

QEEG Utilization in Forensic Settings

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Often the acceptance of new techniques and technology in diagnostics and assessments in general are the result of referencing its acceptance in courts of law. Actuarial methods for confirming and delineating a patient's given functional status has generally been preferred over arguments which are solely "clinical judgement" based on behavioral observations in forensic matters since having simple opposing clinical experts often leaves confusions for judges and juries. With the increasing advent of quantitative neurophysiological measures and neuroimaging, there has been a growing concern for the legitimacy of such measures for providing statements regarding CNS integrity and weighing this in the context of their reported symptoms and/or other clinical evidence of functional or adaptive compromise. This is no less true for methods of quantitative EEG (qEEG). More specifically, queries are made with regard to the specific methodology used in such cases including the qualifications of the equipment used, databases employed, and indeed the professional ultimately making interpretation of the qEEG in these cases. This presentation will review many of the issues that confront providers using qEEG in forensic circumstances using some of the cases that have appeared in both civil and criminal cases as illustrations. The potential more widespread acceptance of qEEG findings in forensics resides on the integrity of its used with well qualified professionals in the field.

Clinical Electrophysiology as a biomarker diagnostic and treatment in Psychiatric setting

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Psychiatric disorders interfere with daily-life activities and treated with psychological and pharmacological treatments. For Psychopharmacology and Psychotherapy to meaningfully improve outcomes, it's time to figure out how to develop "the next generation of interventions." A new route map has been drawn for the diagnosis and treatment of psychiatric diseases. The National Institute of Mental Health (NIMH) has called for a more rigorous and evidence-driven approach to mental healthcare. It is time that psychiatry moves away from its present focus on diagnosing subjectively and takes a new direction that uses other modalities of care; evidence-based diagnosis and treatments. Psychiatry is the only specialty that doesn't actually look at the organ it treats. Patients deserves better. We need to devote our selves to efficient evidence-based diagnosis of disorders and personalized treatments. Implementing biological markers for psychiatric disorders into laboratory-based electrophysiological diagnostic tests can significantly improve diagnosis and management of these disorders. Diagnostic electrophysiological techniques are non-invasive and relatively inexpensive. Psychiatric electrophysiology currently under utilizes such methods and plays a limited role in the diagnosis and treatment in psychiatric disorders. This status is not supported by the existing literature. I am going to talk about evidence supporting diagnostic electrophysiological biomarkers and their effectiveness in the treatment of psychiatric disorders.

Brain to behavior approach-use of objective data in clinical work

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Within the clinical setting, the trajectory of patient assessment should be guided by how the patient's brain drives their behavior. The "Brain to Behavior Approach" uses objective and subjective assessment tools to provide the clinician with data that focus on a patient's key clinical features and assist in targeting the best individualized therapies for their unique mental health condition. The "Brain to Behavior Approach" incorporates objective neurophysiological tools that include auditory and visual cognitive evoked potentials, and IVA, a continuous performance task for assessment of auditory and visual processing, as well as a prolonged EEG recording that includes activation. On the day of the EEG, we perform a toxicology screen and genetic mapping, and if indicated, we add an acute medication challenge study. A challenge study involves two sequential EEG evaluations: one before and one after the administration of psychotropic medications. Moreover, patients routinely participate in face-to-face assessments, such as the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS) and computer-based tests such as the Cambridge Neuropsychological Test Automated Battery (CANTAB). Finally, after the analysis and integration of all the above-mentioned data, what emerges is a unique and comprehensive plan for individualized therapeutics. Clinical cases will be used to illustrate the utility of this approach.