JPC-1, Health Information Technology (A Strategic Research Plan)

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ABSTRACT

Health information technology (HIT) is evolving and open source software communities and commercial health information technology vendors are taking advantage of the enhancements in computing and communications technologies. In many cases these technologies can be inserted into the military medical domain quite effectively. However, not all technology solutions are immediately capable of meeting the challenges of military operations in austere environments and the need to provide care to large numbers of severely wounded patients throughout an evacuation chain that can be thousands of miles long. Congress has appropriated funding for research to address the military relevant health information gaps. This paper will provide an overview of the structure and processes that have been established to select and execute research projects to address those gaps.

1.0 THE JOINT PROGRAM COMMITTEE – 1 (JPC-1)

JPC-1 was established in 2010 to provide planning and oversight of the 1) Medical Simulation and Training, and 2) Health Information Technology and Informatics research programs that are funded through the Defense Health Program (DHP) appropriation.

Prior to 2010, research was funded primarily through the Small Business Innovation Research (SBIR) program and congressional special interest initiatives. However, the funding was not always predictable from year to year. The ability to create a plan and future direction for health information technology and informatics research was limited. With the new JPC structure, the funding lines are more predictable and planning for the future of information technology and informatics research is possible.

JPC-1 has been actively creating a research roadmap in order to define and articulate a research plan to guide the identification, selection and coordination of research projects to address operational gaps and meet the goals of the Department of Defense (DoD) and the Military Health System (MHS).

2.0 THE THREE DIMENSIONAL ROADMAP

2.1 The First Dimension

The first dimension is the overarching themes that are foundational to informatics and information technology: Data, Analytics, and the User Interface. These themes provide the overall framework for the military medical research that is needed in order to develop more effective ways to manage data, develop analytics that will extract information from the data, and provide that information in a form that can be easily used to make correct decisions more quickly and safely.

2.1.1 Data

JPC-1 seeks to explore data concepts such as semantics, storage, and agile and adaptable data standards with the goal of complete patient privacy and data security, semantic data interoperability, and unrestricted data movement and storage in the MHS.

2.1.2 Analytics

In this area, the program addresses a comprehensive research portfolio that includes clinical and business analytics that focuses on advanced predictive and prescriptive analytics for patient care and population health.

2.1.3 User Interface

JPC-1 is funding active research to explore the user interface through the development of new tools, displays, interfaces, and other methods of communicating information with the end user.

2.2 The Second Dimension

The second dimension is based on three functional domains that represent the end users: (1) Theater Health Services and Support; (2) Health Operations Resourcing; and (3) Health Services and Population Health; plus the underlying technical foundation represented by the Health Enterprise Infrastructure. The three functional domains represent the functional community of end users, and their unique military needs which drive the research requirements. As such, challenges surround the delivery of healthcare for warfighters in theater, which requires unique specialties and lifesaving technologies in order to provide a broad array of trauma and health care across conflict environments and in garrison. This ranges from technology that is applied in battle at the point of injury, to Electronic Health Records (EHRs), diagnostic tools, and subject matter expertise, as well as post-treatment support systems that assist individuals and families with long-term injuries and rehabilitative services. HIT research also can be applied to gaps that are not directly related to clinical care such as logistics, personnel management and administration as depicted in the paragraphs below:

2.2.1 Theater Health Services and Support

The overall goal of this task area is health information technology research, aimed at promoting, improving, conserving, or restoring the mental and physical well-being of the fighting force. Specific goals include:

- Conduct research on capabilities to enable commanders to efficiently and effectively manage medical information and medical work flows.
- Conduct research on medical logistics capabilities to improve the processes or technologies for enhanced military medical care
- Conducting research on emerging technologies for providing assistance in response to natural or manmade disasters
- Capture and documenting point of injury and en route care through the evacuation chain.

2.2.2 Health Operations Resourcing

The overall goal of the Health Operations Resourcing is health information technology research, aimed at improving personnel resourcing and budget management. Specific goals include:

- Conduct research to improve the training and education for health care and health promotion delivery and management.

- Conduct research to improve planning for and allocation of personnel for health care and health promotion delivery and management.
- Conduct research to improve planning and budget allocation for health care and health promotion delivery and management.

2.2.3 Health Services and Population Health

The overall goal of the Health Services and Population Health task area is health information technology research aimed at improving health care delivery and health promotion. Specific goals include:

- Conduct research to investigate and improve medical device interoperability.
- Conduct research on mobile health to promote standards and accessibility to make health care information more readily available.
- Conduct research on methods and processes to promote an open framework for electronic health records.

2.2.4 Health Enterprise Infrastructure

The overall goal of the Health Enterprise Infrastructure task area is health information technology research, aimed at improving the computing and communications infrastructure and its management. Specific goals include:

- Conduct research into processes and methods to improve computing and communications systems infrastructure.
- Conduct research to improve the quality of medical data management definitions, standards, and management.
- Conduct research to improve architecture principles including governance, policies, rules, business requirements and system designs.

2.3 The Third Dimension

The roadmap's third dimension is time. The roadmap depicts the evolution of research projects and demonstrates the interrelationship of the projects as well as their progression from less mature to more mature with the goal of transitioning the outcome of the research projects to the enterprise for use by program managers and enterprise architects to reduce enterprise program risks. Given the rapidly changing technology world, it is unrealistic to identify specific HIT research too far into the future. However, a roadmap that projects the types of research initiatives for several years provides a foundation for dialog and coordination and promotes a more mature process for selection of projects in the year of execution.

3.0 PROCESS

The development and implementation of this research roadmap is realized through the a workgroup comprised of functional and technical representatives from across the military medical domain evaluates proposed projects for research funding and then prioritizes and makes recommendation to MHS Research Program Leadership for selection and execution. Once approved, JPC-1 hands off the projects to an execution organization for the execution and/or management of the research. JPC-1 continues in the role of oversight and coordination of research during the execution, creating a seamless transition from project proposal through project completion and integration with the MHS enterprise.

4.0 CONCLUSION

The appropriated funding for military HIT research has made it possible to devise a research plan to aid military medicine through advancement of technologies that are unique to the military healthcare environment, but there is more to be done. Work in this area is changing rapidly as technology evolves. The prospects for the future of healthcare are vast. JPC-1 will continue to work with the military medical functional and technical communities to improve the efficiency and safety of military medicine through an effective HIT research program.