

**COST ACTION “EUROMENE” CA 15111**

**The economic burden of Chronic Fatigue  
Syndrome/Myalgic Encephalomyelitis  
(CFS/ME):  
a comprehensive summary  
of the existing evidence**

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# Main steps

CFS/ME definition - epidemiology

literature review – method and main findings

Chronological steps

Countries most represented – disease management

Final remarks and open issues

# Background

CFS/ME describes a condition of chronic weakness, of sufficient duration and severity to impair functioning (Richardson et al., 2013; McCrone et al., 2012 ).

**This illness state cannot be alleviated by rest** (Burns, 2012; Whiting, 2001) and is associated with:

- **lower quality of life** (Richardson et al., 2013; Assefi et al., 2003; Chalder et al., 1999);
- **higher health care utilization** (Meng et al., 2014)
- **loss of production (indirect costs)** Reynolds et al. (2004)

# Epidemiology

Epidemiological data is quite heterogeneous

A literature review (Prinse et al., 2006) suggests a prevalence rate for CFS/ME between 0.2% and 2.6% worldwide.

Following other studies in the USA, UK and Italy a **prevalence of 0.2-1% has to be considered as a reliable value for developed countries.**

## Prevalence

- 0.2-1% in developed countries
- Women more affected
- Peak on 20-40 years' young adults

# A definition for CFS

From 1988 onwards, several case definitions of CFS/ME were developed to improve the comparability and reproducibility of clinical research (Sharpe et al., 1991; Lloyd et al., 1990).

The most widely supported scientific case definition is that one developed by the US Centers for Disease Control and Prevention (Fukuda et al., 1994).

It represents a **first attempt to create a general consensus on the definition of this syndrome.**

## Case definition for CFS/ME-US Centers for Disease, Control and Prevention

- Fatigue lasts for at least 6 months;
- Fatigue is of new or definite onset;
- Fatigue is not the result of an organic disease or of continuing exertion;
- Fatigue is not alleviated by rest;
- Fatigue results in a substantial reduction in previous, occupational, educational, social, and personal activities;
- Plus four or more of these are concurrently present for  $\geq 6$  months: impaired memory or concentration, sore throat, tender cervical or axillary lymph nodes, muscle pain, pain in several joints, new headaches, un-refreshing sleep, or malaise after exertion;
- There are no mental or physical health problem that may otherwise explain the fatigue.

# Literature review - method

We focused on the contributions that apply **economic evaluation techniques**. Since it is a quite recently discovered pathology we adopted a **chronological approach**, in order to identify a **possible evolution in research studies**

Studies consider **direct costs** (i.e. healthcare costs) and **indirect costs** (loss of productivity).

Direct health care costs are very low, especially if only primary care is involved. Depending on the severity of the disease, there may also be a tertiary setting (e.g. hospital care) to be considered.

**No specific pharmacological therapies are delivered to CFS patients**

In general, studies give indications on the **most cost-effective** therapy/level of care

# Literature: main findings

Authors agree on the cost-effectiveness of treating the pathology at the **primary care level**

As for **therapy**, **no general consensus has been reached so far** on the most cost effective therapy.

Authors agree in providing therapies related to **the self-management approach** (Meng et al., 2014; O'Dowd et al., 2006; Mc Crone et al., 2004), able to improve both patients' self-esteem and physical energy

Within this therapeutical approach, the only evidence of beneficial effects confirmed along years addresses to **cognitive behavioral therapy (CBT)**, a kind of psychotherapy directed at changing condition-related cognitions and behaviors (Butler et al.1991; Bonner et al., 1994; MC Crone et al., 2004).



Time Span	Methods	Policy indications	Open issues
<b>1990-1999</b>	First attempts to identify the nature, the prevalence and the direct costs of the pathology	In this phase, the <b>difficulties in establishing the presence of disease and objectively defining its functional impact</b> , the lack of effective treatment, and a poor understanding of the natural history and prognosis of this syndrome, leave <b>policymakers with little basis for assessing patients' needs.</b>	
<b>2000-2005</b>	<ul style="list-style-type: none"> <li>Applying health technology assessment in order to find the <b>most cost-effective therapy.</b></li> <li><b>Quality of life</b> starts to become relevant</li> <li>First attempts to include <b>productivity costs in the analysis</b></li> </ul>	<ul style="list-style-type: none"> <li>Acknowledgment of the pathology and the related costs</li> <li>Need <b>to invest more resources</b> on the study of CFS</li> <li>Searching for a cost-effective therapy, which would produce better outcomes compared with usual GPs therapy (more attention to quality of life)</li> </ul>	In the HTA analysis is important to know <b>how much the society is willing to pay for quality improvements in CFS patients</b>
<b>2006-2016</b>	<ul style="list-style-type: none"> <li>Studies are focussed on the <b>economic consequences related to employment and productivity</b></li> <li>Further attention on quality of life</li> </ul>	<ul style="list-style-type: none"> <li>The economic burden is now considered and defined (on average a productivity loss of £ 22,684 per patient)</li> <li><b>Guidelines for the disease management are required</b></li> </ul>	<ul style="list-style-type: none"> <li>- <b>Number of CFS cases that are still not identified</b> (80% of people suffering from CFS undiagnosed)</li> <li>- <b>Low socioeconomic status is a risk factor</b></li> <li>- still no consensus on a “best practice” for therapy</li> <li>- Too little progress done by the research, due to the <b>controversies with respect to its definition, diagnosis, and treatment</b></li> <li>- Need to include among costs: i) <b>informal caregiving</b> ii) <b>intangible costs</b> (lower quality of life)</li> </ul>

## **A chronological review of the literature: '90s the first attempts to apply economic evaluation to CFS**

In this phase, the difficulties in establishing the presence of disease and objectively defining its functional impact, the lack of effective treatment, and a poor understanding of the natural history and prognosis of this syndrome, leave policymakers with **little basis for assessing patients' needs.**

**Lloyd and Pender (1990; 1992):** prevalence of the disease and economic burden determined by CFS that *“accounts for a large but neglected area of health care resource utilization and imposes a significant economic burden”*.

**Lloyd and Pender (1994):** the authors identify the characteristics of CFS/ME, correlating these ones to the resources needed to treat it (areas of diagnosis, patient care and research). **Health expenditure for CFS/ME should be weighed against the likely cost and benefits of medical research.**

**Cameron (1995):** discusses to what extent private insurance schemes related to CFS should be considered.

## From 2000 to 2005: social impact of CFS/ME and cost-effectiveness analyses

- Studies begin to employ **cost-effectiveness analysis** and to consider, together with costs, also patients' quality of life, mostly expressed in terms of **QALYs**.
- Evidence is aimed at **comparing** the cost-effectiveness of **two or more therapeutic alternatives**, that help patients in self-managing the disease.
- McCrone et al. (2004): comparison, in terms of cost effectiveness, between Cognitive Behavioural Therapy (CBT) and Graded Exercise Therapy (GET).  
CBT appeared to be more cost-effective on the basis of the cost-effectiveness acceptability curve. Fatigue was measured through a 11-item validated scale, while the Client Service Receipt Inventory was used to retrospectively record service use (GPs, other clinicians, nurses, physiotherapists, counsellors, nutritionists, social services and complementary therapy).

Other studies: **Reynolds et al., 2004; Severens et al., 2004.**

# Recent developments: 2006 onwards

The last ten years are characterized by studies with a **broader view of the CFS' impact on society.**

More attention is paid to the economic consequences related to employment and productivity; patients' quality of life becomes progressively more relevant.

**Collin et al. (2011):** discontinuation of employment and earnings lost as a consequence of CFS/ME. There are productivity costs to the UK economy incurred by patients prior to assessment by a specialist service.

Older adults and men were more likely to have discontinued their employment. The total loss is of **£49.2 million in UK**, equivalent to **£22,684 per patient.**

The prevalence of CFS/ME referred for specialist assessment was higher in women (17.7 per 100,000) than in men (5.3 per 100,000).

Physiological and psychological aspects of CFS/ME could interact with each other. Alternative medical interventions (acupuncture, non-pharmacological supplements, etc.), less expensive, have recently been considered (Porter et al., 2010; Alraek et al., 2011).

# Recent developments: Other aspects

A crucial point relates to the **number of CFS/ME cases that are still not identified**: in the US, nearly 80% of people suffering from this disease are undiagnosed (Griffith and Zarrouf, 2008).

**Ethnicity**: African Americans and Native Americans are significantly more likely to develop CFS/ME than White Americans (Jason, 2009).

Moreover, **belonging to some ethnic groups and social classes may influence the capability to sustain the expenses related to CFS/ME.**

# Countries most represented in Literature

- Australia, USA and UK are the most represented countries in the literature on CFS' clinical and economic burden. They are also the countries where the first studies were carried out (Lloyd et al., 1990; Sharpe et al., 1991; Fukuda and CDC, 1994).
- This evidence does not necessarily mean that prevalence of CFS was higher among their populations. It is possible that, in some countries, the difficulties in identifying the symptoms lowered the number of CFS' cases.

# Managing the disease

- Although many efforts have been made in order to appropriately diagnose CFS, there **are still problems in recognizing the symptoms of the disease** (Prinse et al., 2006). This interferes with the disease management at the Health Care System level. In fact, **an early and appropriate diagnosis could help in reducing clinical efforts and saving resources.**
- Evidence suggests that the most effective way to deal with the pathology is to treat it within the **primary care setting** (Meng et al., 2014; Richardson et al., 2013).
- However, assessment of fatigue severity and functional impairment in the history of the patient remains difficult (Prinse et al., 2003) and, henceforth, applying a timely therapy could be problematic.

# Managing the disease

- Once CFS is diagnosed, the most recognized therapies relate to the **self-management approach** (Meng et al., 2014; O'Dowd et al., 2006; Mc Crone et al., 2004).
- beneficial effects confirmed along years for **cognitive behavioral therapy (CBT)**, a kind of psychotherapy that enables patients to address negative beliefs on symptoms, self-expectations and self-esteem (Butler et al.1991; Bonner et al., 1994; MC Crone et al., 2004; Severens et al., 2004).



# Final remarks

- **More research** is needed to achieve a better knowledge of CFS/ME, both at clinical and organizational level.
- **A clearer and international recognized definition of the syndrome**, would help policy makers in suggesting **appropriate guidelines** to manage the disease.
- An **early and appropriate** diagnosis is fundamental to **save resources** employed for the disease management.
- The relevant costs of CFS/ME are the **indirect costs**, mainly due to the **loss of productivity**. During the last years, social costs of this disease, especially in terms of occupational outcomes, such as absenteeism, work incapacity, and productivity loss have been evaluated.
  - *Last available estimates from UK population, report a yearly production loss of £22,684 per patient, with a significant gap between women (£16,130) and men (£44,515) (Collin et al. 2011).*
- Need to include among costs: i) **informal caregiving** ii) **intangible costs** (lower quality of life)

# Open issues

- Do Health Care Systems of developed countries consider this pathology as relevant? Do they appropriately consider the social costs involved?
- Priority setting: how much public money **the society is willing to pay** for improvements in CFS patients' quality of life.
- Managing the disease: only **primary care** or also **specialist care**? And how much does it cost to the NHS?
- Differential in productivity loss between patients treated respectively in specialist or primary's settings. In fact there are differences in the severity of the disease
- Still on informal care