

The Informatica Platform for Military Health

Delivering Data-Driven Healthcare and Improved Outcomes to
Better Support Active and Retired Military Personnel and Their Families

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Executive Summary

The mission of the U.S. Department of Defense's (DoD) Military Health System (MHS) is to provide world-class healthcare around the globe and meet the diverse needs of its stakeholders. These include the Secretaries of Defense, of Veterans Affairs (VA), and of each military branch; the Joint Chiefs of Staff, combat commanders, surgeons general, and Congress; and individual warfighters, veterans, and their families.

To meet the medical needs of this diverse group, the MHS has set out to:

- Ensure the medical readiness of active duty forces and medical protection for its communities
- Continuously monitor, protect, and improve the health of DoD and VA individuals, military communities, and the nation as a whole
- Raise and deploy a flexible, interoperable, and agile corps of highly trained medical professionals
- Rapidly develop innovative medical services and products
- Monitor globally accessible health information, including electronic health/medical record data
- Manage an integrated health delivery system that encompasses medical treatment facilities and private sector care
- Perform research to support the unique requirements of military personnel
- Deliver all medical services in a cost-effective and resource-efficient manner

To achieve these goals, business, clinical, and IT leaders are constantly looking for ways to streamline operations, increase efficiency, and improve service. The success of these efforts hinges on their ability to effectively manage data from a wide variety of systems that make it comprehensible and actionable for the diverse range of stakeholders and decision makers. At the same time, they must remain agile by readily adopting innovations in technology as they become available.

This white paper discusses the Informatica® Platform and explains how this enterprise data integration platform's open, unified, economical, and comprehensive capabilities can meet the needs of military health organizations. Included is a case study illustrating how the MHS has successfully implemented the Informatica Platform to manage its complex organization, protect its customers' information, and reduce its costs—all while enabling it to deliver exceptional healthcare.

Challenges to Military Health Organizations

To enhance its mission effectiveness, the Military Health System has established a goal to provide globally accessible health and business information:

“Our core business is DoD medical mission support so we must lead the deployment of systems that can provide globally accessible information about the health of Service members, other beneficiaries and entire communities. Our system must enable early detection of medical threats by identifying patterns of symptoms before they are even identified as a disease and it must provide real time evidence-based decision support for our providers. Finally, our systems must provide readiness, clinical, business, customer, financial and other performance information to support performance based management and continuous process improvement.”¹

But several challenges complicate this objective, often undermining operational efficiency and service quality.

Fragmented Master Data

Today, data about patients, physicians, facilities, diagnoses, and treatments is incomplete and fragmented across multiple electronic health/medical record (EHR/EMR) applications and systems, making it virtually impossible to manage the relationships among these entities and derive meaningful insights. Disparate, inaccurate, and duplicative data leads to:

- Difficulty in assessing readiness and planning health services
- Increased use of purchased care as opposed to direct care
- Inconveniences to MHS patients (i.e., service members and veterans)
- Frustrations for healthcare professionals, functional personnel, researchers, members, and business decision makers
- Slow responses to new requirements and changes in the military landscape
- Escalating and uncontrolled costs

Although the MHS has made sizable investments in EHR/EMR applications that meet meaningful-use guidelines, truly trustworthy and authoritative information that’s available enterprise-wide remains elusive. In fact, far from integrating vital information from legacy systems, many enterprise EHR/EMR applications actually increase data fragmentation. Even when EHR/EMR solutions integrate successfully with legacy systems, important master data often remains outside the EHR/EMR. Although it’s common for disparate applications to interface through HL7 messaging to share transaction data, it’s rare for them to coordinate master data.

Poor Data Quality

Patient, provider, and facility data needs to be aggregated and analyzed to improve service, application reliability, and quality of care. Data that varies from source to source introduces duplication, inaccuracies, and inconsistencies that fundamentally undermine the integrity of clinical and business analysis—and the success of initiatives based on this analysis. In effect, chief quality officers, clinicians, researchers, and other executives often have poor, if not misleading, information on which to base decisions affecting patient outcomes, courses of treatments, and strategic direction. The new focus on evidence-based medicine and patient-centered care will require improvements to data quality.

¹ Office of the U.S. Department of Defense, The Military Health System Strategic Plan: A Roadmap for Medical Transformation (October 2006).

Limitations and Costs of Legacy Systems

The rigidity of legacy systems that remain active can hamper an organization's ability to adapt to new requirements. It also compromises the agility of the warfighter who must be able to respond rapidly to new situations and threats. Because military organizations must be able to access, integrate, augment, and analyze data from multiple sources, in various formats, and in real or near real time, legacy systems pose severe limitations on force readiness.

IT organizations of the MHS have reported that as much as 50 percent of their applications are legacy and two-thirds have reported lacking a single view of legacy system data for compliance reporting. Data center consolidation would retire legacy applications and optimize their data, significantly boosting operational efficiency. The potential for costs savings here is enormous.

Limitations of Clinical and Business Intelligence

As MHS organizations consider how to leverage the plethora of stored data to improve clinical and business operation decisions, many are faced with the challenges of extracting, aggregating, analyzing, and sharing results and conclusions. By their very nature, business and clinical requests are complex, dynamic, and resource intensive, and source systems are inherently designed to be function specific. Furthermore, issues of quality, reliability, and granularity in the source systems inhibit reliable use of their data to formulate and change policy based on data analysis, historical performance, and predictive analytics.

Increasing Healthcare Costs

Even though in the public sector, the MHS is not immune to spiraling increases in healthcare costs. In fact, its organizations have many of the same requirements as those in the private sector to control costs in the face of burgeoning data volumes and shrinking budgets. In addition, future requirements to support servicemembers, unknown health threats, and ongoing fiscal uncertainty all make IT transformation in the MHS both critical and unpredictable. And while funding for veterans' healthcare may be exempt from automatic, across-the-board budget cuts, funding for active duty military healthcare is not. Medical care for military personnel and families, including Tricare, falls under MHS operations and maintenance programs and consequently could see significant cuts.

These budgetary pressures will drive the need to consolidate medical health programs across services to eliminate redundancies. Developing strategies for improving data quality in existing systems could reduce costs significantly and help to transform the MHS into the streamlined, nimble, and efficient organization it aspires to be.

Surmounting the Challenges with Technology

Delivering a fully integrated, world-class healthcare system depends on the ability of the Military Health System to solve these data challenges and overcome the barriers to change (see Figure 1). Through innovation and technology, best practice adoption, and improved business operations, it will be able to lower the cost of healthcare, improve results, and ensure readiness. To meet the needs of its diverse community of stakeholders, the MHS needs solutions in technology that can accomplish the following tasks:

Improve Health Outcomes

- Enhance the quality of patient care by ensuring complete and accurate electronic health/medical records through flexible identity resolution
- Advance medical, diagnostic, and treatment research

Enhance Operational Performance

- Streamline administrative processes, and target and prevent fraud
- Ensure proper reimbursement, reduce storage costs, and increase patient throughputs with optimized data exchange, robust data archiving, and complex event processing
- Improve data exchange, data quality, and data transformation for any format

Consolidate EHR/EMR Systems

- Migrate data to new systems quickly and cost-effectively
- Cleanse data to ensure that all information is complete and accurate
- Archive inactive data to keep systems performing optimally and clinical workflows running smoothly

Protect Data from Unintended Disclosure

- Identify sensitive data to prevent accidental disclosures in reports, displays, backup media, and test and development environments

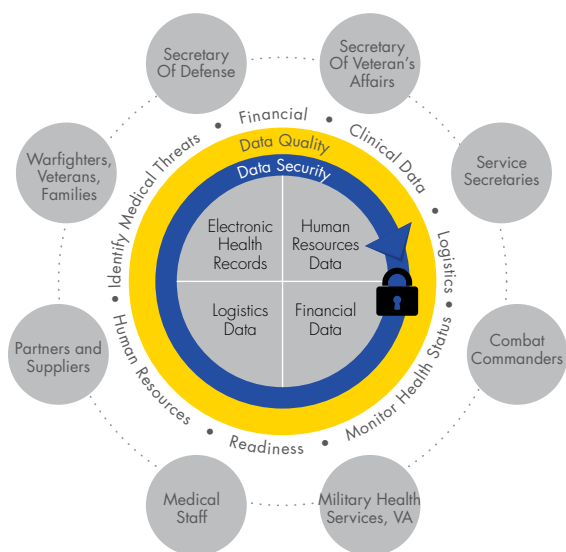


Figure 1. The ability to improve care, reduce costs, drive research, and support servicemembers' readiness depends on the ability of the MHS to access, analyze, and share data across the entire MHS system.

The Informatica Platform

The Informatica Platform empowers military and veterans' health organizations to resolve their data challenges. It enables them to improve health outcomes, enhance operational performance, consolidate EHR/EMR systems, and secure protected health information, all while lowering the costs of care. The platform achieves these goals by delivering the cohesive clinical, business, and operational intelligence that these organizations need to succeed in their mission of medical readiness.

Clinical Intelligence

Seemingly unrelated data from disparate systems, when aggregated and analyzed, can reveal relationships key to identifying gaps or understanding inefficiencies in healthcare processes. A comprehensive clinical intelligence system will enable stakeholders to quickly and easily analyze this data at the individual, unit, facility, region, or enterprise-wide levels. These stakeholders include medical staff, researchers, partners, and specialists who would integrate data from individual health records, treatments delivered, medications administered, and other important clinical factors. Lab, pharmacy, radiology, and immunization data would also be integrated to generate a holistic view of the treatment of individuals or groups of patients.

This aggregated clinical intelligence not only reinforces performance-based care but also provides the basis for comprehensive, accurate, and up-to-date readiness reports for combat commanders and other war-fighting stakeholders (see Figure 2). Furthermore, this data would help health surveillance stakeholders identify wider patterns and monitor global health risks, ensuring a medically ready and protected force.

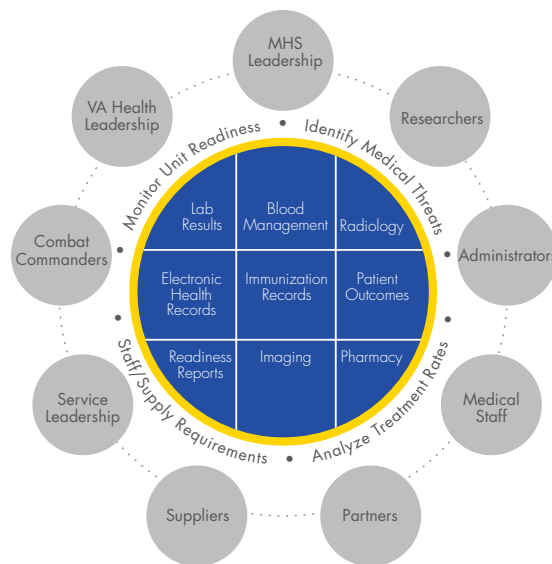


Figure 2. Clinical intelligence reinforces performance-based care by enabling stakeholders to monitor unit readiness, identify medical threats, assess staff and supply requirements, and analyze treatment rates.

The Informatica Platform improves clinical intelligence by yielding faster results with better data, enabling organizations to:

- Access and merge all datatypes from different sources in real time without physical data movement
- Dramatically compress the data integration timetable, shrinking the period from days, weeks, or months down to hours or even minutes
- Enhance collaboration between business and IT through the use of a data services layer, which involves business users directly at a very early stage of data integration
- Protect vulnerable protected health information (PHI) and personally identifiable information (PII) data at various levels of production and nonproduction with flexible masking of independent attributes

Business Intelligence

Financial management stakeholders in military and veterans’ health organizations must analyze a wide range of data on costs, procedures, partners, and suppliers. The ability to compare and evaluate the cost of treatment, procedures, medications, and other clinical necessities from internal, partner, and supplier providers is essential to supplying world-class healthcare at the lowest possible cost and detecting waste, fraud, and abuse. Determining cost-efficient alternatives for medical staffing, supplies, medicine, and equipment will allow MHS executives to lower or maintain the internal cost of healthcare, even with external price increases on these items in the future. Data quality across the entire ecology of providers and suppliers is essential to reducing errors that would otherwise cripple efforts to have a cost-effective, performance-based treatment system (see Figure 3).

Aggregated business intelligence would provide military and veteran health organizations with historical, current, and predictive views of their business operations. Having these views will enable MHS executives to determine cost-effective alternatives for medical staffing, supplies, medicine, and equipment.

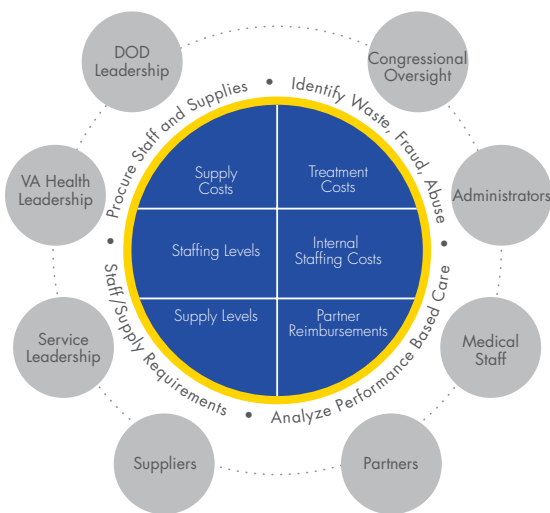


Figure 3. Business intelligence will furnish the MHS with unparalleled access to all of the critical factors required to improve care, reduce costs, streamline operations, and provide support to warfighters by discovering previously hidden relationships and areas for improvement.

The Informatica Platform improves business intelligence through real-time decision support and alerting, enabling organizations to:

- Improve decision making and reduce response times by promoting the production, detection, and consumption of, and reaction to events
- Leverage geospatial awareness and time dominance to identify relationships and patterns instantly
- Support war-fighting missions through automated, real-time, proactive, leading-edge capabilities that leverage trusted information
- Lower the costs of healthcare through innovation, technology, implementation of best practices, and maximized use of commercial off-the-shelf software (COTS)

The platform also dramatically improves readiness by empowering organizations to:

- Enhance intelligence gathering by acquiring, correlating, and fusing disparate data to generate unprecedented insight
- Automate the linking and tagging of data to advance patterning, predictive modeling, and business intelligence

Operational Intelligence

Operational intelligence will provide the MHS with real-time dynamic business analytics that delivers visibility and insight into data, streaming events, and business operations. Operational intelligence helps organizations to make decisions and immediately act on these analytic insights, through manual or automated actions.

The Informatica Platform improves operational intelligence by enabling organizations to:

- Increase business agility by classifying data based on its value or sensitivity and optimally focusing IT resources on mission-critical priorities
- Maximize performance and lower TCO by smart partitioning of active data and archiving inactive data in production, resulting in lower storage, system, and management costs
- Cut infrastructure and maintenance costs by automating information lifecycle management best practices so they can transport, manage, and archive data more efficiently
- Easily and automatically implement data security by masking and de-identifying test data and dynamically masking data in live production systems with integrated compliance management and auditing
- Increase efficiency through data center consolidation, data de-identification, data migration, and master data management initiatives
- Reduce redundancies and unnecessary costs, advance medical research, augment decision making, and formulate new policies by leveraging the power of big data
- Streamline operations with single lifetime electronic health records (EHRs) and a single health system for MHS, VHA, and purchased care

By enabling clinical, business, and operational intelligence, the Informatica Platform dramatically enhances the ability of the MHS to ensure the medical readiness of active duty forces, monitor global health risks, train and deploy an agile corps of medical professionals, and deliver on the promise to be a world-class integrated health organization. What's more, this comprehensive, open, unified, and economical data integration platform enables the MHS to maximize the return on data by increasing its value while lowering its cost.

Case Study: MHA/VHA Data Synchronization Program

The Military Health System and Veterans Health Administration are currently collaborating to reduce unnecessary costs and improve operations in the federal healthcare supply chain, with results that will positively impact the entire healthcare industry. Through an ambitious initiative, the MHS is linking, standardizing, and synchronizing product information between its hospitals and suppliers. The organizations are also working with industry partners through various proof-of-principle pilots to create and adopt industry-wide data standards. This effort is important because it demonstrates that these standards can solve data quality problems experienced by any supply chain partner, whether it is part of the MHS/VHA or a private company.

Using innovative technology that includes the Informatica Platform, the MHS/VHA team has developed a robust, dynamic enterprise data engine called the Product Data Bank (PDB). The PDB turns the vast trove of MHS/VHA data into an authoritative resource of synchronized medical product information within the federal healthcare supply chain. Having enterprise-level data synchronized with site-level item masters means that materials managers will have accurate and consistent data at their fingertips. Armed with powerful information, hospitals will be able to improve supply chain efficiency and reduce costs, by taking the steps necessary to get better pricing, for example. With more than 1.2 million certified and synchronized records from more than 42 million processed data records and growing, the PDB is believed to be the largest medical product database in healthcare.

The PDB not only provides an accurate and synchronized data backbone to all of the federal healthcare supply chain's processes but also serves as a template to highlight the need for a global data-standard solution. It will function as an intermediate step before a much larger-scale industry product data utility (PDU) is implemented with these industry-wide standards, furnishing a single source of synchronized medical product information for all worldwide trading partners.

Through the PDB initiative, the Informatica Platform has enabled the MHS to:

- Save more than \$30 million in price reductions through the end of 2008
- Increase efficiency by moving \$17 million of manual purchases to electronic methods
- Improve patient safety efforts by increasing the accuracy of product information
- Reduce costs by improving spend analysis
- Boost efficiency by increasing transaction accuracy and reducing rework
- Rapidly access information on product recalls, introductions, discontinuations, and replacements
- Obtain accurate information to generate barcodes and radio-frequency identification (RFID)
- Improve healthcare service by focusing on patient care without supply chain distractions

Conclusion

To meet the medical needs of its diverse group of stakeholders, the U.S. Department of Defense's Military Health System continuously monitors the overall health status of individuals, communities, and the nation as a whole. It must manage and deliver superior care in an integrated health delivery system that encompasses both public and private medical treatment facilities. Toward this end, the MHS aims to reduce unnecessary costs and improve operations in the federal healthcare value chain. But doing so requires capable and scalable data integration and management technology.

The Informatica Platform provides this technology. It empowers military and veterans' health organizations to resolve the data challenges that currently limit their ability to meet their complex missions. It enables them to improve health outcomes, enhance operational performance, consolidate EHR/EMR systems, and secure protected health information, all while lowering the costs of care. The platform achieves these goals by delivering the cohesive clinical, business, and operational intelligence that these organizations need to succeed in their mission of medical readiness and fulfill their promise to deliver a fully integrated world-class health system.

About Informatica

Informatica Corporation (Nasdaq:INFA) is the world's number one independent provider of data integration software. Organizations around the world rely on Informatica to realize their information potential and drive top business imperatives. Informatica Vibe, the industry's first and only embeddable virtual data machine (VDM), powers the unique "Map Once. Deploy Anywhere." capabilities of the Informatica Platform. Worldwide, over 5,000 enterprises depend on Informatica to fully leverage their information assets from devices to mobile to social to big data residing on-premise, in the Cloud and across social networks. For more information, call +1 650-385-5000 (1-800-653-3871 in the U.S.), or visit www.informatica.com.



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