



Health
Canada

Santé
Canada

*Your health and
safety... our priority.*

*Votre santé et votre
sécurité... notre priorité.*

Celiac Disease

The Gluten Connection



Health Canada is the federal department responsible for helping the people of Canada maintain and improve their health. *We assess the safety of drugs and many consumer products, help improve the safety of food, and provide information to Canadians to help them make healthy decisions. We provide health services to First Nations people and to Inuit communities. We work with the provinces to ensure our health care system serves the needs of Canadians.*

Celiac Disease—The Gluten Connection

is available on Internet at the following address: www.healthcanada.gc.ca/celiac

Également disponible en français sous le titre :

La maladie cœliaque — Le lien au gluten

To obtain additional information, please contact:

Health Canada

Address Locator 0900C2

Ottawa, ON K1A 0K9

Tel.: 613-957-2991

Toll free: 1-866-225-0709

Fax: 613-941-5366

TTY: 1-800-465-7735

Email: publications@hc-sc.gc.ca

This publication can be made available in alternative formats upon request.

© Her Majesty the Queen in Right of Canada, as represented by the Minister of Health, 2014

Publication date: March 2014

This publication may be reproduced for personal or internal use only without permission provided the source is fully acknowledged.

PRINT Cat.: H164-73/2014E

ISBN: 978-1-100-23279-9

Pub.: 130550

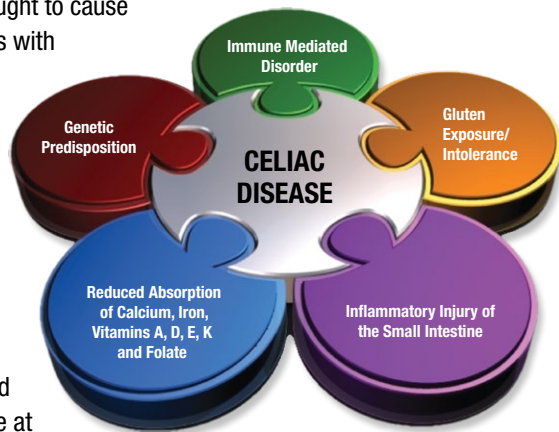
PDF Cat.: H164-73/2014E-PDF

ISBN: 978-1-100-23278-2

What is celiac disease?

Celiac disease is an inherited autoimmune disease. The symptoms are triggered by “gluten”, the name given to certain proteins in wheat (including spelt and kamut), barley, rye, and triticale (a cross between wheat and rye). In celiac disease, the body’s immune system responds abnormally to gluten, resulting in inflammation and damage to the lining of the small intestine, and reduced absorption of iron, calcium, vitamins A, D, E, K, and folate.

Until recently, oats were thought to cause adverse effects in individuals with celiac disease. However, recent studies indicate that the majority of people with celiac disease can tolerate moderate amounts of **oats that are pure and uncontaminated with other cereals**. Health Canada’s **review of celiac disease** and the safety of oats is available at www.healthcanada.gc.ca/ceciac.



In June of 2012 Health Canada published a position on the threshold for gluten in foods labelled as gluten-free. This opinion concluded that foods prepared under good manufacturing practices and containing levels of gluten not exceeding 20 ppm as a result of cross-contamination, meet the health and safety intent of section B.24.018 of the *Food and Drug Regulations* when a gluten-free claim is made. The entire position can be found here: <http://hc-sc.gc.ca/fn-an/securit/allerg/cel-coe/gluten-position-eng.php>.

How common is celiac disease?

Celiac disease is now recognized as one of the most common chronic diseases in the world. It is estimated that it affects nearly 1% of the population in North America. As many as 300,000 Canadians could have this disease; however, many remain undiagnosed.

First-degree relatives (parents, siblings, and children) of a person with celiac disease have about a 10% chance of having this condition. Therefore, family members, especially if they have symptoms, should be tested for celiac disease. Testing for celiac disease is also recommended for individuals with Type 1 diabetes, thyroid disease and Down syndrome since they too have a higher risk of having celiac disease.

What factors are involved?

Not everyone who inherits the genes associated with celiac disease will develop the disease, which indicates that additional factors can be involved. In genetically susceptible adults who are consuming gluten, acute symptoms are sometimes triggered by stress, infections, surgery or pregnancy. In children, recurrent gastrointestinal infections can be a factor in the expression of this disease.

When do the symptoms appear?

The symptoms of celiac disease can develop at any age, once gluten-containing foods are added to the diet. In the past, celiac disease was thought to be a childhood disease, but it is now recognized that it occurs more frequently in adults, especially in individuals between 30 and 60 years of age. A Canadian survey on celiac health¹ reported that the average age of diagnosis in adults was 46 years of age.

What are the symptoms?

The symptoms of celiac disease vary greatly from one person to another. Some may have only one symptom, such as diarrhea or anemia, while others may have a number of symptoms. **Table 1** lists the common signs and symptoms of celiac disease, while **Table 2** lists additional symptoms in children.

As the disease progresses, many systems of the body can be involved, including the reproductive, gastrointestinal and nervous systems. The blood, bones, teeth and skin can also be affected.

1 Cranney A, Zarkadas M, Graham I, *et al.* The Canadian Celiac Health Survey *Dig Dis Sci.* 2007;52:1087–1095.

Some individuals with celiac disease have a positive blood test and a positive intestinal biopsy (tissue sample) but present no symptoms. This is called asymptomatic or silent Celiac Disease.

There is also a gluten-related skin disorder called Dermatitis Herpetiformis. In this condition, a blistering, very itchy skin rash occurs symmetrically (on both sides of the body) and appears most frequently on the elbows, knees, buttocks, upper back and neck.

Table 1.
Common signs and symptoms of celiac disease

Anemia—deficiencies of iron, folate, and/or vitamin B ₁₂	Easy bruising
Deficiencies of vitamins A, D, E, K	Bone/joint pain
Abdominal bloating, gas	Swollen ankles/hands
Indigestion, nausea	Mouth ulcers/canker sores
Recurring diarrhea	Infertility in both sexes, miscarriages
Constipation	Feeling depressed/depression
Extreme weakness/fatigue	Migraine headaches
Weight loss (but can be overweight)	Unexplained neurological conditions

Table 2.
Common additional symptoms in children

Vomiting	Irritability, behavioral changes
Poor growth/short stature	Delayed puberty
Dental enamel defects	

What are the complications of celiac disease?

Delays in diagnosis and not following a strict gluten-free diet can result in chronic poor health, anemia, and a higher risk of infertility in both sexes, miscarriages, osteoporosis, and certain cancers of the gastrointestinal tract.

Is diagnosing celiac disease difficult?

The symptoms of celiac disease are often similar to those of other diseases, including irritable bowel syndrome, chronic fatigue syndrome and fibromyalgia, which can make diagnosis difficult. The recent Canadian Celiac Health survey¹ and Living with a Gluten-Free Diet study² reported that, on average, it took approximately 12 years after the onset of symptoms for adults to be diagnosed with celiac disease. Due to the wide diversity of symptoms, patients reported consulting a variety of medical specialists, before they were finally diagnosed. With improved awareness of the symptoms of celiac disease, these delays in diagnosis could be greatly reduced.

Blood screening tests are improving the speed and accuracy of the diagnosis of celiac disease. The two most effective blood tests for screening celiac disease are the IgA anti-transglutaminase antibody test (TTG, a-tTG, TTA) and the IgA anti-endomysial antibody test (EMA also called AEA). Some people with celiac disease are deficient in immunoglobulin A (IgA), so screening should also include measurement of their serum IgA concentration. These antibodies strongly support the diagnosis of CD, but by themselves are not confirmatory.

Following a positive blood test, an intestinal biopsy (tissue sample) is required to make a definitive diagnosis. **A person should not go onto a gluten-free diet until the blood test and biopsy have been completed, to ensure an accurate diagnosis.**

1 Cranney A, Zarkadas M, Graham I, *et al.* The Canadian Celiac Health Survey *Dig Dis Sci.* 2007;52:1087–1095.

2 Zarkadas M, Graham I, *et al.* Living with coeliac disease and gluten-free diet: a Canadian perspective *J Hum Nutr Diet.* 2013;26(1):10–23.

What is the treatment for celiac disease?

The only current treatment for celiac disease and dermatitis herpetiformis, is **maintaining a strict gluten-free diet for life**. Complete avoidance of gluten enables the intestine to heal, and the nutritional deficiencies and other symptoms to resolve. Children tend to heal more quickly than adults. Following a strict gluten-free diet also reduces the risk of developing many of the serious long-term complications related to untreated celiac disease.



Adjusting to a gluten-free diet can be challenging, since it involves knowing what foods contain gluten, and determining possible hidden sources of gluten in food products and medications. It also involves a number of lifestyle changes since many commonly eaten foods must be avoided, including pasta, most breakfast cereals and certain snacks, most breads and other baked goods including cakes, cookies, doughnuts, bagels, etc. Wheat flour and wheat starch are also frequently added as a thickener or stabilizer to soups, sauces, and processed meats and fish, including wieners, sausages, and imitation seafood. Barley is used in the manufacture of beer and of malt, a flavoring agent commonly used in food. To avoid hidden sources of gluten in the diet, knowledge of potential sources of gluten and careful reading of food ingredient lists is essential.

Newly diagnosed patients should ask their physicians to refer them to a registered dietitian with expertise in celiac disease and the gluten-free diet for dietary counseling and recommended follow-up.

Information about **celiac disease** is available on the Health Canada web site at www.healthcanada.gc.ca/celiac.

Information about gluten free labelling can be found on the Health Canada website at <http://hc-sc.gc.ca/fn-an/secureit/allerg/cel-coe/gluten-position-eng.php>

Some of the following hyperlinks are to sites of organizations or other entities that are not subject to the *Official Languages Act*. The material found there is therefore in the language(s) used by the sites in question.

For more information about celiac disease and the gluten-free diet you can also contact the following organizations:

Canadian Celiac Association

Fondation québécoise de la maladie cœliaque (available in French only)

