

# *Systemic Lupus Erythematosus?*

## **What is Systemic Lupus Erythematosus?**

The immune system normally fights off dangerous infections and bacteria to keep the body healthy. **An autoimmune disease occurs when the immune system attacks its own body because it confuses it for something foreign.** There are many autoimmune diseases, including systemic lupus erythematosus (SLE). It is a [Type III hypersensitivity](#) reaction in which antibody-immune complexes precipitate and cause a further immune response.

SLE is also known as discoid lupus or disseminated lupus erythematosus. Although “lupus” actually includes a number of different diseases, SLE is the most common type of lupus, and when people say “lupus,” they are often referring to SLE.

SLE is a chronic disease that can have phases of worsening symptoms that alternate with periods of mild symptoms. Luckily, most people with SLE lead a normal life.

According to the Lupus Foundation of America, at least **1.5 million** Americans are living with diagnosed lupus ([LFA](#)). The Foundation believes that the number of people who actually suffer from the condition is likely much higher—and that many cases go undiagnosed.

## **Causes of SLE**

The exact cause of SLE is not known, but several factors have been associated with the disease.

## **Pathophysiology**

One manifestation of SLE is abnormalities in [apoptosis](#), a type of programmed cell death in which aging or damaged cells are neatly disposed of as a part of normal growth or functioning.

In SLE, the body's immune system **produces antibodies against itself**, particularly against [proteins in the cell nucleus](#). SLE is triggered by environmental factors that are unknown.

In order to preserve homeostasis, the immune system must balance between being sensitive enough to protect against infection, and becoming sensitized to attack the body's own proteins

(autoimmunity). During an immune reaction to a foreign stimulus, such as bacteria, virus, or allergen, immune cells that would normally be deactivated due to their affinity for self tissues can be abnormally activated by signaling sequences of [antigen-presenting cells](#).

## Genetics

The disease is not linked to a certain gene, **but people with lupus often have family members with other autoimmune conditions.**

## Environment

There may be environmental triggers like ultraviolet rays, certain medications, a virus, physical or emotional stress, and trauma.

## Gender and Hormones

SLE affects more women than men. **Women also experience worsening of symptoms during pregnancy and with their menstrual periods.** Both of these observations have led some medical professionals to believe that the female hormone estrogen may play a role in causing SLE. However, more research is still needed to prove this theory.

## Recognizing Potential Symptoms of SLE

Symptoms can vary and can change over time. Common symptoms include:

- severe fatigue
- painful or swollen joints
- headaches
- rash on cheeks and nose called “butterfly” rash
- hair loss
- anemia
- blood-clotting problems
- Raynaud’s syndrome (fingers turning white/blue and tingle when cold)

Other symptoms can depend on the part of the body the disease is attacking, such as the digestive tract, the heart, or skin.

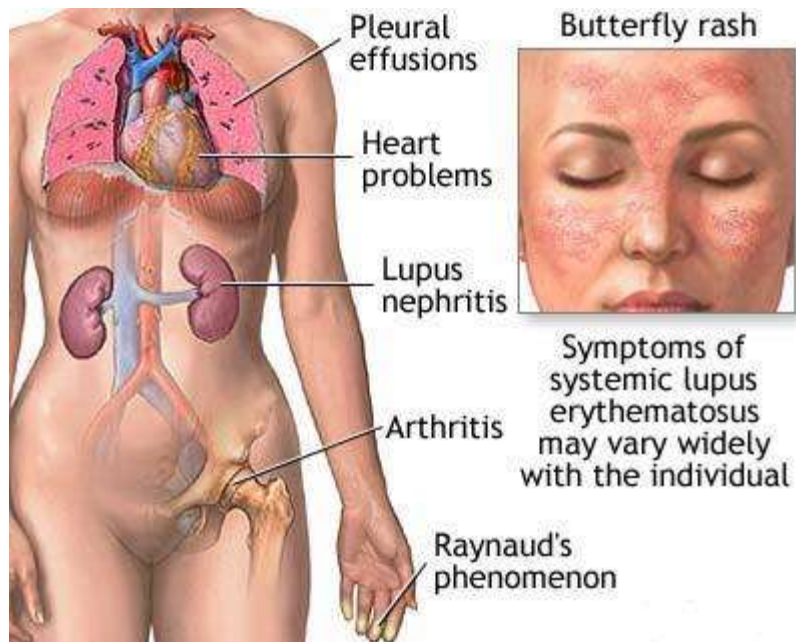
Lupus symptoms are also symptoms of many other diseases, which makes diagnosis tricky. If you have any of these symptoms, see your doctor. Your doctor can run tests to gather the information needed to make an accurate diagnosis.

**Table 1**

**Clinical Symptoms of SLE**

Organ System	Symptoms
Musculoskeletal	Arthritis, arthralgia
Constitutional	Fever (absence of infection), fatigue, weight loss
Skin	Malar (butterfly) rash, alopecia, photosensitivity, purpura, Raynaud's phenomenon, urticaria, vasculitis
Gastrointestinal	Nausea, vomiting, abdominal pain
Renal	Proteinuria, hematuria, nephrotic syndrome
Hematologic	Anemia, thrombocytopenia, leukopenia
Cardiac	Pericarditis, endocarditis, myocarditis
Neurologic	Seizures, psychosis, peripheral and cranial neuropathies
Pulmonary	Pulmonary hypertension, pleurisy, parenchymal disease

*SLE: systemic lupus erythematosus. Source: References 1, 6.*



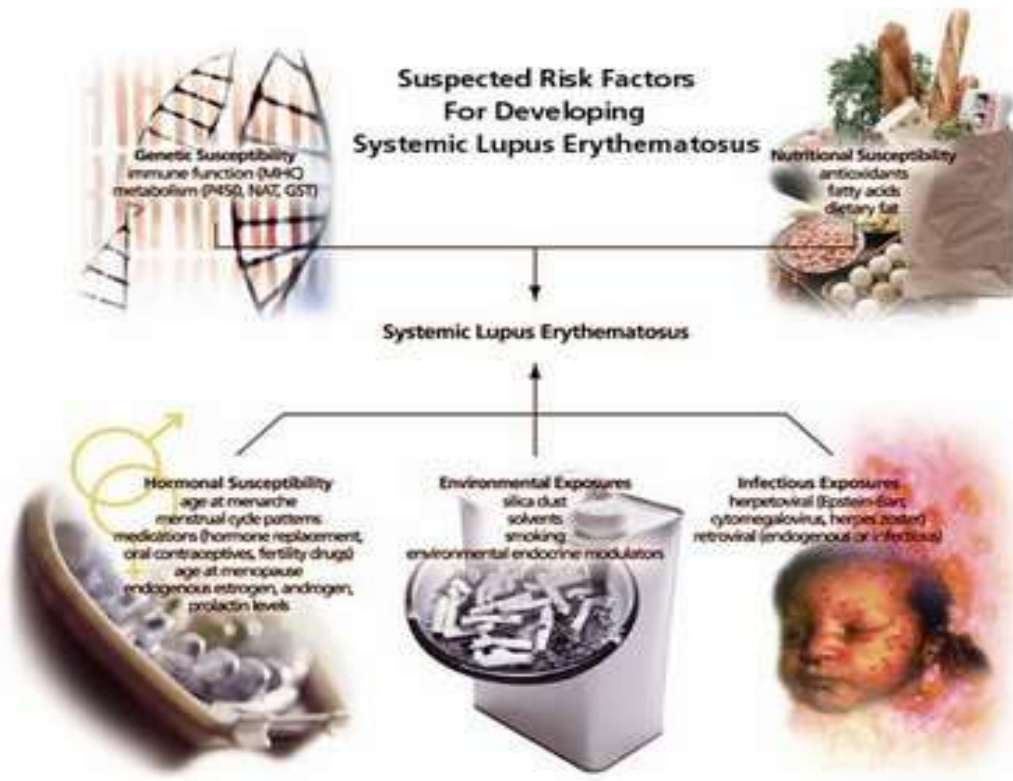
## How is SLE Diagnosed?

Your doctor will do a physical exam and check for typical signs of lupus. There is no one single diagnostic test, but screenings that can help your doctor come to an informed diagnosis include:

- blood tests, such as antibody tests and a complete blood count

- urinalysis
- chest X-ray

Your general practitioner might refer you to a doctor called a rheumatologist. Rheumatologists specialize in treating joint and soft tissue disorders and autoimmune diseases.



## • Treatment for SLE

Treatment for SLE is not curative—the goal is to ease the symptoms of lupus. Treatment can vary depending on how severe your symptoms are and which parts of your body are affected, treatment can vary. Treatments may include:

- anti-inflammatory medications for joint pain and stiffness
- steroid creams for rashes
- corticosteroids of varying doses to minimize the immune response
- antimalarial drugs for skin and joint problems

Talk with your doctor about your diet and lifestyle habits. Your doctor might recommend eating or avoiding certain foods and minimizing stress to reduce the likelihood of triggering symptoms. You might need to have screenings for osteoporosis, since steroids can thin your bones. Preventative care such as immunizations and cardiac screenings may also be recommended.

- **Potential Long-Term Complications of SLE**

Unfortunately, over time, SLE can damage or cause complications in systems throughout your body. Possible complications may include blood clots, inflammation of the heart, stroke, and lung damage. SLE can have serious negative effects on your body during pregnancy, and can lead to pregnancy complications and even miscarriage.

### **What is the treatment for systemic lupus erythematosus?**

There is no permanent cure for SLE. The goal of treatment is to relieve symptoms and protect organs by decreasing inflammation and/or the level of autoimmune activity in the body. The precise treatment is decided on an individual basis. Many people with mild symptoms may need no treatment or only intermittent courses of anti-inflammatory medications. Those with more serious illness involving damage to internal organ(s) may require high doses of corticosteroids in combination with other medications that suppress the body's immune system.

People with SLE need more rest during periods of active disease. Researchers have reported that poor sleep quality was a significant factor in developing fatigue in people with SLE. These reports emphasize the importance for people and physicians to address sleep quality and the effect of underlying depression, lack of exercise, and self-care coping strategies on overall health. During these periods, carefully prescribed exercise is still important to maintain muscle tone and range of motion in the joints.

Nonsteroidal anti-inflammatory drugs (NSAIDs) are helpful in reducing inflammation and pain in muscles, joints, and other tissues. Examples of NSAIDs include aspirin, ibuprofen (Motrin), naproxen (Naprosyn), and sulindac (Clinoril). NSAIDs are usually taken with food to reduce side effects.

Corticosteroids are more potent than NSAIDs in reducing inflammation and restoring function when the disease is active. Corticosteroids are particularly

helpful when internal organs are affected. Corticosteroids can be given by mouth, injected directly into the joints and other tissues, or administered intravenously. Unfortunately, corticosteroids have serious side effects when given in high doses over prolonged periods, and the doctor will try to monitor the activity of the disease in order to use the lowest doses that are safe. Side effects of corticosteroids include weight gain, thinning of the bones and skin, infection, diabetes, facial puffiness, cataracts, and death (necrosis) of the tissues in large joints.

Hydroxychloroquine (Plaquenil) is an antimalarial medication found to be particularly effective for SLE people with fatigue, skin involvement, and joint disease. Consistently taking Plaquenil can prevent flare-ups of lupus. Side effects are uncommon but include diarrhea, upset stomach, and eye-pigment changes. Eye-pigment changes are rare but require monitoring by an ophthalmologist (eye specialist) during treatment with Plaquenil. Researchers have found that Plaquenil significantly decreased the frequency of abnormal blood clots in people with systemic lupus.

For resistant skin disease, other antimalarial drugs, such as chloroquine (Aralen) or quinacrine, are considered and can be used in combination with hydroxychloroquine. Alternative medications for skin disease include dapsone and retinoic acid (Retin-A). Retin-A is often effective for an uncommon wart-like form of lupus skin disease. For more severe skin disease, immunosuppressive medications are considered as described below.

Medications that suppress immunity (immunosuppressive medications) are also called cytotoxic drugs. Immunosuppressive medications are used for treating people with more severe manifestations of SLE, such as damage to internal organ(s). Examples of immunosuppressive medications include methotrexate (Rheumatrex, Trexall), azathioprine (Imuran), cyclophosphamide (Cytosan), chlorambucil (Leukeran), and cyclosporine (Sandimmune). All immunosuppressive medications can seriously depress blood-cell counts and increase risks of infection and bleeding. Immunosuppressive medications may not be taken during pregnancy or conception because of risk to the fetus. Other side effects are specific for each drug. For examples, Rheumatrex can cause liver toxicity, while Sandimmune can impair kidney function.

In recent years, mycophenolate mofetil (CellCept) has been used as an effective medication for lupus, particularly when it is associated with kidney disease. CellCept has been helpful in reversing active lupus kidney disease (lupus renal



disease) and in maintaining remission after it is established. Its lower side-effect profile has advantage over traditional immune-suppression medications.

In SLE patients with serious brain (lupus cerebritis) or kidney disease (lupus nephritis), plasmapheresis is sometimes used to remove antibodies and other immune substances from the blood to suppress immunity. Plasmapheresis is a process of removing blood and passing the blood through a filtering machine, then returning the blood to the body with its antibodies removed. Rarely, people with SLE can develop seriously low platelet levels, thereby increasing the risk of excessive and spontaneous bleeding. Since the spleen is believed to be the major site of platelet destruction, surgical removal of the spleen is sometimes performed to improve platelet levels. Other treatments have included plasmapheresis and the use of male hormones. Plasmapheresis has also been used to remove proteins (cryoglobulins) that can lead to vasculitis. End-stage kidney damage from SLE requires dialysis and/or a kidney transplant.

Most recent research is indicating benefits of rituximab (Rituxan) in treating lupus. Rituximab is an intravenously infused antibody that suppresses a particular white blood cell, the B cell, by decreasing their number in the circulation. B cells have been found to play a central role in lupus activity, and when they are suppressed, the disease tends toward remission. This may particularly helpful for people with kidney disease.

Another new B-cell-suppressing treatment is belimumab (Benlysta). Belimumab blocks the stimulation of the B cells (a B-lymphocyte stimulator or BLyS-specific inhibitor) and is indicated for the treatment of adult patients with active, autoantibody-positive systemic lupus erythematosus who are receiving standard therapy.

Scientists have also found that low-dose dietary supplementation with **omega-3** fish oils could help patients with lupus by decreasing disease activity and possibly decreasing heart-disease risk.

### **How can a lupus patient help prevent disease activity (flares)?**

SLE is undoubtedly a potentially serious illness with involvement of numerous organ systems. However, it is important to recognize that most people with SLE lead full, active, and healthy lives. Periodic increases in disease activity (flares) can usually be managed by varying medications. **Since ultraviolet light can precipitate**

and worsen flares, people with systemic lupus should avoid sun exposure. Sunscreens and clothing covering the extremities can be helpful. Abruptly stopping medications, especially corticosteroids, can also cause flares and should be avoided. People with SLE are at increased risk of infections, especially if they are taking corticosteroids or immunosuppressive medications. Therefore, any unexpected fever should be reported and evaluated.

The key to successful management of SLE is regular contact and communication with the doctor, allowing monitoring of symptoms, disease activities, and treatment of side effects.

### **How can systemic lupus erythematosus affect pregnancy or the newborn?**

Lupus pregnancy deserves special review because it presents unique challenges. Pregnant women with SLE are considered "high risk" pregnancies. Women with SLE who are pregnant require close observation during pregnancy, delivery, and the postpartum period. This includes fetal monitoring by the obstetrician during later pregnancy. These women can have an increased risk of miscarriages (spontaneous abortions) and can have flares of SLE during pregnancy. The presence of phospholipid antibodies, such as cardiolipin antibodies or lupus anticoagulant, in the blood can identify people at risk for miscarriages. Cardiolipin antibodies are associated with a tendency toward blood clotting. Women with SLE who have cardiolipin antibodies or lupus anticoagulant may need blood-thinning medications (aspirin with or without heparin) during pregnancy to prevent miscarriages.

Other reported treatments include the use of intravenous gamma globulin for selected people with histories of premature miscarriage and those with low blood-clotting elements (platelets) during pregnancy. Plaquenil has now been found to be safe for use to treat SLE during pregnancy. Corticosteroids, such as prednisone, are also safely used to treat certain manifestation of lupus during pregnancy.

Lupus antibodies can be transferred from the mother to the fetus and result in lupus illness in the newborn ("neonatal lupus"). This includes the development of low red cell (anemia) and/or white blood cell and platelet counts and skin rash. Problems can also develop in the electrical system of the baby's heart (congenital heart block).