FEDERAL ELECTRONIC HEALTH RECORD MODERNIZATION

FEHRM

Interoperability Progress Quarterly Report

FOURTH QUARTER, FISCAL YEAR 2021

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Interoperability Metrics

Pursuant to the National Defense Authorization Act for Fiscal Year 2020 (NDAA FY2020), the Federal Electronic Health Record Modernization (FEHRM) program office will establish a Joint Interoperability Strategy with the Department of Defense (DOD) and Department of Veterans Affairs (VA). As part of this process, the FEHRM will evaluate metrics appropriate for assessing and monitoring progress toward achieving the outlined strategy.

A snapshot of the current baseline Health Data Interoperability (HDI) metrics used to track progress toward modernization and enhancement of HDI is included below. Appendix A includes details outlining each metric category: (A) DOD/VA Integration, (B) Community Partnerships and (C) Patient Engagement.

Electronic Health Record Modernization

- **FEHRM Program Office:** During the fourth quarter of FY2021 (Q4 FY2021), the FEHRM continued its focus on operationalization and convergence in its mission to implement a single, common federal electronic health record (EHR) to enhance patient care and provider effectiveness, wherever that care is provided. This operationalization and convergence strategy unified efforts across the federal EHR ecosystem and delivered common capabilities. The common capabilities the FEHRM delivers include:
    - Managing the Federal Enclave, which is a shared environment to contain the federal EHR and supporting systems.
    - Managing the joint health information exchange (HIE), a data-sharing capability.
    - Overseeing configuration and content changes to the EHR that are agreed on by the Departments through a joint decision-making process facilitated by the FEHRM.
    - Providing software upgrades and solutions to optimize EHR performance—in FY2021 this included releasing Capability Block 4.0, which provided a range of technical updates to the federal EHR, and Capability Block 5.0, which provided more than 600 enhancements for referral management, pharmacy, registration and documentation.
    - Tracking joint risks, issues and opportunities as well as lessons learned regarding EHR implementation to inform continuous improvement.
    - Maintaining an integrated master schedule to help coordinate EHR activities.
    - Developing and updating deployment maps to show real-time status of deployments.
    - Advancing interoperability, which is the meaningful use and exchange of data, to improve the continuity of care among and between public- and private-sector providers.

- Leading analysis and integration of deployment activities at joint sharing sites, sites where resources are shared between DOD and VA.

- **FEHRM Website:** In August 2021, the FEHRM launched its new website at www.FEHRM.gov. The website provides a public forum for the FEHRM to share the story behind its work with DOD, VA, USCG and other partners to implement the single, common federal EHR. The website explains how patients, providers and federal agencies benefit from the federal EHR. From the FEHRM's mission and most recent accomplishments to its success stories and testimonials, the site provides a comprehensive view of the FEHRM's work and the federal EHR's positive impact on beneficiaries and the health care industry.

- **Federal EHR Annual Summit:** The FEHRM convened the first Annual Summit meeting of clinical staff from DOD, VA, USCG; community providers; and other leading clinical experts to assess the use of the single, common federal EHR. Participants engaged in valuable discussions on opportunities for enhancing the federal EHR to better serve our Service members, Veterans, and other beneficiaries.

  More than 500 individuals registered for the three-day event, including congressional staffers and the VA Office of Inspector General. The summit allowed end users to provide valuable feedback to FEHRM, DOD and VA leadership. The feedback produced more than 170 items in the form of questions and comments, as well as 40 actionable items for follow up with DHA and VHA Solution Owners and Experts to investigate to determine if change requests are required to enhance the experience of the EHR.

- **Joint Configuration Management:** The FEHRM manages and optimizes the Joint Sustainment and Adoption Board (JSaAB). This joint governance body is responsible for the approval of all federal EHR content and configuration changes. The JSaAB directly informs the Joint Change Control Board (JCCB) and is essential to operating the single, common federal EHR, providing DOD, VA and USCG functional oversight of all configuration decisions impacting the production baseline. The JSaAB Charter annual review was completed in Q4 FY2021 and the updated three-year charter was signed on September 2, 2021.

  For Q4 FY2021, the JSaAB approved 335 items; including seven daily go-live items that surfaced during Wave TRIPLER, and four items related directly to the COVID-19 response. The FEHRM coordinates an e-JSaAB process for urgent and emergent issue resolution during off-hours; this e-JSaAB process was successfully utilized nine times during Q4 FY2021. Additionally, the FEHRM manages the Functional Decision Group (FDG). The FDG is a body of senior clinical, business and health informatics leaders from VA's Office of Electronic Health Record Modernization (OEHRM), Veterans Health Administration (VHA) and Defense Health Agency (DHA). The FDG reviews, analyzes and decides on critical joint issues that apply to the federal EHR.

During Q4 FY2021, the FEHRM completed the phased transition of the JSaAB platform from DHA SharePoint to IBM's Customer Relations Management (CRM) Tool, LMT JAZZ. This transition aims to improve coordination with related issue resolution processes such as the JCCB. LMT JAZZ provides a robust seamless handoff of issues between the Departments and governance bodies and began its next phase to integrate with Department CRMs for full traceability of issues from start to finish.

During the reporting period, the FDG continued to monitor the program management office (PMO) technical communities who were tasked to address the need for allergy and medication checks, to cross between both Departments' legacy and modern EHR systems. This effort continues with a proposed technical implementation in Q4 FY2021. The FDG continued to expand on an initiative to evaluate proposed DOD and VA configuration change requests for convergence. Most recently, the FDG staff evaluated the possibility of combining Functional Subject Matter Expert (SME) Councils into joint DOD/VA Councils. This ongoing evaluation is subject to a positive test of two DOD and VA communities with high impact and importance in the federal EHR—Emergency Medicine and Behavioral Health. Additionally, DOD and VA continue to work toward a common pre-production training and access set of business rules to ensure that the user experience is consistent across the common platform.

- **End-User Engagement:** During the reporting period, the FEHRM continued to collaborate with DOD and VA patient and clinician satisfaction SMEs in the effort to establish common instruments and methodologies to survey and measure clinical use and satisfaction with the federal EHR. This collaborative effort was enacted to equally assess satisfaction across DOD and VA, save government resources and reduce overall costs.

  The survey instruments collaboratively selected for both clinician and patient satisfaction are nationally recognized and include: The KLAS Arch Collaborative for Clinician Satisfaction and The Consumer Assessment of Healthcare Providers and Systems Health Information Technology (CAHPS-HIT) item set. The Joint EHR Patient Satisfaction item sets were successfully included in the Q3 FY2021 surveys for both DOD and VA. Q4 FY 2021 data has been received, and since the HIT question set deployed in Q3 FY2021 the HIT item set has already received approximately 1,700 responses, while VA's SHEP-CG deployment of the HIT question set in January 2021 has received 76,000 responses to the HIT item set.

- **FEHRM Revenue Cycle/Business Processes:** In late Q4 FY2021, the FEHRM completed the development of joint business requirements for ancillary services and referral management (VA to DOD and DOD to VA) with representation from VHA Office of Community Care (VHA OCC), OERHM, VA Payment Operations and Management (POM), VHA Chief Informatics Office, DOD/DHA Business Functional Champion, Unified Business Office (UBO), Referral Management Working Group and DOD/VA Sharing Office.

In addition, the FEHRM/DHA/VHA team completed development and obtained executive leadership approval of:

- Two interim-state enterprise process maps for referral management at collocated and non-collocated staff facilities (VA to DOD), and
- One interim-state enterprise process map for self-referral/emergency referral (VA to DOD).

In Q1 FY2022, this group will complete the development and executive approval of joint inter-departmental billing requirements, as well as three DOD to VA referral management interim-state enterprise process maps.

- **Joint Enclave Data Management:** During the Q4 FY2021 reporting period, there were several ongoing projects to address joint data management. The FEHRM stood up several joint DOD/VA groups with different focus areas including Cerner codesets, terminology and data governance.

  During Q1 and Q2 FY2021, the FEHRM launched a project to apply the emerging Joint Executive Committee (JEC) data management strategy to a practical operational plan for the Joint Enclave. In partnership with joint stakeholders, the group sketched out a draft data governance structure to define data management activities under a unified understanding of responsibilities across DOD, VA and the FEHRM. The plan development is underway and anticipated for comment/release in Q4 FY2021.

  Additionally, in Q4 FY2021, the FEHRM is standing up an executive body, which will function as the formal Data Management and Governance of FEHRM Data Assets. Under the executive body, data and analytics will be governed by the Data Governance Board (DGB) and FEHRM Analytics Board (FAB), respectively.

  In Q4 FY2021, the Federated Interagency Terminology Service (FITS) is continuing to engage with the vendor and Departments to jointly review and manage critical terminology projects. Twelve project or issue proposals have been submitted, five have been approved by the FITS. The FEHRM terminologists completed initial work on FITS 006 Mapping from LOINC to Cerner Millennium Note Type for flow of clinical notes inbound to Cerner. The FEHRM also continues to monitor and normalize Joint Longitudinal Viewer (JLV) and CHDR legacy and Cerner clinical domains such as Medication Status (FITS011), allergens, medications, labs and document types.

- **Joint Enclave Management:** During Q4 FY2021, the FEHRM hosted several Environment Management Operations Center (EMOC) activities in partnership with DOD, VA and USCG program offices, their prime vendors and key stakeholders responsible for segments of the federal EHR ecosystem, including sessions on the Unified Patient Experience, Access to Enclave Data, and Continuity of Business Operations for Users of the Federal EHR.

Because of these ongoing functional-technical collaborative efforts, the EMOC continued to host or participate in technical and functional hybrid discussions on joint sharing sites. Technical and functional SMEs collaborated and requested further examination of preliminary courses of action and their associated critical milestones. This effort continues to serve as a driving force for the FEHRM and federal partners to get to an integrated plan for the federal EHR and work through technical issues as they continuously deliver capabilities.

- **Enterprise Operations Center (EOC):** The EOC activity is a critical component of operationalizing the FEHRM. The EOC prepares the federal EHR system owners and partners in the ecosystem for the intense schedule of go-live activities. The EOC continued to support cross-organizational collaboration and executive level reporting on the Federal Enclave and ecosystem during federal go-live events. During Q4 FY2021, the EOC provided joint executive level briefings for two DOD go-live events, one major shared release and one major infrastructure vendor upgrade. The EOC activity added value to the federal EHR through the following activities: automating analysis tools, enabling shared agency reporting, refining response processes, participating in joint problem management improvement efforts, sharing observations regarding traceability of incidents and changes in the ecosystem, and continuing to expand and enrich stakeholder engagements.

- **FEHRM Joint Testing initiatives:** The FEHRM test activity focused on several key areas to mitigate risks to the federal EHR, including meeting the implementation milestone established under the NDAA FY2020 to engage an independent entity to conduct an evaluation of the federal EHR, cybersecurity testing of the system and ecosystem and testing enablers.

  The FEHRM entered into an agreement with an independent entity—MITRE—to conduct an evaluation that confirms both the interoperability of the federal EHR and the ability for DOD and VA clinicians to access and meaningfully interact with a complete patient health record regardless of the source of the information (i.e., the federal EHR, DOD and VA legacy EHRs and available private sector health data sources). MITRE will conduct a multi-phased evaluation. Phase I of this evaluation will be performed at a level 4 joint sharing site that received the federal EHR. Phase II of the evaluation is expected to be performed at the Captain James A. Lovell Federal Health Care Center (FHCC) after it received the federal EHR.

  Due to VA's strategic review and its corresponding schedule impact, testing as required by the NDAA FY2020 of the interoperability is limited at this time. However, the FEHRM will proceed with establishing context of this evaluation and its relationships to previous and ongoing evaluations in the federal EHR ecosystem, in preparation for execution of Phase I once the level 4 sharing site becomes available. The FEHRM will advise on

completion timelines once VA announces the results of the strategic review and the FEHRM has a revised VA deployment schedule.

During Q4 FY2021, the FEHRM made significant progress toward the design of a "Red/Blue" team assessment of the federal EHR. This assessment—a third-party penetration test for the Federal Enclave—leverages an "external" team to simulate a real-world attack. The "Red/Blue" team assessment will enable the federal partners to identify exploitable vulnerabilities, close them to the extent possible and iterate rapid and effective response mechanisms for these risks.

Previous cybersecurity initiatives spearheaded by the FEHRM refined the Joint Incident Management Framework (JIMF) and established a weekly Joint Cybersecurity Team Meeting (JCTM). The JIMF details the candidate communication pathways for Federal Enclave stakeholders to improve the sharing of information about incidents across organizational components. By hosting the JCTM, the FEHRM established a weekly forum for federal stakeholders and mission partners to discuss and track cybersecurity guidelines, requirements, best practices and issues that impact the confidentiality, integrity and availability of the Federal Enclave. Both of these initiatives are informing a realistic response to the Presidential Order on Cybersecurity – Executive Order 14028.

Testing enablers are focused on processes and activities that enable joint testing efficiencies, including identifying physical locations or virtual options for testing, and management of test patient creation and clean-up in the federal EHR. During Q4 FY2021, the FEHRM test activity worked with DOD and VA to define their testing requirements, which will help inform the physical and virtual testing options for the federal EHR.

- **Joint Sharing Sites (JSS) Implementation Support:** In Q4 FY2021, the FEHRM engaged in numerous planning, execution and analysis activities to support the unique health informatics needs at joint DOD and VA sharing sites. The FEHRM, alongside its DHA Health Informatics (DHA HI) and VHA Office of Health Informatics (VHA OHI) partners, participated in DOD Wave JACKSONVILLE current state workflow assessments (CSWA).

  The FEHRM actively worked with its interagency partners to mitigate risks associated with DOD EHR deployment at Tripler Amy Medical Center (TAMC)-Pacific Islands VAHCS. The FEHRM developed and applied five approved Interim-State Joint Process Maps (ISJPMs) for the VA inpatient behavioral health unit at TAMC in partnership with DHA HI, VHA OHI and site representatives. Further, the FEHRM developed Enterprise Standard ISJPMs for referral management processes ahead of TAMC Go-Live.

- **FHCC Federal EHR Implementation Project:** In Q4 FY2021, the FEHRM orchestrated the FHCC Executive Session in collaboration with OEHRM, DHMSM, VHA, DHA and FHCC

leadership. Following the FHCC Executive Session, the FEHRM supported FHCC in their completion of the FHCC pre-design questionnaire, a requirement leading into the End-to-End (E2E) Assessment.

The FEHRM initiated the E2E Assessment, in collaboration with EHRM PMOs, Department health informatics and the vendor. These engagements assess clinical, business and technical processes to inform a new enterprise baseline for implementation at FHCC that meets site-specific needs and Department missions. The E2E Assessment will conclude in early Q1 FY2022.

The FEHRM continues to orchestrate project planning and execution activities for the interagency FHCC EHR Implementation Project team, guiding weekly leadership and working-level meetings, establishing cross-Department working groups, outlining roles and responsibilities and coordinating notional timelines and activities.

In Q4 FY2021, the FEHRM developed the FHCC Federal EHR Implementation Concept of Operations (CONOPS) and the FHCC Federal EHR Implementation Memorandum of Understanding (MOU). These agreements document how the interagency project team is structured and identifies responsibilities in support of the FHCC EHR implementation.

- **Deployment:** Throughout the reporting period, the FEHRM continued to drive federal capabilities to enhance health care by leading value-added activities for DOD, VA and USCG EHR deployments.

  The FEHRM worked closely with the Departments' functional, technical and site leadership to mitigate challenges and establish prioritized activities to advance solutions, capability delivery and joint initiatives supporting DOD, VA and USCG operational requirements. During Q4 FY2021, the FEHRM supported the DOD's Wave TRIPLER go-live and the USCG's Pacific EHR deployments.

Joint Health Information Exchange (HIE)

- **Joint HIE Enhancements:** The FEHRM continued to support enhancements to the joint HIE, including updates to unattended searches (that rely on electronic matches) that will increase patient matches by revising the minimum traits required to match a patient when a Social Security number is not available. The FEHRM also continued to support efforts that enabled the Social Security Administration to receive documents from the federal EHR.

- **Joint HIE/Joint Longitudinal Viewer (JLV) Collaboration:** Throughout the reporting period, the FEHRM continued its facilitation of the joint HIE/JLV Biweekly Collaboration Meeting. This effort enabled DOD and VA senior leaders to review joint HIE and JLV

progress, discuss risks and identify future opportunities. Through this collaborative forum, the FEHRM and Departments prioritized and planned for joint HIE improvements, addressed joint HIE technical issues and elevated issues and determined corrective actions.

- **CommonWell Health Alliance:** Following the successful connection of the joint HIE with the CommonWell Health Alliance in October 2020, the majority of patients were successfully matched via auto-enrollment. The FEHRM continues to work with DOD and VA to track, monitor and complete manual enrollment of the remaining patients. In August 2021, DOD successfully deployed manual enrollment to enable EHR users to manually enroll and link patients, and VA initiated a pilot of the functionality.

Interoperability Modernization Strategy

- **Interoperability Metrics:** Pursuant to NDAA FY2020, the FEHRM established a Joint Interoperability Strategy with DOD and VA. As part of this process, the FEHRM continues to evaluate metrics appropriate for assessing and monitoring progress toward achieving the outlined strategy.

  A snapshot of the current baseline Health Data Interoperability (HDI) metrics used to track progress toward modernization and enhancement of HDI is included below. Appendix A includes details outlining each metric category: (A) DOD/VA Integration, (B) Community Partnerships and (C) Patient Engagement.

- **Interoperability Modernization Strategy Performance Measurement Plan (Phase 3):** The Interoperability Modernization Strategy (IM Strategy) integrated product team (IPT) met as specialized work groups during the reporting period to review and develop performance measures for initiatives aligned to the IM Strategy's Goals and Objectives. The FEHRM coordinated and led the meetings, facilitated preparatory sessions and developed the artifacts to document the team's progress. As of September 2021, the IPT has reviewed 14 initiatives and endorsed more than 50 measures with potential for further development.

Interoperability Standards

- **Dental Data Exchange:** In ongoing efforts to develop and release the exchange of discrete dental observations among dental providers, the FEHRM collaborated with representatives from DOD, VA, American Dental Association (ADA) and the Health Level Seven® International (HL7) community to develop standards for Dental Data Exchange based on HL7's Clinical Document Architecture (CDA) and Fast Healthcare Interoperability Resources (FHIR). The FEHRM resolved final concerns from stakeholders,

which led to HL7's publication of the *CDA R2 Implementation Guide: Dental Data Exchange* as a Standard for Trial Use (STU) in Q4 FY2021. Efforts will now shift toward planning and supporting dental data exchange pilot activities.

- **HL7 Engagements:** The FEHRM contributed to the 2021 September Ballot Cycle by prioritizing ballots for review, coordinating with DOD and VA, reviewing relevant ballots and submitting votes and comments. The FEHRM also managed the ballot tracking tool to track active ballots for FEHRM, DOD and VA reviewers, planned votes and actual votes. The FEHRM hosted an HL7 ballot coordination meeting with DOD and VA stakeholders to discuss the rationale for negative votes if applicable.

  In conjunction with the HL7 September 2021 Working Group Meeting (WGM), the FEHRM successfully hosted the HL7 Government Birds of a Feather (BOF) meeting. Representatives from eight federal departments and agencies, plus international consulting, insurance, association and industry groups attended the meeting. The FEHRM invited experts from federal agencies and departments to inform the standards community on current priorities and initiatives. The ONC presented significant updates that regarding the next version of USCDI (v3), Interoperability Standards Advisory (ISA), Standards Version Advancement Process (SVAP), FHIR Accelerator for Public Health and Trusted Exchange Framework and Common Agreement (TEFCA). The TEFCA will enable the appropriate sharing of electronic health information between networks. The FEHRM moderated the roundtable discussion that included VA, Centers for Disease Control and Prevention (CDC) and Defense Health Agency (DHA). During the meeting, ONC recognized the FEHRM's contribution to resolving issues with Consolidated Clinical Document Architecture (C-CDA), which is the primary data engine for displaying community health data retrieved through the joint HIE in the JLV used by DOD and VA providers. These HL7 WGMs and Government BOF meetings provide an opportunity for the FEHRM to promote collaboration around standards and interoperability.

  At the September 2021 HL7 FHIR Connectathon, the FEHRM engaged in testing and analyzing implementation guides that included social determinants of health (SDOH) use cases, Da Vinci use cases and structured data capture. It resulted in a successful interagency collaboration effort to present the needs and profiles of Service members, Veterans and beneficiaries in standards development.

  Following the HL7 2021 September Ballot Cycle, the FEHRM completed and distributed the HL7 Government BOF meeting report to federal agencies/departments, industry leaders and key stakeholders from the HL7 community. The FEHRM began development of the ballot cycle evaluation report, which will summarize accomplishments and status for projects and balloting.

- **Consolidated Clinical Document Architecture (C-CDA) Product Management:** C-CDA is the U.S. standard for exchanging summary care records among providers. It contains

templates for documents such as discharge summaries, progress notes, continuity of care documents and procedure notes to better exchange patient information among health care actors. To ensure the C-CDA is maintained and evolved in continued support of national data policy, the FEHRM collaborated with the ONC to develop a three-year product roadmap. This roadmap includes fixing implementer issues, evolving C-CDA to support ONC's United States Core Data for Interoperability (USCDI) v2 and migrating to a modern publication framework. In Q4, the FEHRM coordinated with leaders in the HL7 community, including representatives from major EHR vendors and the ONC, to resolve outstanding implementer issues on the C-CDA standard related to USCDI v1 data policy, and began design efforts with the community to align with the ONC's recently published USCDI v2 data classes.

- **HL7 Da Vinci Project:** The HL7 Da Vinci Project brings together payers, providers and health care technology vendors, along with HL7, with a common goal to accelerate the adoption of HL7 FHIR as the standard to support and integrate value-based care data exchange across communities. The FEHRM actively evaluated three HL7 Da Vinci use cases: 1) prior authorization support (PAS), 2) notifications (formerly known as alerts) and 3) risk-based contract member identification for the purpose of sharing updates on implementation guides with stakeholders upon request.

  The HL7 Da Vinci Project applied for an exception to the X12 transaction requirement, which the Health Insurance Portability and Accountability Act exception allows for the Centers for Medicare and Medicaid Services (CMS)-approved Da Vinci payers and their trading partners to use FHIR standards to support prior authorization. They signed a trading partner agreement, and PAS currently is in FHIR end-to-end testing state.

  During the reporting period, the FEHRM addressed Member Attribution (ATR) lists. Member ATR lists are used between payers and providers for implementing risk-based contracts, value-based contracts, care gap closures and quality reporting. As the FEHRM and federal partners serve as both providers and payers, the FEHRM engaged in the HL7 Da Vinci Member Attribution Work Group meeting at the September 2021 HL7 FHIR Connectathon, which exercised and validated the Risk Based Contract Member Attribution List FHIR Implementation Guide. Specific tasks included:
  - Testing of proposed Application Programming Interfaces (APIs).
  - Validating data structures proposed for representing the Member Attribution List.
  - Validating the Report Summary measure report.
  - Testing of the use of population reference extension to support associating a specific evaluated Resource to a population, of the use of DaVinci Risk Based Contracts ATR List IG to attribute members when creating a gap in care report, and of the use of FHIR bulk data.

- **Institute of Electrical and Electronic Engineers (IEEE) Engagements:** The FEHRM assists the Departments in standardizing data exchanges between medical/mobile-health devices and health information systems (e.g., EHR) by contributing to the development of conceptual frameworks and standards and sharing standards information with the Departments for P1752 mHealth and P2933 Clinical Internet of Things Data and Device Interoperability with Trust, Identity, Privacy, Protection, Safety, Security (TIPPSS). Notable events include:
    - FEHRM submitted comments regarding the standard being developed by P2933 WG, focusing on the Safety, Security and Protection chapter.
    - Introduced the IEEE Life Science Technical Community Transforming the Telehealth Paradigm: Sustainable Connectivity, Accessibility, Privacy, and Security for All to the FEHRM ISO Emergency Preparedness work in addition to promoting transparency and equity for clinical and telehealth devices.

- **International Standards Organization (ISO) Engagements:** The FEHRM engaged as an active member of the ISO/American National Standards Institute (ISO/ANSI) Technical Committee (TC) 215. The FEHRM accepted ballot invitations and submitted ballot comments for standards and development projects that align with the FEHRM's charter and priorities. The FEHRM continues to evaluate engagements and seek ways to contribute to and influence ISO standards in the near future.

    Notably, the FEHRM continues to develop and influence standards that shape the next generation of Public Health Emergency Preparedness and Response (PH EP&R) Information Systems. The PH EP&R Information System is a global effort involving SMEs from the United States, Australia, Canada, Japan and South Korea to reduce the severity of future health crises and mitigate the risk associated with those events. The PH EP&R Information System is designed to collect, process and apply actionable information to manage public health emergencies. The FEHRM submitted leading edge content that provides a framework and protocol that will enhance emergency preparedness, increase situational awareness, improve decision making and enhance other actions necessary to manage a global health crisis.

- **Key Contributions/External Engagements (Government and Commercial):** The FEHRM Standards team led and contributed to a standard and interoperability marathon "Connectathon " event sponsored by the CMS HL7 Connectathon from July 20 to 22, 2021. The FEHRM led a successful interagency collaboration between DOD and VA to present Service member and Veteran profiles in the SDOH standards requirements. The FEHRM successfully advocated on behalf of the military community by educating and influencing the HL7 SDOH committee to consider standard specifications that reflect their unique qualities. Tracking SDOH factors provides a means to improve Service members' readiness and wellness and improve Veterans' quality of life.

Lastly, the FEHRM Standards team analyzed the recently released version of the TEFCA's QHIN Technical Framework (QTF) and contributed by providing comments to identify potential gaps that may impact the needs of Service members, Veterans and beneficiaries.

Federal and Industry Engagements

- **Key Contributions/External Engagements (Federal and Industry):** The FEHRM engaged with multiple federal agencies and industries regarding health analytics and machine learning, data interoperability and SDOH in predicting the wellness and health of a community. These events promoted the FEHRM's mission and priorities by enhancing interoperability and standards.

- **Office of the National Coordinator for Health Information Technology (ONC) Engagements**: During the reporting period, the FEHRM continued collaboration with ONC stakeholders to further the progress of national and international interoperability standards and the quality of health information exchange required by the Departments. In this effort, the FEHRM participated in numerous ONC engagements, including meetings, webinars and public comment periods to inform their work supporting the 21st Century Cures Act.

  The FEHRM continued representation with Federal Health IT Advisory Committee (HITAC) meetings; the Federal Health IT Coordinating Council (FHIT CC) and United States Core Data for Interoperability (USCDI) Workgroup. The following are key details of these interactions.
    - Collected, consolidated and adjudicated more than 140 comments from DOD, VA and the FEHRM on the ONC synchronized feedback request for review of the Interoperability Standards Advisory (ISA), the Standards Version Advancement Process (SVAP) and the draft USCDI in September 2021.
    - Collected, composed and submitted outcome statements for Health Interoperability Outcomes 2030, in which ONC plans to publish a prioritized set of outcomes.
    - Provided input to the U.S. Department of Health and Human Services (HHS) Behavioral Health and Interoperability survey to inform approaches HHS can take to help advance behavioral health care delivery and coordination supported by health IT.
    - Participated in the following ONC webinars: What Health Care Providers Need to Know about Information Sharing and the Information Blocking Regulation, Clinical Decision Support for Advancing Person-Centered Care and Health Equity, and Advancing Social Determinants of Health Data Use and Interoperability for Achieving Health Equity.

Additional Q4 FY2021 FEHRM engagements with key stakeholders included the following:

- Hosted the virtual FEHRM Town Hall for more than 100 participants on HL7 CDA/FHIR Implementation Guides: Dental Data Exchange.
- Supported the HL7 Gravity Community Project centered on SDOH by participating in community and technical meetings and voting to approve submissions to include stress, intimate partner violence and social isolation domains in future standards.
- Hosted monthly meetings with CMS to exchange current engagements and discuss potential collaboration opportunities. The FEHRM also participated in the CMS Interoperability and Standards Collaborative Forum and the Electronic Health Record Modernization Coordination (EHRM-C) meetings.
- Continued participation in the CMS-sponsored Post-Acute Care Interoperability (PACIO) Workgroup and PACIO Project Advance Directive Use Case Subgroup established in Q2 to create FHIR implementation guidance for advance directives information interoperability.
- Participated in the CMS Federal Agencies' Data Standardization Collaboration Meetings.
- Participated in the HL7 September 2021 Ballot Cycle by reviewing and voting on prioritized ballots; tracking ballots for FEHRM, DOD and VA; engaging in the HL7 WGM with key stakeholders and the HL7 community; and hosting the HL7 Government BOF meeting in conjunction with the HL7 WGM.
- Engaged with the Indian Health Service and the National Oceanic and Atmospheric Administration to share information and EHR modernization experience across federal agencies.

Conclusion

The Departments remain focused on enhancing and measuring health data interoperability with the single, common federal EHR as well as with those of their private sector partners who care for DOD, VA and USCG beneficiaries. Enabling health information exchange in the DOD, VA, USCG and private sector will serve as the foundation for a patient-centric health care experience, seamless care transitions and improved care for Service members, Veterans and their families. To demonstrate the effect on patients and providers as DOD, VA and USCG move forward with their implementation of a seamless EHR system, the FEHRM will continue to monitor and report data sharing between the Departments as part of its broader support of the Departments' commitment to advance HDI through interoperability modernization strategic planning.

Appendix A: HDI Metrics Details

HDI Metrics Details: Throughout Q4 FY2021, the FEHRM, DOD and VA continued to collaborate to monitor baseline Health Data Interoperability (HDI) metrics and the progress toward modernization and enhancement of HDI by both Departments. Each section shows a different interoperability dimension, as derived from the FEHRM's HDI Measurement Framework: (A) Department Integration, (B) Community Partnerships and (C) Patient Engagement. Figure 1 represents a snapshot of the Q4 FY2021 HDI Metrics Dashboard. Detailed explanations of the metric trends follow Figure 1. A snapshot of each individual metric is detailed, noting the change between quarters and any changes to systems that could result in potential impacts (for example, infrastructure outages or patches as well as new capabilities such as the joint HIE).

Figure 1 – Q4 FY2021 HDI Metrics Dashboard
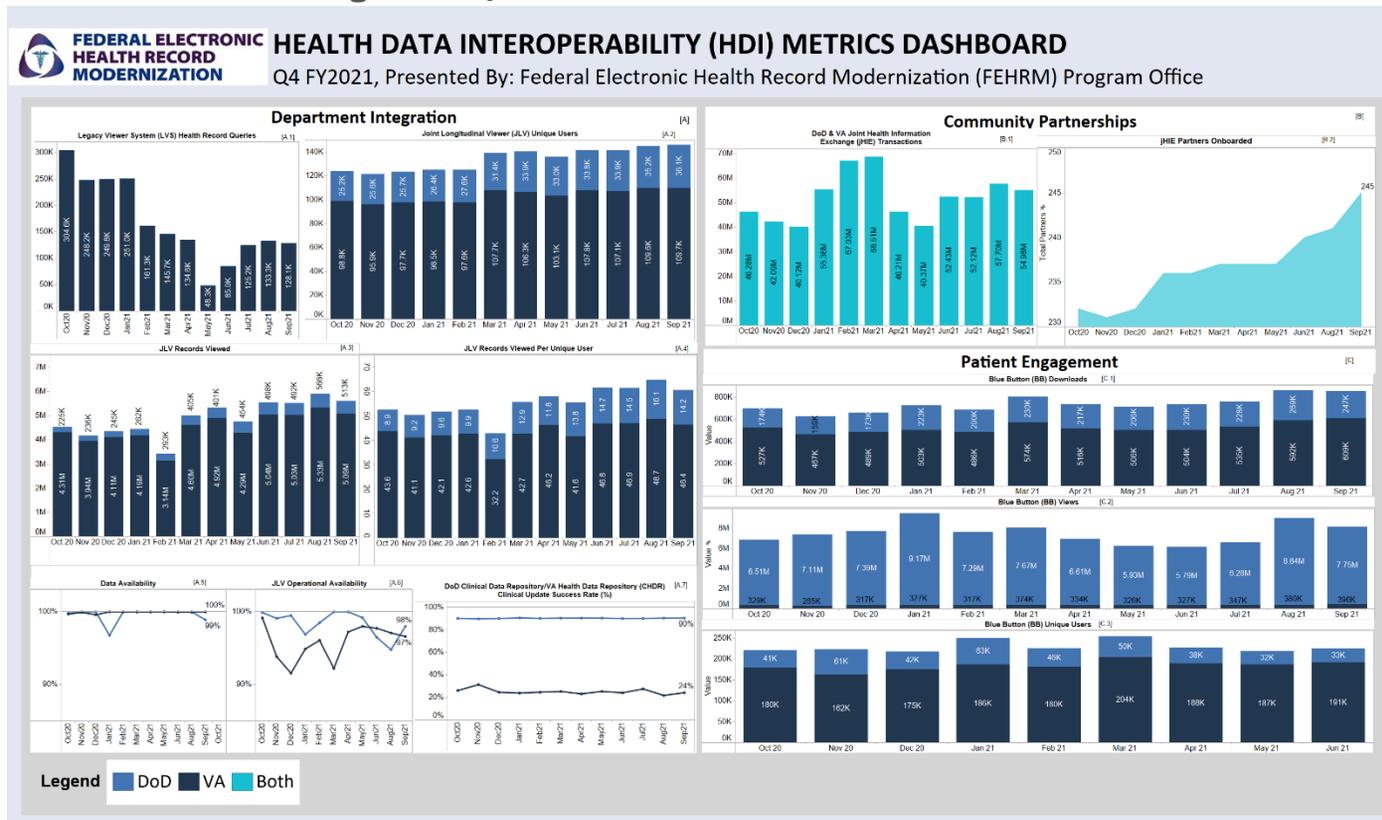
Q4 Highlights: As seen in Table 1, between Q3 FY2021 and Q4 FY2021, quarter over quarter Legacy Viewer System (LVS) (VA) usage and Blue Button (DOD) usage increased substantially.

Table 1 – Quarter Highlights

Metrics with a Notable Change in Q4 FY2021	Quarterly Delta	Supporting Information
VA Legacy Viewer System (LVS) Health Record Queries [Metric A.1]	44.27% increase from a quarterly total of 267,935 in Q3 FY2021	The increase in VA LVS Health Record Queries is driven by a VistA patch install in April 2021 that resulted in a significant drop in queries from VA clinicians seeking access to DOD patient data. Query numbers are now returning to expected levels after a June 2021 patch corrected the issue.
DOD Blue Button Views [Metric C.2]	23.70% increase from a monthly average of 6,108,534 in Q3 FY2021	The increase in DOD Blue Button usage is driven by patients accessing proof of vaccination or COVID-19 test results as required to return to work or school.
DOD Blue Button Unique Users [Metric C.3]	26.61% increase from a monthly average of 34,275 in Q3 FY2021	

DOD and VA use the below software applications and tools to support EHR data interoperability:

1. **Joint Longitudinal Viewer (JLV).** The JLV, released in 2013, is a web-based graphical user interface that was jointly developed by DOD and VA to provide a near real-time, integrated and chronological view of EHR information. It allows clinicians to view an integrated, read-only display of patient data from the DOD, VA and Virtual Lifetime Electronic Record (VLER) eHealth Exchange civilian partners within a single application. JLV retrieves clinical data from several native data sources and systems, displayed in Figure 2.

Figure 2 – JLV Data Sources and Systems

Department of Veterans Affairs (VA)

- Veterans Health Information System Technology Architecture (VistA) / Computerized Patient Record System (CPRS)
- VistA Imaging
- Enhanced Cerner Millennium data

Department of Defense (DoD)

- Armed Forces Health Longitudinal Technology Application (AHLTA)
- Composite Health Care System (CHCS)
- Essentris ®
- Health Artifact and Image Management Solution (HAIMS)
- Theater Systems
- MHS GENESIS (Cerner)

Private Sector
Health Information Exchange (HIE)

2. **Joint Health Information Exchange (HIE).** The Joint HIE is a secure network that shares Veteran and Military Health System beneficiary health care information electronically with civilian network providers who join the eHealth Exchange. Community partners who join undergo stringent security requirements to access patient records and health information securely, regardless if the facility is a civilian provider, military hospital or clinic, or VA Medical Center.

3. **DOD Clinical Data Repository/VA Health Data Repository (CHDR).** CHDR enables DOD and VA to exchange computable outpatient pharmacy and drug allergy information for shared patients. To achieve computable interoperability, each clinical component data is first standardized to a mutually agreed upon mediating vocabulary that both systems comprehend, and provide decision support, such as drug-allergy or drug-drug interaction checks.

4. **Blue Button.** Blue Button enables patients from DOD and VA to access their personal health data from their EHR, including allergies; laboratory and radiology results; vital signs; and outpatient medications, problem lists and encounters. The new MHS GENESIS Patient Portal also allows TRICARE beneficiaries to exchange secure messages with their care team; schedule medical and (active-duty) dental appointments online; access notes, labs and medications; and request prescription renewals online.

5. **Federal EHR.** Beginning in 2017, DOD Initial Operational Capability (IOC) sites in the Pacific Northwest went live with MHS GENESIS (DOD's name for the federal EHR). Subsequent deployments of MHS GENESIS include Waves TRAVIS (Q4 FY2019), NELLIS (Q4 FY2020), PENDLETON (Q1 FY2021), SAN DIEGO (Q2 FY2021), CARSON+ (Q3 FY2021), and TRIPLER (Q4 FY2021). Beginning in October 2017, the federal EHR went live at the first VA IOC sites in the Pacific Northwest and Nevada. VA will resume deployment activities after its strategic review. End-user metrics regarding the federal EHR will be reported jointly for DOD, VA and USCG in subsequent reports.

The FEHRM, DOD and VA continue to expand HDI by improving upon the more than 5.6 million patient records currently shared monthly between the two Departments, as defined by the total number of JLV records viewed by the Departments reported as of September 30, 2021.

Category A: Department Integration

Value Statement: The FEHRM tracks utilization of legacy and modern EHRs, which enables departmental leadership and Congress to assess the reliability of legacy systems and evaluate the Departments' progress in transitioning from legacy systems to the single, common federal EHR.

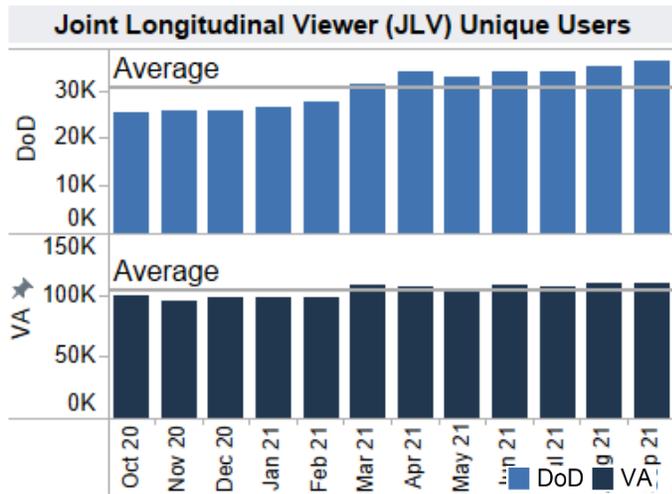### Legacy Viewer System (LVS) Health Record Queries
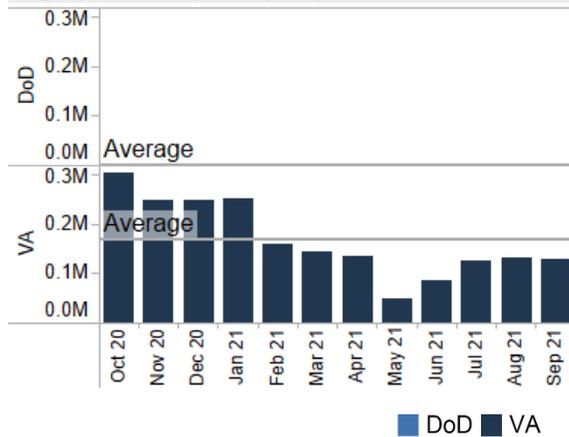
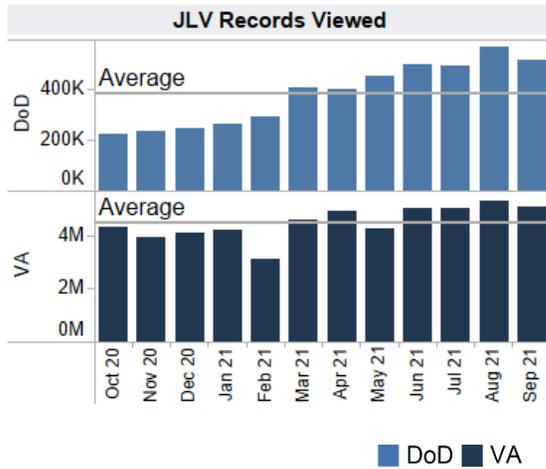### Metric A.1: Legacy Viewer System (LVS) Health Record Queries

Definition

Total number of health record queries made by DOD and VA to the Federal Health Information Exchange/Bidirectional Health Information Exchange (BHIE) Framework database using VistA Web and the Computerized Patient Record System (CPRS) Remote Data View in each month
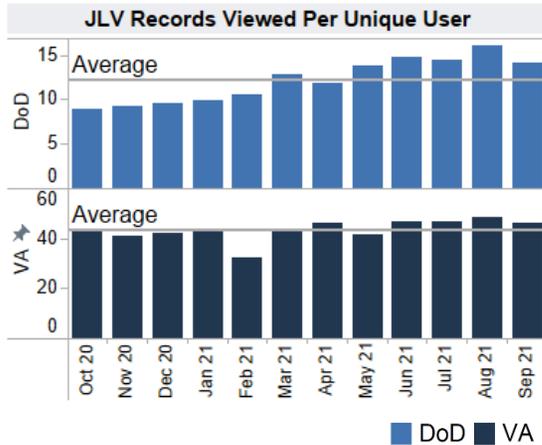
| DOD	Change	Impact Factors
	DOD discontinued use of the LVS in April 2019, so there are no changes.	The DOD implemented the Agile Core Services/Data Access Layer integration with Data Exchange Service in April 2019 and discontinued use of the LVS.
VA	**Change**	**Impact Factors**
	The total number of health record queries increased by 44.27 percent between the third and fourth quarters to 386,547 queries.	The increase in LVS Health Record Queries is driven by query numbers continuing to return to expected levels after an issue was corrected in June 2021 that had been caused by a VistA patch install at clinical sites in April 2021. The April 2021 VistA patch resulted in a significant drop in queries from VA clinicians seeking access to DOD patient data.

Joint Longitudinal Viewer (JLV) Unique Users

Metric A.2: JLV Unique Users		
Definition		
Monthly average number of active unique users (i.e., a user who has logged on during a specific month) recorded by the JLV for DOD and VA		
DOD	**Change**	**Impact Factors**
▲	The average monthly number of active JLV users increased by 4.43 percent between the third and fourth quarters to 35,067.	There are no factors of note.
VA	**Change**	**Impact Factors**
▲	The average monthly number of active JLV users increased by 2.95 percent between the third and fourth quarters to 108,827.	There are no factors of note.

JLV Records Viewed

Metric A.3: JLV Records Viewed

Definition		
Monthly total number of patient records viewed using the JLV for DOD and VA		

DOD	Change	Impact Factors
▲	The total quarterly number of JLV records viewed increased by 16.07 percent between the third and fourth quarters to 1,570,787.	There are no factors of note.
VA	**Change**	**Impact Factors**
▲	The total quarterly number of JLV records viewed increased by 8.44 percent between the third and fourth quarters to 15,450,977.	There are no factors of note.

JLV Records Viewed Per Unique User

Metric A.4: JLV Records Viewed Per Unique User

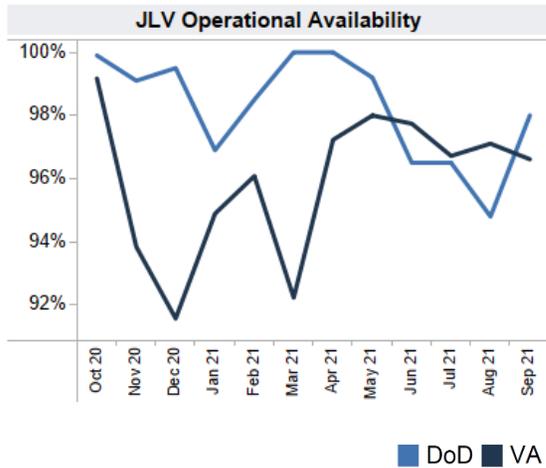| Definition		
Monthly average number of patient records viewed using the JLV for DOD and VA per active unique user		
DOD	**Change**	**Impact Factors**
▲	The average monthly number of JLV records viewed per unique user increased by 11.12 percent between the third and fourth quarters to 14.93.	There are no factors of note.
VA	**Change**	**Impact Factors**
▲	The average monthly number of JLV records viewed per unique user increased by 5.43 percent between the third and fourth quarters to 47.32.	There are no factors of note.

Data Availability

Legend: DoD, VA
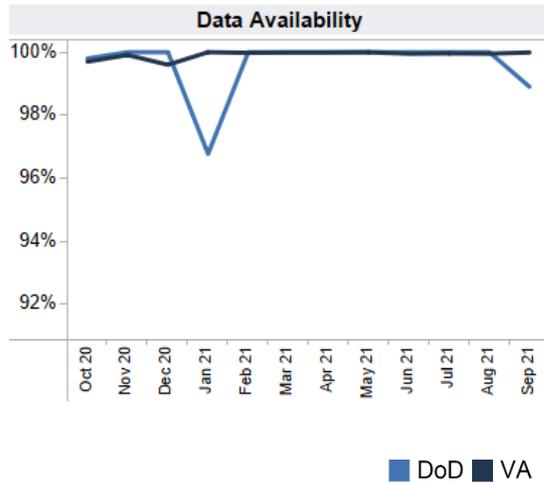
Metric A.5: Data Availability

Definition

DOD – The percentage of time the Data Exchange Service is available on the data server for all the sites located in the data centers in support of DOD-to-VA HIE

VA – Percentage of time during the month that VistA Data Services was operational (i.e., with no errors and available to both DOD and VA users) in all JLV environments (i.e., Earth Observation Cloud, Non-Secure Internet Protocol Router and Medical Community of Interest)

DOD	Change	Impact Factors
▼	The average monthly data availability decreased by 0.37 percentage points between the third and fourth quarters to 99.63 percent.	There are no factors of note.

VA	Change	Impact Factors
▼	The average monthly data availability decreased by 0.01 percentage points between the third and fourth quarters to 99.97 percent.	There are no factors of note.

JLV Operational Availability

Legend: DoD (blue), VA (black)

Metric A.6: JLV Operational Availability

Definition

The percentage of time during the month that the JLV was available for log in and functionally operational by DOD and VA users (i.e., available for users to conduct a patient search and to access both DOD and VA EHR data in the cloud environment)

DOD	Change	Impact Factors
▼	The average monthly operational availability decreased by 2.14 percentage points between the third and fourth quarters to 96.43 percent.	There are no factors of note.

VA	Change	Impact Factors
▼	The average monthly operational availability decreased by 0.85 percentage points between the third and fourth quarters to 96.81 percent.	There are no factors of note.

CHDR Clinical Data Update Success Rate
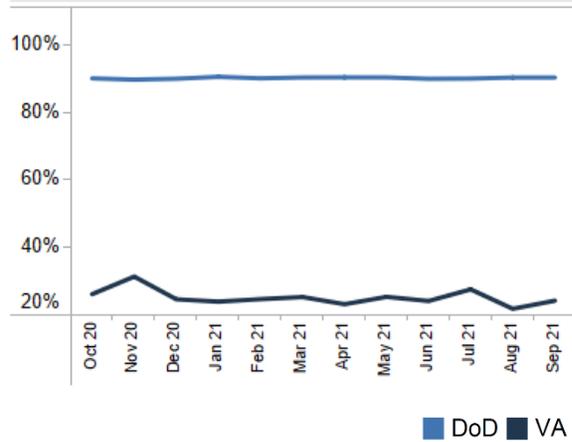
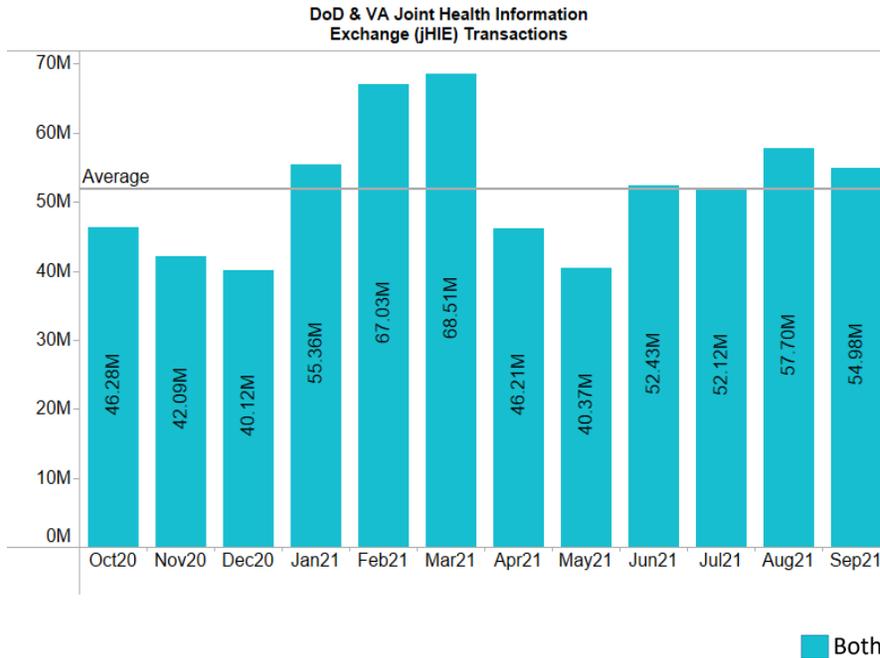## Metric A.7: CHDR Clinical Data Update Success Rate from DOD to VA and VA to DOD

Definition		
Percentage of CHDR clinical update messages with data (allergy or pharmacy) successfully processed (a successful process occurs when the sending agency receives a response from the receiving agency indicating successful receipt, translation and storage of clinical data)		

DOD	Change	Impact Factors
▼	The average monthly CHDR clinical data update success rate had a decrease of 0.01 percentage points from 90.22 percent in quarter three to 90.21 percent in quarter four.	There are no factors of note.
VA	**Change**	**Impact Factors**
▲	The average monthly CHDR clinical data update success rate had an increase of 0.31 percentage points from 24.24 percent in quarter three to 24.55 percent in quarter four.	There are no factors of note.

Category B: Community Partnerships

Value Statement: The FEHRM monitors the Departments' progress toward consistent, secure and reliable health data exchange by tracking joint HIE partner onboarding, as well as joint HIE transactions between the Departments and private care partners as best practices and improvements are implemented.

DoD & VA Joint Health Information Exchange (jHIE) Transactions

	Oct20	Nov20	Dec20	Jan21	Feb21	Mar21	Apr21	May21	Jun21	Jul21	Aug21	Sep21
Both	46.28M	42.09M	40.12M	55.36M	67.03M	68.51M	46.21M	40.37M	52.43M	52.12M	57.70M	54.98M

Metric B.1: Joint HIE Transactions

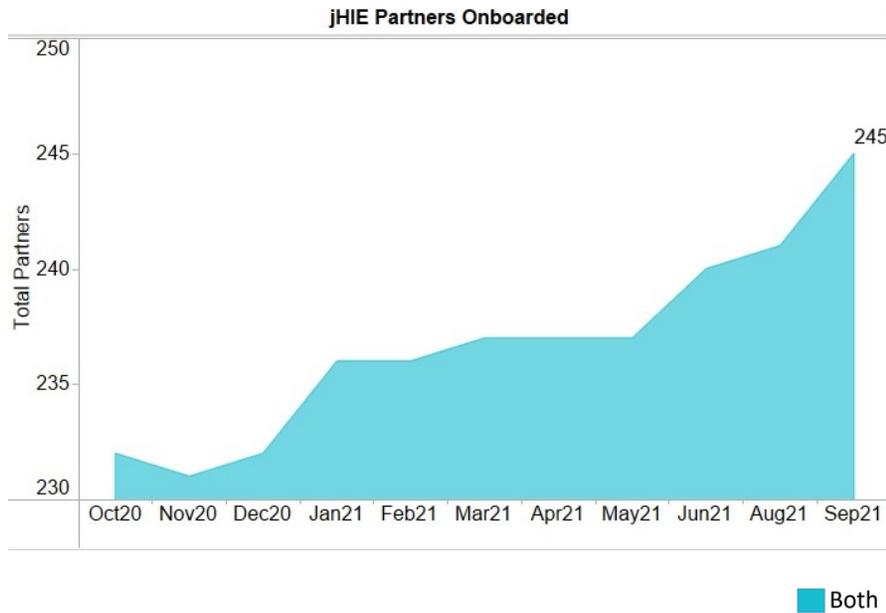| Definition |
|---|
| Monthly count of C-CDA, C32 or C62 (document architecture that facilitates interoperability of health data between EHR systems) documents exchanged between the Departments and private partners |

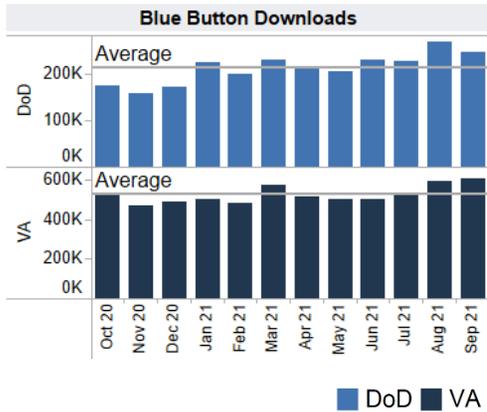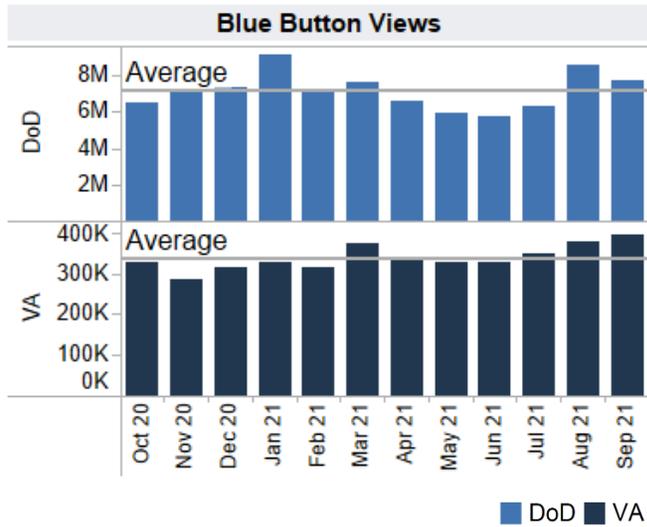| DOD/VA	Change	Impact Factors
▲	The total number of jHIE transactions increased by 18.56 percent between the third and fourth quarters to 164,806,876.	There are no factors of note.

jHIE Partners Onboarded

Metric B.2: Joint HIE Partners Onboarded

Definition		
Monthly and cumulative count of private sector providers who are partners in the joint HIE (a private sector provider is counted as one partner if the provider has one or more data sharing agreement(s) with DOD or VA)		

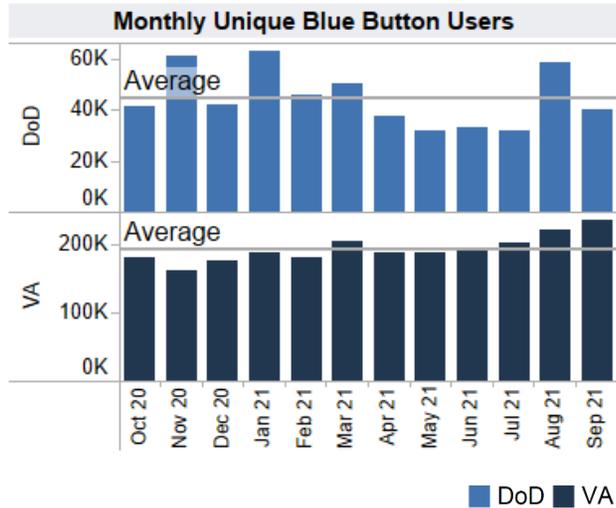| DOD/VA	Change	Impact Factors
▲	Five additional joint HIE partners were onboarded between the third and fourth quarters, bringing the total to 245.	There are no factors of note.

Category C: Patient Engagement

Value Statement: Blue Button serves as the foundation for broader patient engagement activities within the Departments, enabling patients to have easy access to their own health information in a usable format. The FEHRM monitors several metrics associated with Blue Button that show patient engagement with their integrated and consolidated health records from DOD and VA legacy systems' patient portals over time.

Blue Button Downloads

Metric C.1: Blue Button Downloads

Definition

Total number of data downloads (e.g., PDF, text) generated by end users per month

DOD	Change	Impact Factors
▲	The total quarterly number of Blue Button downloads increased by 13.93 percent between the third and fourth quarters to 743,862.	There are no factors of note.
VA	**Change**	**Impact Factors**
▲	The total quarterly number of Blue Button downloads increased by 13.75 percent between the third and fourth quarters to 1,735,942.	There are no factors of note.

Blue Button Views

Metric C.2: Blue Button Views		
Definition		
Average number of views generated by end users per month		

DOD	Change	Impact Factors
▲	The average quarterly number of Blue Button views increased by 23.70 percent between the third and fourth quarters to 7,556,404.	The increase in DOD Blue Button usage is driven by patients accessing proof of vaccination or COVID-19 test results as required to return to work or school.
VA	**Change**	**Impact Factors**
▲	The average quarterly number of Blue Button views increased by 13.70 percent between the third and fourth quarters to 374,337.	There are no factors of note.

FEDERAL ELECTRONIC HEALTH RECORD MODERNIZATION

Monthly Unique Blue Button Users

Metric C.3: Monthly Unique Blue Button Users		
Definition		
Number of unique Blue Button users within a month		
DOD	**Change**	**Impact Factors**
▲	The average monthly number of Blue Button unique users increased by 26.61 percent between the third and fourth quarters to 43,397.	The increase in DOD Blue Button usage is driven by patients accessing proof of vaccination or COVID-19 test results as required to return to work or school.
VA	**Change**	**Impact Factors**
▲	The average monthly number of Blue Button unique users increased by 15.96 percent between the third and fourth quarters to 218,948.	There are no factors of note.