Tests for Abnormalities in ME/CFS
(See National ME/FM Action Network of Canada
for sources of some specialized tests)

From
Myalgic Encephalomyelitis/Chronic Fatigue Syndrome:
A Clinical Case Definition and Guidlines for Medical Practitioners

While there is not one definite test for ME/CFS, many tests may indicate abnormalities. The standard battery of tests may be inadequate to reveal abnormalities in ME/CFS patients. Many of the following tests are not available in general medical laboratories but may be available in research facilities or more generally available in the future:

- **Virology, etc:** viral antibodies, including Coxsackie B; bacteria, including HHV6; mycoplasma, etc. (Wisconsin Viral Research Group)
- **37kDa 25A RNase L immunoassay:** protein, activity, PKR cleavage, & elastase activity assays. (REDLABS U.S.A.; Red Laboratories, Belgium)
- **Other immunological markers:** NK cell levels and function per cell for low NK cell cytotoxicity; CD4CD8 ratio; ANA; activated immune complexes – IgG sub-fractions including IgG1 and IgG3, circulating immune complexes IL2 & IL4; Th1 –Th2 response to mitogen stimulation (high levels of Th2 indicate autoimmunity), flow cytometry for activated/elevated lymphocytes; antilamin antibodies may indicate autoimmunity and brain cell damage (lamin B antibodies are evidence of autoimmunity); humoral autoimmunity for polypeptides of the nuclear envelope (NE); antibodies in neuronal cells MAP2 (kinase regulators) (Immunosciences Lab)
- **Urinary markers:** 24hour urine free cortisol; elevated amino-hydroxy-N-methyl-pyrrolidine correlate with quantity of symptoms; IAG – tryptophan metabolite, is usually positive and indicates a leaky gut, which in turn is indicative of a leaky blood brain barrier; urinary creatine & other muscle metabolites.
- **Endocrine testing:** CT scans may show reduced adrenal gland size; thyroid hormone levels with attention to bioavailability of T3 & those with reduced level should be checked for selenium as it regulates conversion of T4 to T3; reduced HPA function
- **Increased 5HT neurotransmission**
- **Chronic orthostatic intolerance:** Use tilt-table test or monitor the pulse and blood pressure while standing. Note: This monitoring must be done with caution and someone standing beside the patient.
- **Cardiac Dysfunction:** 24-hour Holter monitoring - Specifically ask to either view the results yourself or to report repetitive oscillating T-wave inversion and T-wave flats. This pattern is typical of many ME/CFS patients but may not be reported.
- **Cardiopulmonary Exercise Testing:** AMA Guide for Evaluation of Permanent Impairment. Lower cardiovascular and ventilatory values at peak exercise help determine functional capacity, and peak oxygen consumption levels determine disability categories.
- **Computer Science and Application (CSA™)** Actigraph is a small device that measures frequency and intensity of activity in one minute intervals for up to 22 days. Typically, less intense and shorter activity peaks followed by longer rest periods are identified. It is helpful to have the patient keep a daily diary of activities during this period and/or wear a speedometer.
- **CNS, ANS:** Romberg test; nystagmus test (may fluctuate from positive & negative throughout the day); altered sympathetic modulations; subnormal and/or fluctuating diurnal body temperature
- **Cognitive performance:** decreased processing speed, working memory, information learning, etc.

- **SPECT scans** may reveal significantly lower cortical/cerebellar regional cerebral blood flow frequently in the frontal, parietal, temporal, occipital, brain stem and throughout the cerebral cortex.
- **PET scans** may reveal decreased glucose metabolism in the right mediofrontal cortex, and significant hypoperfusion and hypometabolism in the brain stem.
- **MRI brain scans**: Elevated numbers of punctuate lesions, particularly in the frontal lobes and subcortical areas, suggest demyelination or edema. Do spinal MRI for disc herniation and minor stenosis.
- **qEEG brain topography:** Elevated EEG activity in theta and beta frequencies and increased intracerebral electrical sources in left frontal region delta and beta frequencies in eyes closed condition may be identified. Reduced sources in right hemisphere (beta) may be noted during verbal cognitive processing.
- **Hypercoagulability:** flow cytrometry fibrinogen, thrombin/anti-thrombin complexes, etc.
- **Positive tests for fibromyalgia syndrome and myofascial pain syndrome** should be noted.
- **Skin conductivity and skin temperature:** The combination of a lower ability of the skin to conduct electrical current in response to visual and auditory stimuli, and a higher skin temperature of fingers indicate a down-regulation of autonomic sympathetic tone.
- **Sleep studies** may indicate that there is insufficient time spent in the deeper stages of sleep, and alpha wave intrusion into delta waves within non-REM sleep.
- **Ocular test:** slowed and marked jerkiness of saccades; difficulty with and slowed changing of visual fixation, constricted peripheral fields; low and/or incomplete blinking; small pupils; light hypersensitivity, tear film abnormalities such as low tear breakup time, inadequate production of the oil or mucus layer in tears, rose Bengal corneal staining; visual midline shift.
- **Allergies or sensitivities; Lung function testing; Liver function:** CPK and liver function