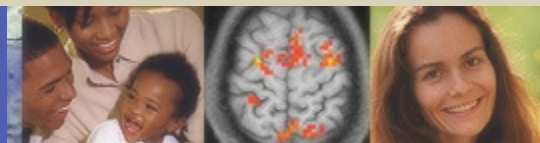




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May 7, 2008

**Virtual Reality, Psychotherapy, Show Promise in Treating PTSD Symptoms; Civilian Access to Care Remains a Concern**

WASHINGTON, DC, May 7 — Early data from an NIMH-sponsored double-blind study of 24 war veterans shows a marked reduction in acoustic startle — the reflex response to sudden loud sounds — in those treated with virtual reality exposure therapy combined with either d-cycloserine, an antibiotic that has been shown to facilitate the extinction of fear memories; pill placebo; or the anti-anxiety medication alprazolam (Xanax).

"These preliminary data suggest that this type of virtual reality exposure therapy is effective in reducing the elevated startle response that was evident before treatment," says Barbara Rothbaum, PhD, a professor in psychiatry at Emory University School of Medicine in Atlanta. Rothbaum spoke today at a press conference involving speakers from a symposium developed by the National Institute of Mental Health (NIMH), a part of the National Institutes of Health, during the American Psychiatric Association Annual Meeting here.

PTSD is an anxiety disorder that can develop following exposure to traumatic events and includes three types of symptoms: re-experiencing the trauma, such as nightmares and flashbacks; avoidance symptoms such as avoiding reminders of the experience and feeling emotionally numb; and physical hyper arousal, such as being easily startled. An estimated 7.7 million Americans adults have PTSD.<sup>1</sup>

At this point, all patients benefit from the virtual reality exposure therapy. The degree to which d-cycloserine coupled with virtual reality exposure therapy is more or less effective in reducing anxiety symptoms compared with placebo or alprazolam will not be known until the study is completed by the end of August, 2011.

The stimuli used for activation during the startle assessment consist of two-minute video clips of scenes depicting the Iraq theater of combat including that of a Humvee driving alone along a desert highway, a Humvee traveling within a convoy along a desert highway, and a soldier on foot patrol in an Iraqi city.

Acoustic startle, which measured hyperarousal symptoms, was assessed while patients were exposed to each of the three virtual environments at (1) pre-treatment, (2) post-treatment, (3) three months post-treatment, and (4) six months post-treatment. During treatment, the virtual reality exposure therapy was tailored to each of the patients such that they were repeatedly exposed to a virtual environment closely matched to that in which they were traumatized or injured.

At the time of pre-treatment, all subjects displayed a robust acoustic startle response within their relevant treatment environment. This robust startle magnitude decreased significantly, by 75 percent, during the course of treatment with its lowest levels at 6 months post-treatment. This reduction in acoustic startle magnitude observed in Rothbaum's study is consistent with a decrease in symptom severity in these patients

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as measured by scores on the Clinician Administered PTSD Scale.

"We think using virtual reality makes for a more potent and therapeutic exposure session by putting together the memories, sights, smells, feelings, and emotions and helping them to confront and cope with that complete memory," says Rothbaum. "We think that d-cycloserine specifically may facilitate the emotional learning process that takes place in exposure therapy and hopefully makes this process faster, more robust and long-lasting."

In general, exposure therapy is a technique that helps people confront what they are fearful of but in a therapeutic manner so that their fear response decreases. For PTSD, exposure therapy usually involves going over the memory of the traumatic event until it becomes less scary to think about and the physical and emotional responses to it diminish. D-cycloserine is a medication that was approved by the Food and Drug Administration more than 20 years ago for treatment of tuberculosis; it has recently been shown to enhance the learning of safety memories, helping those with phobias decrease fear faster when combined with exposure therapy.

The first patient treated with the virtual Iraq exposure therapy and d-cycloserine showed a 56 percent decrease in PTSD scores following four therapy sessions, and soon will be published as a case study. "This particular combination of treatment techniques and medication heralds a paradigm shift," says Rothbaum, explaining that such studies aim to "specifically enhance the efficacy of the emotional learning process that takes place in psychotherapy and hopefully make these new emotional memories more robust and long-lasting. We are very excited about the prospects of this combined therapy."

### **Access to Care for Civilians is a Concern**

In a new study conducted at the University of Washington, researchers found that a very effective PTSD psychotherapy called behavioral activation reached only one percent of the hospitalized population of injured civilian survivors of assaults and motor vehicle crashes targeted for PTSD prevention. Behavioral activation is a form of cognitive psychotherapy requiring injured patients to attend four to six psychotherapy sessions within one to three months after hospitalization. It appears that acutely injured trauma survivors had many other post-traumatic concerns and competing demands that prevented them from participating in the cognitive behavioral psychotherapy trial.

In contrast, a stepped collaborative care intervention that began with techniques to engage patients around their most pressing post-injury concerns, such as physical health and bodily pain, reached 54 percent of the target population of injured trauma survivors. This therapy eventually became more intensive and included evidence-based cognitive behavioral therapy as well as medications targeting insomnia and anxiety.

"These findings suggest that cognitive behavioral psychotherapy interventions may be highly effective in reducing PTSD symptoms in tightly controlled clinical experiments," says Doug Zatzick, MD, medical director of the psychiatric consultation liaison service at Seattle's Harborview Medical Center, a level I trauma center. "But they may require augmentation with other intervention strategies, such as the stepped collaborative care component, if they are going to reach large numbers of individuals suffering from PTSD in the real world."

In another study of 2,707 adult surgical inpatients nationwide, Zatzick and his colleagues found that PTSD and other disorders were associated not only with marked individual suffering but also substantial impairments in the ability to work, socialize, and even perform routine physical activities.

The study of adult surgical patients from 69 hospitals found that after one year, 20.7 percent of patients had PTSD and nearly seven percent had depression. Patients with both PTSD and depression had the greatest functional impairment, including inability to return to work, 12 months after injury; patients with one disorder (PTSD or depression) had high levels of impairment; and patients with neither PTSD nor depression had only modest levels of impairment. "This suggests the need for an enhanced focus on screening and intervention for PTSD and related co-morbidities in acute care settings if we are going to adequately improve functional recovery after injury" Zatzick says.

## Reference

1. Kessler RC, Chiu WT, Demler O, Walters EE. Prevalence, severity, and comorbidity of twelve-month DSM-IV disorders in the National Comorbidity Survey Replication (NCS-R). *Archives of General Psychiatry*, 2005 Jun;62(6):617-27.

\* Rothbaum is a consultant to and owns equity in *Virtually Better, Inc.*, which is developing products related to the virtual reality research described in this presentation. The terms of this arrangement have been reviewed and approved by Emory University in accordance with its conflict of interest policies. Rothbaum is also on the scientific advisory board for Tikvah Therapeutics.

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