Title: Integrated Health Information Systems – A framework for evaluation and selection of Health Information Systems for Global Health operations
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Summary

Military health information systems (HIS) form the backbone of all military medical and global health operations. Efficient and effective global health engagements to mitigate infectious disease threats through medical intelligence and bio-surveillance, and the use of Artificial Intelligence (AI) for advanced data analytics to facilitate predictive and precision medicine and digital epidemiology, require a robust network of HIS. HIS maintained in siloes lack common data standards. Hence, it is not easy to integrate data in these systems resulting in loss of interoperability, lack of data quality, lack of visibility into historical and ongoing global health engagements, and inadequate collaborations. We aimed to answer the question "how should the current systems be evaluated and modernized to allow an integrated Common Operating Picture on health engagements for outcomes, lessons learned, assessment of lines of efforts and to support advanced uses of data". We used a mixed-methods approach comprising of – literature review to understand the evolution of technology solutions to support the U.S. Department of Defense (U.S. DoD) Global Health Engagement (GHE), and the technology trends in the market focusing on cloud infrastructure; and discussions with subject matter experts both in Global Health and technology program management to understand current platforms, capabilities, gaps, future requirements, and user experience. Based on inputs from these steps, we developed the criteria for business value and technical quality evaluation and used them to develop a scorecard for each platform.

Using the business value and technical quality scorecard, we assessed existing health information systems and generated a decision matrix. The decision matrix was then used to determine if systems could be enhanced and integrated, or if there is a need for investment in new HIS. Our findings suggest that the U.S. DoD HIS can be enhanced and integrated with systems used by specific areas for a one-way or two-way data flows. We recommend that the U.S. DoD establish policies for GHE data standardization, compliance, and verification to ensure that relevant and adequate data are captured for future development of advanced analytics capabilities.