COVID-19 Immunization Data Management: Expert consultations on clinical data exchange to VHA, CDC, DHS and EHR vendors

As the COVID-19 pandemic created new requirements for capturing and sharing vaccine information, J P Systems supported Federal efforts to define and standardize data in the U.S. Dept. of Veterans Affairs (VA) Electronic Health Record (EHR) systems. The VA needed a way to send daily immunization data to the Centers for Disease Control and Prevention (CDC). J P Systems' Subject Matter Experts (SMEs) supported the VA COVID-19 Vaccine Integrated Product Team (IPT) and VA Knowledge Based Systems (KBS) to design and implement COVID-19 Immunization placeholder data fields for the vaccines awaiting FDA approval.

J P System's SMEs monitored CDC release bulletins and acted promptly to model the vaccine data as it was released to the public. We worked closely with KBS SMEs to obtain final approval for the modeled data. Once approved, the modeled immunization content was forwarded to the OI&T Standards and Terminology Services technical team for testing and implementation in the VistA system. Within weeks, our team had modeled, tested, and implemented data for five placeholders: three two-dose vaccinations and two one-dose vaccinations. This preparation allowed for rapid updates to VistA as each vaccine was approved for EAU. Three vaccinations have since been added to VistA the CDC COVID-19 vaccination information created by Pfizer, Moderna, and Johnson & Johnson (Janssen). There were two significant issues that needed to be addressed to add a placeholder for the vaccine.

The first issue was that a vaccine administered code set (CVX) was required for a national entry to the VistA Immunizations file. To resolve this the Federal and J P Systems team assigned a temporary code until a final one was issued by the CDC.

The second issue was the possibility that more than one vaccine type would simultaneously be made available and used within VA. To resolve this issue, the team created multiple entries to represent the distinct vaccines in the Immunizations file. Thus, patient records could clearly state which vaccine was administered, which prevents the creation of generic COVID-19 vaccine records that would later not be backwards compatible with newer codes. This could have later impeded patient care, analytics, and research necessary to optimally address the pandemic.

Value to the Government: our work enabled VA to promptly enter vaccine information and report it to the CDC on the first day it was administered to patients! As the VA's eligibility to receive COVID-19 vaccines was contingent on electronic immunization reporting to CDC, our work enabled the VA to receive the COVID-19 vaccinations for our Veterans as soon as they were available.

Electronic data exchange enables providers to share immunization data with state immunization registries. These registries are comprised of immunization history data including allergies, contraindications, reactions, observations, refusals, and vaccine specification. However, for this immunization data to be transmitted, EHRs must comply with data standards, business rules, interoperable messaging frameworks, web services, and data payloads. To manage the immunization data, multiple terminology code sets are incorporated into the standards specification of a single vaccination administration event. These code sets follow SNOMED, CVX, MVX, LOINC, and HL7 National Immunization Program (NIP) values and standards. As immunizations data fall within the Problems, Allergy, Medications, Procedures, and Immunizations (PAMPI) domains, they can be converted to HL7 FHIR resources. HL7 2.5.1 Immunization Messaging is currently used to exchange immunization data, as it is mature in its specification, codification, and technical implementation. However, due to the 21st Century Cures Act Final Rule, providers will soon need to migrate to HL7 FHIR R4 to be compliant.