

## **Myalgic Encephalomyelitis: International Consensus Criteria**

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## **MYALGIC ENCEPHALOMYELITIS: INTERNATIONAL CONSENSUS CRITERIA**

### **Adult and Pediatric Clinical and Research**

Myalgic encephalomyelitis is an acquired neurological disease with complex global dysfunctions.

Pathological dysregulation of the nervous, immune and endocrine systems, with impaired cellular energy metabolism and ion transport are prominent features.

Although signs and symptoms are dynamically interactive and causally connected, the criteria are grouped by regions of pathophysiology to provide general focus.

A patient

- will meet the criteria for post-exertional neuroimmune exhaustion (A),
- at least one symptom from three neurological impairment categories (B),
- at least one symptom from three immune/gastro-intestinal/genitourinary impairment categories (C), and
- at least one symptom from energy metabolism/transport impairments (D).

## **A. Post-Exertional Neuroimmune Exhaustion (PENE pen'-e)**

### Compulsory

This cardinal feature is a pathological inability to produce sufficient energy on demand with prominent symptoms primarily in the neuroimmune regions.

Characteristics are:

1. Marked, rapid physical and/or cognitive fatigability in response to exertion, which may be minimal such as activities of daily living or simple mental tasks, can be debilitating and cause a relapse.
2. Post-exertional symptom exacerbation: e.g. acute flu-like symptoms, pain and worsening of other symptoms
3. Post-exertional exhaustion may occur immediately after activity or be delayed by hours or days.
4. Recovery period is prolonged, usually taking 24 hours or longer. A relapse can last days, weeks or longer.
5. Low threshold of physical and mental fatigability (lack of stamina) results in a substantial reduction in pre-illness activity level.

Operational Notes:

For a diagnosis of ME, symptom severity must result in a significant reduction of a patient's premorbid activity level. Mild (an approximate 50% reduction in pre-illness activity level), moderate (mostly housebound), severe (mostly bedridden), or very severe (totally bedridden and need help with basic functions). There may be marked fluctuation of symptom severity and hierarchy from day to day or hour to hour. Consider activity, context and interactive effects. Recovery time: e.g. Regardless of a patient's recovery time from reading for 1/2 hour, it will take much longer to recover from grocery shopping for 1/2 hour and even longer if repeated the next day – if able. Those who rest before an activity or have adjusted their activity level to their limited energy may have shorter recovery periods than those who do not pace their activities adequately.

Impact: e.g. An outstanding athlete could have a 50% reduction in his/her pre-illness activity level and is still more active than a sedentary person.

## **B. Neurological Impairments**

At least One Symptom from three of the following four symptom categories

### 1. Neurocognitive Impairments

- a. Difficulty processing information: slowed thought, impaired concentration e.g. confusion, disorientation, cognitive overload, difficulty with making decisions, slowed speech, acquired or exertional dyslexia
- b. Short-term memory loss: e.g. difficulty remembering what one wanted to say, what one was saying, retrieving words, recalling information, poor working memory

### 2. Pain

- a. Headaches: e.g. chronic, generalized headaches often involve aching of the eyes, behind the eyes or back of the head that may be associated with cervical muscle tension; migraine; tension headaches
- b. Significant pain can be experienced in muscles, muscle-tendon junctions, joints, abdomen or chest. It is non-inflammatory in nature and often migrates. e.g. generalized hyperalgesia, widespread pain (may meet fibromyalgia criteria), myofascial or radiating pain

### 3. Sleep Disturbance

- a. Disturbed sleep patterns: e.g. insomnia, prolonged sleep including naps, sleeping most of the day and being awake most of the night, frequent awakenings, awaking much earlier than before illness onset, vivid dreams/nightmares
- b. Unrefreshed sleep: e.g. awoken feeling exhausted regardless of duration of sleep, day-time sleepiness

### 4. Neurosensory, Perceptual and Motor Disturbances

- a. Neurosensory and perceptual: e.g. inability to focus vision, sensitivity to light, noise, vibration, odour, taste and touch; impaired depth perception
- b. Motor: e.g. muscle weakness, twitching, poor coordination, feeling unsteady on feet, ataxia

Notes:

Neurocognitive impairments, reported or observed, become more pronounced with fatigue.

Overload phenomena may be evident when two tasks are performed simultaneously. Abnormal reaction to light – fluctuation or reduced accommodation responses of the pupils with retention of reaction. Sleep disturbances are typically expressed by prolonged sleep, sometimes extreme, in the acute phase and often evolve into marked sleep reversal in the chronic stage. Motor disturbances may not be evident in mild or moderate cases but abnormal tandem gait and positive Romberg test may be observed in severe cases.

### **C. Immune, Gastro-intestinal & Genitourinary Impairments**

At least One Symptom from three of the following five symptom categories

1. Flu-like symptoms may be recurrent or chronic and typically activate or worsen with exertion. e.g. sore throat, sinusitis, cervical and/or axillary lymph nodes may enlarge or be tender on palpitation
2. Susceptibility to viral infections with prolonged recovery periods
3. Gastro-intestinal tract: e.g. nausea, abdominal pain, bloating, irritable bowel syndrome
4. Genitourinary: e.g. urinary urgency or frequency, nocturia
5. Sensitivities to food, medications, odours or chemicals

Notes:

Sore throat, tender lymph nodes, and flu-like symptoms obviously are not specific to ME but their activation in reaction to exertion is abnormal. The throat may feel sore, dry and scratchy. Faucial injection and crimson crescents may be seen in the tonsillar fossae, which are an indication of immune activation.

## **D. Energy Production/Transportation Impairments:**

### At least One Symptom

1. Cardiovascular: e.g. inability to tolerate an upright position – orthostatic intolerance, neurally mediated hypotension, postural orthostatic tachycardia syndrome, palpitations with or without cardiac arrhythmias, light-headedness/dizziness
2. Respiratory: e.g. air hunger, laboured breathing, fatigue of chest wall muscles
3. Loss of thermostatic stability: e.g. subnormal body temperature, marked diurnal fluctuations; sweating episodes, recurrent feelings of feverishness with or without low grade fever, cold extremities
4. Intolerance of extremes of temperature

### Notes:

Orthostatic intolerance may be delayed by several minutes. Patients who have orthostatic intolerance may exhibit mottling of extremities, extreme pallor or Raynaud's Phenomenon. In the chronic phase, moons of finger nails may recede.

## Paediatric Considerations

Symptoms may progress more slowly in children than in teenagers or adults.

In addition to post- exertional neuroimmune exhaustion, the most prominent symptoms tend to be neurological: headaches, cognitive impairments, and sleep disturbances.

1. Headaches: Severe or chronic headaches are often debilitating. Migraine may be accompanied by a rapid drop in temperature, shaking, vomiting, diarrhoea and severe weakness.
2. Neurocognitive Impairments: Difficulty focusing eyes and reading are common. Children may become dyslexic, which may only be evident when fatigued. Slow processing of information makes it difficult to follow auditory instructions or take notes. All cognitive impairments worsen with physical or mental exertion. Young people will not be able to maintain a full school program.
3. Pain may seem erratic and migrate quickly. Joint hyper-mobility is common.

Notes:

Fluctuation and severity hierarchy of numerous prominent symptoms tend to vary more rapidly and dramatically than in adults.

## **Classification**

Atypical Myalgic Encephalomyelitis:

meets criteria for post-exertional neuroimmune exhaustion but has two or less than required of the remaining criterial symptoms.

Pain or sleep disturbance may be absent in rare cases.

**Exclusions:**

As in all diagnoses, exclusion of alternate explanatory diagnoses is achieved by the patient's history, physical examination, and laboratory/biomarker testing as indicated.

It is possible to have more than one disease but it is important that each one is identified and treated.

Primary psychiatric disorders, somatoform disorder and substance abuse are excluded.

Paediatric: 'primary' school phobia.

### **Co-morbid Entities:**

- Fibromyalgia,
- Myofascial Pain Syndrome,
- Temporomandibular Joint Syndrome,
- Irritable Bowel Syndrome,
- Interstitial Cystitis,
- Raynaud's Phenomenon,
- Prolapsed Mitral Valve,
- Migraines,
- Allergies,
- Multiple Chemical Sensitivities,
- Hashimoto's Thyroiditis,
- Sicca Syndrome,
- Reactive Depression.

Migraine and irritable bowel syndrome may precede ME but then become associated with it. Fibromyalgia overlaps.