

Proofread and suggestions for Chronic Fatigue Syndrome: A Roadmap For Testing And Treatment

Corrections will be in red

Suggestions will be in green

Chronic Fatigue Syndrome: A Roadmap for Testing and Treatment

Introduction

Chronic Fatigue Syndrome (CFS), also called Myalgic Encephalomyelitis (ME), is a neurological condition characterized by cognitive dysfunction, mood disorders, fatigue, post-exertional malaise, and many more symptoms.

Chronic Fatigue Syndrome (CFS), also referred to as Myalgic Encephalomyelitis (ME), is a severe systemic, acquired illness that can be debilitating. Its symptoms manifest predominantly through neurological, immunological, and endocrinological dysfunction. The disease is often referred to as ME/CFS and people that have fallen ill might refer to themselves or their fellow patients as PWC or PWME (People with CFS/ People with ME)

The following guidelines are an aid to determine: **(1)** whether you have chronic fatigue syndrome, and if so: **(2)** which laboratory tests should be performed to identify the infections and other causal factors that underpin your ME/CFS, and: **(3)** what treatments you can follow to address these infections and causal factors, and treat the symptoms that arise from them.

It's important to note that not all cases are the same. Something that works for one person may or may not work for another.

Chronic Fatigue Syndrome Diagnosis

There are currently no laboratory tests or biomarkers that can be singularly used to diagnose ME/CFS, so diagnosis is performed on symptoms alone. ME/CFS manifests a whole array of clinical symptoms, 1 2 both physical and mental/cognitive, which typically include the following:

Currently, there are no laboratory tests or biomarkers that lead to a direct diagnosis of ME/CFS. A diagnosis is determined clinically through exclusion of other diseases and by looking at symptoms and cross referencing them with the ME/CFS guidelines (CCC, Fukuda, Oxford, ICC). These symptoms commonly contain the following:

SYMPTOMS OF CHRONIC FATIGUE SYNDROME

<p>Persistent fatigue not due to ongoing exertion, and not really relieved by adequate rest. The fatigue is of a new onset, and and greatly reduces activity levels, compared to before the onset.</p>	<p>Cognitive dysfunction (brain fog): short-term memory and working memory deficits, problems recalling words or names, disorientation, loss of focus and awareness.</p>	<p>Mood disorders which may include: emotional sensitivity, emotional lability (marked fluctuation of mood mood swings), and irritability. Anxiety, panic attacks, and depression are common comorbidities, in ME/CFS but they are not the cause.</p>	<p>Post-exertional malaise: symptoms profoundly worsen after physical and/or mental exercise, leaving an individual very incapacitated for several days, or even weeks, after exertion. A patient might not start to feel the effects until 48 hours later.</p>
<p>Headaches of a type not previously experienced. Tinnitus, dizziness, balance problems, fainting, irregular heartbeat. Abdominal pain, irritable bowel, diarrhea. Unrefreshing sleep.</p>	<p>Chronic sore throat or recurring sore throat (often from the virus pathogen that initiated the ME/CFS condition), chronic cough, chest pain, dry mouth, dry eyes, blurred vision.</p>	<p>Sensitivities to light, noise and chaotic or busy environments. Sensitivity to heat and/or cold. Increased or new allergic reactions or sensitivities to foods, alcohol, odors, chemicals. pollens pollens or medications.</p>	<p>Muscle aches or weakness, tingling sensations. Enlarged or painful lymph nodes in neck and armpits. Joint pain moving from one joint to another without swelling or redness.</p>

For ~~the a more~~ complete set of symptoms formally used for ~~a~~ ME/CFS diagnosis, see the [Canadian Consensus ME/CFS Definition](#) (regarded as most accurate and ~~scientific and thorough by ME/CFS specialists~~), and the [CDC 1994 CFS Criteria](#).

Ruling Out Other Conditions

The inherent problem with diagnosing ME/CFS by its symptoms ~~alone~~ is that many of the same symptoms manifest in other diseases and conditions such as: Lyme disease, hypothyroidism, celiac disease, lupus, anemia, hepatitis B or C, and many others. Thus if you have symptoms resembling chronic fatigue syndrome, you and your doctor first need to rule out diseases and conditions with ~~very~~ similar symptoms before a diagnosis of ME/CFS can be given with reasonable certainty.

~~There is an inherent problem with diagnosing ME/CFS by its symptoms alone. Many diseases manifest in a very similar way and it's hard to differentiate. These diseases include but are not limited to: Lyme Disease, Hypothyroidism, Celiac Disease, Lupus, Anemia, Hepatitis B or C, and many others. If you have symptoms resembling Chronic Fatigue Syndrome, you and~~

your doctor first need to rule out of conditions with similar symptoms before arriving at a diagnosis of ME/CFS.

RULING OUT CONDITIONS SIMILAR TO ME/CFS

Condition	Tests and Results Interpretation
<p>Lyme disease</p> <p>Lyme disease is caused by a chronic infection with certain species of <i>Borrelia</i> bacteria. These bacteria are often contracted through the bite of infected Ixodes ticks. Bites from <i>Borrelia</i>-infected ticks often (but not always) cause a characteristic erythema migrans rash. Early symptoms of Lyme disease include: fever, headache, fatigue and depression.</p>	<p>Borrelia culture. This is a more reliable test for the <i>Borrelia</i> bacteria that cause Lyme disease. It is available at Advanced Laboratory Services.</p> <p>Borrelia IgM and IgG antibodies. Dr A Martin Lerner uses Western blot and ELISA to test for <i>Borrelia burgdorferi</i> IgM and IgG antibodies.¹</p> <p>More info on testing for Lyme disease: Lyme Testing</p> <p>Lyme and ME/CFS differences in symptoms: in Lyme there is often pain and swelling in the large joints, most often the knees; by contrast in ME/CFS there can sometimes be pain in the joints, but this occurs <i>without</i> swelling. Facial palsy can occur in Lyme, but this does not occur in ME/CFS. A chronically stiff neck is common in Lyme, but not common in ME/CFS. These differences in symptoms can thus act as a differential diagnosis(no comma) to help distinguish Lyme disease from ME/CFS.</p>
<p>Hypothyroidism</p> <p>Hypothyroidism occurs when your thyroid gland does not produced enough of the thyroid hormone thyroxine.</p>	<p>The symptoms of hypothyroidism are quite similar to those of ME/CFS. Hypothyroidism is diagnosed by a blood test which measures the levels of various thyroid hormones.</p>
<p>Celiac disease</p> <p>Celiac disease is an autoimmune reaction triggered by gluten, causing damage to the small intestine and nutrient malabsorption. Celiac disease symptoms vary widely between patients, but can resemble those of</p>	<p>Transglutaminase antibody blood test and an upper endoscopy with biopsy of the duodenum are used to diagnose celiac disease.</p> <p>Since celiac symptoms greatly improve after removing ALL gluten from the diet, if you feel much better going gluten-free, it hints you might have celiac disease (though gluten-sensitive people without celiac disease will also feel better going</p>

ME/CFS. Info: Celiac Disease Symptoms .	gluten-free).
Systemic Lupus Erythematosus (SLE) SLE is an autoimmune diseases that can cause various symptoms such as joint pains, muscle pains, skin rashes, fatigue and brain fog.	Most people with Systemic Lupus Erythematosus (SLE) will have a positive antinuclear antibody test (ANA), but ANA is usually negative in ME/CFS patients. Thus the ANA test is a useful tool to help distinguish SLE from ME/CFS. Around-up Close to 50% of SLE patients exhibit a red butterfly rash on the face which is not found in ME/CFS.
Anemia Anemia is a decrease in the number of red blood cells, or a decrease in the amount of hemoglobin in those cells, either of which results in a reduced ability of the blood to carry oxygen.	The symptoms of anemia are similar to those of ME/CFS. Anemia can be diagnosed by a full blood count.
Hepatitis B or C virus infection Chronic hepatitis B and hepatitis C viral infections can produce symptoms that resemble those of ME/CFS.	Hepatitis B virus can be caught from unprotected sex, including anal and oral sex, and also from sharing needles to inject street drugs. Hepatitis C virus is most commonly caught by sharing of needles to inject street drugs, and is sometimes caught from unprotected sex. Your doctor or a sexual health clinic can provide testing for hepatitis B and hepatitis C virus infections.

More comprehensive lists of diseases that have similar symptoms to ME/CFS:

[Chronic Fatigue Syndrome Diagnosis](#)

[Chronic Fatigue Syndrome: Evaluation and Treatment](#)

[CFS can be caused by chronic infection](#)

[Diseases similar to ME/CFS](#)

Causes and Treatments of ME/CFS

Once you have ruled out common diseases with similar symptoms(~~no comma~~) and have settled on a diagnosis of ME/CFS, then next stage is to try to identify the underlying factors (infections, toxic exposures, etc) that may be causing or contributing to your ME/CFS. ME/CFS patients may have several factors contributing to their symptoms. In order best treat ME/CFS(~~no comma~~) these factors need to be identified and addressed. This is ideally performed with the help of a doctor specializing in Chronic Fatigue Syndrome

laboratory testing and treatment.

There are many laboratory tests that people with ME/CFS might choose to take. In this roadmap to ME/CFS testing and treatment, the tests suggested are grouped into various rounds, with the most important tests placed in the earlier rounds. After each round of testing, depending on the test results, advice on an appropriate course of action for treatment is given. Tests for causal factors that have a corresponding treatment or cure are prioritized, since the main goal of this roadmap is to guide people with ME/CFS to treatments that may improve or cure their condition. Generally, it is not always necessary to take the appropriate tests before commencing a particular treatment; in many cases, a treatment can be tried out speculatively without prior testing, to see if it improves health.

The suggested treatment plans are those generally employed by leading Chronic Fatigue Syndrome doctors and researchers in the field. There are no hard and fast rules for Chronic Fatigue Syndrome treatment, and you may wish to follow different courses of action to those given here. These guidelines are an ongoing project which aims to be reasonably comprehensive; but they are not an exhaustive chart of ME/CFS treatments.

Research indicates that treatment-resistant ME/CFS of unproven etiology generally appears to be associated with viruses from the enterovirus genus (specifically: Coxsackievirus B and Echovirus) and/or to viruses from the herpes family (specifically: human herpes six virus, cytomegalovirus, Epstein-Barr virus). More treatable or curable forms of ME/CFS may be caused by Parvovirus B19, Chlamydia Pneumoniae, as well as other microbes. Non-microbial causes or contributory factors to ME/CFS include: ~~mold-toxin-exposure~~ (mold is a microbe) and pesticide exposure. The first round of testing detailed below suggests you consider or get tested for all these microbes and causal factors.

Notes on Pathogen Testing

Most ME/CFS-associated microbes are ~~very~~ commonly found in the general population: Epstein-Barr virus, for example, is found in 95% of adults. Microbes found in the body are generally acquired from infections earlier in life, but once the immune system has them under control, these infections become largely inactive and dormant; so microbes from past infections normally exist in the body in a latent state (though these pathogens can reactivate and become ~~more~~ active if there is weakness in the immune system).

When a test is performed for a microbe, we want to know not only whether you have it in your body, but more importantly, whether it is active or not. In chronic infections, the level of activity of a microbe can be gauged to a certain extent by the amount of IgG antibodies your body produces in response to that microbe. High levels of IgG antibodies tend to suggest an active chronic infection.

Testing for microbes is important. To evaluate the extent to which a microbe is causing harm, it is important to know whether the microbe is active or inactive. In chronic infections, the level of activity of a microbe can be gauged by the amount of IgG antibodies

one's body produces in response to that microbe. High levels of IgG antibodies tend to suggest a chronically active infection. These levels must be measured over time to note clinical significance and how a patient is responding to treatment.

Note that the activity of some microbes, notably enteroviruses, cannot be ~~so~~ accurately determined by antibody tests(no comma) due to the fact that these microbes can also live inside human cells(no comma) as an intracellular infection. The immune system does not readily make antibodies to microbes living inside human cells, so you may have a significant intracellular enterovirus infection, but show relatively low antibody levels when you take a test. Other means of pathogen testing may be employed in these situations. Alternative methods of testing for the presence of pathogens in the body include: PCR (polymerase chain reaction) and viral culture. Viral culture is usually the "gold standard" by which other viral detection methods are judged.

Note that the activity of some microbes, notably enteroviruses, cannot be accurately measured by antibody testing due to the fact that these microbes can also live inside human cells as an intracellular infection. The tests measure the antibody levels in the blood or serum not in the cells. The immune system does not readily make antibodies to microbes living inside human cells. One might have a significant intracellular enterovirus infection, but also register low antibodies in a standard test. Alternative methods of testing for the presence of pathogens in the body include: PCR (Polymerase Chain Reaction) and viral culture. Viral culture is considered the "gold standard" to which other viral detection methods are judged.

1st Round Tests: Common Microbial Infections in ME/CFS

The first set of ME/CFS causal factors to consider and/or test for is shown in the table below. The various microbial (and other) causal factors are listed in the left hand column, and recommended tests for these causal factors (plus some basic guidance on interpreting the test result) are given in the right hand column of the table.

FIRST ROUND TESTS

Causal Factor	Tests and Results Interpretation
<p>Coxsackievirus B and echovirus (CVB & EV)</p> <p>These viruses have been strongly linked to ME/CFS. There are 6 coxsackievirus B serotypes and 32 different echovirus serotypes. All are part of the enterovirus genus. If you have an active infection with coxsackievirus B or echovirus, this may be causing your ME/CFS. 1 2 3 4</p> <p>Intracellular infections: enteroviruses can exist in</p>	<p>Coxsackievirus B and echovirus antibodies. Only ARUP Lab, in Utah, has an enterovirus antibody test sufficiently sensitive enough to detect the low-level "smoldering" chronic enterovirus infections of ME/CFS. These sensitive ARUP Lab tests are: coxsackievirus B antibodies, echovirus antibodies. Titers of 1:320 and higher in these tests are good indicators of an active infection. ARUP tests can be ordered directly, or ordered through Labcorp.</p> <p>Stomach biopsy (immunohistochemistry). This test,</p>

two distinct forms within the body: the normal lytic virus form, which lives in the blood and tissues; and the non-cytolytic virus form, which lives inside human cells, as an intracellular infection. An enterovirus infection begins with a lytic virus, but once in the body, some of these lytic viruses can convert into non-cytolytic viruses. Because non-cytolytic enteroviruses live inside human cells, they are hard to detect. Nevertheless, Dr John Chia and other researchers think non-cytolytic enteroviruses may be a major causal factor in ME/CFS.[1](#) [2](#)

The prevalence of coxsackievirus B ranges from around 7% to 22% of the general population, according to a study in Greece.[1](#)

which requires a sample of stomach tissue obtained by an endoscope, is the most reliable for detecting a chronic enteroviral infection. [Dr Chia's lab](#) can process the stomach tissue sample.

PCR testing is not sensitive for chronic enteroviral infections, as these viruses disappear from the blood after the acute phase of the infection is over (the acute phase of an enterovirus infection is a short window that starts just after initial exposure, and last for around 10 days).

Complement fixation test (CFT) is useless for testing enteroviral activity in chronic infections. The CFT is only of value within the acute phase (first 10 days) of an enterovirus infection.

Non-cytolytic enterovirus testing. There are no commercially available tests for non-cytolytic enteroviruses, which form an intracellular infection (they live inside human cells).

Further info:

[Enterovirus Foundation: Testing for chronic enteroviral infections](#)
[Enterovirus-Associated ME/CFS Etiology](#)

Human herpes virus six (HHV-6)

HHV-6 is found in over 90% of adults, usually in a latent inactive state. If you have an active HHV-6 infection, this may be contributing to or causing your symptoms, as active HHV-6 is linked to ME/CFS.[1](#) [2](#) There are two main variants of HHV-6: variant A and variant B, often denoted as HHV-6A and HHV-6B. Tests for HHV-6 do not usually distinguish between the two variants.

Most individuals that test positive for HHV-6 will have the more benign HHV-6B variant; but just under 3% will have the more nasty HHV-6A variant. It is this HHV-6A variant which is more strongly linked to ME/CFS.[1](#) So a

HHV-6 antibodies. A blood test showing an HHV-6 IgG antibody titer of **1:320** or more suggests an active infection. Dr Jose Montoya believes that IgG antibody levels are a better guide to the HHV-6 activity in the central nervous system than viral culture from the blood.[1](#)

Nested PCR for HHV-6A. Regular tests do not distinguish between these two variants of HHV-6, so if you tested positive for HHV-6, you could have either (or both). However, nested PCR tests can specifically determine if you have HHV-6A.

HHV-6

PCR.

<p>positive test for HHV-6A may be quite significant if this virus is active.</p> <p>Dr Kazuhiro Kondo has a theory that partial reactivation of HHV-6 may cause ME/CFS, as well as depression and bipolar disorder.1</p>	<p>Further info:</p> <p>HHV-6 Foundation: Viral Testing</p> <p>HHV-6 Foundation: Research Papers</p>
<p>Epstein-Barr virus (EBV)</p> <p>There is a high 95% prevalence of Epstein-Barr virus in the adult population, so most people will have this virus in their system, but usually in a latent inactive state. However, if you have an active EBV infection, it is possible this may be contributing to or causing your ME/CFS symptoms. New evidence indicates that some subtypes of ME/CFS may be due to partial reactivation of Epstein-Barr virus.1 2</p>	<p>Epstein-Barr virus antibodies. A blood test showing an EBV VCA IgG antibody titer of 1:1280 or more suggests an active infection.1</p> <p>Dr A Martin Lerner says that a positive diagnosis of Epstein-Barr virus infection requires a positive EBV early antigen (EA) diffuse test, and/or a positive EBV IgM viral capsid antibodies (VCA) test.1</p> <p>Epstein-Barr virus PCR.</p> <p>Lymphocyte subset panel. If this test shows elevated CD8 T-cells, this can indicate an ongoing viral infection with EBV or cytomegalovirus, which both raise CD8 T-cells.1</p>
<p>Cytomegalovirus (CMV)</p> <p>Cytomegalovirus is found in 50% of adults, usually in a latent inactive state. If you have an active CMV infection, this may be contributing to or causing your ME/CFS symptoms.</p>	<p>Cytomegalovirus IgG antibodies. Dr A Martin Lerner says that a diagnosis of cytomegalovirus infection is made by examining the CMV IgG antibody titer. (Lerner says the IgM titer for CMV is inaccurate and insensitive.) The higher the CMV IgG titer, the greater the viral load.1</p> <p>Cytomegalovirus PCR.</p>
<p>Parvovirus B19</p> <p>Parvovirus B19 is found in 50% of adults, usually in a latent inactive state. If you have an active parvovirus B19 infection, this may be contributing to or causing your symptoms.1 2 3</p>	<p>Parvovirus B19 antibodies. A blood test showing a parvovirus IgG antibody titer of 1:?? or more suggests an active infection.</p>
<p>Chlamydia pneumoniae</p> <p>Chlamydia pneumoniae, an intracellular bacterium (that lives inside human cells), is a known cause of ME/CFS. 1 This bacterium is found in a latent state in 74% of the adult population, and about 10% of the population have a persistent active infection with this bacterium, according to a study conducted in Israel.1 Dr</p>	<p>Accurate Chlamydia pneumoniae testing poses significant difficulties and uncertainties. As a result, if you have a negative blood test for Chlamydia pneumoniae, this does not preclude you you from having a Chlamydia pneumoniae infection.</p> <p>More info on Chlamydia pneumoniae testing: Diagnosis Issues Cpnhelp.org</p>

<p>Chia has found that Chlamydia pneumoniae is the cause of ME/CFS as much as 10% of his ME/CFS patients.1</p> <p>Further info: Cpnhelp.org Stanford University: Chlamydia Pneumoniae</p>	
<p>Mold toxin exposure Mold can synthesize toxic substances (mycotoxins) that can damage the central nervous system, intestines, kidneys. These toxins have been linked to the triggering of ME/CFS</p> <p>Dr Joseph Brewer found the following mycotoxins in ME/CFS patients: ochratoxin A in 83% of patients, macrocyclic trichothecenes in 44%, and aflatoxins in 12% of patients.1</p>	<p>Mold growth can be visible, or it may be hidden behind walls and domestic appliances. People can become ill from hidden mold growths without knowing the cause (though a moldy, musty smell in the environment provides a warning to the possible presence of mold). Usually several species of mold can be found in a mold infestation. Mold species that have very potent mycotoxins include: Stachybotrys, Memnoniella and Acremonium. These three species depend on damp cellulose material (wood, paper, cotton) for nutrition, and thus typically thrive in water damaged-buildings that contain plenty of wood, wallpaper, etc.</p> <p>Dr Joseph Brewer <i>et al</i> have recently hypothesized that mold may be harbored within the body, and continue to release and/or produce mycotoxins which contribute to ongoing chronic illness. Brewer suggests that sinuses are the most likely candidate as a site for the mold and mycotoxin production.1</p>
<p>Pesticide exposure Chronic exposure to significant amounts of organophosphate or pyrethroid pesticides can cause ME/CFS-like illnesses, or act as a co-factor in precipitating ME/CFS. 1</p> <p>Further info: PAN</p>	<p>Sources of pesticide exposure include garden sprays used by you or your neighbor, which can be tracked into the house on shoes. Agricultural exposure may occur in rural areas through crop spraying. Pyrethroids are found in pet flea control products. Pesticide residues on foodstuffs are generally very minimal, and are not of concern.1 Organophosphate pesticides are detoxified from the body by an enzyme called paraoxonase; differences in the paraoxonase gene can increase an individual's susceptibility to organophosphates.1 2</p>

1st Round Treatments

In the light of the results of the first round of tests:

Coxsackievirus B and echovirus infection. If your tests indicate you have an active ~~an~~ infection with one or more enteroviruses of the coxsackievirus B or echovirus species, then

Dr John Chia has found that around 25% of people will noticeably improve with a herbal treatment named **oxymatrine** (although Dr Chia suggests that patients with autoimmune tendencies should not take oxymatrine).¹ Dr Chia has formulated his own brand of oxymatrine called [Equilibrant](#). More info on oxymatrine: [Dr Chia: Oxymatrine, Oxymatrine, Autoimmunity, ME/CFS and FM](#). Dr Chia also often adds the antiviral **lamivudine** (Epivir) to patients' medications.¹

Dr Chia has also used **interferon** therapy for ME/CFS patients with enterovirus infections; many patients went into full remission after this therapy, but unfortunately tended to relapse within around six months, so this is not a permanent cure, but perhaps an encouraging result.¹ More info: [Chia's Interferon Therapy](#).

Herpesvirus infection. If your tests indicate you have an active infection with one or more of the three herpesviruses: HHV-6, cytomegalovirus and Epstein-Barr virus, then Dr A. Martin Lerner has recently shown that an anti-herpesvirus treatment comprising the antivirals **valganciclovir** (Valcyte) and/or **valacyclovir** (Valtrex) can return ME/CFS patients to a near-normal to normal life, provided you have no active co-infections with pathogens other than these three herpesviruses.¹ Professor Jose Montoya also found Valcyte effective when there is an active HHV-6 infection.¹ Note that Valcyte is potent antiviral drug with potentially serious side effects, and should only be taken under medical supervision. More info: [Valcyte \(Valganciclovir\) for CFS](#).

Those who experience side effects from valacyclovir can substitute with **famciclovir** (Famvir), an antiviral which is usually much better tolerated. Unfortunately, if you have active co-infections with pathogens other than these three herpesviruses, this antiviral treatment on its own has proved ~~ineffectual~~ **ineffective**, according to Dr Lerner. However, it is possible that this anti-herpesvirus treatment, when combined with treatments for the other pathogens, may get results.

The antiviral **Nexavir** (formerly Kutapressin) displays potent *in vitro* (**space**) activity against HHV-6,¹ and this well-tolerated drug is used to treat ME/CFS.

The antimalarial drug **artesunate** has efficacy against HHV-6.¹

Dr Dan Peterson has had success using the antiviral **cidofovir** (Vistide) for ME/CFS patients with infections from the herpes family viruses HHV-6 and CMV. Cidofovir is potent antiviral drug with potentially serious side effects, and should only be taken under medical supervision. More Info: [Peterson Reports Cidofovir Effective in Treating Herpesvirus Infected](#)

The HIV antiviral drug **raltegravir** (Isentress) may be effective against the whole family of herpesviruses.^{[1](#)}

Epstein-Barr virus infection. If your tests indicate you have a chronic Epstein-Barr virus infection and no other infections, it is quite possible that your symptoms are in fact a case of chronic Epstein-Barr virus syndrome (chronic mononucleosis syndrome), which closely resembles ME/CFS. Dr A. Martin Lerner suggests that chronic Epstein-Barr can be considered a subtype of ME/CFS. Chronic Epstein-Barr infection often clears itself up within 6 months or less, and you should then achieve remission from your symptoms. (This statement is incorrect. It does not **become chronic** until after 6 months. For most people that are very sick it does not clear up by itself hence the need for antiviral drugs. If you mean a normal case of mononucleosis then you should specify that.) Antivirals such as **valacyclovir** (Valtrex) or **famciclovir** (Famvir) can hasten the healing process.^{[1](#)}

Even if you do not have chronic mononucleosis syndrome, if your tests indicate that the EBV in your body has reactivated, this may be contributing to your ME/CFS symptoms. Dr A. Martin Lerner has recently shown that the antiviral drugs **valacyclovir** (Valtrex) and/or **valganciclovir** (Valcyte) can be very beneficial in ME/CFS patients with reactivated EBV.^{[1](#)} Professor Jose Montoya also found Valcyte effective when there is an active EBV infection.^{[1](#)} Generally, you would first try the safe antivirals Valtrex or Famvir for EBV before you try Valcyte, as Valcyte can have serious side effects and thus patients taking it must be medically monitored.

The antiviral **Nexavir** (formerly Kutapressin) may have some activity against Epstein-Barr virus.^{[1](#)}

Cytomegalovirus infection. The antimalarial drug **artesunate** has efficacy against cytomegalovirus.^{[1](#)} **Cidofovir** (Vistide) is effective against cytomegalovirus.

Parvovirus B19 infection. If your tests indicate you have high parvovirus B19 antibodies and nothing else, then **intravenous immunoglobulin** treatment may fully cure you.^{[1](#)}

Chlamydia pneumoniae infection. If you have Chlamydia pneumoniae and no other

infections, then antibiotic treatment with(space) **azithromycin** or **rifampin** may clear this bacterium, and may cure fully your ME/CFS. Chlamydia pneumoniae infection is an uncommon but treatable cause of chronic fatigue.¹ More info: [Dr Stratton's CFS protocol](#), [Chlamydia pneumoniae Treatment Protocols](#).

Toxic mold exposure. If you have been exposed to high amounts of toxic mold, ensure you prevent or minimise further exposure. If exposed in your home, carefully clean off the mold growths (wearing a face mask is advised), and reduce humidity by increasing ventilation, in order to inhibit mold regrowth. **Cholestyramine** can be used to help detoxify certain mold toxins (such as ochratoxin A, fumonisins and zearalenone) from the body.^{1 2} (Some of this information is wrong and the part about cleaning it up is dangerous and probably will not do a thing. I will get a comprehensive list and links of treatments together to give to you. I will also get links on mold clean up. I will use my resources and ask Slayadragon for help as well.)

Chronic organophosphate and/or pyrethroid pesticide exposure. If you have been chronically exposed to organophosphate or pyrethroid pesticides, ensure you prevent any further exposure. The amount of pesticides residues found in foodstuffs is very minimal, and not of concern.

Note: some cases of ME/CFS may be due to a combination of the above pathogenic infections (as well as other causal factors). In which case, conceivably, it may be possible to combine the above treatments in order to tackle the various individual infections.

Before undertaking any treatment, however, you should first become familiar with any risks of taking that treatment, and if unsure, you should run it by a good ME/CFS doctor first.

More info: [Antivirals and Antibiotics for ME/CFS](#).

Adjunct Therapies for ME/CFS

As well as specific pathogen-targeted therapies, there are many adjunct or additional therapies that can be helpful in chronic fatigue syndrome. These include:

Immunomodulators. These are drugs and supplements that modulate the immune system. Many immunomodulators used in ME/CFS shift the immune response from the Th2

mode to the Th1 mode. There is evidence that ME/CFS patients are stuck in the Th2 mode, whereas they should really be in the Th1 mode; it is the Th1 mode immune response that fights viruses and intracellular bacteria.¹ These Th2 to Th1 mode shifting immunomodulator drugs and supplements include: **low-dose naltrexone**, **Imunovir**, **oxymatrine** (probably), **Nexavir** (formerly Kutapressin), **pine cone extract**, **heparin**, and **transfer factor**.^{1 2}

Note that Th2 to Th1 mode shifting immunomodulators can make you feel worse for the first few months, but benefits accrue after that initial period. Note also that Dr Paul Cheney believes immunomodulators lose their effect if you do not take regular breaks from them. Regular breaks means an on/off regimen, such as for example: taking them for 5 days, stop for 2 days; and taking them for 3 weeks, stop for 1 week.

Other immunomodulators used in ME/CFS include: **artesanate** (often used by Dr Cheney; it inhibits the effects of TNF-alpha ¹), **azithromycin** (an antibiotic that lessens ME/CFS symptoms ¹), **etanercept** (inhibits the effects of TNF-alpha), **Ampligen** (a powerful but very expensive immunomodulator drug that modulates interferon and RNase L).

Low-intensity exercises like walking, tai chi and yoga help shift towards the desirable Th1 mode, whereas higher intensity exercise and longer workout durations shift towards the undesirable Th2 mode.¹

Low-dose naltrexone (LDN). A **low-dose naltrexone** regimen (3 to 4.5 mg daily, taken before bed) can help halt the progression of various autoimmune and neurodegenerative diseases, including multiple sclerosis, systemic lupus erythematosus, rheumatoid arthritis, Sjogren's, Parkinson's, Crohn's. Many ME/CFS and fibromyalgia patients find LDN beneficial.¹ LDN acts as an immunomodulator that stimulates the desired Th1 immune response, and LDN is believed to increase natural killer cell function (NK function is often low in ME/CFS patients). More info: [LDN for ME/CFS](#), [LDN Overview](#).

Vitamin B12 injections or B12 sublingual tablets. Many ME/CFS patients find that high dose **vitamin B12** substantially reduces ~~the~~ **their** cognitive dysfunction (brain fog) symptoms. The recommended forms of vitamin B12 are: methylcobalamin, adenosylcobalamin, and hydroxocobalamin. Injectable vitamin B12 doses are around 1000 mcg three times a week; sublingual doses are 5000 mcg taken daily. Improvements in symptoms usually appear after a few weeks of taking B12. Further reading: [Rationale for using vitamin B12 in CFS](#), [Methylation, B12, Glutathione, Chelation](#).

Methylation protocol. Dr Richard van Konynenburg says that insufficient methylation is a factor behind ME/CFS, and recommends boosting methylation using supplement regimen based on the treatment program developed by Dr Amy Yasko for autism. The Health Diagnostics and Research Institute in New Jersey (email: lab@vitdiag.com) provide a test for methylation, as do the [European Laboratory of Nutrients](#) (see their "amino acids analysis"). More info: [Glutathione and the Methylation Cycle](#), [Simple Methylation Treatment Protocol for CFS](#).

Very low dose tricyclic antidepressants (TCA). Low doses (10 to 25 mg daily) of tricyclic antidepressants (TCA) such as **amitriptyline** or **imipramine** can be particularly helpful for ME/CFS. TCA antidepressants not only provide a mood-boosting for ME/CFS patients, they also are known to increase energy levels (though low doses are stipulated, as higher doses are usually found too stimulating for ME/CFS patients).^{1 2} TCAs can reduce vitamin B2 levels, so taking vitamin B2 with TCAs is beneficial, and may improve the effects of these antidepressants.¹

Nexavir injections. The injectable drug **Nexavir** (formerly Kutapressin) is an antiviral, an anti-inflammatory and an immunomodulator that has demonstrated overall benefits for ME/CFS, and this drug is often employed by ME/CFS doctors, including Dr Cheney, Dr Enlander and Dr De Meirleir. Nexavir treatment protocols vary, but in one study, ME/CFS patients were given one subcutaneous 2 ml injection of Nexavir for the first 25 days of treatment; thereafter one injection every two days, for the next 50 days; and thereafter one injection three times a week for the next 105 days. This study reported a 42% remission rate in these patients at the end of this course of Nexavir treatment.¹

Dr De Meirleir reports that around 70% of his ME/CFS patients experience at least a 20 point increase on the [Karnofsky scale](#) as a consequence of taking Nexavir. Dr Enlander says that Nexavir helps about 30% of his ME/CFS patients. Nexavir is usually taken in conjunction with vitamin B12 injections.

Other drugs and supplements. **Acetyl-L-carnitine** improves mental fatigue in ME/CFS.¹ **L-carnitine** helps ME/CFS.¹ **Omega 3 with omega 6 fatty acids** (fish oil plus evening primrose oil) improve ME/CFS symptoms.¹ **Magnesium** (either applied transdermally on the skin, or given by injection) can be of benefit in ME/CFS.¹ **DHEA** improves pain, fatigue, anxiety, memory and sexual problems in ME/CFS patients.¹ **NADH** helps ME/CFS.¹ **Co-enzyme Q10** may increase energy in ME/CFS.¹ **Undenatured whey protein** may help ME/CFS by boosting intracellular

glutathione.¹ **Malic acid** taken with magnesium can increase energy in ME/CFS and reduce pain in fibromyalgia.¹ ²

In my opinion there should be a lot information more on fatty acids. I can provide that to you.

More info on various ME/CFS therapies:

[ME/CFS Immune System Treatments at Phoenix Rising](#)

[Dr Jacob Teitelbaum's 30 Top Tips for Treating CFS](#)

[Dr Myhill Fatigue Treatments](#)

[ME/CFS Medications Database](#)

2nd Round Tests: Common Comorbid Diseases and Conditions of ME/CFS

This second round of tests and possible causal factors focuses on a few of the comorbid diseases and conditions that are frequently found in ME/CFS patients —□” in many cases, prior to the triggering factor that precipitated the ME/CFS condition (triggering factors such as an enteroviruses, herpesviruses, mold exposure, etc).

Comorbid conditions that are statistically more prevalent in ME/CFS or fibromyalgia patients (either prior to ME/CFS onset, or subsequent to onset) include: irritable bowel syndrome, small intestine bacterial overgrowth, interstitial cystitis and overactive bladder, chronic pelvic pain syndrome (prostatitis), endometriosis, Raynaud’s disease, multiple chemical sensitivity (increased allergies), temporomandibular joint disorder, myofascial pain syndrome, attention deficit hyperactivity disorder, eating disorders, Hashimoto’s thyroiditis, prolapsed mitral valve, and Sjogren’s syndrome (sicca syndrome), postural orthostatic tachycardia syndrome (POTS), and neurally mediated hypotension.¹

Some of these common comorbid conditions likely play a causal role in the development of ME/CFS (though there is no direct proof of this; all we know at present is that these comorbid conditions are statistically more prevalent in ME/CFS patients).

SECOND ROUND TESTS

Causal Factor	Tests and Results Interpretation
Intestinal dysbiosis Intestinal dysbiosis is where the populations of harmful bacteria or fungi in the large intestine outweigh the populations of beneficial bacteria. People with ME/CFS often have intestinal dysbiosis, and their bowels may harbor some pathogenic microbial species. These conditions	Full digestive stool analysis. A digestive stool analysis will determine whether you have bacterial or fungal overgrowth in your intestines, and will determine whether there are any pathogenic or potentially pathogenic microbes present (potentially pathogenic microbes are those that only cause problems if their populations in the gut become too large). More info on gut dysbiosis: Fermentation in the gut and CFS

<p>may be contributing to your ME/CFS symptoms.</p>	
<p>Leaky gut (Increased intestinal permeability) Leaky gut is an intestinal dysfunction that can allow toxic contents of the small intestine to enter the bloodstream unregulated. Leaky gut is what happens when tight junctions in the gut lining start to space farther apart. A normal tight junction is supposed to protect contents "leaking" through the membranes into the gut. Leaky gut arises from dysfunction of the tight junctions in the lining of the intestine.</p> <p>Fixing leaky gut improves ME/CFS(no comma) and sometimes achieves full remission from ME/CFS. 1 2</p>	<p>Leaky gut test (lactulose/mannitol test). The lactulose/mannitol test can detect if you have a leaky gut.</p> <p>More info: fixing Leaky Gut Helps ME/CFS.</p>
<p>Irritable bowel syndrome (IBS) IBS symptoms may include: abdominal pain and bloating; bouts of diarrhoea and/or constipation.</p> <p>Irritable bowel syndrome is a very common comorbid condition in ME/CFS and fibromyalgia.1 2 One study found 92% of ME/CFS patients, and 77% of fibromyalgia patients had IBS in their lifetime (compared to 18% for healthy controls).1</p>	<p>IBS is generally diagnosed by its symptoms; there are no specific tests for IBS.</p>
<p>Small intestine bacterial overgrowth (SIBO)</p> <p>SIBO is a condition in which abnormally large numbers of bacteria grow in the small intestine. SIBO symptoms are very similar to those of IBS, and include nausea, bloating, vomiting, diarrhea, nutrient malabsorption (and thus consequently malnutrition), and weight loss. SIBO is found in 84% of</p>	<p>Hydrogen breath test. SIBO can be detected using a hydrogen breath test, which involves drinking some lactulose sugar, and measuring the hydrogen or methane gas produced by bacteria in the small intestine as they metabolize this sugar. (These gases enter the bloodstream and are expelled by the lungs, where they are detected in the breath).</p> <p>D-xylose test. Malabsorption due to SIBO can be detected by the D-xylose test, which involves drinking D-xylose, and measuring levels in the urine and blood; if there is no D-xylose is found in the urine and blood, it suggests that the small bowel is not absorbing properly.</p>

<p>IBS patients(no comma) and some hypothesize that SIBO may be the cause of IBS in these cases.1</p> <p>SIBO is a common comorbid condition in ME/CFS and fibromyalgia.1</p>	<p>More info: Testing for SIBO, Labs that offer hydrogen breath tests.</p>
<p>Interstitial cystitis (bladder pain syndrome) and overactive bladder These two conditions involve an excessive urgency, and increase frequency, to urinate. These two conditions involve an excessive urgency and frequency to urinate. Bladder pain is involved in interstitial cystitis.1 Interstitial cystitis and overactive bladder are common comorbid conditions in fibromyalgia and ME/CFS.1 2 3 Research on cats with interstitial cystitis shows that they may have mild primary adrenal insufficiency.1</p>	<p>Interstitial cystitis (IC) cannot be diagnosed with a simple test. IC is initially diagnosed by exclusion, by ruling out other conditions with similar symptoms, such as infection, bladder stones, bladder cancer, kidney disease, multiple sclerosis, endometriosis, and sexually transmitted diseases. To confirm the initial diagnosis of IC, a fiber-optic tube and camera (cystoscope) is inserted through the urethra and into the bladder (under general anesthetic), to examine the bladder lining. A common sign of IC is numerous red pinpoint spots of blood (glomerulations) on the bladder wall lining.</p> <p>More info on testing for IC: Diagnosing and treating interstitial cystitis</p> <p>Overactive bladder is also initially diagnosed by exclusion, by ruling out other conditions with similar symptoms, such as infection. The diagnosis is confirmed by a procedure called flow cystometry, which involves the insertion of a catheter into the urethra in order to measure the fluid pressure pulses generated by bladder contractions.</p>
<p>Allergies or food intolerances Allergies and/or food intolerances are commonly found in ME/CFS.1 2 Allergies or food intolerances, especially to gluten or dairy products, may exacerbate ME/CFS symptoms.</p>	
<p>Postural orthostatic tachycardia syndrome There is a high prevalence postural orthostatic tachycardia syndrome (POTS) in ME/CFS.1 The symptoms of POTS include: postural tachycardia (increased heart rate on standing), headache, abdominal discomfort, dizziness, feeling faint, nausea, fatigue, lightheadedness, sweating, tremor, anxiety, palpitations, exercise intolerance.</p>	<p>POTS is diagnosed using the tilt table test. However, an adequate home diagnosis of POTS can be achieved by measuring any increase in heart rate that occurs after standing up from a relaxed lying down position. To perform this test, you need to lie down and relax for 10 minutes, and at the end of this 10 minute period, measure you your heart rate. Then stand up, and after two minutes standing, measure you heart rate again. After 10 minutes standing, measure your heart rate a third time. If your heart rate measurements taken on standing are 30 beats per minute or more faster than your heart rate while lying down, then you have POTS. Those aged 12-19 years must have an increase of at least 40 beats per minute in order to be diagnosed with POTS.</p>

Note that as well as being a common condition in ME/CFS patients, POTS can also occur on its own without ME/CFS, and in these cases, POTS can be misdiagnosed as ME/CFS, since its symptoms are similar to those of ME/CFS. Prof Julia Newton believes that a third of all ME/CFS diagnoses could be wrong, because the patient may in fact only have POTS rather than ME/CFS.¹ POTS is a treatable condition, so everyone with ME/CFS should investigate whether they have POTS.

Further info on POTS: [Orthostatic Intolerance in CFS II](#), [dinet.org](#), [www.potsuk.org](#), [POTSgrrl](#)

Orthostatic hypotension (OH), and Neurally mediated hypotension (NMH)

OH and NMH are conditions in which your blood pressure drops ~~upon~~ standing. In OH the pressure drop is immediate; in NMH the drop occurs after a long period of time standing, or also sometimes after having an unpleasant or upsetting experience.

Symptoms of OH or NMH include: dizziness or light-headedness, feeling that you are going to faint, blurred vision, confusion, weakness, fatigue, nausea. These symptoms appear within a few seconds or minutes of standing up after you've been sitting or lying down, and will disappear if you ~~you~~ sit or lie down for a few minutes.¹

Patients with ME/CFS have a high prevalence of neurally mediated hypotension (NMH),¹ which is due to a dysfunction of the autonomic nervous system. In some cases ME/CFS patients can experience almost complete resolution of their ME/CFS symptoms once their NMH is treated.¹

Orthostatic hypotension is diagnosed when, on standing from a sitting or lying position, there is a fall in systolic blood pressure of 20 mm Hg or more, and/or a fall in diastolic blood pressure of 10 mm Hg or more.¹ These blood pressure measurements can be made with an ordinary home blood pressure meter. Note that a blood pressure reading is expressed as systolic /diastolic, for example: 120 / 80

2nd Round Treatments

In the light of the results of the second round of tests:

Intestinal dysbiosis. If your digestive stool analysis test indicates bacterial overgrowth and/or the substantial presence of potentially pathogenic gut bacteria such as Aeromonas, Bacillus cereus, Campylobacter jejuni, Citrobacter, Clostridium difficile, pathogenic strains of Escherichia coli, Klebsiella, Morganella morganii, Proteus, Pseudomonas, Salmonella, Shigella, Staphylococcus aureus, Vibrio and Yersinia, then a course of antibiotics, and/or probiotics may help reduce these bacterial populations. Note that some people ME/CFS, typically those who have had this disease for a decade or more, may find their gut is too sensitive to take probiotics.

Irritable bowel syndrome. If you have been diagnosed with irritable bowel syndrome (IBS), note that IBS can be caused by the intestinal protozoan parasites Giardia lamblia, Blastocystis hominis and Dientamoeba fragilis, all of which are treatable. There is also evidence of bacterial infection in IBS (in that the antibiotic rifaximin can put IBS into remission for three months).

For Giardia lamblia, a single dose of antiprotozoal drug **tinidazole** is an effective treatment.¹ For Blastocystis hominis and Dientamoeba fragilis treatment: see the **triple drug cocktail** (comprising secnidazole, diloxanide furoate and bactrim DS) at the [Badbugs website](#). A two week course of rifaximin, a unique antibiotic which is not absorbed in the intestines (and so remains in the bowels), improves IBS symptoms for three months.¹ [Fecal transplant](#) (bacteriotherapy) may be worth considering: it has a 58% response rate for treating ME/CFS patients with IBS.¹

Small intestine bacterial overgrowth. If you have been diagnosed with small intestine bacterial overgrowth (SIBO), there are a number of treatment options, including: the antibiotics **rifaximin**, **neomycin** and **metronidazole**; an **elemental diet** (to starve the bacteria); and **dietary treatments** that reduce food sources for the bacteria. See: [Treatments Strategy for SIBO](#). Once the ~~the~~ bacterial overgrowth in the small intestine is brought under control by ~~theses~~ **these** treatments, it is then necessary to adopt a [prevention strategy](#) (such as an ongoing dietary treatment) to stop SIBO from reappearing. Without adopting a prevention strategy, recurrence of SIBO is common.

Leaky gut syndrome. If you find you have a leaky gut (intestinal hyperpermeability), this means that the potent endotoxins such as lipopolysaccharide (LPS) made by bacteria in your gut can escape into your bloodstream. LPS leaking into the bloodstream can create significant system-wide inflammation. LPS also reduces the antiviral Th1 immune response, making it harder for your body to fight off viruses.¹ A **leaky gut diet** can help resolve leaky

gut problems. Fixing leaky gut in ME/CFS can lead to clinical improvement in symptoms.¹Sometimes, complete remission from ME/CFS can be obtained by normalizing a leaky gut.¹

Postural orthostatic tachycardia syndrome (POTS). If you are diagnosed with POTS, drugs for treating POTS include: **beta blockers**(such as **propranolol**), **clonidine** (Catepres), **desmopressin**(DDAVP), **erythropoietin**, **fludrocortisone** (Florinef), **ivabradine**,**labetalol**, **methyldopa**, **pyridostigmine** (Mestinon), **ibuprofen**,**intravenous saline**, **SSRI drugs**, **bupropion** (Wellbutrin),**vasoconstrictors** (such as **ergotamine**, **midodrine**, **octreotide**,**ephedrine**, **pseudoephedrine**, **yohimbine**, **theophylline** and**ritalin**). Non-pharmaceutical approaches to treating POTS include: increasing **salt** or sodium intake (different doctors have recommended anything between 3 and 15 grams of salt daily), drinking more **water**(up to 2 liters a day), **licorice root**. More info on POTS treatments:[POTS - What Helps](#)

Neurally mediated hypotension (NMH). If you are diagnosed with NMH, it can be treated by: increased **salt** intake, increased **water**intake (2 liters each day), **vasoconstrictors** (see POTS section above), **beta blockers**, **fludrocortisone** (Florinef), **licorice root**.

3rd Round Tests: Less Common Microbial Infections in ME/CFS

This third round of tests focuses on rarer microbial causes and contributory factors of ME/CFS.

THIRD ROUND TESTS

Causal Factor	Tests and Results Interpretation
Giardia lamblia Giardia lamblia is a protozoan parasite that colonizes and replicates in the small intestine, causing giardiasis. Prior infection with Giardia lamblia predisposes one to acquiring ME/CFS. ^{1 2 3}	Giardia lamblia antigen test. Antigen or antibodies?

<p>Toxoplasma gondii This intracellular protozoan parasite, which can be caught from undercooked meat and cat feces, can cause toxoplasmosis, a mild condition that usually clears up on its own. However, <i>Toxoplasma gondii</i> can sometimes cause or contribute to ME/CFS. <i>Toxoplasma gondii</i> does not spread from person to person.</p> <p>The prevalence of <i>Toxoplasma gondii</i> in humans varies from country to country. It is found in around 11% of people the US, 22% in the UK, and in around 88% in France.</p>	<p><i>Toxoplasma gondii</i> antibodies.</p>
<p><i>Mycoplasma species bacteria</i> 60% of ME/CFS patients are found to have blood infections with one or more of the following: <i>Mycoplasma pneumoniae</i>, <i>Mycoplasma fermentans</i>, <i>Mycoplasma hominis</i> and <i>Mycoplasma penetrans</i>. By contrast, such infections are detected in the blood of only 10% of healthy adults)delete half parenthesis . ME/CFS patients infected with more than one mycoplasmal species generally had a longer history of illness, suggesting that they may have contracted additional mycoplasmal infections with time.1 2</p> <p>It has been speculated that <i>Mycoplasma species</i> may contribute to ME/CFS symptoms.</p>	<p><i>Mycoplasma pneumoniae</i> IgM and IgG antibodies. Dr A Martin Lerner only considers a ME/CFS patient to have a persistent <i>Mycoplasma pneumoniae</i> infection unless the titer is 1:600 or more (Lerner uses LabCorp for testing).1</p> <p><i>Mycoplasma</i> PCR.</p>
<p><i>Coxiella burnetii</i> This rare bacterium causes a disease named Q fever, which has ME/CFS-like symptoms. Direct, person-to-person infection occurs rarely, if ever. It can be treated with antibiotics. The incubation period of <i>Coxiella burnetii</i> 2 to 3 weeks. 1 2</p>	<p><i>Coxiella burnetii</i> antibodies.</p>
<p><i>Brucella</i> <i>Brucella</i> bacteria can cause ME/CFS-like symptoms. This bacterium can be treated with antibiotics. <i>Brucella's</i> incubation period is 1 to 3 weeks.</p>	<p><i>Brucella</i> antibodies.</p>

<p>HTLV I and II If living in an endemic area, like Florida, infection with the HTLV virus is a remote possibility to explain a ME/CFS-like condition, though the symptoms of this virus take decades to appear (it has a very long incubation period).</p>	<p>HTLV I and II antibodies.</p>
<p>Ross River virus This mosquito-borne virus is only found in parts of Australia (and some other countries). This virus has been associated with ME/CFS, though most infections of Ross River virus do not produce clinical symptoms and go unnoticed.</p>	<p>Ross River virus antibodies.</p>
<p>Herpes simplex virus 1 & 2 (HSV) HSV 1 is found in 58% and HSV 2 is found in 16% of the adult population. It has been suggested that HSV 1 & 2 may play a role in ME/CFS.1</p>	<p>HSV 1 & 2 antibodies. A blood test showing a HSV IgG antibody titer of 1:?? or more suggests an active infection.</p>
<p>Varicella zoster virus (VZV) VZV is the virus which causes chickenpox. Having VZV has been linked to ME/CFS.1 It has been hypothesized that some cases of ME/CFS may be caused by the reactivation of VZV in peripheral nerve ganglia.1</p>	

3rd Round Treatments

In the light of the results of the third round of tests:

Giardia lamblia infection. If you tested positive for an Giardia lamblia infection, then either a week course of **metronidazole**, or a single dose of **tinidazole** or **ornidazole** is curative in 90% of cases.[1](#)

Mycoplasma infection. If you have a Mycoplasma infection, macrolide and tetracycline classes of antibiotics (such as **azithromycin** and **doxycycline**) are effective

treatments. For healthy people, two or three weeks treatment is required; longer treatment is usually needed in chronic illness like ME/CFS.[1](#)

Dr A Martin Lerner treats Mycoplasma pneumoniae infection in his ME/CFS patients with **intravenous doxycycline** 150 mg for six weeks, followed by **oral doxycycline** 100 to 150 mg twice daily or **moxifloxacin** 400 mg once daily for three months.[1](#)

Varicella zoster virus infection. If you have an active infection with varicella zoster virus, then treatment with one of the antiviral drugs **acyclovir**, **valacyclovir** or **famciclovir** is beneficial.[1](#)

Herpes simplex virus infection. If you have an active infection with herpes simplex virus I or II, then treatment with one of the antiviral drugs **acyclovir**, **valacyclovir** or **famciclovir** is beneficial.[1](#) The supplement **L-lysine** (1000 mg twice daily) is also beneficial.[1](#) [2](#)

4th Round Tests: Rarer Causes and Contributory Factors of ME/CFS

This fourth set includes rarer causes/contributory factors of ME/CFS.

FOURTH ROUND TESTS

Causal Factor	Tests and Results Interpretation
<p>Jaw bone infection</p> <p>Cases of ME/CFS have occasionally been caused by bone infections (osteomyelitis) inside the jaw bone. Such infections can develop inside jaw bone cavitations (the hollow pockets in the jaw bone left after a tooth extraction).</p> <p>Further info: My recovery from CFS due to osteonecrosis of the jaw My recovery story</p>	<p>Jaw bone infections can be very hard to detect, as they often cause only very minimal local symptoms. Yet a local infection in the jaw bone can cause symptoms identical to ME/CFS.</p> <p>A simple test for jaw bone infection is applying pressure to jaw bone with a finger; if any area feels painful, this indicates a possible bone infection.</p> <p>Jaw bone infections will usually not show up on X-rays. However an MRI can detect jaw bone infections. Ultrasound and thermal imaging cameras can also be used</p>

<p>I think I put the puzzle together</p>	<p>to help detect a jaw bone infection. A handheld device called the Cavitat scanner can detect infections hidden within the jaw bone.</p> <p>Jaw bone infections come under the category of focal infections, which are defined as infections localized in a small region of the body. Focal infections within the tonsils may also lead to fatigue symptoms.</p> <p>Dr Graeme Munro-Hall and Dr Lilian Munro-Hall are UK dentists that specialize in testing for and treating jaw bone infections.</p>
<p>Sinusitis (sinus infection) Sinusitis can cause chronic fatigue, and so conceivably sinus infections may worsen ME/CFS.1</p> <p>Patients suffering chronic fatigue (but not proper ME/CFS) due to obstructive sinusitis have reported significant improvements in fatigue after undergoing sinus surgery. The improvements are likely to derive from the easing of sinus inflammation after surgery.</p> <p>Further info: Sinus surgery can improve chronic fatigue</p>	<p>Sinusitis is usually diagnosed from its symptoms (blocked nose or runny nose, and facial pain).</p>
<p>Lymph fluid obstruction/stagnation Some patients with ME/CFS have improved, and some have even been cured, by massage that circulates lymph fluid. Thus lymphatic congestion and/or dysfunction in the thoracic duct which pumps the lymph fluid may be a factor in underpinning ME/CFS.</p> <p>Further info:</p>	<p>Testing for lymph flow obstruction. Raymond Perrin, a osteopath who has developed lymph massage techniques to treat ME/CFS, found that his patients have a sore and tender spot just under the third rib on their left side. The presence of this soreness indicates a lymph flow stagnation. To test this spot in yourself, press your fingers into a point around 2 cm above and to the left of your left nipple; if there is soreness or tenderness at this point, this indicates to Perrin that there is a lymph flow blockage.</p>

<p>Perrin Technique</p>	<p>Perrin theorizes that lymph stagnation prevents proper cerebrospinal fluid drainage, thus creating a toxic build-up in the central nervous system that underpins or contributes to ME/CFS.1</p>
<p>Physical trauma (eg: car accident) Physical trauma such as a road accident or a fall can precipitate fibromyalgia and ME/CFS, particularly if a head or neck injury is sustained (such as whiplash or concussion).</p> <p>Further info: Chiropractic and ME/CFS</p>	<p>Fibromyalgia and ME/CFS can appear immediately after an accident, or begin to develop over the subsequent months.1 2 One study found fibromyalgia was 13 times more likely to occur following neck injury compared to lower extremity injury.1 The mechanisms that precipitate fibromyalgia and ME/CFS after a physical trauma producing anatomical damage or misalignment are not clear, but it is easy to hypothesize that causal factors may include anatomical misalignment restricting lymph flow from the head and through the neck; or anatomical misalignment leading to pinching of the vagus nerve or trigeminal nerve. Note that trauma to the spine can sometimes cause a syringomyelia to later form in the spinal cord, which may result in ME/CFS-like symptoms. Syringomyelia can be treated surgically.</p>
<p>Temporomandibular joint dysfunction (jaw misalignment) Temporomandibular joint dysfunction (TMJD) is an inflammation and misalignment of the temporomandibular joint (the joint which connects the jaw bone to the skull). TMJD can cause symptoms similar to fibromyalgia and ME/CFS.</p> <p>More info: Recovery from CFS using oral orthotics</p>	<p>Temporomandibular joint dysfunction can be diagnosed by dental professionals.</p> <p>One theory on how jaw misalignment precipitates fibromyalgia-like symptoms relates to a compound called substance P. Substance P is normally raised in fibromyalgia patients (but not in ME/CFS patients) and some believe it may play causal role in fibromyalgia. Now, higher levels of substance P are also found in TMJD patients. Substance P is released into the cerebrospinal fluid when the trigeminal nerve (which runs through the lower jaw) is stimulated. So substance P, originating from TMJD, offers a possible explanation of how TMJD might trigger fibromyalgia-like symptoms, and may explain how treating TMJD can lead to remission from fibromyalgia.</p>
<p>Silicone breast implant leakage Silicone used for breast and other implants, as well as silicone injections,</p>	<p>Silicone breast implant leakage symptoms can include: pain, swelling, redness and sometimes tingling of the breasts.</p>

can in rare cases cause an ME/CFS like illness, as well as autoimmune conditions, if it leaks into the body. Silicone is known to affect the immune system (silicone is used as an immune stimulating adjuvant in vaccines for this reason).

More info on silicone illness [here](#).

Vaccination

In some cases, ME/CFS is triggered by vaccination. Vaccination-triggered ME/CFS is generally the rapid onset kind, with the symptoms of ME/CFS appearing almost immediately after the vaccination. Dr John Chia has found that around 1.5% of his ME/CFS patients appeared to have their disease triggered by vaccination.¹ Dr Charles Shepherd of the ME Association UK says that the vaccines most linked to triggering ME/CFS are tetanus, typhoid, influenza, and hepatitis B; more rarely he says hepatitis A (using immunoglobulin), polio, or rubella vaccine can trigger ME/CFS.¹

In 2013 the Federal US Court ruled that hepatitis B vaccine caused ME/CFS in one patient, and awarded the patient \$1.1 million.¹

Ciguatoxin

Ciguatoxin exposure causes ciguatera, which can later sometimes lead to Chronic Fatigue Syndrome.^{1 2} Ciguatoxin is found in some predatory fish which eat smaller fish that feed on ciguatoxin-producing algae. This toxin cannot be destroyed by

Ciguatoxin poisoning from fish occurs in tropical and subtropical areas, particularly in the Pacific Ocean, the Indian Ocean, and the Caribbean. All reef fish are capable of causing ciguatera poisoning, but in particular, the species: barracuda, grouper, red snapper, moray eel, amberjack, parrotfish, hogfish, sturgeonfish, kingfish, coral trout, and sea bass present a risk.

cooking.	
Ionizing radiation This can cause of ME/CFS-like symptoms (post-radiation syndrome). 1	
Radiotherapy or chemotherapy undertaken as a cancer treatment can lead to ME/CFS soon after. 1	
Food poisoning Very occasionally, cases of food poisoning can precipitate ME/CFS.	
Meningitis An episode of meningitis can afterwards lead to ME/CFS. 1	
Tung oil Exposure to tung oil, a wood preservative extracted from the seed of the tung tree (<i>Vernicia fordii</i>), has been proposed as a cause for ME/CFS. 1	
Corticosteroids If corticosteroids (immunosuppressants) are given during the acute phase of a significant respiratory infection, this has been found to sometimes lead to ME/CFS. ME/CFS specialist Dr John Chia discovered this during while taking a detailed medical history of his ME/CFS patients.	

4th Round Treatments

In the light of the results of the fourth round of tests:

Jaw bone infection. If you suspect you may have ~~an~~ a focal infection within the jaw bone, you need to seek help from a knowledgeable dentist, but these are hard to find. More info [here](#). [Dr Graeme Munro-Hall and Dr Lilian Munro-Hall](#) are UK dentists that specialize in testing for and treating jaw bone infections.

Lymph flow obstruction. If you think you may have a lymph flow obstruction, you may wish to try the Perrin Technique, which improves lymphatic and cerebrospinal fluid drainage using osteopathic massage and manipulation. Patients also follow a massage and exercise routine at home, involving spinal twists (Perrin twists) which manually activate the thoracic duct (the body's main pump for lymph fluid).

Physical trauma. If you think your ME/CFS or fibromyalgia may be due to a physical trauma, such as a car accident that involved a head or neck injury, physical therapy spinal manipulation such as cranial osteopathy or chiropractic may perhaps yield benefits.

Temporomandibular joint dysfunction. If you have fibromyalgia-like symptoms, and you have been diagnosed with temporomandibular joint dysfunction (jaw misalignment), consider treating this, because it may help improve your fibromyalgia-like symptoms too.