# CDP 11-236 Accuracy and Validity of ICD9 Codes for PTSD in Veterans (CDA 10-016)

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#### **BACKGROUND/RATIONALE:**

The use of the Department of Veterans Affairs (VA) centralized data sources to study the impact of post-traumatic stress disorder (PTSD) on returning veterans' health has become commonplace. Unfortunately, research is hampered by the lack of a well validated method to identify PTSD using the centralized data. Often a singular definition is used to answer different kinds of research questions.

# **OBJECTIVE(S):**

The purpose of this study was to examine the validity of three algorithms tested against medical chart evidence for two different types of basic research questions: 1) which definitions best predict for a diagnosis of PTSD and, 2) which definitions best predict for the receipt of medication treatment for PTSD.

## **METHODS:**

VA centralized data sources were used to identify a random sample (n=136) of veterans nationwide enrolled in VA care in 2006. Using the ICD-9-cm code of 309.81, three administrative data algorithms commonly used in research were used to define half of the study sample with PTSD and the other half without PTSD: 1) one or two outpatient encounters with PTSD, 2) three or more outpatient encounters with PTSD, and 3) one or more inpatient encounter with PTSD. Next, medical records over a three year period (FY 2006 - 2008) were abstracted for each subject by trained psychology research assistants focusing on two relevant clinical judgments: 1) was there evidence of medical documentation of a diagnosis of PTSD, and 2) was there evidence of prescription treatment for PTSD. The two independent raters used a 5 point Likert scale to determine whether or not the providers of record were documenting each of these relevant clinical situations. Sensitivity, specificity, positive and negative predictive (PPV and NPV) values were then calculated across each algorithm for each situation.

#### FINDINGS/RESULTS:

From the 140 completed chart abstractions, we are able to demonstrate sensitivity, specificity, PPV, and NPV values for each of the three algorithms: 1) chart evidence of a diagnosis of PTSD and 2) chart evidence of medications used to treat PTSD. We used a dichotomous value of the Likert score indicating either definitely or highly likely to indicate a diagnosis or treatment of PTSD. Using the medical chart data indicating a Likert score of definitely or highly likely for a diagnosis of PTSD, definition 1 (e.g., one or two visits with PTSD) had a sensitivity of 69.6% and a specificity of 86.4%. PPV was 84.2% and NPV was 73.1%. By using definition 2 (e.g., three or more visits with PTSD), sensitivity increased to 91.7% with

95.5% specificity. PPV and NPV were also 95.7% and 91.3% respectively. Finally, using definition 3 (e.g., one or more in patient visits), sensitivity was 90.9% and specificity 82.6%. PPV and NPV were 83.3% and 90.5%. Examining for a Likert score for definitely or highly likely evidence for PTSD treatment, definition 1 had a sensitivity of 82.6% and specificity of 90.9% (PPV 66.7 and NPV 51.3); definition 2 was 79.2% sensitive and 100% specific (PPV 100 and NPV 81.5); whereas definition 3 was 77.3% sensitive and 91.3% specific (PPV 89.5 and NPV 80.8).

### **IMPACT:**

Sensitivity and specificity vary depending on the administrative data definition of PTSD used. These preliminary results suggest that definition 2 (outpatient encounters with 3 or more PTSD codes) may represent an optimal algorithm both to identify veterans with PTSD and to identify medication use associated with a diagnosis of PTSD

# **PUBLICATIONS:**

Journal Articles

Abrams TE, Vaughan-Sarrazin M, Richardson K, Cram P, Rosenthal GE. Patterns of Illness Explaining the Associations between Posttraumatic Stress Disorder and the Use of CT. Radiology. 2013 Jan 29.

#### **Conference Presentations**

Abrams T, Richardson KK, Lund BC. Variations in Pharmacotherapy Associated with a Diagnosis of PTSD. Poster session presented at: VA HSR&D / QUERI National Meeting; 2012 Jul 16; National Harbor, MD.

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