



Cardiovascular Health & Systemic Lupus Erythematosus (SLE)

A resource for people living with lupus and their support network to learn about:

- The risks of cardiovascular disease for people with lupus
- Why people with lupus have a higher risk
- Who is most at risk for developing cardiovascular disease
- What you can do to reduce your risk
- Other evidence-based resources available to learn more

Why are people with lupus at higher risk of developing cardiovascular disease?



It's still unclear exactly why people with lupus are at higher risk of developing CVD, but research provides us with some clues. Better treatments mean that people with lupus are living longer – however, this also means that as people age, their natural risk of CVD becomes greater, just like everyone else.⁵ A risk factor is a trait, behavior or circumstance associated with a higher chance of developing CVD.

Risk Factors for the General Population



Additional Risk Factors for People with Lupus



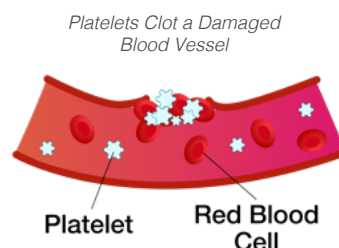
Many of the CVD risk factors for people with lupus are the same as the general population:⁵ having [high cholesterol](#) or [high blood pressure](#), living with [diabetes](#), having a family history of CVD, smoking, and older age¹ (being [post-menopausal](#) for women or older than 45 years for men). Research suggests that smoking is a particularly important CVD risk factor for people with lupus.⁶

There are also factors unique to lupus that increase risk of CVD. In lupus, the immune system is overactive, leading to inflammation in the body. This ongoing inflammation can speed up the process of atherosclerosis.⁷ People with lupus may also have differences in the levels of substances in their blood, such as some types of lipids (fats) and [antibodies](#), which also appear to contribute to atherosclerosis.^{8,9}

People with lupus may also have differences in some types of blood cells. For example, [platelets](#) are a type of blood cell that forms [blood clots](#). People with lupus tend to have platelets that are more active, and therefore tend to produce more clots.¹⁰ When more clots are present, it becomes more likely that a clot could grow and eventually block blood flow.

When blood flow is blocked, blood cannot travel to organs and tissues to deliver the oxygen they need to function. A heart attack happens when blood flow to the heart is blocked. When blood flow to the brain is blocked, a stroke can result.

Some medications may also contribute to the development of CVD. In many cases, lupus is treated using a type of drug called [glucocorticoids](#) (for example, prednisone is a glucocorticoid). In the short-term, glucocorticoids may protect against CVD. However, long-term use of glucocorticoids might further increase risk of CVD.¹¹ Other types of drugs, such as [hydroxychloroquine](#) (also called Plaquenil), appear to reduce risk of CVD.¹² If you are taking these medications, and do have questions or concerns, we recommend that you speak with your doctor about the benefits and risks of your treatment plan.

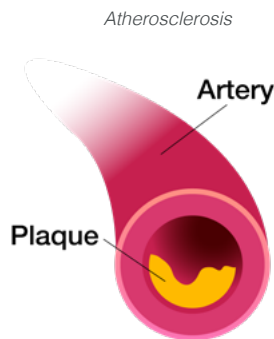


What is cardiovascular disease?

The [cardiovascular system](#) involves the heart and all the blood vessels in the body that circulate blood to and from muscles, organs, and other tissues. [Cardiovascular disease](#) (CVD) is an umbrella term that refers to a number of



conditions which that disrupt this system from functioning properly. Other common terms for CVD include heart disease, heart attack, stroke, and heart failure.¹



CVD typically develops through a process called [atherosclerosis](#). In atherosclerosis, a substance called [plaque](#) builds up on the walls of the arteries. Plaque is made up of fatty materials that collect on the artery walls, narrowing them, and preventing blood from flowing through. If the plaque grows over time and eventually blocks the artery, a heart attack or stroke can occur.¹

People with [lupus](#) are at higher risk of developing CVD compared to people of the same age and sex who do not have lupus.^{2,3} Being aware of and managing your risk of CVD is one important thing you can do to stay healthy.⁴

Who is most at risk?

In general, the risk of CVD increases with greater disease activity as well as age.¹¹ For example, there are high rates of CVD among patients with [lupus nephritis](#), or kidney complications.¹³ Black, Hispanic and other racial/ethnic minority populations may be at higher risk for more severe disease, and therefore CVD, as well.¹⁴ Having a family history of parents, siblings or other close relatives with CVD may also increase your risk.¹⁵

As a person with lupus, what can I do to reduce my risk?

To reduce your risk of CVD, experts recommend the following:



Manage your lupus symptoms by following the treatment plan you and your doctor have created.^{3,15}



Quit or cut down on smoking, vaping and tobacco use and reduce your exposure to cigarette smoke.^{4,6}



Limit alcohol, as alcohol can increase blood pressure. A maximum of two drinks per day for men and one drink per day for women is recommended.¹⁶



Choose healthy foods and drinks: fresh fruits and vegetables and foods that are high in fiber and low in saturated fat, trans fats, processed sugars and cholesterol are best for heart health.¹⁶



Engage in regular physical activity: a total of 2 hours and 30 minutes per week of moderate exercise (walking, bicycling, sports, yoga, stretching, swimming, etc.) is recommended for healthy adults.¹⁶ However, it's most important to listen to your body and make modifications where necessary. Even small amounts of daily exercise or moving your body have been shown to have positive effects.



Reduce stress: identify what your stressors are and take action to manage them through activities like mindfulness, relaxation, practicing deep breathing, or seeking counselling or talk therapy.



Know your risk! Ask your doctor about monitoring your risk regularly.^{8,15}

What research is being done to help?

Promoting cardiovascular health in people with lupus is an active area of research around the world. Currently, researchers from the University of Calgary, Harvard and MIT are working to develop an 'SLE calculator'. This calculator will be available online, and can be used to predict individuals' risk of CVD. Using the calculator will allow patients to better understand their personal risk of CVD, and monitor their risk over time. This will also allow healthcare providers to identify individuals who are most at risk, and better work with them to prevent CVD-related illness.

Participating in research studies is one important way that people living with SLE can contribute to improving quality of life for themselves and others. If you are interested in participating in research related to CVD for people with lupus, and/or development of the SLE calculator, please contact: [Contact person] or visit [Website] for more information.

For more information visit...

Our Partners

SLICC (Systemic Lupus International Collaborating Clinics Group)

(<https://sliccgroup.org/>)

CanVECTOR (Canadian Venous Thromboembolism Research Network)

(www.canvector.ca)

SLE & Related Organizations in Canada

Lupus Canada (<https://www.lupuscanada.org/>)

BC Lupus Society (<https://www.bclupus.org/>)

Lupus Society of Alberta (<https://www.lupus.ab.ca/>)

Lupus Saskatchewan (<http://lupus.sk.com/>)

Lupus Manitoba (<https://lupusmanitoba.com/>)

Lupus Ontario (<https://www.lupusontario.org/>)

Lupus Newfoundland & Labrador (<https://www.lupusnl.com/>)

Arthritis Society (www.arthritis.ca)

Global SLE Organizations

Lupus Foundation of American (www.lupus.org)

Lupus Europe (www.lupus-europe.org)

Cardiovascular Disease Resources

Heart & Stroke Foundation of Canada (<https://www.heartandstroke.ca/>)

Thrombosis Canada (www.thrombosiscanada.ca)

American Heart Association (www.heart.org)

References

- American Heart Association (2022). What is cardiovascular disease? [URL: <https://www.heart.org/en/health-topics/consumer-healthcare/what-is-cardiovascular-disease>]
- Bernatsky S, et al. (2006). Mortality in systemic lupus erythematosus. *Arthritis & Rheumatology* 54(8):2550–2557.
- Katz, G, et al. (2019). Systemic Lupus Erythematosus and Increased Prevalence of Atherosclerotic Cardiovascular Disease in Hospitalized Patients. *Mayo Clinic Proceedings* 94(8):1436-1443.
- Tselios K & Urowitz MB (2017). Cardiovascular and Pulmonary Manifestations of Systemic Lupus Erythematosus. *Current Rheumatology Reviews* 13(3):206-218.
- Bakshi J, et al. (2018). Unmet Needs in the Pathogenesis and Treatment of Systemic Lupus Erythematosus. *Clinical Reviews in Allergy & Immunology* 55(3):352-367
- Arnaud L & Tektonidou MG. (2020). Long-term outcomes in systemic lupus erythematosus: trends over time and major contributors. *Rheumatology* 59(5): 29-38.
- Mercurio V, et al. (2019). Inflammatory, serological and vascular determinants of cardiovascular disease in systemic lupus erythematosus patients. *International Journal of Molecular Sciences* 20(9):2154.
- McMahon M, et al. (2009) Dysfunctional proinflammatory high-density lipoproteins confer increased risk of atherosclerosis in women with systemic lupus erythematosus. *Arthritis Rheumatology* 60(8):2428–2437.
- Patino-Trives AM, et al. (2021). Anti-dsDNA antibodies increase the cardiovascular risk in systemic lupus erythematosus promoting a distinct immune and vascular activation. *Arteriosclerosis, Thrombosis & Vascular Biology* 41:2417-2430.
- Linge P, et al. (2018). The non-haemostatic role of platelets in systemic lupus erythematosus. *Nature Reviews Rheumatology* 14:195-213.
- Gustafsson JT & Svenungsson E (2014). Definitions of and contributions to cardiovascular disease in systemic lupus erythematosus. *Autoimmunity* 47:2, 67-76.
- Haugaard JH, et al. (2021). Use of hydroxychloroquine and risk of major adverse cardiovascular events in patients with lupus erythematosus: A Danish nationwide cohort study *Journal of the Academy of American Dermatology* Apr;84(4):930-937.
- Faurschou ML, et al. (2011). High risk of ischemic heart disease in patients with lupus nephritis. *Journal of Rheumatology* 38: 2400—2405.
- Barbhaiya M, et al. (2017). Race/Ethnicity and Cardiovascular Events Among Patients With Systemic Lupus Erythematosus. *Arthritis & Rheumatology* 69(9), 1823–1831.
- Kostopoulou M, et al. (2020). Cardiovascular disease in systemic lupus erythematosus: Recent data on epidemiology, risk factors and prevention. *18(6):549-565.*
- Centres for Disease Control (2020). Prevent heart disease. [URL: <https://www.cdc.gov/heartdisease/prevention.htm>]
- Molina E, et al. (2022). Stress, mindfulness and systemic lupus erythematosus: An overview and directions for future research. *Lupus* 2022(0):0.
- Heart & Stroke Foundation of Canada. Reduce stress. [URL: <https://www.heartandstroke.ca/healthy-living/reduce-stress>].

Cardiovascular Health & Systemic Lupus Erythematosus (SLE)

Dr. May Choi, MPH, MD Dr. Susan Elliott, PhD
Emily Shantz, MSc, PhD Candidate
Katherine Buhler, BSc Christine Sperling, BA, Patient Partner

