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“Chronic Fatigue Syndrome is a complex multi-symptom disorder. There is currently no diagnostic test for the illness and no medication, which will cure it. How can the primary care physician establish the diagnosis and differentiate ME/CFS from other fatiguing illnesses? What are the principles of treatment?”

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Chronic Fatigue Syndrome (CFS)/Myalgic Encephalomyelitis (ME)¹ is a complex, debilitating illness of unknown etiology. Although not fatal, CFS wreaks havoc and alters the lives of nearly one million people in the United States². Incapacitating fatigue, which is often experienced as profound exhaustion and post-exertional malaise following physical or mental activity, flu-like symptoms such as joint and muscle aches, unrefreshing sleep, sore throats and tender lymph nodes are among the most common symptoms that CFS patients experience. Patients also have difficulty concentrating, may experience short term memory loss, headaches and dizziness. Although CFS is more prevalent among women, children and adults of both sexes and of all races, ethnicities and socioeconomic populations suffer from CFS (Craig and Kakumanu 2002).

Unfortunately for CFS patients and their loved ones, the illness is poorly understood in causation, pathophysiology and treatment (Lichtbroun, 2002, p. 35). Not only does the mosaic of symptoms differ among patients, but the clinical course varies greatly – some patients report improvement a year and a half to four years after initial diagnosis, a quarter to one third of patients report worsening illness overtime and less than 10% recover (Taylor et al, 2003). For most, CFS can be described as a cyclical illness in which periods of debilitating and disabling symptoms alternate with periods of relative wellness and normalcy (Jason et al., 2003, p. xii).

Perhaps more frustrating than the unpredictable nature and unknown etiology, is the fact that the majority of the suffering endured by a CFS patient is invisible. That is, little or no pain

¹ Literature sometimes cites ME as a syndrome separate from CFS, characterized by muscle weakness and gross abnormal muscle fatigue, pain and dysfunction of the nervous system (Whiting et al., 2001). However, CFS and ME are often referred to as being the same illness in medical literature and I will be considering them as such in this paper.

² The Centers for Disease Control (CDC) estimates that more than four million Americans suffer from CFS, of which only one million are currently diagnosed (CDC.org).

is conveyed to onlookers unless it is done so verbally. Considering the battle for public and medical legitimacy that Chronic Fatigue Syndrome has faced, the process of even describing what it is like to have CFS to friends, family members and even physicians often serves as another source of exhaustion for patients.

As the first medical professional sought out by the CFS patient, the primary care physician is placed in a unique and challenging role. The patient interview, physical exam and clinical evaluation must be done with careful consideration. Unlike other medical conditions and diseases, the CFS diagnosis must ultimately be made without the aid of biomarker or diagnostic tests. Moreover, the derivation of a treatment plan must be specific to the patient's symptoms, limitations and personal attitudes and beliefs. The physician must also encourage proper follow-up visits, referrals to appropriate specialists, mental health services, support groups and legal advice regarding disability. Most importantly, the physician must truly listen without judgment or personal bias in order to best treat the CFS patient.

The Diagnosis of CFS – The Primary Care Physician's Role in Initiating Care

Chronic Fatigue Syndrome is unsettling for physicians, since most medical professionals rely on laboratory tests to confirm their clinical impressions. Fatigue itself, the major symptom of CFS, is vague and immeasurable by quantitative analysis. The most commonly used International Case Definition (1994) states that the diagnosis of CFS is one made by exclusion, requiring that the physician rule out other diseases that produce similar symptoms prior to diagnosis of CFS in a patient (Fukuda et al., 1994, p. 957). In order to identify the presence of symptom criteria that meet with the revised definition from the Centers of Disease Control and

Prevention (CDC) and to diagnose by exclusion, both of which must be done without confirming laboratory testing, physicians must be knowledgeable about CFS symptom criteria (Plioplys, 2003, p. 26). Moreover, physicians must be aware of the pathophysiology of other likely causes of fatigue such as thyroid problems, lupus, other autoimmune disorders, cancer and severe depression (to name a few) that may present similarly.

Taking an in-depth history is the first step towards assessing the patient's health and potential diagnosis of CFS. It is important for the physician to listen carefully as the patient reports his/her clinical complaints. If possible, the physician should determine when the onset of symptoms or illness occurred, if the patient has previously seen other physicians regarding their current state, if and where the patient has acquired information regarding CFS, if (and how) the patient has self treated any of his/her symptoms at home, and whether the patient has sought care from any other healthcare provider.

In order for the physician to assign a diagnosis of CFS, the patient must present with at least six months of persistent fatigue which substantially reduces his/her level of activity and four or more of the following symptoms must occur with fatigue in a six-month period: impaired memory or concentration, sore throat, tender glands, aching or stiff muscles, multi-joint pain, new headaches, unrefreshing sleep and post-exertional fatigue (Fukuda et al., 1994). Since fatigue is an experience that all people experience throughout their lifetime, four major criteria for fatigue must be met in order for the physician to differentiate the fatigue of CFS from the fatigue due to other medical conditions or non-medical causes (Plioplys 2003, p. 28).

Chronic Fatigue Syndrome: Defined by the Presence of the Following:

Major Criteria

1. Clinically evaluated, unexplained, persistent, or relapsing chronic fatigue that is of new or definite onset (has not been lifelong)
2. Fatigue is not the result of ongoing exertion

3. Fatigue is not substantially alleviated by rest
4. Fatigue results in substantial reduction in previous levels of occupational, educational, social, or personal activities.

Additional Symptoms

Concurrent occurrence of *four or more* of the following symptoms, all of which must have persisted or recurred during 6 or more consecutive months of illness and must have predated the fatigue.

1. Self-reported impairment in short-term memory or concentration severe enough to cause substantial reduction in previous levels of occupational, educational, social, or personal activities
2. Sore throat
3. Tender cervical or axillary lymph nodes
4. Muscle pain
5. Multi-joint pain without joint swelling or redness
6. Headaches of a new type, pattern, or severity
7. Unrefreshing sleep
8. Postexertional malaise lasting more than 24 hours

Figure 1. Revised Criteria for the Diagnosis of Chronic Fatigue Syndrome by the Centers of Disease Control, the National Institutes of Health and the International Chronic Fatigue Syndrome Study (Centers for Disease Control and Prevention: December 1994).³

If the four major criteria for fatigue are met, the physician must evaluate the patient for the presence of four or more of the additional symptoms that are required to meet the CFS definition (Figure 1.) (Fukuda et al 1994). These symptoms can be evaluated throughout the initial visit, during the physical exam and Review of Systems (ROS), and in subsequent visits. For example, it has been estimated that 90% of CFS patients have cognitive impairments such as short term memory loss, concentration deficits and ‘brain foginess’ (Komaraff and Buchwald, 1991); these additional symptoms can be elicited in a thorough interview and clinical evaluation of the patient’s past and presenting medical history.

The diagnosis model is a tool that the physician often refers to consciously or subconsciously; the model is used to evaluate the major and additional symptoms of patients who may potentially meet the criteria for a diagnosis of CFS (See Appendix, Figure 1). Although it may be difficult to pinpoint, the onset of illness and symptoms should be established during the

³ U.S. Centers of Disease Control and Prevention (2008). Retrieved online: *CFS Toolkit for Health Care Professionals: Diagnosing CFS*

interview. During the interview, the physician should also ask how these symptoms, muscle aches and fatigue for example, have impacted the patient's quality of life and activities of daily living. For example, is the patient so dizzy that he/she can no longer stand for extended periods of time? Is walking a few blocks exhausting? Physicians may also use the Medical Outcomes Study Short-Form General Health Survey (SF-36), an instrument that helps to determine functional status of the patient (Buchenwald et al., 1996). While obtaining the patient's medical history, the physician should gather other important information such as alcohol intake, substance abuse, use of over-the-counter and prescription medications, diet and lifestyle. Medications currently being taken by the patient should be reviewed with the intent to identify side effects that could potentially cause fatigue and other symptoms commonly seen with CFS.

Since secondary depression is common among CFS patients, careful consideration must be paid to the patient's mental health during the initial interview and assessment. It is important to remember that Depression is a psychiatric disorder that can be a consequence of CFS, but is not a primary cause of the illness or its pathophysiology (Plyopois 2003). To distinguish between the two as the primary cause of illness, physicians should inquire about the patient's sleep patterns to gather more insight. CFS patients often show marked sleep disturbances, especially insomnia and may subsequently nap during the day. Also, reactions to antidepressants differ between the two diagnoses: patients with depression tend to respond quickly and well to antidepressant medication whereas CFS patients show little improvement with regard to overall symptoms (Walker et al, 2009) when placed on antidepressants. Also some CFS patients are hypersensitive to most medications and may respond adversely to anti-depressants, as they do to most medications.

Physicians should also inquire about sleep patterns to rule out sleep disorders during the differential diagnosis. Since insomnia and/or a lack of refreshing sleep are common among CFS patients, the physician should also consider a sleep disorder as a differential diagnosis (Podell 2002, p. 25). Although sleep disorders are usually not the primary cause of fatigue in CFS patients, they can complicate and exacerbate the illness (Podell 2002). Obstructive sleep apnea and narcolepsy are disorders that disrupt sleep and must be considered by the physician. Many CFS patients also suffer from sleep apnea. Such patients may benefit from treatment of their sleep apnea in terms of reduced fatigue. Patients who receive benefit from sleep apnea treatment will most likely continue to suffer from the other physical and cognitive symptoms associated with CFS. These include irritable bowel syndrome (IBS), muscle and joint aches, headaches, pharyngitis, low grade fevers and decreased cognition. Similarly, social factors pertaining to work, environment, or other medical conditions, like infections that disturb sleep could lead to daytime fatigue or cognitive impairments. All of these should be considered and addressed.

Clinical and Physical Examination: Evaluating the CFS Patient with Differential Diagnosis in Mind

Once a detailed history has been taken, the physical exam should proceed. The physician should take note that the patient may need more time or may be unable to withstand a full review of systems and physical exam due to fatigue – both physical and mental. As the evaluation progresses, the physician should actively be conscious of other medical, psychological and environmental causes that could contribute to the fatigue and symptomology experienced by persons with CFS. Fukuda et al. (1994) established a guide to help physicians systematically

approach the differential diagnosis. The areas of differential diagnosis include, but are not limited to, endocrine, rheumatologic, neurological, infectious, hematologic, metabolic, psychiatric and other disciplines.

Vital signs including blood pressure (taken in the supine and standing positions) and heart rate should be collected, with careful consideration of tachycardia or possible orthostatic hypotension since dizziness and lightheadedness upon standing occur in a subset of CFS patients (Stewart 2002). The physician should perform a standard Review of Systems (ROS) to inquire about the patient's general health, Head-Eyes-Ear-Nose and Throat (HEENT), the gastrointestinal system (GI), endocrine, chest and lungs, genitourinary (GU), hematology, musculoskeletal (MS) and the neurological system (See Appendix, Figure 2). When necessary, the physician should inquire further for more detailed information; for example, if the patient reports night sweats, chills and/or low grade fevers. The physician may ask to see or may suggest that the patient keeps a temperature log (Levine and John, 2002).

Once the interview and the ROS have been completed, physical examination and laboratory testing are crucial to further explore the patient's health and gather more information and clues in order to make a proper diagnosis. The general appearance of the patient should be noted; CFS patients may present with cachexia, or wasting, due to the systematic immune response of their body or weight gain due to an inability to exercise or engage in activity. The scalp should be palpated for alopecia since certain autoimmune diseases often produce irregularities (Levine and John, 2002). The maxillary, ethmoid and sphenoid sinuses should be examined since chronic sinusitis is common in CFS patients. Many patients report sore throats and thus the oral cavity, including the buccal mucosa, gums, soft palate and anterior tonsillar pillars should be carefully inspected. If the pharynx is inflamed and red, an exudate may be taken

for culture. The lymph nodes (cervical and axillary) should be palpated for tenderness and enlargement. Similarly, the thyroid gland should be palpated for soreness and the presence of nodules. The chest and lung exam should be conducted in the usual manner and the physician should palpate for the heart size and pulse. Among CFS patients, mitral valve prolapse is more common than in the general population, and the physician should listen for a mid-systolic click (Stewart 2009). The skin should be examined. Not only should the physician note common skin conditions, but rashes and pigmentation abnormalities should be further investigated because they could offer more insight into differential diagnoses such as the presence of Lyme disease or adrenal insufficiency, respectively (Craig and Kakumanu 2002). Also, inquiry about Reynaud's and the inspection of nail beds should be carried out since obstructive lung disease and chronic smokers often present with clubbing (Schwartz 2006). In palpating the abdomen, the physician should take note of a tender or enlarged spleen, which is often found in patients in the acute stages of mononucleosis (EBV). Although acute EBV most closely resembles CFS and was long thought by researchers to be the cause of CFS⁴, patients with mononucleosis can be differentiated from those with CFS since they tend to be younger and without cognitive dysfunction, sleep disorders and allodynia (John and Friedman 2002, p. 3).

Research has shown that several gastrointestinal conditions and symptoms coexist with CFS, particularly Irritable Bowel Syndrome (IBS) (Rubin and Friedman, 2002, p. 49). IBS, a functional disorder of the GI tract, is characterized by abdominal pain and discomfort and is accompanied by an alteration of bowel function (Schwartz 2006). The physician should be aware that symptoms of IBS – diarrhea, constipation or both, bloating and urgency – may present with CFS symptomology. CFS patients who fit the criteria for IBS may also experience post prandial,

⁴ In the laboratory work-up, the antibody titers for EBV should be measured since EBV does precipitate CFS in a subset of patients.

upper abdominal pain, nausea and bloating. The physician should also consider signs of other GI disorders such as blood in the stool, anemia and fever to differentiate between the GI symptoms of CFS and those of unrelated gastrointestinal disorders, problems and infections (infectious and ulcerative diseases).

The musculoskeletal examination should be performed carefully. The majority of patients report muscle aches, swollen joints and pain. It is important that the physician evaluates these areas carefully since the diagnosis of CFS, which does not have a definitive treatment, should be differentiated from other, more treatable conditions such as Lupus, early Lyme, arthritis and Fibromyalgia (FMS). Unlike CFS, a diagnosis of FMS requires the presence of 11/18 trigger points, which are areas of the body that elicit pain when pressed.⁵ It is also important to note that a dual diagnosis of CFS/FMS occurs in many cases of CFS. Although symptoms overlap, pain is more dramatic and widespread in FMS.

Since the prevalence of CFS in women is at least twice that of men, it is important that proper attention be given to the clinical presentation of the female patient. Gynecological symptoms in women with CFS should be properly evaluated and the gynecological history should be taken. Research by Underhill et al. (2002) has shown that a subset of premenopausal CFS patients often have scanty, irregular periods, low estrogen levels (but normal Follicle Stimulating Hormone [FSH] levels), lower bone density, dysuria, vaginal discharge and sexual dysfunction. The primary care physician should also inquire about the history of galactorrhea, fibroids and ovarian cysts and pelvic inflammatory disease (PID), because retrospective research studies have shown these conditions to be more common in patients with CFS (Underhill 2002).

⁵ Trigger points to test include the back of the head, front of the chest, lateral epicondyles, medial patellae and lateral malleoli. The 1990 Criteria for the Classification of Fibromyalgia requires pain to be elicited in 11 of 18 tender point sites on digital palpation; tender points are considered “positive” when the subject states that the palpation(s) are painful (Wolfe et al. 1990).

Also, should pregnancy be a possibility, further medical counseling and consultation should be provided at subsequent visits.

Finally, the neurological examination is crucial to the clinical evaluation; cranial nerves should be tested including motor and sensory examinations. The mental status, speech quantity and production, and facial expression of the patient should be evaluated⁶. Moreover, many patients with CFS are limited in terms of cerebellar functioning and the physician should conduct heel-to-shin, finger-to-nose and gait assessments. Reflexes and muscle tone should be noted as well to rule of spinal cord or cortical injuries.

Laboratory Testing

The laboratory evaluation should be initiated during the visit. The primary care physician should perform a standard workup that includes a CBC differential and platelet count, a comprehensive serum metabolic panel (glucose, electrolytes, calcium, liver function tests, renal function tests), magnesium, thyroid function tests, erythrocyte sedimentation rate, rheumatoid factor, antinuclear antibody (ANA) titer, urinalysis and an intermediate- strength protein derivative and serum carnitine levels (Plioplys 2003). Serology for EBV, HHV-6, CMV, toxoplasmosis and HIV should also be performed (John and Friedman 2002, p. 14). Further tests may be performed by an infectious diseases specialist or an immunologist. Further tests might include serological assays (IgG and IgM antibodies and PCR assays for HHV-6 CMV, EBV, B-19, mycoplasma/Chlamydia (Oleske et al., 2003).⁷ Using assays for HepB surface Ag and an ELISA (with subsequent Western blot), patients at risk for Hepatitis B and HIV infections can be

⁶ Tests to evaluate mental status should be conducted. These include the Serial 7s, short-term memory and long term memory tests (Schwartz 2006).

⁷ Additional tests can be performed given a patient's willingness and their insurance company's reimbursements; newer tests include PCR to amplify a patient's DNA (John and Friedman 2002)

tested respectively. Also, in patients who have traveled to, or are from, areas endemic to ticks, antibody titers to Lyme disease should be ordered.

Other tests can be performed and the primary care physician can refer the patient to appropriate specialists and centers. Sleep tests can be performed if a primary sleep disorder is a potential cause of fatigue. MRI scans and SPECT scans can be performed by a neurologist should CNS symptoms be present. Tilt table exams can be performed by electrophysiology units or cardiac care centers to evaluate the presence of autonomic dysfunction. Syncope upon Head-Upright Tilt (HUT) Table testing, and/or tilt table testing, may suggest a diagnosis of Postural Orthostatic Tachycardia Syndrome (POTS) or Orthostatic Intolerance (OI) which are diagnoses seen in subsets of CFS patients (Rowe et al., 1995).

Establishing a Differential Diagnosis in Medical Assessment.

Although the physician should consider differential diagnoses throughout the interview and physical exam, additional time should be dedicated to evaluating laboratory results and excluding other conditions, such as autoimmune disorders, that may present similarly⁸. Several conditions that may present like CFS must be excluded prior to a diagnosis of CFS. Conditions to be excluded include Mononucleosis (infectious EBV), Lyme disease, Lupus, Multiple Sclerosis, primary sleep disorders, hypothyroidism, Major Depressive Disorder, and others. Additionally, physicians should counsel patients if they feel that co-morbid conditions are present. Co-morbid conditions may include (but are not limited to) IBS, Multiple Chemical Sensitivity, Gulf War Syndrome, Temporomandibular Joint Disorder, Interstitial Cystitis and most commonly, FMS (U.S. DHHS and CDC, 2006).

⁸ I will only delve into a few here given the parameters and length of this paper. I alluded to many diagnoses by organ system in the previous section. (Without a page-length limitation, I would go into more depth here).

Treatment and Counseling the CFS Patient

The pathophysiology and clinical manifestations of Chronic Fatigue Syndrome span several medical domains. As such, this heterogeneous illness of complex and multifaceted etiology is often treated on individualized basis. Using the medical history, physical exams and laboratory data that the primary care physician has collected, pharmacological and behaviorally-based treatments can be implemented. In addition to addressing the symptoms of CFS, research shows that three goals assist in managing the health of CFS patients: (1) development of effective coping strategies, (2) relief of symptoms, and (3) patient management of activity levels so as to avoid post-exertional malaise (U.S. DHHS and CDC, 2006).

Considering the tremendous variability in disease etiology and symptomology among patients, the primary care physician will need to assess the individual case thoroughly through the interview, physical exam and follow-up visits to monitor and adjust care accordingly. Non-pharmacological and lifestyle changes should be considered. Rest and the scaling back of activities that exacerbate symptoms, fatigue and pain should be attempted. Patients managing their own activity level will require trial and error. Patients must learn to avoid the extremes of “over-doing it” and bed-rest. Over-the-counter medications, supplements, dietary changes and relaxation techniques have the potential to provide patients relief as well. Therapeutics such as analgesics, sleep aid medications and antidepressants may offer symptom relief.

In terms of pain, therapeutic doses of anti-inflammatory agents should be considered. These include naproxen (Naprosyn) and ibuprofen (Motrin, Advil, Nuprin) and prednisone. Non-steroidal anti-inflammatory (NSAIDS) combined with CNS medications may provide relief as well (Lichtbroun 2002, p. 39). CNS active medications, especially tricyclics, amitriptyline and cyclobenzaprine have been shown to offer relief (Craig and Kakumanu 2002).

Since CFS patients suffer from fatigue and non-refreshing sleep, a variety of strategies can be used to address sleep dysfunction. Non-pharmacological approaches should be considered. Complementary and over-the-counter relief formulations may be of benefit. In terms of pharmacological approaches, antidepressants such as trazadone (Desyrel) or sedating tricyclic antidepressants (including the commonly prescribed nortriptyline, doxepin and imipramine) may be prescribed with patients started on smaller dosages (Podell 2002, p. 27). Muscle relaxers like Cyclobenzaprine or NSAIDs (Aspirin, Ibuprofen, Celecoxib, Rofecoxib) may be used to reduce pain as well as help with sleep (Podell 2002). Unfortunately, many patients experience insomnia and physicians may consider prescribing zolpidem (Ambien) or a benzodiazepine such as clonazepam (Klonopin), temazepam (Restoril) or lorazepam (Ativan). In terms of fatigue, many patients are prescribed modafinil (Provigil), methylphenidate (Ritalin) or amphetamine salts (Adderall) by their physicians (Spotilla 2005).

Considering the role of infectious agents, trials of antiviral and antibacterial therapies may be considered. Ampligen, a 50 base-pair compound consisting of double stranded RNA, is an immunomodulator that has shown antiviral activity in placebo-controlled clinical trials (John and Friedman, 2002). Physicians may encourage patients to enroll in this type of study/treatment program (Levine and John, 2002). Other areas of treatment are important as well. Decreasing gastrointestinal symptoms may be achieved through nutritional or herbal supplements as well medications. Antidiarrheals or selective 5-HT₃ receptor antagonists may provide relief for cramps, diarrhea, and IBS (Rubin and Friedman 2002, pg. 50).

Addressing psychological issues pertaining to CFS is necessary and important to the health and overall well-being of the patient and their loved ones. Many patients experience depression, either as a result of their diagnosis or in association with the pain, lifestyle or

symptoms imposed by the illness. The physician should offer support and resources. Therapy, either with a psychiatrist or psychologist, family or marriage counseling, group therapy, support group, and cognitive behavior therapy are options to be considered. In addition, prescribing antidepressants (Tricyclics, SSRIs or others) by the treating psychiatrist or physician should be considered. Research indicates that Cognitive Behavior Therapy (CBT), which consists of treatment aimed at modifying the individual's perception of factors contributing to the experience of physical and psychological disability, can be used as an adjunctive treatment (Chambers et al., 2006).

Final Thoughts and Considerations:

Due to its unknown causation and its unique presentation among patients, each of whom may present with different symptoms and concerns, Chronic Fatigue Syndrome is a challenge for physicians. Not only is the course of illness unpredictable in terms of illness severity and recovery, but the treatments and various medical protocols that are currently being used may not be appropriate for, or tolerated by all patients. By acknowledging that the patient's physical, social, and mental well-being are affected by the illness, the physician will be able to more fully help the CFS patient. Moreover it is essential that the primary care physician stay abreast of current treatments and remain supportive and empathetic, even if cures or total symptom abatement are unable to be offered.

Given the physical and cognitive limitations that CFS imposes, discussing disability is important. Should symptoms be severe, the physician should encourage the patient to consider applying for disability benefits. For the patient whose employer offers Disability insurance, the

physician should encourage the patient to gather the appropriate paperwork from his/her employer. And if the disability is anticipated to continue for at least 12 continuous months, the physician should encourage the patient to apply for Social Security Disability benefits⁹. Most importantly, physicians and clinical researchers have the opportunity to serve as patient advocates among members of the medical and public communities who are unfamiliar with this disease. It is through increased awareness and understanding that more research and patient care funding, and legitimacy will be gained. With more systematic, random, clinical trials (RCTs) and the creation of clinical care centers, primary care physicians and specialists will be better able to help CFS patients. Increased numbers of clinical trials and care centers will increase the efficiency of CFS treatments and improve CFS patient care outcomes as measured by the decreases in the severity of symptoms and duration of illness.

⁹ The physician should assist the patient in identifying an attorney who specializes in Disability law.

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Appendix

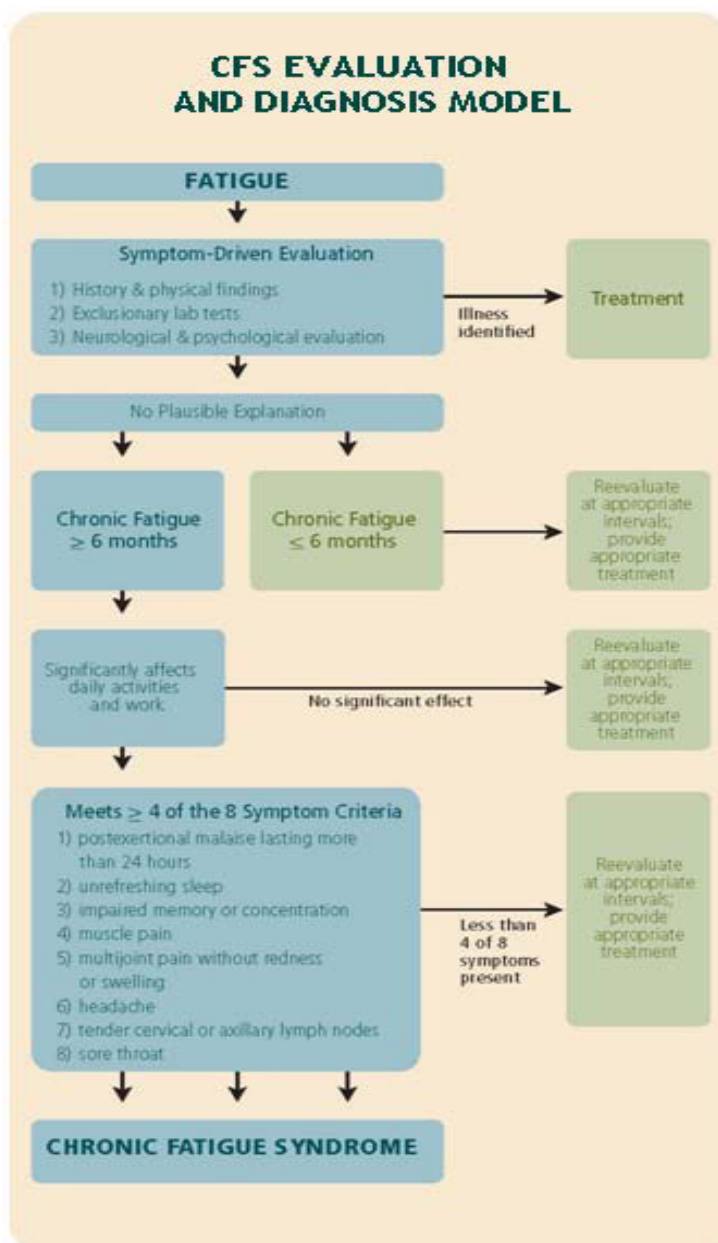


Figure 1. Diagnostic Model for Chronic Fatigue Syndrome by the Centers for Disease Control (CDC) and Prevention.¹⁰

¹⁰ U.S. Centers of Disease Control and Prevention (2008). Retrieved online: *CFS Toolkit for Health Care Professionals: Diagnosing CFS*

	(Fevers/ Chills/ Night sweats)?		
General	Weight loss? Skin (rashes/ itching/ color changes)? (Headaches/ dizziness)? Loss of consciousness?	Intro	Sit down on the exam table. Lie down. Sit up. Stand up. Remove your clothes (except your underwear).
HEENT	Vision changes? Do you hear as well as before? (Vertigo/ Tinnitus)? Nose bleeds? Sore throat? Bleeding gums?	HEENT	I am going to take your (blood pressure/ pulse). Do this. (<i>to mimic physical action</i>) Follow my finger. Look at the light. Raise your eyebrows. (Smile/ frown). I need to check your teeth. I'm going to examine your nose. Push against my hand with your face. Raise your shoulders against my hands. Open your mouth. Stick out your tongue. Say "ahh". Swallow.
GI	(Indigestion/ Heartburn/ Diarrhea/ Constipation)? What color is your stool?		
Endo	(Heat/ cold) intolerance? Polydipsia? Polyuria? (Hair/ nail) changes?		
Chest	Cough? Sputum? What color is it? Shortness of breath? Exposure to TB? Chest pain? Palpitations? How many pillows do you use to sleep? How many blocks can you walk before you get tired?	Chest, Abdomen, GI	I am going to examine your (heart/ lungs). Breathe deeply. Breathe out. I am going to examine your abdomen. Tell me whether this hurts, when I (press/ let go). I am going to do a rectal exam. Roll over onto your (left/ right) side.
Heme	Anemia? Do you bruise easily?		
GU	Fatigue? Dysuria? Urgency? Daily frequency? Nocturia? Hematuria?	Neurological	Tell me as soon as you see my finger wiggling. Do you hear this? Is it louder in your right ear or your left? Walk on your (toes/ heels). Walk like this. Stand like this with your feet together. Close your eyes. I am going to test your balance. Touch my finger. Touch your nose. Do it again. Faster. (Push/ pull) against my hand. Squeeze. Harder. Does this feel the same as this?
Limbs	Joint pain? Weakness? Osteoporosis? Rheumatoid arthritis?		Does it feel sharp or dull?
Mental	Problems with concentration? Mood changes? Suicidal thoughts?		Say "one" or "two" according to how many points you feel. I am going to check your reflexes.

Figure 2. Guidelines for Review of Systems (ROS) during interview and Physical Examination

