



Does your child suffer from learning delays or regression, attention deficits (ADHD), autism, delayed speech, and language development or sleep disorders?

If yes, we look forward to helping your child reach his or her maximum potential in order to thrive in today's challenging world.

BMI is a diagnostic and treatment center for children with all levels of learning difficulties including ADHD, Autism and developmental brain disorders. We also treat seizures, motor delays, sensory integrative dysfunction and coordination difficulties.

Led by chief neurologist **Fernando Miranda, M.D., F.A.A.N.**, our staff will diagnose your child using a recent MRI (from the past year) and our leading edge BEAM/DEEP Assessment data. From your child's data and medical history we will determine whether he or she suffers from brain disorders. We are confident that your child will significantly improve over time with our treatments if you strictly follow our regimen.

Our clinics in San Francisco, California and Vero Beach, FL are the only locations in the world where the custom BEAM/DEEP EEG system is available for clinical use by neurologists and neuropsychologists. Below are the steps of our diagnostic process.

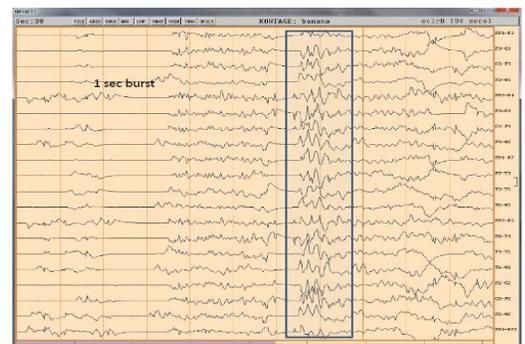


Digital EEG and Evoked Potentials vs. Traditional EEG

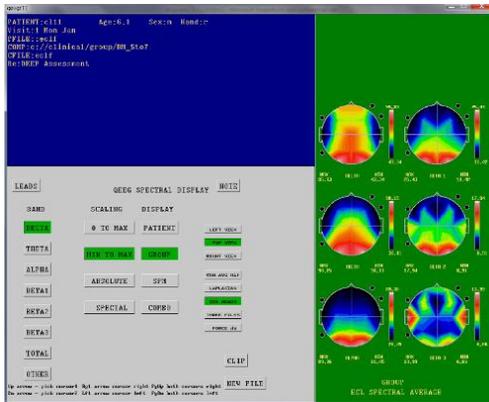
EEGs measure brain electrical activity, therefore brain function. Regular EEG scans are available worldwide in most hospitals. We use a special, customized version of Digital EEG called "DEEP" which stands for **Digital Electroencephalograph and Evoked Potentials**. This specialized EEG captures more information than the standard EEG and allows trained neurologists to thoroughly examine the subtleties and complexities of each individual. Our DEEP looks at the raw cross-functionality of the brain and provides better data than standard EEGs.

The DEEP is better than more primitive diagnostics:

- ⤴ Standard EEG at best utilizes 28 electrodes -- none of which record data from the primary language regions of the brain.
- ⤴ Our EEG caps have 32 electrodes, 8 of which specifically record data from key language learning regions of the brain -- Broca's and Wernicke's areas respectively. These regions handle the majority of our understood and evoked language and yet remain largely ignored in traditional EEG recordings. We believe that these regions must be evaluated directly in order to accurately explain how a child's individual problems manifest in their development of language.



Another difference in our test versus standard EEG is in the method used to discover potential anomalies. Traditional EEG is primarily used to discover seizure activity and or anomalous neural activity. To do this, traditional EEGs use a barbaric method to discover these anomalies -- in short they *cause* them as a means of determining their presence.



Traditional EEG is like an engineer's test used to determine where a machine may break down. An engineer runs the new machine through a series of very extreme tests, well outside of its normal tolerances. When it breaks down she looks to the original area of failure as a region to fix. While this may be sufficient for a machine, the brain is too complex to have its diagnosis benefit greatly from such a method.

Our DEEP does not "brute force" anomalous activity from the brain but instead uses basic stimuli (beeps, tones, and flashing lights), all of which have been confirmed effective in peer-reviewed literature to activate specific areas of the brain that we wish to observe. These stimuli allow us to determine how the brain would respond under ordinary conditions, thus allowing us to view any anomalous activity in context.

The DEEP records the brain for 2-3.5 hours. We require 4-5 hours to process and review the data and 1 hour to create your child's comprehensive report.

Why take a DEEP Assessment?

- ▲ Confirm proper or abnormal brain function
- ▲ Quantify any deficits in neural processing
- ▲ Rule out or confirm silent seizure activity. Even if the patient does not demonstrate silent seizures during the DEEP, Dr. Miranda is able to see with 80% certainty abnormalities of where silent seizures may have occurred.
- ▲ Identify specific regions of the brain affected
- ▲ Find evidence of slow activity in certain areas of the brain. If anomalous slow activity is present, the DEEP may identify anomalous activity as a result of a **chemical imbalance**. In that case, specific information is used to determine which medications would be needed to effectively treat the imbalance.
- ▲ Concretely understand any problem and determine what medications and dosages are appropriate if any — insuring that physicians **do not blindly prescribe** medications to your child, as may happen after a solely behavioral diagnosis, or a diagnosis based on lesser scanning technology.

The DEEP is also used to determine the following:

1. How well the brain processes spoken language
2. How long the brain pays attention to information
3. How well the brain analyzes visual processing and auditory processing
4. How well connected all parts of the brain are to each other and the processing speed of the brain

How does the DEEP Assessment work?

Electrical signals produced by the brain are picked up by electrodes and transmitted to a computer where they are analyzed according to their speed, height, and location. A neurologist



examines your child's EEG recording for abnormal brain wave patterns. The results are first read traditionally via visual inspection. Afterward, our computers perform statistical analysis and compare your child's results to our **BEAM** (Brain Electrical Activity Mapping) **database** of normal electrical brain activity established at Harvard Medical School and Children's Hospital Boston by Dr. Frank Duffy, M.D.

Our DEEP Assessment references the above mentioned BEAM database of "normal" samples to compare to when testing you or your child. This standardized database of brain activity has been gathered over the last two decades and is still being updated today. These normative samples are broken into 10 age groups, allowing us to know what the average expected response to the stimuli we give your child will be. We superimpose your child's data over that of the average and are able to tell with mathematical certainty where your child differs. This provides us extreme accuracy in determining exactly which regions of the brain are affected and how these anomalies affect the proper functioning of your child's brain. In addition these results serve as a concrete framework upon which to build a medically based treatment protocol individually tailored to your child and the specific needs of his or her brain.

MRI

After your first evaluation, our neurologist *may* prescribe an MRI test for your child. MRI is an anatomical study of the brain which examines physical structure. MRIs allow us to rule out or confirm *structural* deficits in the brain. An MRI tells us if there are any physical anomalies causing the unusual activity seen in your child's EEG functionality assessment results (ie, lesions or developmental anomaly). Without an MRI we would be assuming that your child's brain is physically okay. We do not perform this procedure in our office. An MRI can be scheduled by your child's primary care doctor in your home region after your clinical evaluation, or be scheduled in the San Francisco area after your first BMI visit.

- MRI requirements:
 1. 1.5 or 3 T (Tesla) resolution scanner
 2. Brain MRI "without contrast"
 3. Braces: Can affect MRI but depends on size and total brackets. Please inform Dr. Miranda **before** your child is scanned.
- Your child must remain completely still for 45 minutes inside a loud, claustrophobic machine. 99% of children require sedation as head motion ruins the imaging process.
- Please bring your child's results CD to your first visit or mail to us ahead of time. If you have not had an MRI yet, Dr. Miranda *may* prescribe one after your first evaluation.



Call or Email to Schedule your Initial Evaluation

Please call us for more information about our approach. My staff and I work daily to improve cognitive performance and quality of life for all children, teenagers and adults. We look forward to maximizing your child's potential. Call Leah at **+1 (415) 561-6755** to schedule your first appointment in San Francisco. To schedule a Vero Beach office appointment call Dale or Jackie at **+1 (772) 299-4730**.

Best wishes and *salud!*

Dr. Fernando Miranda, M.D., F.A.A.N.
Founder and Medical Director



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