The Defense Health Management Systems is centralizing data from disparate sources with a cloud solution, preparing its data assets for greater usability to improve health care delivery across the Military Health System.
Over the first half of 2020, the agency was in the process of migrating electronic health record data and Defense Department health data to an AWS solution, DHMS Enterprise Intelligence and Data Solutions Program Manager Chris Nichols said during the Artificial Intelligence: New Horizons in Medicine event Thursday.

That migration involved absorbing not just EHR data, but also socially determined, biomedical, genomic, proteomic and imaging data, among others, making the new solution a “hub with spokes model” in MHS' GovCloud environment, Nichols said. The aim is to make the platform the central compute and store hub for MHS’ data sources.

Since migrating to GovCloud in June, Nichols said that the program is now looking to integrate and prepare the data to make insights and take action for the health care space.

“Our big focus right now is smoothing everything out and then starting to integrate how we will leverage it and putting all the right processes in place, so we know where the data is,” Nichols said. “We’re also onboarding all of the historical data into the net, so then we have one space that we’re tying in the future state data with all the longitudinal data."

This new model will be game-changing for AI and machine-learning models that can be leveraged in the military clinical setting and for Nichols’ customers like Defense Health Agency Walter Reed Clinical and Informatics Research Chief Jesus Caban. With health data coming from a variety of ancillary applications, databases and EHRs, validating and joining data in a way that cleans it for machine-learning models delays their development, Caban explained.

“The biggest challenge is the elevation of the data that we use,” Caban said. “Health care data is not clean. It has a lot of bias in the data as well. It comes, it gets out replicated across different systems … so when that data is combined, validating that all data is combined or joined correctly, making sure that the data you feed in the models and the machinery models is correct, is valid … that has been the biggest challenge.”
Caban praised Nichols’ work, adding that the cloud-based infrastructure DHMS is implementing for the data hub will act as a data catalogue that will bring more visibility into the data across the defense health enterprise.

The importance of data provenance and cleanliness is working toward the improved enterprise data management that the MHS needs to deliver better health outcomes, Nichols added. He highlighted that defense health could further improve in data governance by establishing data leadership positions, such as the roles of chief data officer, data quality manager and master data manager and metadata manager.

Working the backend of data collection and computing can make health data useful, trustworthy and ready for the clinical setting, Nichols said.

As the DOD and Department of Veterans Affairs continue to work toward a common electronic health record, the available health data can further centralize, and organization’s like Nichols’ can expand the horizontal reach of its data collection, Nichols added. This will enable more analysis and better serve individuals who serve in the military throughout their retirement as veterans.