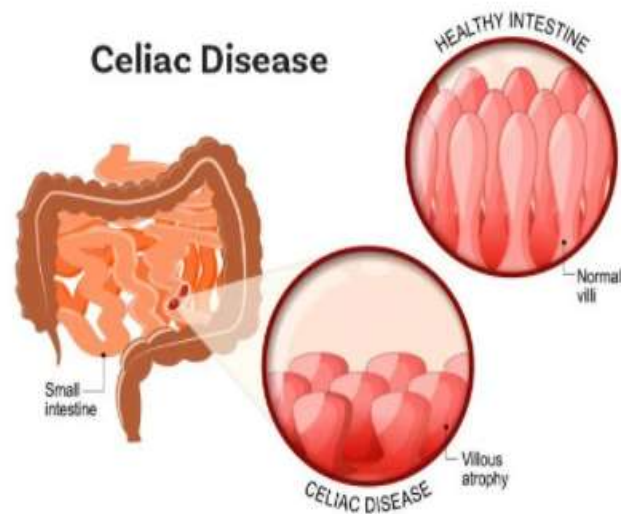


What is Celiac Disease?

Celiac disease is a serious autoimmune disease that occurs in genetically predisposed people where the ingestion of gluten leads to damage in the small intestine. It is estimated to affect 1 in 100 people worldwide. Two and one-half million Americans are undiagnosed and are at risk for long-term health complications.

When people with celiac disease eat gluten (a protein found in wheat, rye and barley), their body mounts an immune response that attacks the small intestine. These attacks lead to damage on the villi, small fingerlike projections that line the small intestine, that promote nutrient absorption. When the villi get damaged, nutrients cannot be absorbed properly into the body.



Celiac disease is hereditary, meaning that it runs in families. **People with a first-degree relative with celiac disease (parent, child, sibling) have a 1 in 10 risk of developing celiac disease.**

Celiac disease can develop at any age after people start eating foods or medicines that contain gluten. Left untreated, celiac disease can lead to additional serious health problems.

Symptoms of Celiac Disease

Celiac disease can be difficult to diagnose because it affects people differently. There are more than 200 known celiac disease symptoms which may occur in the digestive system or other parts of the body. Some people develop celiac disease as a child, others as an adult. The reason for this is still unknown.

Some people with celiac disease have no symptoms at all, but still test positive on the celiac disease blood test. A few others may have a negative blood test, but have a positive intestinal

biopsy. However, all people with celiac disease are at risk for long-term complications, whether or not they display any symptoms.

Does Your Child Have Celiac Disease?

Digestive symptoms are more common in infants and children. Here are the most common symptoms found in children:

- abdominal bloating and pain
- chronic diarrhea
- vomiting
- constipation
- pale, foul-smelling, or fatty stool
- iron-deficiency anemia
- weight loss
- fatigue
- irritability and behavioral issues
- dental enamel defects of the permanent teeth
- delayed growth and puberty
- short stature
- failure to thrive
- Attention Deficit Hyperactivity Disorder (ADHD)

Do You Have Celiac Disease?

Adults are less likely to have digestive symptoms, with only one-third experiencing diarrhea. Adults are more likely to have:

- unexplained iron-deficiency anemia
- fatigue
- bone or joint pain
- arthritis
- osteoporosis or osteopenia (bone loss)
- liver and biliary tract disorders (transaminitis, fatty liver, primary sclerosing cholangitis, etc.)
- depression or anxiety
- peripheral neuropathy (tingling, numbness or pain in the hands and feet)
- seizures or migraines
- missed menstrual periods
- infertility or recurrent miscarriage
- canker sores inside the mouth
- dermatitis herpetiformis (itchy skin rash)

Types of Celiac Disease

According to the World Gastroenterology Organization, celiac disease may be divided into two types: classical and non-classical.

In **Classical Celiac disease**, patients have signs and symptoms of malabsorption, including diarrhea, steatorrhea (pale, foul-smelling, fatty stools), and weight loss or growth failure in children.

In **Non-Classical Celiac disease**, patients may have mild gastrointestinal symptoms without clear signs of malabsorption or may have seemingly unrelated symptoms. They may suffer from abdominal distension and pain, and/or other symptoms such as: iron-deficiency anemia, chronic fatigue, chronic migraine, peripheral neuropathy (tingling, numbness or pain in hands or feet), unexplained chronic hypertransaminasemia (elevated liver enzymes), reduced bone mass and bone fractures, and vitamin deficiency (folic acid and B12), difficulty losing weight, late menarche/early menopause and unexplained infertility, dental enamel defects, depression and anxiety, dermatitis herpetiformis (itchy skin rash), etc.

Silent Celiac disease is also known as asymptomatic celiac disease. Patients do not complain of any symptoms, but still experience villous atrophy damage to their small intestine. Studies show that even though patients thought they had no symptoms, after going on a strict gluten-free diet they report better health and a reduction in acid reflux, abdominal bloating and distention and flatulence.

First-degree relatives whether or not experiencing symptoms, should always be screened, since there is a 1 in 10 risk of developing celiac disease. Second-degree relatives and families with multiple individuals with celiac disease also have an increased risk of developing the disease. ¹

The number of ways celiac disease can affect patients, combined with a lack of training in medical schools and primary care residency programs, contributes to the poor diagnosis rate in the United States. Currently it is estimated that 80% of the celiac disease population remains undiagnosed.

Long-Term Health Effects

People with celiac disease have a 2x greater risk of developing coronary artery disease, and a 4x greater risk of developing small bowel cancers.

The treatment burden of celiac disease is comparable to end-stage renal disease, and the partner burden is comparable to caring for a patient with cancer. ^{1 2}

Untreated celiac disease can lead to the development of other autoimmune disorders like Type I diabetes and multiple sclerosis (MS), and many other conditions, including dermatitis herpetiformis (an itchy skin rash), anemia, osteoporosis, infertility and miscarriage, neurological conditions like epilepsy and migraines, short stature, heart disease and intestinal cancers.

Treatment

Currently, the only treatment for celiac disease is lifelong adherence to a strict gluten-free diet. People living gluten-free must avoid foods with wheat, rye and barley, such as bread and beer.

Ingesting small amounts of gluten, like crumbs from a cutting board or toaster, can trigger small intestine damage.

Celiac disease is also known as coeliac disease, celiac sprue, non-tropical sprue, and gluten sensitive enteropathy.

Gluten-Free Foods

Cutting out gluten from your diet may seem like a difficult and limiting task. Fortunately, there are many healthy and delicious foods that are naturally gluten-free.

The most cost-effective and healthy way to follow the gluten-free diet is to seek out these naturally gluten-free food groups, which include:

- **Fruits**
- **Vegetables**
- **Meat and poultry**
- **Fish and seafood**
- **Dairy**
- **Beans, legumes, and nuts**

Pure wheat grass and barley grass are gluten-free, but there is gluten in the seeds. If they are not harvested or processed correctly, there is risk of gluten contamination.



What about grains?

There are many naturally gluten-free grains that you can enjoy in a variety of creative ways. Many of these grains can be found in your local grocery store, but some of the lesser-known grains may only be found in specialty or health food stores. It is not

recommended to purchase grains from bulk bins because of the possibility for cross-contact with gluten.

Naturally Gluten-Free Foods

The following grains and other starch-containing foods are naturally gluten-free:

<ul style="list-style-type: none">• Rice• Cassava• Corn (maize)• Soy• Potato• Tapioca• Beans• Sorghum• Quinoa• Millet	<ul style="list-style-type: none">• Buckwheat groats (also known as kasha)• Arrowroot• Amaranth• Teff• Flax• Chia• Yucca• Gluten-free oats• Nut flours
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There has been some research that some naturally gluten-free grains may contain gluten from cross-contact with gluten-containing grains through harvesting and processing. If you are concerned about the safety of a grain, purchase only versions that are tested for the presence of gluten and contain less than 20 ppm.

Gluten-Free Substitutes

Many items that usually contain gluten have gluten-free alternatives that are widely available in most grocery stores, and make living gluten-free much easier. Keep in mind, however, that minimally processed fresh foods are a crucial part of a healthy gluten-free diet. It is very important to base your diet around fruits, vegetables, meats, and other healthy food groups listed above.

Many commercially available products are labeled "gluten-free," but there will be some that are not; this is why proper label reading is important. It is also important to remember that **"wheat-free" does not necessarily mean "gluten-free."** Be wary, as many products may appear to be gluten-free, but are not.

As a rule, traditional wheat products such as pastas, breads, crackers, and other baked goods are not gluten-free. However, there are many gluten-free options available that

use alternative flours and grains. **Often, gluten-free bread can be found in the freezer section.** Additionally, there are gluten-free flours and flour blends available in the grocery aisle, allowing you to bake your own bread.

<p>Cereal</p> <p>Many cereals contain gluten or wheat-based ingredients, but there are some that do not. Be on the lookout for the "gluten-free" label, but also realize that not all gluten-free cereals will advertise as such, so it is important to check the list of ingredients. Something to watch out for: cornflakes and puffed rice cereal may contain malt flavoring or extract, which contains gluten.</p>	<p>Oats</p> <p>Oats are often harvested and processed with the same equipment that is used for wheat, and are therefore easily contaminated. Research indicates that pure, uncontaminated oats consumed in moderation (up to ½ cup dry rolled oats daily) are tolerated by most people with celiac disease. Look for oats specifically labeled gluten-free in all products containing oats, including granolas and granola bars.</p>
<p>Soups and Sauces</p> <p>Soups and sauces are one of the biggest sources of hidden gluten, as many companies use wheat as a thickener. It is always a good idea to read the label of any pre-prepared or canned soups and sauces, paying special attention to those that are cream-based.</p>	<p>Produce</p> <p>Fresh and frozen fruits and vegetables are naturally gluten-free. However, it is important to read labels on any processed fruits and veggies, as well as dried fruit and pre-prepared smoothies. Additionally, packaged frozen potatoes are not always gluten-free, and labels should be read carefully when considering these products.</p>

Beverages

Most beverages are gluten-free, including juices, sodas and sports drinks.

Wine is generally considered gluten-free to the FDA standard of under 20ppm of gluten. According to the University of Chicago Celiac Disease Center, wines fermented

in barrels lined with wheat paste (historically wines such as port, Madeira and muscatel) are unlikely to contain enough gluten to cause a reaction.

However, some types of wine do contain an unsafe amount of gluten for people with celiac disease, and include those with added color or flavoring such as dessert wines, and those made from barley malt, such as bottled wine coolers. For these, consumers should check the label, and if in doubt, contact the company.

Alcoholic beverages, including hard liquor/distilled liquors/hard ciders are also gluten-free. Beers, ales, lagers, malt beverages and malt vinegars that are made from gluten-containing grains are **not distilled and therefore are not gluten-free**. There are several brands of gluten-free beers available in the United States and abroad.

For more information about Celiac Disease visit www.celiac.org