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Researchers to test effectiveness of wristwatch-like devices for detecting sleep apnea in TBI patients

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Researchers from the Peter O'Donnell Jr. Brain Institute will participate in a national study to determine whether medical devices used in the home can diagnose sleep apnea that often develops after traumatic brain injuries (TBI).

The \$2.68 million study will compare the accuracy of formal laboratory screening versus wristwatch-like sensors that TBI patients will wear to measure sleep patterns.

Researchers want to know if wrist actigraphs, if proven comparable to full-scale polysomnography commonly used in sleep labs, would offer a reliable, accessible method to diagnose sleep apnea and lead to earlier treatment. The disorder – characterized by snoring and pauses in breathing that disrupt rest – often goes undiagnosed, which for TBI patients can be a crucial setback in recovery.

"Optimizing sleep is essential for neurorecovery after TBI," said Dr. Kathleen Bell, the project's investigator at the O'Donnell Brain Institute at UT Southwestern Medical Center and Chair of Physical Medicine and Rehabilitation.

Funding for the study comes from the Patient-Centered Outcomes Research Institute (PCORI) to further previous work from the multi-institutional team on how TBI affects sleeping patterns.

The team recently published the largest study examining sleep apnea incidence in consecutive admissions to inpatient brain injury rehabilitation. The researchers found that 50 percent of all brain injury admissions, and 37 percent of persons with TBI, were diagnosed with sleep apnea.

Up to 3 million TBIs occur in the U.S. each year, but diagnosing the ensuing cases of sleep disorder has been a challenge because most TBI patients don't realize they're at higher risk and are unaware their sleep is being disrupted by snoring or other symptoms.

Dr. Bell's research aims to improve the diagnosis rate by demonstrating whether simpler, home-based technology such as home polysomnographs (wrist actigraphs) can be just as effective as the thorough testing conducted in a laboratory.

The wrist actigraphs, which have primarily been used informally by researchers to monitor sleep patterns, will be upgraded for the study with improved sleep-tracing abilities to determine whether they can be a viable alternative to full-scale polysomnography, which is done in a sleep lab by a technician.

"We know that you can identify disturbances in sleep with wrist actigraphs. What we don't know is how effective these screening methods are stacked up against one another," said Dr. Bell, who holds the Kimberly-Clark Distinguished Chair in Mobility Research.

The study will begin enrollment in May at six TBI Model System Research Centers across the country, with infrastructure currently funded by the Departments of Health and Human Services, Veterans Affairs, and Department of Defense to examine early and long-term outcomes from brain injury. Dr. Risa Richardson, Clinical Neuropsychologist at James A. Haley Veterans Hospital in Tampa, Florida, and Associate Professor of Medicine at the University of South Florida, is principal investigator for the national study.

Participants will be selected from inpatients enrolled in the TBI Model Systems.

Source:

<http://www.utsouthwestern.edu/newsroom/news-releases/year-2017/apr/tbi-sleep-apnea.html>
