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U.S. Military Tests Predictive Analytics to Better Treat Depression in War Veterans

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The military is testing whether a cloud-based predictive analytics tool can help doctors do a better job treating depression in military personnel.

The effort to find a more objective basis for treatment comes as the U.S. military hospital system faces the dual strains of continued long term care of veterans of the wars in Afghanistan and Iraq, and severe cuts from the sequestration. “People would like us to find more cost effective treatment models,” said Col. Brett J. Schneider, a psychiatrist running the study at Walter Reed National Military Medical Center, where sequestration has forced thousands of planned worker furloughs. Dr. Schneider hopes the new self-learning software, built on a cloud-based Salesforce.com Inc. platform, will allow the military to more precisely treat wounded veterans, who often must spend years trying different medications before they identify an effective treatment for depression symptoms. “Wounded warriors are the population that has the highest risk for multiple medications.” Dr. Schneider said. “Multiple medications can have side effects and if we could avoid that by getting it right on the first try, that would be the way to go.”

The 2,000-patient study at Walter Reed National Military Medical Center and Fort Belvoir Community Hospital, which began last April, aims to assess whether a self-learning software can make better recommendations for medications to treat depression in military personnel—many of them wounded veterans—compared with doctors prescribing treatments based solely on their own judgment.

The study is using PEER Interactive software, from Aliso Viejo, Calif.-based vendor CNS Response Inc., which crunches mental health data from 9,402 patients, who

have already been treated using its database recommendations, and provides practitioners with recommendations for psychiatric medication and a calculation of the probability the treatment will work.

Rather than basing its recommendation solely on patient responses to questions, the software tool compares a measurement of the patient’s brain waves—the squiggly line printout known as an EEG—with those of thousands of past patients, and how those patients responded to drug regimens

Past studies have found a correlation between EEG measurement and various forms of mental illness. The software is designed to sharpen those correlations by continually updating its recommendations based on how well patients with particular, distinct, EEG patterns respond to different medication regimens. The software will not adjust its recommendations during the study based on new patient data, but the military hopes its patients will benefit from the analysis already done on thousands of treated patients, whose data was gathered over the course of more than a decade.

Other areas of medicine have already made strides in using self-learning tools to improve treatment. For example, at Vanderbilt University Medical Center, a database compares patient genetic attributions with treatment results from various blood thinners drugs, and continuously improves treatment recommendations based on results, said Dr. Blackford Middleton, chief informatics officer at the hospital. Dr. Middleton says the method allows the hospital to continue to improve results instead of relying solely on periodic, costly studies. “Otherwise we won’t be able to afford progress in the field,” said Dr. Middleton. “Learning from the data that exists is a very attractive alternative.”

But self-learning software in psychiatry is a greater challenge. Treating mental health conditions has traditionally relied more on observation than concrete, easily comparable indicators like blood tests, making it harder to create the empirical results needed for self-learning.

“Currently we have to go with clinical wisdom rather than more objective tests,” said Dr. Schneider who hopes recommendations from the system helps patients “get better sooner with less trial and error and fewer side effects. If we can get the right medication the first time that’s just good for the patient.”