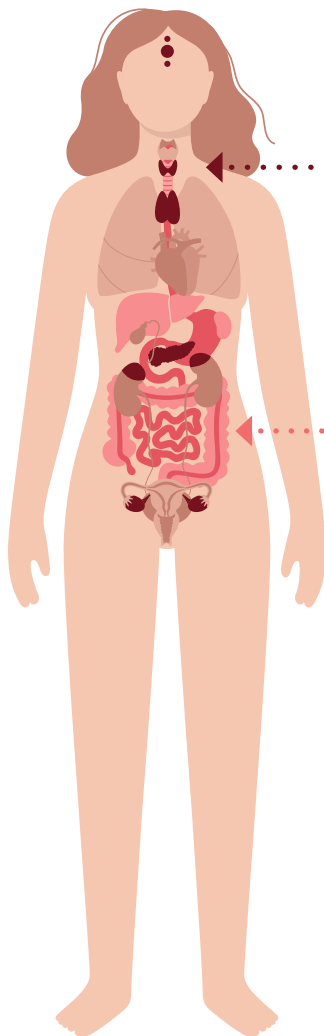


Autoimmune Disease in Women

There are more than **80 known autoimmune diseases** that affect different cells, organs, and tissues throughout the body.



Autoimmune diseases occur when the body's immune system mistakenly attacks its own healthy cells thinking they are germs or foreign bodies. Sex hormones, such as estrogen, progesterone, and testosterone, play unique roles in the body that contribute to differences between women and men concerning autoimmune diseases. Autoimmune diseases affect more than **24 million Americans**, and **4 out of 5** patients are women.¹



Autoimmune Diseases Throughout The Body

The **ENDOCRINE SYSTEM** makes and releases hormones that control processes, such as metabolism, reproduction, growth, and mood. Creating too little or too much of certain hormones, or the body not being able to regulate their activity, can lead to health consequences.

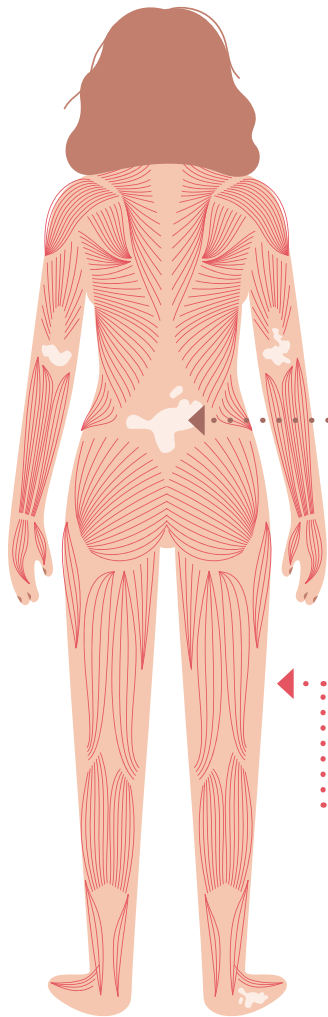
Hashimoto's Disease is the most common cause of hypothyroidism (underactive thyroid) in the United States, affecting **5 in every 100 Americans**,² and women **10x** more than men.³ This chronic disease destroys cells of the thyroid gland, resulting in low levels of thyroid hormones. Women with Hashimoto's experience fatigue, changes in weight and menstrual cycles, depressive symptoms, and constipation. *Other endocrine autoimmune conditions: Addison's Disease, Grave's Disease, and Type 1 Diabetes*

The **DIGESTIVE SYSTEM** facilitates the digestion and absorption of nutrients from food and drinks to produce energy for the body to grow, heal, and survive. Autoimmune diseases in the digestive system can lead to chronic inflammation and irritation, malabsorption, and vitamin deficiencies

Celiac disease causes chronic inflammation of the small intestine in reaction to dietary gluten, a protein commonly found in grains (e.g., wheat, barley, and rye). **1 in 133** individuals in the United States have Celiac disease,⁴ and it is **1.5x** more common in women than men.⁵ Celiac disease may cause changes in bowel movements, bloating, pain, nausea, fatigue, and skin rash, and if untreated, it can lead to damage of the small intestine. *Other digestive autoimmune diseases: Crohn's Disease, Primary Biliary Cholangitis (PBC), and Ulcerative Colitis*

Sex differences in the gut's composition and function may affect women's increased likelihood to developing digestive autoimmune diseases.

Many symptoms, such as inflammation, pain, and fatigue, are experienced in a wide variety of autoimmune diseases and can impact multiple organ systems within the body. It is also common for an individual to be diagnosed with more than one autoimmune disease in their lifetime.



The **INTEGUMENTARY SYSTEM** (hair, skin, and nails) creates a barrier between the body and the outside world, protecting it from germs, damage, and harmful radiation, and assisting with touch, feel, and temperature control.

Autoimmune diseases that affect the integumentary system are often more visible, resulting in a greater burden of disease for women due to societal, cultural, and gender norms.⁶

Vitiligo occurs when the immune system destroys the cells that contain and make the pigment melanin, causing the skin to lose its color. Depigmentation typically appears on the skin, hair, or mucus membranes in the nose or mouth. Individuals with vitiligo may also experience sensitive skin, eye changes, and psycho-social challenges. Vitiligo impacts **1 in 100** Americans and both sexes equally;⁷ however, women with vitiligo are at greater risk to experience depression, anxiety, stress, and lower quality of life than men.⁸ *Other integumentary autoimmune diseases: Alopecia Areata, Atopic Dermatitis, Psoriasis, and Scleroderma*

The **MUSCULOSKELETAL SYSTEM** uses muscles, bones, and supporting tissues to provide the body with physical structure, protection, movement, and strength.

Myasthenia gravis (MG) is a rare autoimmune disease that targets the communication between nerves and voluntary muscles, leading to fatigue and muscle weakness that create challenges with sight, mobility, speaking, chewing, swallowing, and sometimes, breathing. Although MG affects only **32 in 100,000** individuals in the United States, diagnoses have been increasing in women under the age of 55, with a link to hormonal fluctuations during menstruation, pregnancy, the postpartum period, and the menopause transition.⁹ MG also has a high rate of association with autoimmune thyroid diseases. *Other musculoskeletal autoimmune conditions: Osteoarthritis, Rheumatoid arthritis, Sjogren's Syndrome, and Systemic lupus erythematosus*

Hormonal differences in men and women are associated with an increased prevalence of autoimmune diseases that target joints and connective tissue in women.¹⁰

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Resources and Support Organizations



The More We Know

While there are no known cures for autoimmune diseases, individuals can achieve significant symptom management, reduced physical impairment, and increased quality of life with a timely diagnosis, quality care, and a good support system. As we learn more about how autoimmune diseases develop and affect the body, particularly in women, we can unlock keys to faster diagnoses and better treatment options that will improve health outcomes for all individuals living with autoimmune diseases.