



NHRC
Naval Health Research Center

Supporting the biomedical and psychological health and performance of the Navy and Marine Corps

Expeditionary Medical Knowledge Warehouse (EMedKW)

Medical Mission Support

Problem

Medical planners require current, high-quality information to plan for future operations; medical researchers require timely, accurate data to perform studies; and data collectors need a secure and efficient way to store, maintain, and access data. Data collection, uniformity, security, version control, and distribution are crucial to medical analysis and the validity of analysis tools.

Solution

Naval Health Research Center (NHRC) has developed the Expeditionary Medical Knowledge Warehouse (EMedKW) to identify and bridge both inter- and intra-service discrepancies to address medical capability gaps. EMedKW is a service-oriented architecture (SOA) system designed to protect and organize medical data in support of the NHRC analysis mission. EMedKW provides version control, while allowing authorized personnel easy sharing of and access to data.

Results

EMedKW is a collection of Web services that abstract medical data collected and maintained by NHRC. It is a flexible database system that enables the storage, retrieval, and maintenance of virtually any customized data set. The server also has features tailored to the specific needs of a medical analyst (such as historical data queries and server-side computation of supply usage per a given patient stream). EMedKW tracks all data changes for accountability and retrieves historical data from any point in time.

EMedKW secures the data behind a comprehensive role-based login system and encrypted network connection, while allowing authorized users to access the data from virtually anywhere on the internet. As a SOA application, EMedKW can also be integrated with other systems on any platform for automatic updates and data retrieval. EMedKW also includes validation for data entry, with customizable rules that notify data collection personnel of data inconsistencies. EMedKW is currently used as the data source for NHRC's suite of analysis tools: Enterprise Estimating Supplies Program (EESP), Joint Medical Planning Tool (JMPT), and Medical Planners Toolkit (MPTk).

This repository is one element of an integrated, clinically-based, end-to-end medical materiel requirements planning process that incorporates clinical practice guidelines (CPGs), patient encounter and clinical workload forecasts, and medical materiel data linked to clinical workload forecasts and CPGs. This modeling and simulation process enables collaboration by integrating clinical and logistics data, which permits the identification of capabilities and operational requirements, the development of patient stream estimates, the development of material item estimates, and the review and adjustment of material item estimates.

Benefits

- EMedKW is a central data repository with version control.
- EMedKW allows NHRC to selectively share data with authorized parties while maintaining strict access control.
- EMedKW retrieves historical data sets and allows analysts to choose a variety of data configurations, while providing visibility regarding recent changes.
- EMedKW connects to other systems across the internet via an industry-standard XML-based protocol, overcoming barriers between platforms and enhancing interoperability with other tools and medical data sets.

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Suite of Medical Models and Simulations

- **Expeditionary Medical Knowledge Warehouse (EMedKW)**
 - Repository for medical capability and logistics data
 - Service-oriented architecture based
 - Workflow, Configuration Management, and Data Validation features
- **Enterprise Estimating Supplies Program (EESP) Web**
 - Calculates medical consumables, durables, and equipment items for a given patient stream
 - Queries EMedKW data for supply information
 - Web client built on Microsoft Silverlight
- **Joint Medical Planning Tool (JMPT)**
 - Simulates the stochastic flow of patients as a network of queues with finite resources for care providing and movement
 - Imports medical capabilities from EMedKW
- **Web Site**
 - Public and Registered Users Accessible
 - Tools, documentation, and some past studies available for download to registered users
 - Collaborative environment
- **User Support and Training**
 - Three-tiered technical support model
 - Friendly, responsive support available during normal business hours
 - Self-paced and instructor led courses for JMPT

