line with best-in-class integrated health systems and with the recommendations in Assessment F, VA should continue to build evidence-based prescribing guidelines into existing and new clinical protocols and treatment pathways for the most common conditions in the Veteran population (for example, COPD, hypertension, diabetes, heart failure, chronic pain). Given VA's scale and integration, it could monitor response to changes in clinical pathways and protocols and make adjustments accordingly.

b. Invest in IT and analytic capabilities to support outcomes-based data analysis.

Significant investments in IT, data capture and management, and analytics will be required to enable some of the recommendations outlined above, such as physician-level reports of prescribing patterns, particularly around inpatient drug utilization.

Therefore, VA should develop an integrated IT strategy that includes elements of what will be required to deliver against the recommendations outlined above. This will need to be aligned with the more specific recommendations made later in this report in relation to clinical supplies and devices, where the IT and data challenges are similar.

c. Drive appropriate data interpretation and utilization through peer review.

VA should establish a mechanism to have local physician peers evaluate drug utilization data that is made available by implementing the recommendation above. This could consist of new specialty-specific peer review committees or could build upon existing P&T committees. Those committees should use their understanding of the local patient population and individual physicians' circumstances (for example, subspecialty, specific patient populations treated) to evaluate the appropriateness of any variability in formulary compliance and adherence to clinical use guidelines seen in the data. Based on that understanding, those committees should deploy strategies to address inappropriate variability, such as physician education, best practice sharing, distribution of physician-level performance reports, and updates to the prescribing system to limit inappropriate prescribing. The high risk drug initiatives for opioid and benzodiazepines are good examples of programs driving behavior change. Implementation and outcomes should be studied for lessons learned and application to other areas.

d. Build utilization rules into prescribing system to facilitate appropriate use.

Longer term, VA should pursue the possibility of building its formulary and clinical use guidelines into VA's prescribing system to facilitate appropriate prescribing. This will require

updates to VA's current systems, which should be made in parallel with the updates described later in this report in relation to clinical supplies and devices.

5.2 Clinical Supplies, Medical Devices, and Related Services

To improve VA's ability to both meet procurement compliance requirements and ensure timely and cost effective delivery of product to Veterans, we would recommend the following:

1. Transform and consolidate VA's entire supply chain organization.
2. Improve key enablers required to support the transformation, including IT systems, data integrity, and HR.
3. Streamline, standardize, and integrate key supply chain management processes.

Each of these recommendations is described in more detail below and largely fall into the "people, processes, systems" model, for which key success factors are briefly described for the pharmaceutical supply chain in Table 3-1.

5.2.1 Transform and Consolidate VA's Entire Supply Chain Organization

We would recommend a full organizational transformation for the VA's supply chain, which should include the following:

a. Rationalize the organizational structure by consolidating VA and VHA entities into one integrated supply chain organization that manages all VA contracting and logistical management of clinical supplies and medical devices.
b. Establish robust performance management on supply and device procurement that is focused on Veteran outcomes.
c. Develop deep category-level expertise within the organization.

a. Rationalize the organizational structure by consolidating entities into one integrated supply chain organization that manages all VA contracting and logistical management of clinical supplies and medical devices.

As a first step, VA should fundamentally restructure its supply chain organization by rationalizing and consolidating its structure. It should bring together all VA and VHA's procurement entities and those responsible for the logistics management of clinical supplies and medical devices into one integrated entity that is accountable for the performance of VA's supply chain management of those products end-to-end – from product selection, contracting, and purchasing, to inventory management, distribution, timely delivery to end users, and ultimately, value for money. This would eliminate or greatly reduce the duplication that currently exists between VA and VHA. It would also help optimize between VA's need to drive compliance with federal and VA acquisition requirements while also delivering the responsiveness and flexibility required to meet the needs of Veterans and their caregivers.

This will likely require a "clean sheet" approach for developing a blueprint of what the ideal organizational structure must be to effectively meet the needs of VA's supply chain's customers, based on a set of guiding principles, including but not limited to:

- One leader who is accountable for the end-to-end effectiveness of its supply chain related to clinical supplies and medical devices (cost, quality, efficiency)
- Governance that includes each element of the supply chain, including contracting, logistics, and program management
- Service level agreements between supporting functions (such as IT, finance, and HR), VAMCs and the supply chain organization
- Commitment to delivery against the expectations laid out in the service level agreements
- Personnel aligned by product category

VA should then develop an organizational transformation plan to get from its current state to the blueprint in a defined timeframe. Careful consideration of sequencing based on organizational readiness for new capabilities and responsibilities will be essential.

It should also be noted that only contracting for the medical supply chain was considered in this assessment. However, the organizational transformation and guiding principles outlined here should also be considered in light of other specialized contracting activities. For instance, Assessment K (facilities) identified similar issues with respect to contracting performance and facility relationships, and organizational restructuring. The specialized needs of construction and leasing activities should be considered in any transformation effort, in line with the recommendations outlined in Assessment K.

The DALC has developed a number of practices, processes, and systems that could be of value across VA and which are highlighted throughout these recommendations. VA should evaluate each of these to determine how they could be replicated and scaled across VA to enhance the performance of its supply chain. In relation to organizational structure, we would recommend focusing on DALC's integrated operating model, where contractors work shoulder-to-shoulder with buyers and logisticians, while supply chain personnel work with finance, program management, clinicians, and customers, to select products and negotiate contracts with suppliers. This integrated operating model is very different to how the rest of VA operates currently, but it could inform how the integrated organization could operate going forward.

b. Establish robust performance management of supply and device procurement that is focused on Veteran outcomes.

VA should develop a more robust performance management approach that builds upon the integrated organizational structure outlined above, and takes into account the relative contributions of each function in delivering against the supply chain organization's end-to-end objectives.

This should include clear performance expectations of each function and each role within each function, including guidelines and expectations around productivity.

In addition, VA's supply chain should develop service level agreements between itself and its end users, based both on end users' service-level expectations and what is feasible within the constraints in which VA operates. That service-level agreement should define roles and responsibilities of major functions and personnel; turnaround or delivery times and other service-related targets for core actions; customer oriented performance metrics (like customer

satisfaction scores); and communication channels to manage to the service level agreements (how feedback from customers will be received and acted upon, for example). Care should be taken however, that auditing and compliance monitoring with these agreements do not become burdensome or damage relationships further.

The DALC represents a customer-centric model that could be built upon to develop these service-level agreements. DALC personnel have frequent, direct contact with customers – internal and external. This enables the organization to respond quickly to feedback and better meet the needs of Veterans. VA should explore the genesis and evolution of this customer-centric culture and develop a plan to replicate it in the new, integrated, end-to-end supply chain organization.

Enhancing VA's performance management system will require a level of standardized data capture and reporting that is not be possible with VA's current data systems. Therefore, system upgrades and/or replacements should be considered as per the recommendation below.

Once the integrated performance management system is in place, incentives and penalties should be established to ensure supply chain functions are held accountable for their performance relative to the agreed targets. Accountability measures should be carefully sequenced and matched to ensure responsibilities align with maturity of the new organization's capabilities.

c. Develop deep category-level expertise within the organization.

The DALC has successfully developed technical and contracting personnel with deep category expertise. Those individuals play a key role in product selection, contracting, and purchasing decisions. This is becoming standard practice in other high-performing health care organizations and has been standard practice beyond health care for many years. As VA restructures and reforms its supply chain organization, it should clearly lay out a plan for how category-level expertise will be built into the organization and how that expertise will be used. This may require that VA takes a more structured approach to professional development and/or considers recruiting category-level experts from outside VA.

In addition, we would recommend organizing the strategic sourcing functions of VA's new supply chain organization (for example, product selection, contracting, purchasing) by product category, to maximize the benefit of category-level expertise. This would likely result in higher levels of sub-specialization at the national level given the volume of purchases and value of each contract, with lower levels of specialization at the local level. For example, at the national level, the volume of items purchased and the potential for savings would likely justify investment in individuals with deep specialty-level expertise (for example, cardiac rhythm management devices). At the regional level, the specialty-level expertise may need to be rolled up into higher-level categories (like surgical implants). In that way, local specialists, service line leaders, and leaders of product standardization committees could have a more constructive and peer-like dialog with their strategic sourcing colleagues about product and supplier selection and subsequent contracting and purchasing.

5.2.2 Improve Key Enablers Required to Support the Transformation, Including IT Systems, Data Integrity, and HR

VA currently lacks critical enablers that will be required to achieve the level of transformation outlined above. Therefore, we would recommend VA does the following:

a. Update or replace supply chain IT systems to make them fit for purpose.
b. Standardize supply chain data and overlay user-friendly interfaces that enable robust and timely decision making.
c. Revise VA's approach to supply chain talent management.

a. Update or replace supply chain IT systems to make them fit for purpose.

VA's current supply chain management technology was developed in-house several decades ago; VA personnel report that it was considered to be state of the art when it was implemented. However, technology has evolved and the systems used by health systems across the country have evolved in concert. The software used by VA to manage its supply chain is no longer fit for purpose and needs to be upgraded and/or replaced.

In addition, health systems rarely claim that software development and IT implementation are their core competencies. As such, the majority of health systems around the country use third party software to manage their supply chain and rely on outside agencies to support the implementation of that software.

Therefore, we would recommend that VA carefully monitors the pilot and plans for SOARD given the track record. If there is evidence that the program is not going to meet VA's needs, VA should further evaluate the options that are available from third party software and IT companies to see if any of those would meet its needs. Any evaluation should include an assessment of the system's functionality relative to VA needs, its ability to integrate with existing systems, and its scalability.

As VA evaluates IT systems and data formats, VA should also ensure that any decisions are made in line with VA's overarching IT strategy and in full consideration of the interoperability and interdependencies between supply chain, financial, and clinical systems.

Ideally, VA would move towards a fully integrated system whereby, for example, product ordering and delivery is automated based on utilization; utilization automatically adjusts the value of inventory in the financial system; and any product that is used for a given patient is automatically captured in the clinical system. The VA's systems are a long way from this level of functionality and automation at the current time.

b. Standardize supply chain data and overlay user-friendly interfaces that enable robust and timely decision making.

VA's lack of data standardization is a major impediment to effective monitoring and management of its supply chain. Achieving data standardization across the enterprise should be a high priority.

As a first step, VA should evaluate near-term options to standardize the critical data elements to enable some level of cross comparability. This should include establishing a central item master file that contains standardized nomenclature and numbering of the most commonly used items across VA. It could also include mechanisms to ensure that any updates to nomenclature and numbering cannot be made by personnel in the field, and only by authorized personnel who manage the item master. In addition, VA should work to limit or prevent free text entry into any field by, for example, establishing drop down menus from which users can select the category of best fit.

Longer term, VA should fully standardize and centralize data management across VA. This could include moving to an international data standard such as GS1 or an internally developed system. VA should then develop a roadmap to consolidate databases based on this centralized and standardized data system.

In addition, VA's contracting system should be modified such that contracting staff cannot change dates in the system. Data on contracting timeliness should be automatically captured and reported and should reflect a true picture of contracting's performance relative to the agreed standards to enable fair and accurate performance management.

c. Revise VA's approach to supply chain talent management.

VA should evaluate whether current grade classifications are consistent and fairly applied across supply chain personnel given their current roles, responsibilities, workload, and criticality in providing service to Veterans.

VA should also explore waivers on federal or VA-imposed recruitment restrictions if positions are not filled within a pre-defined time period. In that way, VA may get access to a larger pool of highly-talented professionals who would otherwise have been deprioritized under the current recruiting restrictions.

VA should also continue to work on building expertise within the supply chain workforce, as other high performing organizations have done. In particular, VA supply chain leaders should establish clear career paths within supply chain management to help retain high caliber talent by providing opportunities for them within the organization. VA should also create opportunities for specialization such as category expertise described below.

The assessment team would also recommend fully implementing the recommendations laid out in Assessment L.

5.2.3   Streamline, Standardize, and Integrate Key Processes

Inefficiencies and lack of standardization in key processes inhibit VA's ability to be sufficiently flexible and responsive, and may also have led to some of the workarounds and practices that have developed, particularly around purchasing. Therefore, we would recommend that VA does the following in relation to specific processes:

a. Expedite product selection and standardization in key product categories.
b. Rationalize contracting requirements wherever possible and provide VAMC-level staff with access to contracting status.

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c. Standardize and simplify purchasing processes by automating wherever possible, linking inventory management systems to ordering systems, and driving greater use of electronic order entry.

d. Identify, collect data from, and propagate innovations across VA.

a. Expedite product selection and standardization in key product categories.

VA should develop an approach to prioritize categories and/or products for standardization and an approach to select specific products that integrates the national Standardization User Group, VISN standardization committees, and Clinical Product Review Committees.

To do this, VA should build upon learnings from VA's Pharmacy Benefits Management organization's Pharmacy and Therapeutics committee structure, whereby VA has developed an integrated cascade of testing, review, feedback, and decision making related to selection and use of pharmaceuticals.

As with pharmaceuticals, utilization of products on the standardized list should be monitored and mechanisms established to drive compliance (like incentives and penalties). Physician engagement and a data driven approach is essential to Pharmacy's success. CPRC and VISN standardization committees should be tightly integrated with each other and the National Standardization Committees through cascading and overlapping representation (as in P&T committees) and participation should be made a core responsibility of clinicians.

b. Rationalize contracting requirements wherever possible and provide VAMC-level staff with access to contracting status.

The assessment team believes that process mapping has been underway for some time to identify bottlenecks and areas for improvement in contracting but that findings and recommendations have not yet been delivered to VA. VA should expedite this process.

However, it should also look more holistically at all the bureaucracy and regulations related to contracting and purchasing to identify opportunities to make the process more user-friendly for contracting personnel and the turnaround time faster for supply chain customers. It is likely that the process can be streamlined (fewer steps) and bureaucracy reduced (less work at each step). At the very least, it is likely that workload can be better tailored to the complexity of the contracting need and that contracting status could be more transparent to customers. To that end, VA should do the following:

- Develop a database of previous contracts and make it readily available and easily searchable so contracting personnel can avoid unnecessarily duplicative work.
- Develop a mechanism to aggregate contracting requests to identify opportunities where VA should develop a national contract. This would reduce workload on local contracting personnel and potentially enable VA to achieve more competitive pricing on frequently bought items.
- Enable customers to view the status of their contracting request. This does not necessarily mean that customers need read-only rights to eCMS as this could lead to inappropriate access to sensitive information. Instead, VA should evaluate whether it

might be possible to layer onto eCMS software that might provide high-level visibility into where each request is against key milestones, similar to how online shopping vendors and delivery companies provide their customers with information on order and delivery status.

c. Standardize and simplify purchasing processes by automating wherever possible, linking inventory management systems to ordering systems, and driving greater use of electronic order entry.

VA should streamline and update its electronic ordering system to encourage VAMCs to use it and to ensure better capture and tracking of purchasing data. VA should also build its contract catalog, usage hierarchy, and current pricing into the system so that orders are automatically placed on the correct contract and at the best price available to VA.

VA should establish mechanisms to automate the re-ordering of commonly used items based on electronic utilization triggers (like point-of-use technologies).

VA should explore opportunities to have specialized services, such as components of inventory management, provided by third parties whose core competency it is to provide such services. In particular, VA should explore the opportunity to have their MSPV(s) support inventory management across VA.

An internal example that could be leveraged is the DALC's web-based remote order entry system. It contains an integrated catalog with up-to-date contracts and prices, and it prevents inappropriate off-contract purchasing (if a contract is already in place, for instance). VA should explore whether this system or an off-the-shelf equivalent could support VA's desire to drive more on-contract purchasing through its prime vendor, improve compliance with purchasing regulations, and streamline the purchasing process for end users.

d. Systematically identify, collect data from, and propagate innovations across VA.

This report highlighted only a sub-set of innovations that are currently taking place across VA. However, among the innovations that were observed, several were relevant for the challenges VA is facing more broadly. Therefore, VA should build upon the organization's ability and willingness to experiment by establishing an approach to more systematically capture, codify, prioritize, and if appropriate, scale these innovations across VA.

Mechanisms to collect and propagate best practices could include a more robust two-way cascade of standardization committees discussed above. Lessons from the pharmaceutical committees should be leveraged, possibly including a national level Chief Logistics Officer Committee analogous to the Pharmacy Executive Committee, a national file and information site, and other activities such as those practices described in section 3.2.3.

5.3 Implementation Considerations

As previously noted and in alignment with Section 201 of the Choice Act, our recommendations were developed independently of VHA leadership to ensure an objective perspective. As a result of this approach, it will be incumbent upon the Commission on Care to further refine the

recommendations and collaborate with VHA and other stakeholders to incorporate these recommendations with current and planned initiatives.

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Appendix A   Detailed Methodology

To ensure a broad range of sources, our assessment draws upon national data sets, national surveys, expert interviews, and visits to select VAMCs across the country, at which we conducted interviews, focus groups, and observations.

A.1   Data Sources

It should be noted that we did not conduct an audit to validate the accuracy of data that was provided, although, where applicable, we did note potential data integrity issues highlighted during site visit interviews.

A.1.1   Pharmaceuticals

- **Purchase order data**: (VA, 2012-2014) Data for prime vendor purchases was provided for calendar year 2012 – 2014 at the line item level for the entire VA system. Data fields included:
    - National drug code (NDC) number, active pharmaceutical ingredients, form, dosage, and unit for each purchase
    - Package size based on manufacturer units (number of pills in package or milliliters in a vial, for example)
    - Package size based on the prime vendor's selling units, but may represent more the typical unit of use (this may differ from manufacturer units, particularly for injectable forms)
    - VISN and station where purchased
    - VA class code
    - Average Wholesale Price (AWP) downloaded from Medi-Span® (a unit of Wolters-Kluwer), converted, where necessary, to present the Medi-Span AWP values consistent with the sizes of the prime vendor's selling units.
    - Total cost, units, contract number, and contract type from which prime vendor calculated price (such as Big 4, FSS, national contract, or WAC based generic pricing)
    - Flag field for whether purchase came from an open market account (note that some on contract purchases may be marked open market, and vice versa, due to late notifications or credit/rebills)
- **Prime vendor reports**: Standard prime vendor service reports were provided and include the following:
    - Total pharmacy purchases (both spend and volume) from the prime vendor by quarter for brand, generic, and over-the-counter drugs overall and by channel (e.g., CMOP versus VAMC)
    - Overall service level (e.g., fill rates) by channel
    - Customer service activity by type and by channel

- **PBM reports**: The VA PBM team provided standard reports that are currently used to manage the pharmaceutical supply chain. Reports included:
  - Drug volume and cost per unique patient and per 30 day prescription (VA, 2010-2014b)
  - Opioid utilization, opioid drug testing, and opioid + benzodiazepine rates by VAMC and VISN (VHA Pharmacy Benefits Management, 2015b)
  - Dispensing rates by CMOP and VAMC window pharmacy (VHA Pharmacy Benefits Management, FY2014)
  - Formulary compliance metrics (e.g., percent of prescriptions on-formulary, volume of non-formulary requests) (VA, FY2014b)

- **CMOP operational data**: (VA, 2015c) Core operational metrics were provided for each CMOP for FY2014, including:
  - Throughput times
  - Volume of prescriptions processed
  - Cost per prescription processed
  - Mailing cost per prescription sent
  - Error rates

- **Data calls from site visits**: VAMC-level data was collected during each site visit for metrics that were not readily available through system-wide data pulls
  - Minutes from recent Pharmaceuticals and Therapies (P&T) committee meetings
  - Annual volume of prescriptions returned to the VAMC by the CMOP
  - Annual volume of prescriptions written by an external Choice Act provider
  - Total pharmaceutical spend on purchase cards

- **National Average Drug Acquisition Cost (NADAC):** (Centers for Medicare and Medicaid Services, n.d.)Data for the weekly survey of community pharmacies was downloaded from the Centers for Medicare and Medicaid Services.

- **Wholesale Acquisition Cost (WAC) data:** Quarterly price data obtained from PriceRx was obtained for branded and generic drugs.

A.1.2   Clinical Supplies and Medical Devices

- **Purchase order data:** (VA, FY2014a) All obligation data from the Integrated Funds Distribution, Control Point Activity, Accounting And Procurement (IFCAP) system was provided for FY2014 – March FY2015 at the line item level for VISN 1, 8, 21, 22, and 23 (IFCAP Table 442); These five VISNs were chosen because they represented a geographically diverse set and covered the majority of medical and surgical prime vendors. Received data contained fields for (not necessarily complete):
  - Purchase order information including, date, PO number, method of processing (Purchase card, Invoice/requisition, and so on), supplier, total amount, cost center,

budget object code, financial control point, requesting service, and number of line items

  o Line item data including: contract number, vendor stock number, manufacturer stock number, long item description, NIF number, IMF number, total line cost, units, and unit size

- **Medical and surgical supplies data with an item master file number:** (VA, FY2015) Supplemental clinical supplies data (budget object code 2632) was provided for the entire system for FY15 transactions through February if they contained an item master file number, were charged to four relevant cost centers, and were not pharmacy fund control points. Data contained additional fields not present in full IFCAP data, including:

  o Source code (Federal supply schedule, Decentralized VA schedule, Open market, or some combination of the previous, for example)

  o Local procedure code which gave justification for certain purchases (like open market purchases)

- **Prosthetics order data**: (VA, FY2014c) Data was provided for FY2014 at the individual order level for the entire VA system (IFCAP Table 660) with any patient identifying information removed

- **Inventory days on hand**: (VA, 2015f) Monthly average metrics on clinical supplies inventories by inventory point were provided from 10/1/2014 through 1/31/2015

- **Data calls from site visits**: VAMC-level data was collected during each site visit for metrics that were not readily available through system-wide data pulls

  o **Denver Acquisition and Logistics Center***: Cost savings reports, performance metrics (VA, 2015g), integrated project team charters and templates

  o **Acquisition and logistics metrics books***: (VHA, 2015c; VHA, 2015a) (VHA, 2015c; VHA, 2015a) Monthly metrics reports and metric definitions

  o **eCMS transmission communications**: (VAMC site visit, 2015) One facility visited by the team provided a log of all status transmissions for procurement requests from contracting (February 2014 – February 2015). It included the 2237 number, timestamp, status of transmission (Sent, Return, Cancel), and limited comments on cancellation or returns by contracting.

  o **Logistics organization FTEs and examples of downgraded positions**

- Publically available data: Relevant VA data was downloaded from various Federal government websites for analysis

  o **Contracting Catalog Search Tool (CCST):** (VA National Acquisition Center, 2015) Accessed on 3/4/2015 to analyze contracts and pricing information for clinical supplies and devices

  o **Federal Procurement Data System (FPDS):** (VA Contracts in the Federal Procurement Data System, 2010-2015) Contract information was downloaded for the Department of Veterans Affairs

A.2 Data Analysis

A.2.1 Pharmaceutical Pricing Analysis

Comparison of overall prices paid to industry: Only tablet and capsule form drug purchases were considered. Average price per pill (total cost divided by pills purchased; pills calculated as units multiplied by manufacturer package size) were calculated from VA prime vendor purchase data for the month of April 2014 at the NDC level separately for generic and branded products. NADAC prices for the month of April 2014 were cross-matched to VA data using the NDC number. Drugs whose prices changed in the month of April according to NADAC were excluded from the analysis. All prices were indexed to the AWP included in the prime vendor purchase data. The unweighted average price is reported.

Prices paid by VA on different contracting vehicles: Average price per pill or pill equivalent (as calculated in previous paragraph) were determined for all VA products purchased through different pricing types (as labeled in the prime vendor purchase data) in CY2014. For products purchased through more than one pricing type, prices were indexed to the FSS average cost paid. Brand and generic purchases were considered separately and pricing instruments with less than nine data points were excluded (blanket purchase agreements and generic FSS restricted contracts, for example). The median indexed price was reported.

A.2.2 Vendor Name Format Reduction

All vendor names were extracted from prosthetic purchase data for FY2014 and duplicate entries were removed. The unique list, containing 23,725 unique name formats, was matched with itself using the Microsoft Excel Fuzzy lookup plugin to create 33,799 pairs at a 95 percent confidence level. These pairs were then clustered into unique sets using an automatic algorithm that joined pairs based on a common member. These sets were then manually inspected and grouped to form 2,661 sets, leaving 9,523 vendor formats from the initial list unpaired.

A.2.3 Price Arbitrage Analysis

Medical and surgical supplies equivalent item analysis: Purchase order and line item data from VISN 8 and VISN 22 were provided separately for each facility and combined based on the station number and database row id (VistA Table 442). Combined data was filtered for budget object code 2632 and CY2014, and then manually inspected to remove non-medical and surgical supply spend. The cleaned data was then constrained to the six months from July 2014 to December 2014 to negate the impacts due to price inflation on product SKUs. A proprietary algorithm was used to identify equivalent products, largely based on manufacturer or vendor stock numbers and unit size information within the file.

Medical devices equivalent item analysis: Prosthetic appliance request data (Table 660) was filtered for relevant medical device spend using the National Prosthetics Patient Database (NPPD) code (Artificial legs - 200*, Artificial arms - 300*, Orthosis/Orthotics - 400*, Shoes/Orthotics – 500*, Sensori-neuroaids – 600*, Oxygen supplies – 800D, Respiratory supplies – 800H, Surgical implants – 960*, Biological implants – 970A) within VISN 8 and VISN

22. Requests were matched to IFCAP purchase order data using the transID and station codes to reconstruct the PO number. Lines with no manufacturer or vender stock number were excluded from analysis (68 percent of the data by spend). Remaining data were matched similarly to the medical and surgical supplies analysis.

Arbitrage opportunity calculation: A list of price points were identified for each equivalent purchase. As the lowest price point is not always achievable for a number of reasons (such as temporary price reductions on expiring stock), a conservative estimate of minimum price achievable was calculated by taking the lowest price to fall within the average price point and average price point divided by a sensitivity factor (150 percent, 200 percent). If no price point fell within that range (such as if there were only two, widely separated price points) no arbitrage opportunity was assigned for that product. Total arbitrage opportunity was calculated as the difference in price paid from the arbitrage price, multiplied by the volume paid at the price point considered.

A.3   Site Selection

To increase consistency and generalizability of findings, assessment teams have coordinated our sampling methods to the extent possible while ensuring sampling the methodology reflected assessment-specific considerations. We have selected a core set of VAMCs to visit, which are representative of the VAMC system as a whole across critical facility demographic and performance outcome metrics.

The VAMC site selection process followed the following steps:

1. **Stratification of facilities:** Stratified random sampling, with VISN as strata, was used to select an initial long-list of facilities. To reduce sample size, a subset of VISNs was randomly selected, from which one of the two initially selected sites was randomly de-selected.

2. **Review of distribution:** Chi-square testing was used on each of the key facility profile and performance variables to ensure the distribution of scores in the sample is representative of the population. Variables were chosen to reflect anticipated drivers of facility performance, and included: VISN, rurality, adjusted admissions, complexity level (on VHA rating scale), adjusted LOS, patient satisfaction, cumulative access score, and facility age

3. **Refinement of facility selection:** Initial facility list was vetted with internal and external SMEs and augmented as needed, to include facilities that are considered critical for inclusion (e.g., a Polytrauma Center, facilities with innovative tools/practice) and ensure that all selected facilities had the range of services being assessed.

This method resulted in a sample of 25 facilities that is representative across each of the criteria used in selection.

A.3.1 VAMC Site Selection Variables

Variables were selected based on criteria relevant to each assessment area and assumed impact on facility performance. Variable definitions are given below:

- VISN: used VHA Support Center (VSSC) classification of VAMCs by VISN

- Rurality: used VSSC 2014 categorization of facilities as rural or urban

- Adjusted admissions: relied upon American Hospital Association (AHA) 2014 data (American Hospital Association, 2014). Adjusted admissions = Total admissions *(Admissions*(OP revenues/Total revenues)). VHA reports revenue data (gross billed revenue) to AHA to calculate this metric. Adjusted admissions scores were divided into quartiles, with the middle quartiles grouped, to produce low (<2881.75), medium (2881.75-6081.00), and high (>6081.00) adjusted admissions categories

- Complexity level: used VSSC 2014 categorization of facility complexity. Level 1 facilities were grouped, to produce selection criteria of high complexity (levels 1a, 1b, and 1c), medium complexity (level 2), and low complexity (level 3).

- Adjusted LOS: used VA SAIL data. As only Q3 FY2014 was available to us at the time of selection, we were only able to use that quarter's results. LOS data was divided into quartiles, with the middle quartiles grouped, producing three variables: low LOS (<4.19), medium LOS (4.19-5.14), and high LOS (>5.14)

- Patient satisfaction: used VA SAIL data. As noted above, as only Q3 FY2014 was available to us at the time of selection, we were only able to use that quarter's results. Patient satisfaction data was divided into quartiles, with the middle quartiles grouped, resulting in low (<249.83), medium (249.83- 264.02), and high (>264.02) satisfaction categories

- Cumulative access score: used VA SAIL data. As noted above, as only Q3 FY2014 was available to us at the time of selection, we were only able to use that quarter's results. The eight access scores included in the VA Q3 FY2014 SAIL report were assigned quartiles and added together to produce a single cumulative access score, which was then divided into quartiles. This process resulted in cumulative score quartile categories of low (<17), medium-low (17-20), medium-high (20-23), and high (>23) access

- Facility age: relied upon VSSC 2014 operational date data for each VAMC (U.S. Department of Veterans Affairs, 2014). Operational dates were divided into quartiles, with the middle two quartiles grouped, producing categories of early (prior to June 4, 1929), medium (June 4, 1929 – April 7, 1952), and recent (after April 7, 1952) establishment

In several instances, variable data was not available for each VAMC. To ensure that these cases were not excluded from the sample, we scored absences with -1 and included the -1 score as a category for each selection criterion where there were absences.

A.3.2 VAMC Core Site Selection Representativeness

Results for Fisher's exact test demonstrate that the sample is not significantly different from the population of VAMCs (Table A-1):

Table A-1. Fisher's Exact Test Results

numerical_complexity_level_variable (p-value for Fisher's Exact Test: 0.79)					
	Population	**% pop**	**Selected**	**% Selected**	**Difference**
-1	2	1%	0	0%	-1%
1	88	59%	17	68%	9%
2	32	21%	5	20%	-1%
3	28	19%	3	12%	-7%
Total	150	100%	25	100%	
rurality_numerical_variable (p-value for Fisher's Exact Test: 1.0)					
	Population	**% pop**	**Selected**	**% Selected**	**Difference**
0	28	19%	4	16%	-3%
1	122	81%	21	84%	3%
Total	150	100%	25	100%	
adjusted_admissions_quartile (p-value for Fisher's Exact Test: 0.59)					
	Population	**% pop**	**Selected**	**% Selected**	**Difference**
-1	22	15%	2	8%	-7%
adjusted_admissions_quartile (p-value for Fisher's Exact Test: 0.59)					
1	32	21%	6	24%	3%
2	64	43%	9	36%	-7%
3	32	21%	8	32%	11%
Total	150	100%	25	100%	
adjusted_los_quartile (p-value for Fisher's Exact Test: 0.50)					
	Population	**% pop**	**Selected**	**% Selected**	**Difference**
-1	39	26%	4	16%	-10%
1	28	19%	3	12%	-7%
2	55	37%	12	48%	11%
3	28	19%	6	24%	5%
Total	150	100%	25	100%	

adjusted_patient_satisfaction_quartile (p-value for Fisher's Exact Test: 0.6)					
	Population	**% pop**	**Selected**	**% Selected**	**Difference**
-1	39	26%	4	16%	-10%
1	28	19%	7	28%	9%
2	55	37%	9	36%	-1%
3	28	19%	5	20%	1%
Total	150	100%	25	100%	
cumulative_access_score_quartile (p-value for Fisher's Exact Test: 0.54)					
	Population	**% pop**	**Selected**	**% Selected**	**Difference**
-1	32	21%	3	12%	-9%
1	33	22%	9	36%	14%
2	27	18%	4	16%	-2%
3	33	22%	4	16%	-6%
4	25	17%	5	20%	3%
Total	150	100%	25	100%	
operational_date_quartile (p-value for Fisher's Exact Test: 0.72)					
	Population	**% pop**	**Selected**	**% Selected**	**Difference**
1	38	25%	5	20%	-5%
2	74	49%	12	48%	-1%
3	38	25%	8	32%	7%
Total	150	100%	25	100%	

Appendix B   Previous Assessments

B.1   Summary of Previous Assessments

Table B-1. Summary of Major Themes and Findings from Select Previous Assessments Relevant to the VA's Pharmaceutical Organization

Year	Title	Agency	Main findings and recommendations
2002	VA Health Care: Expanded Eligibility Has Increased Outpatient Pharmacy Use and Expenditures	GAO	▪ After VA implemented eligibility reform in 1999, the use of the pharmacy benefit by Priority 7 Veterans increased from 11 million 30-day equivalents in 1999 to 26 million in 2001 and resulted in a doubling of net pharmacy expenditures for that population
2002	VA and Defense Health Care: Increased Risk of Medication Errors for Shared Patients	GAO	▪ Patients that are receiving care from both DoD and VA providers face an increased risk of medication errors, mostly due to the presence of separate, uncoordinated information and formulary systems ▪ There is additional risk due to lack of inter-accessibility between medical record systems and resulting inability to automatically check for drug allergies and drug-drug interactions ▪ Joint care facilities are implementing changes to address this increased risk, which include: ○ Creation of joint P&T committees ○ Increasing accessibility to EMRs ○ Creating a platform to support electronic (rather than handwritten) prescriptions for all providers ▪ Recommendations included creating a standard platform for sharing electronic information between systems, developing a comprehensive system to check drug interactions, and establishment of a joint P&T committee at all sites
2005	Mail Order Pharmacies: DoD's use of VA's mail order	GAO	▪ DoD could achieve savings of ~$1.39 per prescription in drugs costs if it used the

Year	Title	Agency	Main findings and recommendations
	pharmacies could produce savings and other benefits		VA's CMOPs to dispense its outpatient refill prescriptions ▪ Non-financial benefits from this arrangement could also be realized including reduced traffic / congestion at military treatment facilities, shorter pharmacy waiting times for active servicemembers, and increased satisfaction resulting from the VA's accurate and timely distribution of pharmaceuticals
2010	VA Drug Formulary: Drug Review Process is Standardized at the National Level, but Actions are Needed to Ensure Timely Adjudication of Nonformulary Drug Requests	GAO	▪ According to the VA PBM, reviews for the majority of the drugs that VA considered adding to its formulary in 2008-20009 were completed within a year of FDA approval ▪ There is variability at the VISN and VAMC level in the non-formulary drug request process is handled ▪ VA requires that non-formulary drug requests are handled within 96 hours, but VA is unable to determine the number of requests that exceed this time limit due to limitations in data collection and process differences
2012	Review of open market purchases under VA's pharmaceutical prime vendor contract	OIG	▪ Policy changes instituted in November 2011 did not prohibit open market purchasing, but instead led to decreased visibility into purchasing practices ▪ Major recommendations to VA included: o Block drug purchases for items where generic products are on contract o Require the prime vendor to update its ordering system to more effectively interface with the VA's CMOP ordering system o Ensure VA facilities purchase all products available on FSS at or below FSS pricing if not purchased through prime vendor

Year	Title	Agency	Main findings and recommendations
			o Retrain ordering officers on allowable practices and revoke warrants from non-compliant officers
2012	DOD and VA Health Care: Medication Needs during Transitions May Not Be Managed for All Servicemembers	GAO	▪ The DoD does not have a formal policy for transitioning medication needs for all servicemembers ▪ The current DoD medical assessment has gaps compared to best practices for medical transitions (e.g., no plan is developed for how to obtain medications during the transition, medication lists are not provided at point of discharge) ▪ While VA and DoD do have programs for a select group of servicemembers (e.g., individuals with complex care needs), the programs are not available at all facilities ▪ GAO recommended that VA and DoD identify and implement best practices to improve continuity of care and reduce potential for misusing or discontinuing psychiatric or pain medications
2013	Prescription drugs: Comparison of DoD and VA Direct Purchase Prices	GAO	▪ For a sample of 83 drugs purchased by both VA and DoD in Q1 2012, the average unit price for VA was 31.8 percent lower than the DoD's price. For a subset of generic drugs, VA was 66.6 percent lower than the DoD. ▪ Differences in prices paid were related to drug utilization differences, formulary design, price and rebate negotiations by both organizations,

**Table B-2. Previous Assessments of Medical/Surgical Supplies
and Devices Considered for This Report**

Year	Title	Agency	Main findings
1999	Audit of VA Medical Center Management of Medical Supply Inventories	OIG	▪ VHA holds too much inventory on hand, in large excess over 30 days. Reasons for high levels: Improper stock levels set ▪ Normal stock levels not reviewed and updated ▪ Quantities on hand are not monitored ▪ Reductions in demand not effectively managed
2007	Audit of the Acquisition and Management of Selected Surgical Device Implants	OIG	VHA could reduce its procurement costs for aortic valves, coronary stents, and thoracic grafts and should strengthen key SDI management controls in the areas of inventory, patient privacy, and recalls
2008	Audit of VHA's Government Purchase Card Practices	OIG	VHA purchase card controls were generally effective at preventing or detecting improper or fraudulent medical facility purchases. All purchases reviewed (707) were for medical facility needs, although price reasonableness could not be documented for 126. Of the 126 transactions, 65 were for open market purchases and cardholders did not maintain documentation showing multiple quotes were sought or justification for using non-competitive sourcing.
2009	Audit of VHA's Undelivered Orders	OIG	Internal controls to identify invalid undelivered orders need improvement. There was inadequate follow up by Fiscal Service staff because of policy to follow up after the order's end-date rather than after 90 days of inactivity. Fiscal Service staff did not perform reconciliations between FMS and source documents
2009	Audit of Veterans Health Administration Open Market Medical Equipment and Supply Purchases	OIG	VHA ineffectively uses FSS for medical equipment and supply purchases, and it has weak internal controls over open market purchases. Found $8.2M opportunity if open market purchases were made on existing FSS contracts.

Year	Title	Agency	Main findings
2010	Spending for and Provision of Prosthetic Items	GAO	VA spending for prosthetic items varied both over and under budget estimates from FY2005 through FY2009. Analysis of trends is limited for budget purposes and relies mostly on local services to identify more up-to-date estimates. Provision of products to Veterans met performance goals, although timeliness measures had flaws that did not capture the full time it may take for a Veteran to receive their prosthetic appliance. Seven out of 21 VISNs had centralized PSAS management allowing some to share resources, reduced competition with other services for staff resources at VAMCs, and freed local PSAS staff from some administrative tasks to focus more time on meeting Veteran needs.
2010	Inadequate Controls over Miscellaneous Obligations Increase Risk over Procurement Transactions	GAO	In FY2007, VHA used $1.4 billion in miscellaneous obligations to acquire pharmaceuticals and hospital supplies when specific quantities and time frames are uncertain. GAO found inadequate controls and oversight which increased the risk of fraud, waste, and abuse for miscellaneous obligations. This included lack of segregation of duties and supporting documentation.
2011	Audit of Veterans Integrated Service Network Contracts	OIG	Changes instituted in 2009 were not effective: 1) VA did not follow the new review processes consistently; 2) VA and VHA acquisition management did not provide adequate guidance and oversight on IOP implementation
2011	Weakness in Policies and Oversight Governing Medical Supplies and Equipment Pose Risks to Veterans' Safety	GAO	Selected requirements for tracking and reprocessing medical equipment are inadequate to help ensure Veterans' safety
2011	Protests Concerning Service Disabled Veteran Owned Small	GAO	GAO determined that the Veterans Benefits, Health Care and Information Technology Act of 2006 requires VA to set aside procurements,

Year	Title	Agency	Main findings
	Business Preferences Sustained		even if they are on FSS, for SDVOSB concerns if the contracting officer has a reasonable expectation of receiving offers from two or more SDVOSB concerns and that the award can be made at a fair and reasonable price
2012	Audit of Prosthetics Supply Inventory Management	OIG	▪ Inefficiencies from using two inventory systems ▪ Inadequate staff training on inventory management principles and techniques ▪ Insufficient VHA Central Office and VISN oversight of VAMC inventory management practices ▪ Inadequacies in the VHA Inventory Management Handbook
2012	Audit of the Management and Acquisition of Prosthetic Limbs	OIG	VHA overpaid prosthetic limb vendors by $2.2 M (4 percent) in FY2010 largely because vendor invoice included higher prices than quoted - improved review by Contracting Officer's Technical Representative was needed Additionally, contracting practices were variable between VISNs, including negotiation practices and interpretation of guidance on the number of vendors to establish contracts with
2012	Strategic sourcing: Improved and Expanded Use Could Save Billions in Annual Procurement Costs	GAO	DOD, DHS, DOE and VA accounted for 80% of $537 billion in federal procurement spending (FY2011), but only 5 percent was strategically sourced. VA spent 1.4 percent of $17.4 billion in FY2011 through strategic sourcing, and had no utilization targets. In response to proposal from VHA, VA has committed to hiring 150 FTE to establish commodity management teams to identify department wide strategic sourcing opportunities and develop improved requirements packages. VA also cites lack of strategic sourcing expertise and cited a training program to address this challenge
2012	Audit of Savings Reported Under the Office of Management and Budget's	OIG	VHA inaccurately report $710 million (65 percent) of its savings target under the OMB acquisition savings initiative for its FY2010-11 plan. The majority of savings were to come from

The views, opinions, and/or findings contained in this report are those of the assessment team and should not be construed as an official government position, policy, or decision.

Year	Title	Agency	Main findings
	Acquisition Savings Initiative		consolidating contracting using VISN, regional, and national contracts; increased competition for contracts; and by canceling Army Corps of Engineers contracts and using VHA's in-house contracting resources. $562 million were not reportable under OMB guidance because new actions (such as negotiating more favorable pricing or improving contractor performance) were not taken on existing contracts since FY2008. A further $129 M did not have supporting documentation (including $107 from PBM). VHA did not issue appropriate guidance or provide oversight for reporting savings
2013	VHA Has Taken Steps to Address Deficiencies in Its Logistics Program, but Significant concerns remain	GAO	VAMCs and networks have partially complied with new VHA requirements to address deficiencies in its logistics program. VHA has additional efforts underway to further improve its logistics program, but they face uncertainty about implementation.
2014	Oversight of Tissue Product Safety	GAO	Poor inventory management practices challenge VA's ability to track product recalls. Systems are inadequate and contain accuracy issues that make searching inventories for products difficult.

B.2 Key Questions to Guide Assessment Approach

To ensure that a comprehensive assessment of the VA pharmaceutical supply system was achieved, a series of guiding questions were developed and tested with supply chain experts. These questions are summarized below in (Table B-3, Table B-4).

Table B-3. Key Questions for Assessment J

Purchasing	- How do the VA's drug costs compare to industry benchmarks? - How effectively does VA use group purchasing arrangements (e.g., percent of purchases made through open sources, percent of purchases on-contract)? - What are the roles of and relationships between national, regional, and local purchasing groups? - How is the value of new drugs assessed by VA and how does that compare to industry best practice?

Distribution	▪ How efficient and effective is the VA's drug distribution, inventory management, and mail-order pharmacy relative to standards? ▪ How often do stock-outs or shortages occur and what does VA do to prevent them? ▪ To what degree is shrinkage, wastage, expiration an issue, and why?
Use	▪ How does VA compare to industry benchmarks on key utilization metrics (e.g., formulary compliance rate, generic dispensing rate, annual drug spend per patient)? ▪ How do the VA's policies, practices, and processes impact those performance metrics (e.g., formulary development and override policies, therapeutic interchange)? ▪ What is the level of Veteran satisfaction with the current VA pharmaceutical system?
Cross-cutting	▪ How is the pharmacy division structured and resourced? ▪ How does the structure, membership, operating model, and bylaws of the pharmacy and therapeutics committee(s) compare to industry best practice? ▪ Who is accountable for purchasing decisions?

Table B-4. Guiding Questions for the Assessment of VA Purchasing, Distribution and use of Clinical Supplies and Devices

Purchasing	▪ How do the VA's supplies and devices costs compare to industry benchmarks? ▪ How effectively does VA use group purchasing arrangements? ▪ What are the roles of and relationships between national, regional, and local purchasing groups (e.g., feedback loop from local groups to national groups)? ▪ How is the value of new supplies and devices assessed and how does that compare to industry best practice?
Distribution	▪ How efficient and effective is the VA's supplies distribution and inventory management? ▪ How often do stockouts / shortages occur and what can be done to prevent them? ▪ To what degree is shrinkage, wastage, expiration an issue, and why?

Use	▪ How does VA compare to industry benchmarks on key utilization metrics (e.g., supplies spend per patient)? ▪ How standardized are utilization practices across the VA? ▪ How does the VA's policies, practices, and processes key performance metrics?
Cross-cutting	▪ Where are decisions around supplies made and who has accountability for those decisions (e.g., new product introductions, inclusion in standardized care pathway)? ▪ How do VA systems, processes and talent management support a Veteran's care with respect to delivering needed clinical supplies, devices and services?

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Appendix C   Bibliography

American Hospital Association. (2014). AHA Annual Survey Database. Retrieved 2014, from www.aha.org

American Pharmacists Association. (2015). Healthcare Industry Outreach Interviews.

Blumenthal, D., & Herdman, R. (2001). *Description and analysis of the VA national formulary.* Washington DC: National Academy Press.

Brennan, T. A., Shrank, W., Polinski, J., Cohan, S., Stenta, J., Chalker, L., & Crawford, A. (2014). *Prescription drug trends in health exchange plans: January - September 2014.* CVS Health. Retrieved from http://www.cvshealth.com/sites/default/files/Exchanges_White_Paper_Final.pdf

Bruen, B., & Young, K. (2014, December). *What drives spending and utilization on Medicaid drug benefits in states?* Retrieved from The Kaiser Family Foundation: http://kff.org/medicaid/issue-brief/what-drives-spending-and-utilization-on-medicaid-drug-benefits-in-states/

CAPS research. (2014). *Cross industry report of standard benchmarks.*

Centers for Medicare and Medicaid Services. (2014, April). *National Average Drug Acquisition Cost (NADAC).* Retrieved from Pharmacy Drug Pricing: http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Benefits/Prescription-Drugs/Pharmacy-Pricing.html

Centers for Medicare and Medicaid Services. (n.d.). *Survey of Retail Prices*. Retrieved June 10, 2015, from http://www.medicaid.gov/medicaid-chip-program-information/by-topics/benefits/prescription-drugs/survey-of-retail-prices.html

Chemical Pharmaceutical Generic Association. (2012). *The world APIs Market.*

Coates, R. (2014). *VA Systems Redesign, Operations: Logistics workflow redesign.*

Congressional Research Service. (2013). *Departments of Defense and Veterans Affairs: Status of the Integrated Electronic Health Record (iEHR).*

CVS Caremark. (2015, March). *Quarterly filing (10-Q).* Retrieved from CVS Caremark Investor Relations website.

Defense Medical Information Exchange Program Office. (2014). *2014 Fact Sheet.* Retrieved from http://www.med.navy.mil/navydays/2014%20DHITS%20Presentations/EHR/fact_sheet_DMIX.pdf

DoD and VA. (2014, November). *JLV FAQ.* Retrieved from Defense Health Clinical Systems - Knowledge Sharing Site.

Donahoe, G., & King, G. (2014). *Estimates of Medical Device Spending in the United States.* Retrieved from Advamed: http://advamed.org/res.download/688

Elsevier Gold Standard. (2014). *Generic Drug Price Increases: Causes and Impact.* Retrieved from http://www.goldstandard.com/generic-drug-price-increases-causes-and-impact/

Expert interviews. (2015). Pharmacy supply chain interviews with experts.

Express Scripts. (2015, April). *Quarterly Filing (10-Q).* Retrieved from Express Scripts Investor Relations website.

FDA. (2013). ANDA Filings.

FDA. (2015). *Drug Shortages Infographic*. Retrieved June 30, 2015, from http://www.fda.gov/Drugs/DrugSafety/DrugShortages/ucm441579.htm

Federal Acquisition Regulation; Prioritizing Sources of Supplies and Services for Use by the Government. (2013, December 31). *Federal Register, 78*, 80376. Retrieved from https://www.federalregister.gov/articles/2013/12/31/2013-31149/federal-acquisition-regulation-prioritizing-sources-of-supplies-and-services-for-use-by-the

Federal Register proposed rule change. (2014, November 25). Inflation Adjustment of Acquisition-Related Thresholds (FAR Case 2014-022). *Federal Register*.

GAO. (2004). *VHA Purchase Cards: Internal Controls Over the Purchase Card Program Need Improvement.*

GAO. (2009). *Actions needed to fully establish program management capability for VA's financial and Logistics initiative.*

GAO. (2010). *VA Drug Formulary: Drug Review Process is Standardized at the National Level, but Actions are Needed to Ensure Timely Adjudication of Non-Formulary Drug Requests.*

GAO. (2012). *DOD and VA Health care: Medication needs during transitions may not be managed for all servicemembers.*

GAO. (2013a). *VA Health care: Additional Guidance, Training and Oversight Needed to Improve Clinical Contract Monitoring.*

GAO. (2013b). *VHA Has Taken Steps to Address Deficiencies in Its Logistics Program, but Significant concerns remain.*

GAO. (2014). *Electronic Health Records – VA and DOD need to support cost and schedule claims, develop interoperability plans, and improve collaboration.*

Gencarelli, D. M. (2005). One pill, many prices: variation in prescription drug prices in selected government programs. *NHPF Issue Brief*, 1-20.

Good, C., & Valentino, M. (2014). *Overview of the VA Drug Formulary Management Program.* Retrieved from http://mldc.whs.mil/public/docs/library/health/20140507-VA-Drug-Formulary-Briefing-to-MCRMC.pdf

GSA. (2015). *GSA card sales data for VA in FY14.* Retrieved from http://smartpay.gsa.gov/cardholder-data-spreadsheet

Haggstrom, G. (2014). Building a Professional Acquisition Corps in the Department of Veteran Affairs. *The Public Manager*.

HIDA. (2012). *Hospital Procurement Study.* Retrieved from http://www.hida.org/App_Themes/Member/docs/Hospital_Procurement.pdf

High performing health system interviews. (2015).

Hirst, E. (2015, January 5). Gilead counters AbbVie with exclusive hepatitis C drug deal of its own. *Chicago Tribune*.

IMS Institute for Health Informatics. (2015). *Medicines Use and Spending Shifts: A review of the use of medicines in the US in 2014.* Retrieved from http://www.imshealth.com/portal/site/imshealth

IOM. (2010). *Returning Home from Iraq and Afghanistan: Assessment of Readjustment Needs of Veterans, Service Members, and Their Families.* Washington, DC: National Academy Press.

J.D. Power. (2014). *2014 Retail Pharmacy Study – Mail Order .*

Kaiser Permanente. (2015, June 8). *Pharmacy*. Retrieved from http://businesshealth.kaiserpermanente.org/manage-costs/pharmacy/

LMI. (2008). *Summary Slides: Task # DL733, "Comparing the Cost of Medical Materiel Acquisition Procedures" presented to Directorate of Medical Materiel, Defense Supply Center.*

Lyden, S. P. (2015, February). On Purchasing Power, Cost Control, and Device Decisions. *Endovascular Today*, 66-69.

Martin, A. B., Hartman, L., Whittle, L., & Catlin, A. (2014). National Health Spending In 2012: Rate Of Health Spending Growth Remained Low For The Fourth Consecutive Year. *Health Affairs, 33*(1), 67-77.

MSPV Vendor. (2015, January 15). MSPV metrics.

Okike, K., O'Toole, R. V., Pollak, J. A., Bishop, J. A., McAndrew, C. M., Mehta, S., . . . Lebrun, C. T. (2014). Survey Finds Few Orthopedic Surgeons Know The Costs Of The Devices They Implant. *Health Affairs, 33*(1), 103-109.

Ourth, H., Morreale, A., & Groppi, J. (2015). Development of a pharmacoeconomic model to demonstrate clinical pharmacist impact in chronic disease management. *Academy of Managed Care Pharmacy Annual Meeting*, (p. Poster E31).

Pharmaceutical Prime Vendor. (2014, November 13). *Business Review for Period: 3rd Qtr 2012 through 2nd Qtr 2014.*

Principal Executive Director, OALC. (2013, March). Strategic Sourcing Contracting Support (VAIQ 7277508).

Prosthetic & Sensory Aids Service. (2015). Retrieved May 13, 2015, from VA Rehabilitation and Prosthetic Services: http://www.rehab.va.gov/psas/index.asp

Render, M. L., Nowak, J., Hammond, E. K., & Roselle, G. (2003). Methods for estimating and comparing VA outpatient drug benefits with the private sector. *Med Care, 41*, 1161-9.

Staff interviews. (2015). Site visits.

U.S. Department of Veterans Affiars. (2014). *VSSC data. Provided by the MITRE Corporation 2014.*

US Congressional Budget Office. (2005). *Prices for brand name drugs under selected federal programs.* Washington DC: US Government Printing Office.

US Congressional Budget Office. (2014). *Comparing the costs of the Veterans' health care system with private-sector costs.* Washington DC: US Government Printing Office.

US Department of Defense . (2014). *Defense Contract Management Agency Policy 140.* Retrieved from http://www.dcma.mil/policy/140/

US Department of Homeland Security – US Coast Guard. (2010). *Simplified acquisition procedures (SAP) manual. COMDTINST M4200.13H.* Retrieved from https://www.uscg.mil/directives/cim/4000-4999/CIM_4200_13H.pdf

US Department of Labor, Bureau of Labor Statistics. (2015, March). *Consumer Price Index.* Retrieved from http://www.bls.gov/cpi/

US House Committee on Veterans Affairs Subcommittee on Oversight and Investigations . (2015). *Hearing: Waste, Fraud, and Abuse in VA's Purchase Card Program.*

VA. (2010, 2011). Medical Surgical Prime Vendor Contracts, VA797P-0188, VA797P-0189, VA797P-0190, VA797P-0191, VA797P-0192, VA797P-0193, VA797P-0195.

VA. (2010-2014a). PPV Spend by Calendar Year.

VA. (2010-2014b). Outpatient prescription data.

VA. (2012, May 10). Pharmaceutical Prime Vendor Contract - VA797P-12-D-0001. Retrieved from http://www.va.gov/oal/business/nc/ppv.asp

VA. (2012-2014). Pharmaceutical Prime Vendor Purchase Order Data.

VA. (2013). Office of Acquisition Operations Customer Guide.

VA. (2014a). Congressional budget submission. Volume II - Medical programs and information technology programs.

VA. (2014b). *VA 2015 budget request fast facts.* Retrieved from
http://www.va.gov/budget/docs/summary/fy2015-fastfactsvasbudgethighlights.pdf

VA. (2014c). *Pending wait time using create date for new patients and desired date for established patients.* Retrieved June 8, 2015, from
http://www.va.gov./health/docs/pending_access_data_using_cd_and_dd_11202014.pdf

VA. (2014d). Multi-month prescriptions as percentage of total prescriptions by facility.

VA. (2014e, December 31). *VA Employees by Occupation.* Retrieved from US Data Catalog:
http://catalog.data.gov/dataset/va-employees-by-occupation-2dee8/resource/5a89dd4f-44aa-4a59-ba7f-925ec615b748

VA. (2014f). *VA Functional Organization Manual v2.0a.* Retrieved from Organizations — U.S. Department of Veterans Affairs: http://www.va.gov/landing_organizations.htm

VA. (2015a). Congressional budget submission. Volume II - Medical programs and information technology programs.

VA. (2015b, March 25). Overview for Secretary - VHA Consolidated Mail Outpatient Pharmacy (CMOP).

VA. (2015c). CMOP Fiscal data.

VA. (2015d). *VA Pharmacy Benefits Management - About Us.* Retrieved June 30, 2015, from
http://www.pbm.va.gov/PBM/aboutus.asp

VA. (2015e, February 26). *VistA 4 Roadmap version 3.11.* Retrieved from OSEHRA:
http://www.osehra.org/sites/default/files/vista_4_roadmap_20150226update.pdf

VA. (2015f, February). GIP Inventory Days of Stock on Hand Report.

VA. (2015g, February). DALC MIS report.

VA. (2015h). *VA National Acquisition Center*. Retrieved March 30, 2015, from VA Office of Acquisition and Logistics: http://www.va.gov/oal/about/nac.asp

VA. (2015i). *List of standardized contracts.* Retrieved from OAL - Medical/Surgical, Prosthetic and Pharmaceutical Standardization:
http://www.va.gov/oal/docs/business/nac/medSurgStandardizationIndex.zip

VA Contracts in the Federal Procurement Data System. (2010-2015). Retrieved June 2015, from
http://www.fpds.gov

VA Deputy Assistant Secretary for Acquisition and Logistics. (2013). *VA PPM (2013-07) - Use of Integrated Product Teams (IPT) for Major Acquisitions (VAIQ 7327809) .*

VA. (FY2014a). IFCAP Purchase Data for Five VISNs.

VA. (FY2014b). Non-formulary metrics.

VA. (FY2014c). Prosthetic appliance purchase orders (VistA Table 660).

VA. (FY2015, October - January). IFCAP purchase data for clinical supplies with an IMF number.

VA National Acquisition Center. (2015). *National medical and surgical supply products BPA and FSS pricing.* Retrieved March 4, 2015, from Medsurg contract catalog search tool: http://www.va.gov/nac/index.cfm?template=Search_MedSurg_Catalog

VA OIG. (1999). *Audit of VA Medical Center Management of Medical Supply Inventories.*

VA OIG. (2004). *Issues at VAMC Bay Pines Florida and Procurement and Deployment of CoreFLS.*

VA OIG. (2007). *Open market purchases of prosthetics.*

VA OIG. (2008). *Audit of Veteran's Health Administration Government Purchase Card Practices.*

VA OIG. (2009). *Audit of Veterans Health Administration Open Market Medical Equipment and Supply Purchases.*

VA OIG. (2010). *Audit of the FLITE Strategic Asset Management Pilot Project.*

VA OIG. (2012a). *Review of Open Market Purchases under VA's Pharmaceutical Prime Vendor Contract Number V797P-1020 Awarded to McKesson Corporation.*

VA OIG. (2012b). *Audit of Prosthetics Supply Inventory Management.*

VA OIG. (2014a). Healthcare Inspection – VA Patterns of Dispensing Take-home Opioids and Monitoring Patients on Opioid Therapy.

VA OIG. (2014b). *VHA Audit of Engineering Service Purchase Card Practices at the Ralph H. Johnson VA Medical Center, Charleston, South Carolina.*

VA OIG. (2014c). *Audit of VA's hearing aid services.*

VA OIG testimony. (2010). *VHA Contracting and Procurement Practices at the U.S. Department of Veterans Affairs.*

VA Pharmacy Benefit Management. (2015, May). Leadership interviews.

VA. (n.d.). *VA topic review: Epidemiology of Hepatitis C*. Retrieved May 21, 2015, from http://www.hepatitis.va.gov/provider/reviews/epidemiology.asp

VAMC site visit. (2015). IFCAP/eCMS transmission log received during site visit.

VHA. (2009a). Handbook 1108.08 VHA Formulary Management Process.

VHA. (2009b). Handbook 1761.02 VHA Inventory Management.

VHA. (2014). *Directive 2014-02: Continuation of Mental Health Medications Initiated by Department of Defense Authorized Providers.*

VHA. (2015a, February). Procurement metrics book.

VHA. (2015b, May). Prosthetics Timeliness Tool.

VHA. (2015c, February). Logistics metrics book.

VHA. (2015d, May 22). VHA Staffing update.

VHA Assistant Deputy Under Secretary for Health Administrative Operations. (2014, April 10). Memo: Acquisition Management Framework and Contracting Customer Relations Management Team Acquisition Center Support.

VHA Pharmacy Benefit Management. (2013, March 4). *Maximizing Integration of clinical pharmacist in Chronic Disease Management VA model v1.* Retrieved from Right Care Initiative Presentation: https://www.dmhc.ca.gov/Portals/0/AbouttheDMHC/RCI/SanDiegoBestPractices/miocpicdm030413.pdf

VHA Pharmacy Benefits Management. (2015a). *Pilot Evaluation of Medication Continuation for Veterans Transitioning from the Department of Defense Health Care System to the Department of Veterans Affairs Health Care System.*

VHA Pharmacy Benefits Management. (2015b). VISN Opioids over time Q4 Fy 12 to Q1 Fy 15.

VHA Pharmacy Benefits Management. (2015c, July 1). Email response to questions.

VHA Pharmacy Benefits Management. (FY2014). Outpatient prescription slices.

VHA Procurement and Logistics Office. (2015a). *Acquisition Management Framework Review.*

VHA Procurement and Logistics Office. (2015b, July). Acquisition Planning Day consolidated feedback.

VHA Procurement and Logistics Office. (2015c). Customer service agreement between VHA Acquisition Service Area Office Director PCAC Director of Contracting and Office of Informatics and Analysis ADUSH Informatics and Analysis.

VHA Procurement and Logistics Office. (2015d, July). VA Acquisition Business Intelligence Tool (VABIT) description and access statistics.

VISN20 Logistics. (2015). VISN 20 Prosthetics performance improvements.

Von Oehsen, W. (2001). *Pharmaceutical discounts under federal law.* Retrieved from http://www.ppsv.com/news-publications-31.html

WSNC Program Officer. (FY2014). *WSNC Cost savings.*

Wu, P. C. (2010). Opioid use in young Veterans. *Journal of Opioid Management, 6*(2), 133-139.

Appendix D   Acronyms

ACE	ACE Inhibitor
AHA	American Hospital Association
ARB	Angiotensin II Receptor Blocker
BiPAP	Bilevel Positive Airways Pressure
BPA	Blanket Purchase Agreement
BPC	Business Program Coordinator
CAMH	CMS Alliance to Modernize Healthcare
CCST	Contracting Catalogue Search Tool
CLO	Chief Logistics Officer
CMOP	Consolidating Mail Order Pharmacy
CMS	Centers for Medicare & Medicaid Services
CO	Contracting Officer
COR	Contracting Officer Representative
CoreFLS	Core Financial and Logistics System
CPAP	Continuous Positive Airway Pressure
CPO	Chief Procurement Officer
CPRC	Clinical Product Review Committee
CY	Calendar Year
DALC	Denver Acquisition and Logistics Center
DoD	Department of Defense
eCMS	electronic Contract Management System
EDI	Electronic Data Interchange
ERP	Enterprise Resource Planning
FAR	Federal Acquisition Regulations
FDA	Food and Drug Administration
FFRDC	Federally Funded Research and Development Center
FLITE	Financial and Logistics Integrated Technology Enterprise
FMS	Financial Management System
FSS	Federal Supply Schedule
GAO	General Accountability Office

GIP	General Inventory Package
GSA	General Services Administration
HR	Human Resources
IDIQ	Indefinite Delivery, Indefinite Quantity
IFCAP	Integrated Funds Distribution, Control Point Activity, Accounting and Procurement
IMF	Item Master File
IPT	Integrated Product Team
JIT	Just in Time
LOS	Length of Stay
LUM	Low Unit of Measure
MAP	Medical Advisory Panel
MBO	Manufacturer Backorders
MSPV	Medical Surgical Prime Vendor
NAC	National Acquisition Center
NADAC	National Average Drug Acquisition Cost
NCO	Network Contracting Office
NIF	National Item File
NPDD	National Prosthetic Device Database
OAL	Office of Acquisition and Logistics
OALC	Office of Acquisition, Logistics and Construction
OHRM	Office of Human Resources Management
OIG	Office of the Inspector General
OMB	Office of Management and Budget
OPM	Office of Personnel Management
PLO	VHA Procurement and Logistics Organization
P&T	Pharmacy and Therapeutics
PALT	Procurement Administrative Lead Time
PBM	Pharmacy Benefits Management
PEO	Program Executive Office
PIP	Prosthetics Inventory Package
PLO	Procurement Logistics Organization

PO	Purchase Order
POU	Point of Use
PPV	Pharmacy Prime Vendor
PSAS	Prosthetics and Sensory Aids Service
RME	Reusable Medical Equipment
ROES	Remote Order Entry System
RTLS	Real Time Location Service
SAC	Strategic Acquisition Center
SAIL	Strategic Analytics for Improvement and Learning
SAO	Service Area Office
SLA	Service Level Agreement
SOARD	VHA Special Projects Office Service Oriented Architecture Research and Development
TAA	Trade Agreement Act
TAC	Technology Acquisition Center
UOU	Unit of Use
VA	Veterans Affairs
VAAR	VA Acquisition Regulation
VAMC	VA Medical Center
VHA	Veterans Health Administration
VISN	Veterans Integrated Service Network
VistA	Veterans Health Information Systems and Technology Architecture
VMOC	VISN Mail Out Center
VSSC	VHA Support Center classification
WAC	Wholesale Acquisition Cost
WSNC	Western States Network Consortium