

Facts:

Myalgic Encephalomyelitis (ME) classified as a disorder of the central nervous system since 1969 – (World Health Organization International Classification of Diseases) WHO ICD 10 G 93.3

The renaming of ME to Chronic Fatigue Syndrome (CFS) in 1988, giving misplaced emphasis to “fatigue”, trivializes the substantial disability of the disease¹ – which can extend to the wheelchair or bed-bound requiring 24 hour care

ME/CFS is characterized by neurological, immunological, gastrointestinal, cardiovascular and musculoskeletal features – severe forms can present with paresis, seizures, intractable savage headaches and life threatening complications

Amorphous definitions and diagnostic symptom criteria have contaminated study cohorts and corrupted research data²⁻¹⁰ – researchers and clinicians participating in the 2005 Adelaide ME/CFS Research Forum unanimously endorsed the adoption of the acclaimed 2003 Canadian Clinical Criteria

ME/CFS includes clinical syndromes linked to infectious agents and toxic exposures¹¹⁻¹⁵ – incl. Epstein Barr virus, Ross River Virus, Q Fever¹⁵, ciguatoxin¹³, organophosphates and organochlorines^{12,14}

Prevalence estimates are 235-700 per 100,000 affecting all socio-economic and ethnic groups, and men and women of all ages¹⁶⁻²¹ – more prevalent than AIDS, lung or breast cancer¹⁹

Disease impact²²⁻²⁶ – quality of life equivalent to late stage AIDS^{17,27}, chronic obstructive lung^{25,28} and heart disease and end stage renal failure²⁹

Some experience recovery (average 7yrs¹⁷), some partially recovery and a significant proportion (25%²⁰) are permanently incapacitated^{17-20,22-23}

Economic cost in lost productivity to Australian economy approximately \$3.8 billion dollars annually by CDC estimates¹⁷

Biomedical Abnormalities:

Immune System, including:

- **chronic immune activation and dysfunction^{24,30-32}** -evidence of persistent viral infection³³ (enteroviral³⁴⁻⁴¹, EBV⁴²⁻⁴⁷ and HHV-6/7^{43,45-50}), activation of the 2-5A anti-viral pathway^{47,51-56}, low natural killer cells and cytotoxicity^{33,47,54,57-63}, T-cell abnormalities^{59,61-62,64-66}, pro-inflammatory cytokines and inflammation⁶⁶⁻⁷², increased cell apoptosis (death)⁷³⁻⁷⁴ and allergy^{54,75-77}
- **abnormal immuno-genetic expression^{61,66,78-81}**

Brain/Central Nervous System, including:

- **objective measurement of dysfunction^{54,82-86}** –deficits in working memory, concentration, information processing⁸⁷⁻⁹⁵, autonomic function⁹⁶⁻⁹⁸ (incl. neurally mediated hypotension and orthostatic intolerance)
- **abnormalities** –regional brain hypoperfusion⁹⁹⁻¹⁰⁶ by SPECT, white and gray matter abnormalities¹⁰⁶⁻¹¹² by MRI, inflammation^{66,106-107,113-114}, hypomyelination^{83,113-114}, neurotransmitter^{115-116,119} and metabolic dysfunction¹¹⁷⁻¹²¹ by MRS/PET and abnormal spinal fluid proteins¹²²⁻¹²³
- **abnormal neuro-genetic expression¹¹⁴**

Endocrine System: impaired activation of the hypothalamus-pituitary-adrenal (HPA) axis¹²⁴⁻¹³¹ and abnormalities of neuroendocrine-genetic expression⁷⁸

Heart and Circulatory System: -hypoperfusion^{54,83,99-106,132-136}, impaired vascular control^{127,134-137} (incl. abnormal response to acetylcholine), low blood volume¹³⁴⁻¹³⁵, vasculitis¹³⁶⁻¹³⁷ (incl. raised oxidative stress, inflammation and arterial stiffness¹³⁸⁻¹³⁹) and heart dysfunction^{132,135,140-141}

Muscular: structural and biochemical abnormalities^{38,68,89,142-148} including impaired muscle recovery after exercise¹⁴⁹⁻¹⁵⁴ (exercise responsive gene expression abnormal, worsening after exercise¹⁵⁵)

Others: gastrointestinal dysfunction¹⁵⁶⁻¹⁵⁸ including food intolerance¹⁵⁹⁻¹⁶⁰ and IBS^{156,161}, mitochondrial dysfunction^{38,82,125,162-163} including abnormal mitochondrial associated gene expression¹⁶⁴ and ion transport channelopathy^{155,165-166}

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