

NON-INVASIVE HOME-BASED BRAIN MONITORING FOR DEMENTIA AND PRE-DEMENTIA PATIENTS

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Over two billion people worldwide are estimated to suffer from a disease of the central nervous system. Over half of the people satisfying the criteria for dementia have never received a diagnosis. In US, a lower bound of 5.7 million individuals is believed to have Alzheimer's disease (AD). Given this population's reduced ability for self-assessment, it can hardly accurately report changes in physiological state, including seizures and their causes, rendering it all the more vulnerable to undetected injury and drug side effects which is compounded in the US drug where over 70% of the population is at least on one prescription and more than half takes at least two thus delaying care. Given that compromised sleep is the first hallmark of AD and possibly a precursor as sleep may be critical in reducing β -amyloid build-up. Moreover dynamic oscillations during sleep can be harnessed to identify subtle changes in neurophysiology, tracking the fine nature of sleep in AD. Mild cognitive impairment (MCI) patients presents a significant opportunity to address the vulnerabilities described above as well as to evaluate compounds, diets and changes in lifestyle which may be more potent in the MCI stage than in AD. In this lecture, human-based, sleep-based, non-invasive neurotechnology platforms will be discussed, including one specific for gathering drug response data and a sensitive one for identifying at risk subjects. Applications of these technologies regarding other CNS disorders, including Lewy body dementia, will be discussed.

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