EXPLANATION OF THE QUANTITIVE EEG (QEEG)

QEEG data assists in the localization and assessment of the severity of neurological functioning. It provides useful information in the selection of neurofeedback protocol for successful treatment and medication evaluation. Repeated neurometric tests provide information on recovery and chronicity of deterioration trends.

Neurometric Brain Mapping or Quantitative EEG is a clinical diagnostic tool, which measures *brain dysfunction*. It points to areas of dysfunction, quantifying specific abnormalities and assists in the differential diagnosis process. Unlike other testing, such as MRI, CAT Scan, FMRI, and SPECT Scans, QEEG analysis reflects problems in **functioning of the brain**; hence it is more useful for neurofeedback or EEG Biofeedback protocol development.

Neurometrics is state of the art methodology for data collection, selection and statistical analysis of electrophysiological measurements, which provides a precise quantitative and duplicable measurement of brain dysfunction. The purpose of the procedure is to assess the configuration and pattern of brain neurophysiological dysfunction in neurological disorders.

The main data source is the regular EEG record, which is effective in detecting epileptic activity and gross focal abnormality. The Quantitative EEG (QEEG) serves as a clinical diagnostic tool which maps regional brain dysfunction from data derived from regular EEG and contributes to a global picture of brain dysfunction.

QEEG utilizes a computerized spectral analysis, which breaks down the EEG into its component wave bands of differing frequencies or differing cycles per second [Hz} (Delta 1-4; Theta 4-8; Alpha 8-12; and Beta 12-25). Afterward the QEEG computerized analysis program measures, for each of 19 channels, the wave band frequencies, amplitudes, asymmetries between analogous points of measurement, and the phase relationship between different points of measurements (coherence). Each channel or local measurement is called a univariate measure.

After being compared to a normative database for the same age group, the computerized analysis as described above, provides a measurement of abnormality in standard deviation (s.d.) units (or Z score measurements). These s.d. units reflect the degree of deviation from the norm and the increased certainty the measurement is abnormal. A standard deviation of 1.96 is considered to be significantly abnormal (1.96 s.d. means a 5% chance of having a false positive finding. It is reduced to 1% when the s.d. is 2.33 and further to 0.26% when the s.d. is 3).

Clinical discriminant function determines the similarity between the cluster of measurements of a particular patient and that of a group of people suffering from a particular neurological disorder, e.g. Attention Deficit Disorder and Traumatic Brain Injury. It is also expressed in probability measurements as described above. It is based on extensive clinical research and multisite testing. The clinical discriminant function serves as an adjunct to other clinical information in the diagnostic process. However, it does not provide a diagnosis by itself and should not be used as a diagnostic screening tool.

In addition to the QEEG feedback, the data can be reviewed by a neurologist and includes a report with medical interpretation.

The full QEEG analysis with medical interpretation of EEG and qEEG is recommended when billing third party insurance. The topographic analysis includes current source density, multivariate connectivity and an NxLink database comparison.