



VA'S MILLION VETERAN PROGRAM AND THE VA-DOE BIG DATA SCIENCE INITIATIVE



The VA-DOE Big Data Science Initiative (BDSI), announced by the Department of Veterans Affairs and the Department of Energy in April 2017, is a new partnership that combines the technological and scientific expertise of two federal agencies to advance health care for Veterans and other Americans. Read on to learn more.

What is the VA-DOE BDSI, and what does it aim to accomplish?

- The VA-DOE BDSI is an agreement between the two federal agencies that aims to improve health care for Veterans and spur technological innovation. The results may also lead to better health care for all Americans, as well as for people around the world.
- The initiative will apply DOE's state-of-the-art expertise and capabilities in a secure computing environment, to analyze large amounts of health care and genetic data from VA and other federal sources. The massive amounts of information, combined with super-fast and super-powerful computing, will enable VA and other authorized researchers to glean new insights that would not otherwise have been possible.

What is "big data"?

- Big data is a branch of information and computer science concerned with processing and analyzing huge amounts of data. When it comes to health

research, this can mean looking at de-identified health records and genetic results of millions of people to answer important health questions. Each individual record or genetic report potentially contains thousands of "data points" that can be analyzed and compared against others.

- Technologies developed in recent years—computers capable of billions of calculations per second—have made it possible to analyze extremely large data sets with unprecedented speed. Health researchers hope to use these computing advances to discover new solutions to prevent and fight disease.

Why is the Department of Energy getting involved in health care?

- The agency's unique scientific and computing capabilities hold great potential to help solve America's health care challenges. The VA-DoE BDSI will be based within DOE's National Laboratory system, one of the world's top resources for

supercomputing. A secure enclave will be established within the system to give VA and other approved health researchers access to data and state-of-the-art computing resources.

- The effort will take advantage of DOE expertise and technology in big data, artificial intelligence, and high-performance computing. Direct, secure high-speed networks between VA and DOE facilities are expected to be in operation by June 2017.

What role does MVP play in the partnership?

- The starting point and centerpiece of the VA-DOE partnership is the Million Veteran Program Computational Health Analytics for Medical Precision to Improve Outcomes (MVP-CHAMPION) initiative. MVP has already enrolled more than 570,000 Veteran volunteers (as of late May 2017). These volunteers have provided DNA samples; completed surveys about their health, lifestyle, and military experiences; and granted access to their electronic health records for

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research purposes. MVP now represents the world's largest genomic database linked to a health care system.

- The partnership between VA and DOE will help VA use MVP data to do research more easily and efficiently. Eight studies are already underway using MVP data, looking at PTSD, heart disease, and other conditions common among Veterans; additional studies are being planned specific to the BDSI (see below).

Will the initiative involve only MVP data?

- The VA-DOE partnership will also involve approved research studies that look at data from the electronic health records of 24 million Veterans who have used VA care over the past two decades, including MVP participants. The goal of this work will be to find new

ways to improve health care for Veterans.

- Along with MVP and other VA health data, the VA-DOE partnership will use records from the Department of Defense, Centers for Medicare and Medicaid Services, and the National Death Index of the Centers for Disease Control and Prevention to provide a more complete picture of each patient's health status.

How will the data be kept secure?

- All data are coded, so that researchers cannot directly identify any individual. Also, data will be accessed by researchers in a secure enclave and will not leave the system.

What health conditions will be studied through the partnership?

- Over time, the VA-DOE part-

nership will support research on a very wide range of health issues affecting Veterans. Initially, however, the focus will be on the following three studies:

- One project will help VA improve computer algorithms being used to identify Veterans at high risk for suicide.
- A second project, on prostate cancer, will seek new ways to tell which tumors are deadly and require treatment, and which are slow-growing and not life-threatening.
- A third project will explore which sets of risk factors are the best predictors of certain forms of heart disease. It will help providers tailor treatment based on patients' individual genetic profiles.
- Additional studies are expected to be undertaken by VA and DOE as the partnership progresses.

The VA-DOE Big Data Science Initiative is a new federal partnership that promises to advance health care for Veterans and other Americans.



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