Index of ME/CFS Published Research

An A-Z index of the most important published research

31st March 2020

The ME Association
Forward

Welcome to the ME Association Index of Published ME/CFS Research.

This is an A-Z index of the most important published research studies and selected key documents and articles, listed by subject matter, on myalgic encephalomyelitis or chronic fatigue syndrome (ME/CFS). It is correct to 31st March 2020.

The Index will be updated at the end of each month and made available in the research section of the ME Association website. Each update will be accompanied by a website blog of that month’s published research abstracts to help keep you informed of the latest research developments.

The Index adopts the subject headings used in the ME Association’s authoritative clinical and research guide which provides a thorough and fully updated review of current clinical knowledge and research evidence.

The guide is written by Dr Charles Shepherd, Hon. Medical Adviser to the ME Association and Dr Abhijit Chaudhuri, consultant neurologist at Queen’s Hospital in Romford.

The 2019 edition can be ordered from our website shop and is priced at £9.00 for UK residents. It is also available as a Kindle version via Amazon. We are pleased to be able to offer free hard copies to health professionals upon application.

The ME Association are very grateful to Dr Barbara de Barros, Charlotte Stephens and Russell Fleming, for producing this Index which is proving a very popular and helpful resource.

Please support our vital work

We are a national charity working hard to make the UK a better place for people whose lives have been devastated by an often-misunderstood neurological disease.

If you would like to support our efforts and ensure we are able to inform, support, advocate and invest in biomedical research, then please donate today.

Just click the image opposite or visit our JustGiving page for one-off donations or to establish a regular payment. You can even establish your own fundraising event.

Or why not join the ME Association as a member and be part of our growing community? For a monthly (or annual) subscription you will also receive ME Essential – quite simply the best M.E. magazine in the UK today!
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Please note: Research published after January 2019 (the date of the latest update to our clinical and research guide) is highlighted in purple in the listing below. We will be publishing a new guide in April 2020.

1. Nomenclature and definition


Brurberg et al. (2013) Case definitions for chronic fatigue syndrome/myalgic encephalomyelitis (CFS/ME): a systematic review. *BMJ Open* 4 (2). Link: https://bmjopen.bmj.com/content/4/2/e003973


### 2. Epidemiology


### 3. Co-morbidity


4. Biomedical Research

4.1 Biobank UK ME/CFS


4.2 Biomarker Landscape Project


4.3 Cardiac Function


Campen CM and Visser FC (2018) The Abnormal Cardiac Index and Stroke Volume Index Changes During a Normal Tilt Table Test in ME/CFS Patients Compared to Healthy Volunteers, are Not Related to Deconditioning, Journal of Thrombosis and Circulation 107. Link: https://tinyurl.com/y5nb9dyr

Campen CM et al. (2020) Cerebral blood flow is reduced in ME/CFS during head-up tilt testing even in the absence of hypotension or tachycardia: a quantitative, controlled study using Doppler echography. Clinical Neurophysiology Practise [Epub ahead or print]. Link: https://www.sciencedirect.com/science/article/pii/S2467981X20300044


### 4.4 Exercise physiology/testing


4.5 Gastrointestinal and microbiome


Kenyon J et al. (2019) A Retrospective Outcome Study of 42 Patients with Chronic Fatigue Syndrome, 30 of Whom had Irritable Bowel Syndrome. Half were treated with oral approaches, and half were treated with Faecal Microbiome Transplantation. Human Microbiome Journal 13. Link: https://tinyurl.com/y2cqzg7f


4.6 Gene expression


4.6.1 Epigenetics


4.7 General reviews


### 4.8 Genetic predisposition


### 4.9 Immunology


Cabanas H et al. (2019) Naltrexone Restores Impaired Transient Receptor Potential Melastatin 3 Ion Channel Function in Natural Killer Cells From Myalgic Encephalomyelitis/Chronic Fatigue
Syndrome Patients. **Frontiers in Immunology** [Epub ahead of print] Link: https://tinyurl.com/yy92pwks


Hornig M, et al. (2015) Distinct plasma immune signatures in ME/CFS are present early in the course of illness. *Science Advances* 1(1): e1400121. Link: [http://advances.sciencemag.org/content/1/1/e1400121](http://advances.sciencemag.org/content/1/1/e1400121)


4.10 Infection


**Asprusten T et al.** (2019) EBV-requisitioning physicians’ guess on fatigue state 6 months after acute EBV infection. *BMJ Paediatrics Open* 3 (1). Link: https://tinyurl.com/y39pwy8r


4.11 Ion channels


### 4.12 Metabolomics


Tomas C et al. (2017) Cellular Bioenergetics is Impaired in patients with Chronic Fatigue Syndrome. *PLoS ONE* 12(10). Link: [https://doi.org/10.1371/journal.pone.0186802](https://doi.org/10.1371/journal.pone.0186802)


Yamano E, et al. (2016) Index markers of chronic fatigue syndrome with dysfunction of TCA and urea cycles. *Science Reports* doi: 10.1038/srep34990. Link: [https://www.nature.com/articles/srep34990](https://www.nature.com/articles/srep34990)

### 4.13 Miscellaneous


Melvin A et al. (2019) Circulating levels of GDF15 in patients with Myalgic Encephalomyelitis/Chronic Fatigue Syndrome. *Journal of Translational Medicine* 17 (409). Link: [https://www.repository.cam.ac.uk/handle/1810/299333](https://www.repository.cam.ac.uk/handle/1810/299333)


4.14 Mitochondria and energy production


### 4.15 Muscle


4.16 Neurology: Autonomic nervous system (ANS) dysfunction


4.17 Neurology: Central nervous system and neuroimaging


Barnden LR, et al. (2015) Evidence in chronic fatigue syndrome for severity-dependent upregulation of prefrontal myelination that is independent of anxiety and depression. NMR in


He Q et al. (2020) Neuroinflammation, Oxidative Stress, and Neurogenesis in a Mouse Model of Chronic Fatigue Syndrome, and the Treatment with Kampo Medicine. Biological and


4.18 Neurology: Hypothalamic and neuroendocrine function


4.19 Neurology: Neuropsychology and cognitive function


4.20 Neurology: Neurotransmitter function


4.21 Pain


4.22 Phenotypes and sub-groups


4.23 Post-Exertional Malaise (PEM)


4.24 Post-mortem research


4.25 Sleep disturbance


4.26 Vision


5. Psychiatry and psychology


Thompson et al. (2019) Cognitive factors are associated with disability and pain, but not fatigue among physiotherapy attendees with persistent pain and fatigue. *Physiotherapy* [Epub ahead of print]. Link: https://tinyurl.com/yyep9zu8


6. Sociology


7. Recommendations, challenges and ideas for future research into ME/CFS


8. Clinical assessment, symptoms and diagnosis

8.1 General


8.2 Investigations


8.3 Physical examination


### 8.4 Symptoms

Pain – see Biomedical Research, 4.21 above.
Post-Exertional Malaise – see Biomedical Research, 4.23 above.
Sleep disturbance – see Biomedical Research, 4.26 above.
Vision – see Biomedical Research, 4.28 above.

### 9. Management

#### 9.1 Cognitive Behavioural Therapy (CBT)


9.2 Complementary and alternative therapies


9.3 Diet and nutrition


9.4 Exercise, Pacing and activity management


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9.5 General management


9.6 PACE Trial, The


Vink M. PACE trial authors continue to ignore their own null effect. Journal of Health Psychology 22 (9): 1134-1140. Link: https://www.ncbi.nlm.nih.gov/pubmed/28805519


### 9.7 Pharmacological treatment


Bolton MJ et al. (2020) Low-dose naltrexone as a treatment for chronic fatigue syndrome. *BMJ Case Reports* 13 (1). Link: [https://casereports.bmj.com/content/13/1/e232502](https://casereports.bmj.com/content/13/1/e232502)


Campen CL et al. (2019) Open Trial of Vitamin B12 Nasal Drops in Adults With Myalgic Encephalomyelitis/Chronic Fatigue Syndrome: Comparison of Responders and Non-Responders. *Frontiers in Pharmacology* [Epub ahead of print]. Link: [https://tinyurl.com/ugd8om5](https://tinyurl.com/ugd8om5)


Dunn KM and Hay EM. (2010) Opioids for chronic musculoskeletal pain. *BMJ* 341: 467-468. Link: [http://www.bmj.com/content/341/bmj.c3533](http://www.bmj.com/content/341/bmj.c3533)


Shepherd C. (1997) Long-term treatment is being used. Letter to the editor in response to ‘Giving thyroid hormones to clinically hypothyroid but biochemically euthyroid patients’. *BMJ* 315(7111): 814. Link: [http://www.bmj.com/content/315/7111/813](http://www.bmj.com/content/315/7111/813)


Van Campen LMC and Visser FC (2019) The Effect of Curcumin in Patients with Chronic Fatigue Syndrome/Myalgic Encephalomyelitis Disparate Responses in Different Disease Severities. *Pharmacovigilance and Pharmacoepidemiology* 2 (1). Link: [https://tinyurl.com/qpvhgdm](https://tinyurl.com/qpvhgdm)


9.8 Pregnancy


10. Prognosis and quality of life

10.1 Age


10.2 Mortality


10.3 Prognosis and recovery


10.4 Quality of life


10.5 Severe ME


11. Vaccinations


12. Children and adolescents


Ascough C et al. (2020) Interventions to treat pain in paediatric CFS/ME: a systematic review. *BMJ Paediatrics Open* 4 (1). Link: https://bmjpaedsopen.bmj.com/content/4/1/e000617


Carruthers BM and van de Sande MI (eds). (2012) Myalgic Encephalomyelitis – Adult and Paediatric: International Consensus Primer for Medical Practitioners. Available at:


**Collin SM, et al.** (2015) Chronic fatigue syndrome (CFS) or myalgic encephalomyelitis (ME) is different in children compared to in adults: a study of UK and Dutch clinical cohorts. *BMJ Open* 5(10): e008830. Link: http://bmjopen.bmj.com/content/5/10/e008830


**Crawley E and Sterne JAC.** (2009) Association between school absence and physical function in paediatric chronic fatigue syndrome/myalgic encephalopathy. *Archives of Disease in Childhood* 94(10): 752-756. Link: http://adc.bmj.com/content/94/10/752.info


Haig-Ferguson A, et al. (2009) Memory and attention problems in children with chronic fatigue syndrome or myalgic encephalopathy. Archives of Disease in Childhood 94(10): 757-762. Link: [http://adc.bmj.com/content/94/10/757.info](http://adc.bmj.com/content/94/10/757.info)


Harland MR et al. (2019) Paediatric chronic fatigue syndrome patients’ and parents’ perceptions of recovery. BMJ Paediatrics Open 3 (1). Link: [https://bmjpaedsopen.bmj.com/content/3/1/e000525](https://bmjpaedsopen.bmj.com/content/3/1/e000525)


Neale FK et al. (2019) Illness duration, mood and symptom impact in adolescents with chronic fatigue syndrome/myalgic encephalomyelitis? Archives of Disease in Childhood [Epub ahead of print]. Link: https://adc.bmj.com/content/early/2019/06/13/archdischild-2018-316720.long


**Norris T et al.** (2017) Natural course of chronic fatigue syndrome/myalgic encephalomyelitis in adolescents. *Archive of Diseases in Childhood* doi: 10.1136/ archdischild-2016-311198. Link: [http://adc.bmj.com/content/early/2017/01/19/archdischild-2016-311198](http://adc.bmj.com/content/early/2017/01/19/archdischild-2016-311198)


**Oliver L and Patel K.** (2012) Co-morbid conditions in children with chronic fatigue syndrome/myalgic encephalomyelitis (CFS/ME) – a retrospective case note review of a large cohort. *Archives of Disease in Childhood* 97(Supplement 1): A105. Link: [http://adc.bmj.com/content/97/Suppl_1/A105.1](http://adc.bmj.com/content/97/Suppl_1/A105.1)


Solomon-Moore E *et al.* (2019) Physical activity patterns among children and adolescents with mild-to-moderate chronic fatigue syndrome/myalgic encephalomyelitis. *BMJ Paediatrics Open* 3 (1). Link: [https://bmjpaedsopen.bmj.com/content/3/1/e000425](https://bmjpaedsopen.bmj.com/content/3/1/e000425)


### 13. Government Documents

#### 13.1 Disability support


#### 13.2 Economic cost to the UK


### 13.3 General reports, debates and statements

**All-Party Parliamentary Group on ME.** (2020) Inaugural meeting to re-establish APPG led by Carol Monaghan MP with Dr Charles Shepherd and the MEA providing secretariat. Link: https://www.meassociation.org.uk/2020/01/the-all-party-parliamentary-group-on-me-to-re-convene-please-invite-your-mp-to-attend-09-january-2020/


House of Commons (2013) Debate. 11 February col. 517W. Secretary of State re: ME/CFS WHO classification. Link: https://publications.parliament.uk/pa/cm201213/cmhansrd/cm130211/text/130211w0003.htm#13021150000045


14. Healthcare


### The ME Association: Please support our vital work

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