



Health-Medical Professionals

Celiac Disease

Toolkit

**Screening, Testing, Nutrition,
Gluten-Free Diet and more!**

**This toolkit was developed and compiled by the
Edmonton Chapter of the Canadian Celiac Association.
May 2011**

www.CeliacEdmonton.ca

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Screening for Celiac Disease - Symptoms Checklist

This screening tool is intended to help you in documenting your symptoms, advocating for your health needs and following up your physician. It is not meant to be a tool for self-diagnosis. Proper screening and testing should be done in consultation with your physician.

Symptoms of Celiac Disease **MAY** include the following:

SYMPTOMS						HAS A FAMILY MEMBER
	ALWAYS	ALMOST ALWAYS	SOME-TIMES	ALMOST NEVER	NEVER	EXPERIENCED SIMILAR SYMPTOMS?
Iron, folate and Vitamin B-12 Deficiency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A,D,E,K Vitamin Deficiencies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chronic Fatigue and Weakness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Abdominal Pain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bloating and Gas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Indigestion / Reflux	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nausea	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vomiting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recurrent/Persistent Diarrhea	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Constipation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lactose Intolerance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Weight Loss / Weight Gain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bone/Joint Pain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Easy Bruising of the Skin	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Edema (swelling) of Hands and Feet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Migraine Headaches	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Depression	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mouth Ulcers (canker sores)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Menstrual Irregularities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Infertility (women and men)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recurrent Miscarriages	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Elevated Liver Enzymes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Irritability/Behaviour Changes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



NOTES TO REMEMBER:

Symptoms can occur singly or in combination.

Celiac Disease can occur at any age.

Celiac Disease is **GENETIC**.

Celiac Disease may not have been diagnosed in the family yet.

The only treatment for Celiac Disease is a **STRICT GLUTEN-FREE DIET FOR LIFE.**

SYMPTOMS AND RISK FACTORS WILL VARY FROM PERSON TO PERSON. THIS IS WHY SCREENING SHOULD STILL BE DONE.

Additional Symptoms in Children

SYMPTOMS	YES	NO	UNSURE	COMMENTS
Vomiting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Irritability/Behavioural Changes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Delayed Growth or Puberty	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Learning Problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Dental Enamel Abnormalities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Failure to Thrive (in infants)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

Have you ever been diagnosed with the following?

ILLNESS	YES	NO	UNSURE	HAS A FAMILY MEMBER EXPERIENCED THE ILLNESS?
Celiac Disease	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Type 1 Diabetes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chronic Fatigue Syndrome	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fibromyalgia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
IBS - Irritable Bowel Syndrome	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Eczema and/or Rash	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thyroid Disease	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dermatitis Herpetiformis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Osteoporosis / Osteopenia	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sjogren's Syndrome	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Peripheral Neuropathy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other Autoimmune Diseases	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Down Syndrome	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Turner Syndrome	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lymphoma	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rheumatoid Arthritis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Addison's Disease	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Next Steps - SEE YOUR FAMILY PHYSICIAN

Test for Anemia	<input type="radio"/>
Vitamin Screen	<input type="radio"/>
IgA level with ATTG screening	<input type="radio"/>
Bone Mineral Density Test	<input type="radio"/>
Intestinal Biopsy	<input type="radio"/>
Make an appt. with a Dietitian	<input type="radio"/>

*** A GLUTEN-FREE DIET SHOULD NOT BE STARTED BEFORE A BLOOD TEST AND BIOPSY HAVE BEEN COMPLETED, since it can interfere with making an accurate diagnosis.**



Blood Testing for Celiac Disease

Canadian Celiac Association
5170 Dixie Road, Suite 204, Mississauga, ON L4W 1E3
tel: 905.507.6208, toll free: 1.800.363.7296
web: www.celiac.ca email: info@celiac.ca

Diagnostic Alert: A GLUTEN-FREE DIET SHOULD NOT BE STARTED BEFORE A BLOOD TEST **AND** UPPER ENDOSCOPY WITH INTESTINAL BIOPSY HAVE BEEN COMPLETED. The diet interferes with accurate results of both tests.

1. Which tests are used for screening for celiac disease in Canada?

Either the IgA-human tissue transglutaminase (TTG) or IgA-endomysial antibody (EMA) test or a combination of both are recommended as screening tests. "Celiac disease screening/panel" on a lab requisition should include one or both of these tests. An additional test is required to measure the serum IgA concentration (explained in Question #3).

2. Which test is the better one?

They are equally accurate as screens for celiac disease in individuals who regularly eat foods that contain gluten (see glossary).

3. My doctor ordered another test. Why?

In addition to the above tests, the serum IgA test is used to evaluate IgA deficiency. If your body does not make serum IgA, the TTG and EMA results are usually falsely negative. IgA deficiency occurs in 3 – 5% of individuals with celiac disease. IgA deficiency alone may cause intestinal symptoms and you should discuss with your physician the need for upper endoscopy and intestinal biopsy (see glossary).

4. Do these tests work all the time?

The TTG and EMA tests are about 90% accurate for individuals who make serum IgA. They are not as accurate in children under age

three years. Because the tests are not 100% accurate, anyone with a negative test result and symptoms suggestive of celiac disease should talk to a physician about an upper endoscopy and intestinal biopsy (see glossary).

5. What are the positive/negative levels for the test?

Positive and negative results values vary between test kits from different manufacturers. Each kit includes instructions on positive and negative results. The test results should be explained on the report provided by the laboratory. Your physician should discuss these results with you.

6. Is there a genetic test for celiac disease? Is this a better test?

No, there is no genetic test to diagnose celiac disease. Although there are tests for the HLA DQ2 and HLA DQ8 genes, they are costly and not readily available in Canada. Since about 40% of North Americans have these genes but only 0.5-1% of the population will develop celiac disease, having the gene does not mean you will develop celiac disease.

7. Are the tests useful if I have already started a gluten-free diet?

For the TTG and EMA blood tests to work properly, one must be eating gluten daily. For the genetic tests, it doesn't matter (see question #9). Your doctor may use these tests to monitor your response to the gluten-free diet after confirmatory diagnosis

8. Why are blood tests considered to be only screening tests? Why do I need a biopsy too?

An intestinal biopsy must be performed because of the 10% possibility of a falsely positive blood test.

9. Can I start the gluten-free diet after testing positive on a blood test?

NO! You should continue to consume at least the equivalent of one to four slices of bread containing gluten every day until your endoscopy for the biopsy to be accurate.



10. If I don't want a biopsy, should I start a gluten-free diet?

All health choices are personal ones. A strict gluten-free diet is expensive, complicated to follow and must be followed for life to prevent complications of celiac disease. If you start a gluten-free diet without a biopsy, it may take a prolonged gluten challenge to correctly diagnose celiac disease. (See Question #9).

For these reasons the Professional Advisory Board of the Canadian Celiac Association strongly recommends an intestinal biopsy to diagnose celiac disease. Without a positive biopsy for celiac disease, you will not likely qualify for tax relief for the extra costs of a gluten-free diet.

11. Should my family be screened with a blood test?

First-degree relatives (parents, siblings, children) of people with celiac disease have a 10-15% risk of developing celiac disease at any age. Recommendations suggest screening should be carried out in relatives of individuals with celiac disease, especially if they have symptoms. Research has demonstrated that the risk of complications of celiac disease including osteoporosis, anemia, infertility, poor growth and certain cancers is reduced by a gluten-free diet in individuals with celiac disease.

12. Are the blood tests covered by government health insurance?

Health care is administered at the provincial level, and insurance coverage for these blood tests varies from province to province. In some provinces the tests are fully covered, while in others the patient is required to pay (up to a few hundred dollars).

13. Once I am biopsy confirmed and on a gluten-free diet, should I continue to get the blood tests?

This is a matter for you to discuss with your gastroenterologist or your family physician.

14. Can I join the CCA if I do not have celiac disease?

Yes. Celiac disease is not a prerequisite for joining the CCA.

15. What about home test kits?

Self-administered celiac testing kits are now on the market. The data on the accuracy of these tests is limited. A positive or negative test result does not confirm or exclude the diagnosis of celiac disease. Therefore home testing kits cannot replace an intestinal biopsy to diagnose celiac disease.

Individuals with symptoms should consult with their physician about referral for an intestinal biopsy. The only treatment for celiac disease is a strict gluten-free diet for life. This diet can be expensive and difficult to manage and a correct diagnosis is essential to determine that such a diet is required for life.

Treatment without biopsy confirmation is not recommended and initiating a gluten-free diet prior to biopsy can delay the diagnosis by altering the appearance of the biopsy.

Glossary

Gluten: Gluten is a general name for specific proteins in wheat, rye and barley.

Intestinal biopsy: The removal of small pieces of the lining of the small intestine for microscopic examination.

Upper endoscopy: This is an examination of the esophagus (swallowing tube), stomach and

the duodenum (first portion of the small intestine). It is carried out with a small flexible tube inserted through the mouth and the patient is sedated for the procedure. Intestinal biopsies are obtained through the tube. Swallowing the tube may cause mild discomfort but the biopsies do not hurt.

CCA Chapter Locations

For more information on celiac disease, dermatitis herpetiformis, and the gluten-free diet, please contact the national office or the local chapters of the Canadian Celiac Association.

- Vancouver
- Victoria
- Kamloops
- Kelowna
- Calgary
- Edmonton
- Saskatoon
- Regina
- Western Manitoba
- Manitoba
- Thunder Bay
- Sudbury
- London
- Kitchener-Waterloo
- Hamilton
- Toronto
- St. Catharines
- Peterborough
- Belleville-Quinte
- Kingston
- Ottawa
- Quebec
- Fredericton
- Saint John
- Moncton
- Halifax
- Charlottetown
- St. John's

Canadian Celiac Association

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Celiac Disease - What is it?

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What is Celiac Disease

Celiac disease (CD) is a permanent intolerance to gluten, a protein found in various wheats (e.g., durum, kamut, spelt), rye, barley and triticale. Gluten consumption causes damage to the absorptive surface of the small intestine and can result in malnutrition, anemia, nutritional deficiencies and an increased risk of other autoimmune diseases and some cancers of the gut.

Dermatitis herpetiformis (DH) is celiac disease of the skin, and is characterized by blistering, intensely itchy skin. The rash has a symmetrical distribution and is most frequently found on elbows, knees, buttocks, back of the neck, scalp and upper back. People with dermatitis herpetiformis can have gastrointestinal damage without obvious symptoms.

Genetics

Celiac disease is an inherited condition. First degree relatives (parents, brothers, sisters and children) of individuals with celiac disease are at the highest risk of having unrecognized celiac disease (5-15%). It can appear at any time in the life of a person with a hereditary predisposition to it. Environmental factors such as emotional stress, pregnancy, surgery, or an infection (e.g., travellers' diarrhea, pneumonia) can sometimes trigger the onset of symptoms.

Prevalence

Recent research has revealed that celiac disease affects 1:100-200 people in the United States (1,2). Growing awareness of celiac disease, earlier diagnosis and improved blood screening point to the likelihood of similar prevalence figures in Canada.

Symptoms

The number and severity of symptoms associated with untreated celiac disease can vary greatly from person to person. In some cases, undiagnosed adults with celiac disease have only iron deficiency anemia without digestive or intestinal symptoms.

The similarity of the symptoms of celiac disease to those of other conditions often leads to a misdiagnosis of irritable bowel syndrome, lactose intolerance, chronic fatigue syndrome or diverticulosis, thus delaying the diagnosis of celiac disease. The presence of obesity does not exclude the diagnosis of celiac disease.

The following symptoms may occur individually or in combination in children or adults.

- indigestion and nausea
- abdominal bloating, pain, cramping or gas
- lactose intolerance
- anemia – iron, folate or B12 deficiency
- extreme weakness and fatigue
- migraine
- bone/joint pain
- swelling of ankles and hands
- recurring/persistent diarrhea
- constipation
- weight loss
- deficiency of vitamins A, D, E, and K
- mouth ulcers/canker sores
- depression
- menstrual irregularities
- infertility/miscarriages

Additional symptoms in children:

- delayed growth
- irritability and behavioural changes
- vomiting
- delayed puberty
- dental enamel abnormalities



Associated Conditions

Celiac disease often occurs with other diseases. If you have any of the following conditions, consider having your blood tested for celiac disease.

- family history of celiac disease
- type 1 diabetes
- autoimmune hepatitis
- lymphoma
- infertility
- osteoporosis
- Down Syndrome
- Turner Syndrome
- unexplained liver enzyme elevations

Diagnosis

Recent Canadian and U.S. studies report significant delays in diagnosis (3,4). Excellent blood tests to detect endomysial (EMA) and tissue transglutaminase (tTG) antibodies are now available to screen for celiac disease in people with mild or atypical symptoms and those in high risk groups. Such tests may suggest that a person has celiac disease, but they do not replace the need for an intestinal biopsy.

Small intestinal biopsies are the ONLY definitive means of diagnosing celiac disease.

A gluten-free diet should not be started before the blood tests and biopsies are done, since it can interfere with making an accurate diagnosis.



Treatment

The only treatment for celiac disease is a strict gluten-free diet for life.

A strict gluten-free diet will enable recovery of the gut, and may reduce the risk of developing other associated diseases and complications.

Because of the complexity of the gluten-free diet, patients should be referred to a registered dietitian with expertise in celiac disease for nutrition assessment, education and follow-up. Regular follow-up with your physician is also recommended.

All persons with celiac disease are encouraged to join the Canadian Celiac Association and their local chapter for valuable practical information and ongoing support.

The safety of oats in celiac disease has been extensively investigated. Clinical studies have shown that small amounts of pure, uncontaminated oats are safe for most adults and children with celiac disease. The availability of pure oats remains a problem.

Most commercially available oats are contaminated with wheat or barley. However, individuals with celiac disease must ensure that the oats they are eating are free from gluten contamination.

For more information on celiac disease and the gluten-free diet, contact the Canadian Celiac Association or go to the CCA website: www.celiac.ca.

Biography

1. NIH consensus document web link: http://consensus.nih.gov/cons/118/118cdc_intro.htm
2. Fasano A, Berti I, Gerarduzzi T, et al. Prevalence of celiac disease in at-risk and not-at-risk groups in the United States. Arch Intern Med 2003; 163:286-292.
3. Cranney A, Zarkadas M, Graham ID, Switzer C. Canadian Health Survey – Ottawa Pilot. Biomed Central 2003; 3:8.
4. Green PHR, Stavropoulos SN, Panagi SG, et al. Characteristics of adult celiac disease in the USA: results of a national survey. Am J Gastroenterol 2001;96:126-131.
5. Green PHR, Jabri B. Celiac Disease. Lancet. 2003, 362: 383-391.

CCA Chapter Locations

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- Kingston
- Ottawa
- Quebec
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Celiac Disease - Myths & Facts

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MYTH: Celiac disease is rare in Canada.

FACT: Recent research has revealed that celiac disease affects 1 in 100-200 people in the U.S. Growing awareness of celiac disease, earlier diagnosis and excellent blood screening tests point to the likelihood of similar prevalence figures in Canada.

MYTH: Celiac disease is easily recognized.

FACT: Celiac disease can be difficult to recognize since symptoms are often vague and nonspecific. Symptoms can vary greatly from person to person and can appear at any age.

MYTH: Celiac disease can be diagnosed by a simple blood test.

FACT: Blood screening tests (EMA or tTG) may suggest that a person has celiac disease, but they do not replace the need for an intestinal biopsy. Intestinal biopsies are the only definitive means of diagnosing celiac disease.

MYTH: An intestinal biopsy is a major surgical procedure requiring general anesthesia.

FACT: This procedure is performed under sedation by an experienced specialist and is usually done as an outpatient procedure. In children, sedation or anesthetic may be used.

MYTH: Celiac disease and dermatitis herpetiformis are unrelated.

FACT: Dermatitis herpetiformis (DH) is celiac disease of the skin. Persons with dermatitis herpetiformis may or may not have intestinal symptoms characteristic of celiac disease, but they will have an abnormal small bowel biopsy. Treatment of dermatitis herpetiformis requires a gluten-free diet for life and medication to help relieve the burning and itching of the skin rash.

MYTH: Celiac disease is a childhood disease.

FACT: Celiac disease is an inherited condition and symptoms may develop at any age after the ingestion of gluten.

MYTH: Celiac disease can be outgrown.

FACT: Celiac disease is a LIFE-LONG disease. Eating food containing gluten will continue to damage the intestinal lining and will increase the risk of developing associated conditions and other complications. The only known treatment for celiac disease is a **gluten-free diet for life**.

MYTH: A person with celiac disease needs to avoid only wheat and wheat products.

FACT: Effective treatment of celiac disease requires strict exclusion of gluten for LIFE. The gluten found in various wheats (e.g., durum, kamut, spelt), and in rye, barley, and triticale, must be avoided. Consultation with a registered dietitian is recommended to learn about the hidden sources of gluten and how to prepare a nutritious, well balanced diet while avoiding gluten.

MYTH: A trial of the gluten-free diet is a good way of selecting patients who have celiac disease.

FACT: A gluten-free diet should not be started until the diagnosis of celiac disease has been made by a small bowel biopsy. A trial of the gluten-free diet before the blood tests and the biopsy allows the villous damage to improve which may make the interpretation of the tests inconclusive and further delay the diagnosis of celiac disease. Moreover, patients may respond clinically to dietary changes for reasons other than celiac disease.

MYTH: A person with celiac disease can tolerate a small amount of dietary gluten once in a while.

FACT: Even though some people with celiac disease may seem to tolerate gluten, damage is still being done to the intestinal lining when gluten is eaten. Treatment for celiac disease is a **strict gluten-free diet for life**.

MYTH: Oats are allowed on a gluten-free diet.

FACT: The safety of oats in celiac disease has been extensively investigated. Clinical studies have shown that small amounts of pure, uncontaminated oats are safe for most adults and children with celiac disease. The availability of pure oats remains a problem. Most commercially available oats are contaminated with wheat or barley. However, individuals with celiac disease must ensure that the oats they are eating are free from gluten contamination. Contact the CCA office or go to the CCA website for our position statement on oats: www.celiac.ca.

MYTH: After diagnosis and adherence to a “gluten-free diet”, a person with celiac disease can be considered “cured” and needs no further medical or dietary supervision.

FACT: Continued medical and dietary supervision is needed to prevent and treat anemia, osteoporosis and other nutritional deficiencies. Early recognition and therapy of associated diseases such as diabetes and thyroid disease is important. Followup with a dietitian is essential to keep up to date with changes to the gluten-free diet (e.g., new products, recipes and resources). Your pharmacist can help identify which drugs may contain gluten.



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- Kingston
- Ottawa
- Quebec
- Fredericton
- Saint John
- Moncton
- Halifax
- Charlottetown
- St. John's



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Diagnosis of Gluten-Sensitive Enteropathy (Celiac Disease)

A Summary of the NASPGHAN, AGA and WGO Guidelines

Celiac disease is an immune medical condition that is caused by ingestion of gluten in genetically susceptible individuals. ~ e damage to the absorptive surface of the small intestine by gluten results in an inability to absorb nutrients. ~ e prevalence is between 1:100 and 1:300 in the North American population. Celiac disease may present with a wide variety of symptoms (Table) at any point in life. ~ e prevalence is higher in specific associated conditions (Table)

PRACTICE POINT

~ e classic form of celiac disease can manifest at any age with weight loss, diarrhea, abdominal distention, and occasionally, severe malnutrition. Older children may present with constitutional short stature, delayed puberty or dental enamel defects. Children and adults may present with iron or folate-deficiency anemias.

Many symptoms (e.g., anemia, weight loss, bone pain, paresthesia, edema, skin disorders) are secondary to deficiency states. If intestinal symptoms (e.g., diarrhea, abdominal discomfort, distention) do not occur, the diagnosis celiac disease may not be suspected.

TABLE 1 (Symptoms include but are not limited to one or more of the following)

Classic Symptoms

Abdominal distension
Abdominal pain
Chronic diarrhea
Anorexia
Irritability
Weight loss or failure to thrive in children
Muscle wasting
Dermatitis herpetiformis

Associated Conditions (% affected)

Relative of individual with celiac disease (8-15%)
Type 1 diabetes mellitus (4-8%)
Autoimmune thyroiditis (2-5%)
Trisomy-21 (Down syndrome) (2-5%)
Turner syndrome (2-5%)
IgA deficiency (1-4%)

Non-classic Symptoms and Signs

Unexplained iron or folate deficiency anemia
Persistent vomiting
Chronic constipation
Irritable bowel syndrome
Aphthous stomatitis
Dental enamel defects
Arthritis
Osteoporosis
Delayed puberty
Short stature
Abnormal liver enzymes (ALT/AST)
Infertility
Neurological presentations
Unexplained ataxia or peripheral neuropathy
Epilepsy with occipital calcifications
Depression

Screening and Diagnosis of Celiac Disease

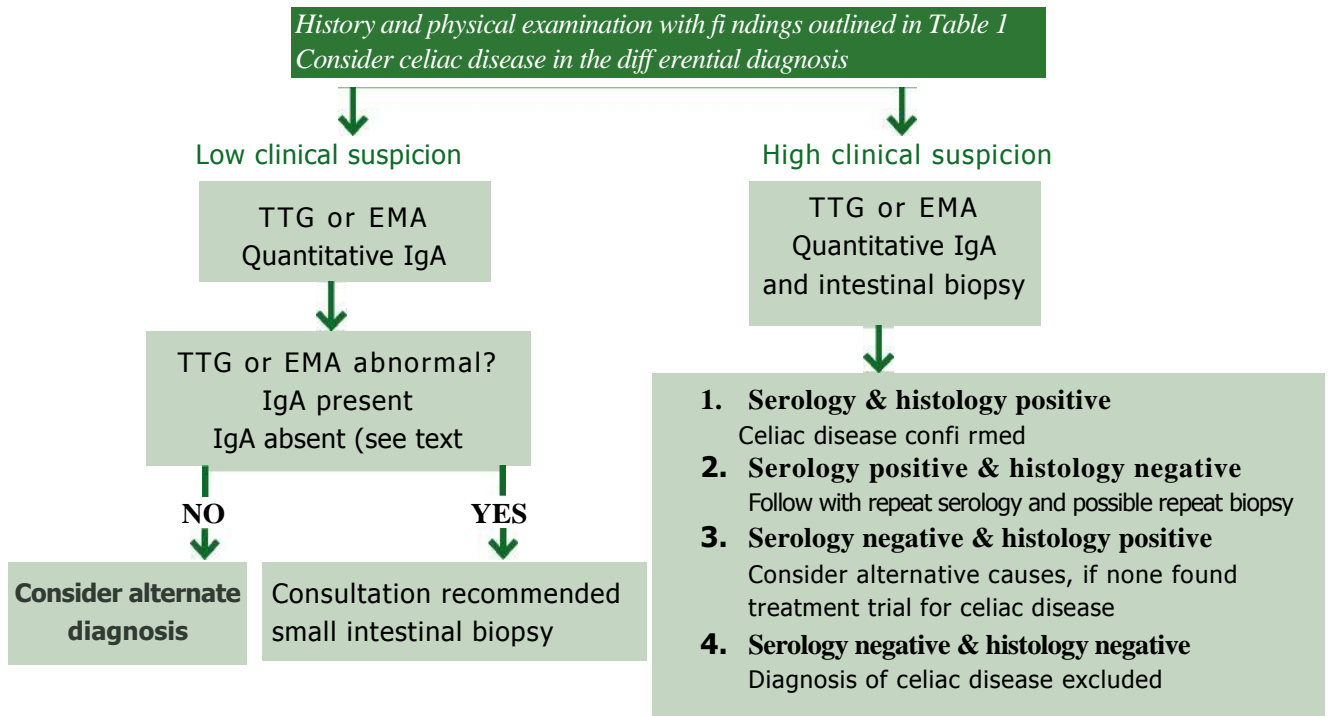
- Diagnosis of celiac disease may be suspected in individuals with one or more of the above symptoms, signs or associated conditions. Screening serologic tests can be utilized to identify individuals at risk for celiac disease BUT the diagnosis MUST be confirmed with small bowel biopsy. It is recommended that the biopsy be done BEFORE starting the patient on a gluten-free diet in order to confirm the diagnosis. **Celiac disease requires lifelong treatment with a gluten-free diet.** ~ e diet is complicated and expensive. Initiation of the diet requires counseling by a qualified and knowledgeable dietitian.

PRACTICE POINT

Screening tests and intestinal biopsy need to be performed while the patient is on a **gluten-containing diet.**

- IgA antibody human recombinant tissue transglutaminase (IgA-TTG) or endomysium (IgA-EMA) are recommended for initial testing by experienced laboratories. ~ e choice of test depends on laboratory preference. Both tests display positive and negative predictive values of about 90% in IgA sufficient patients. Both tests require the presence of IgA and will be falsely negative in IgA deficient patients. ~ e prevalence of IgA deficiency is increased in individuals with celiac disease and therefore screening for IgA deficiency should be performed at the same time as the serology tests.
- IgA or IgG anti-gliadin antibody tests are no longer recommended as a screening test for celiac disease because of their very poor positive and negative predictive values.

Algorithm for the Evaluations of Celiac Disease



Note: Individuals with CD who are also IgA deficient will not have elevated levels of TTG or EMA. Celiac disease occurs in 1-4% of people with IgA deficiency. All symptomatic patients should be referred for intestinal biopsy regardless of their serology results because false negative serological tests can occur. In asymptomatic individuals with IgA deficiency, the laboratory may be able to perform IgG-TTG.

Management

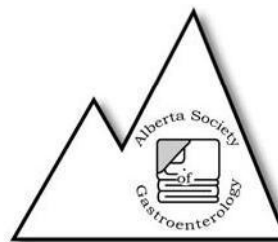
1. Prescribe gluten free diet for life
2. Treat specific nutrient deficiencies if identified e.g.. Iron, Vitamin D, calcium, folate
3. Refer to dietitian with expertise in management of celiac disease
4. Refer to Canadian Celiac Association, an excellent resource and support group. National office in Mississauga , ON (905-507-6208; 800-363-7296; info@celiac.ca; www.celiac.ca) or the Edmonton Chapter at (www.CeliacEdmonton.ca; ccaedm@telus.net; 780-485-2949).
5. Advise bone mineral density if suspect osteoporosis
6. Monitor for symptom resolution and repeat serology in ~ 6 mo.
7. Screen 1st degree relatives for celiac disease

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*Developed by the Alberta Society of Gastroenterologists and the Toward Optimized Practice Program
January 2006. Revised February 2008*





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Nutrition Complications for Celiac Disease

Nutritional Consideration	Comments	Counselling Suggestions
Iron Deficiency Anemia	<ul style="list-style-type: none"> • Iron deficiency anemia is common with celiac disease. • In the 2007 Canadian Celiac Health Survey, 49% of respondents reported that they had been diagnosed with iron deficiency anemia prior to the diagnosis of celiac disease (1). • Celiac disease should be considered in the differential diagnosis of unexplained iron deficiency anemia (4). • Iron deficiency will persist until gut morphology is restored and iron stores are replenished (5-7). • Long-term follow-up of serum ferritin in clients with celiac disease is helpful to determine if iron deficiency has resolved completely (8). 	<ul style="list-style-type: none"> • Treatment with a strict gluten-free diet, with special attention to iron rich foods should correct iron deficiency. • Optimize dietary sources of iron with: <ul style="list-style-type: none"> • Heme iron sources: meat, fish, poultry. • Non-heme iron sources: nuts, seeds, legumes, dark green vegetables dried fruits (apricots, prunes, raisins), eggs, amaranth, bean flours, quinoa, rice bran, soy flour, black-strap molasses, teff. • Combine non-heme iron sources with foods high in vitamin C to facilitate absorption – oranges, tangerines, tomatoes, bell peppers etc. • Short term gluten-free iron supplementation may be required in some clients (it is essential to recognize that iron supplements can cause side effects which include stomach discomfort and constipation).
Lactose Intolerance	<ul style="list-style-type: none"> • Lactose intolerance may occur temporarily in newly diagnosed patients as a result of damaged villi and decreased lactase production. • In the Canadian Celiac Health Survey, 26% of respondents reported it as symptom prior to diagnosis (1). • With a strict gluten-free diet, lactose intolerance symptoms should disappear within 6 months to one year (with the healing of the small intestine). If lactose intolerance persists, consider the possibility of primary lactose intolerance or hidden gluten in the diet. 	<ul style="list-style-type: none"> • Start with a strict gluten-free diet and if symptoms persist, a temporary restriction of dietary lactose may be necessary (in addition to the gluten-free diet). • If a lactose-free diet is required consider: <ul style="list-style-type: none"> ○ Lactase enzyme drops or tablets as tolerated ○ Lactose-free (and gluten-free) beverages fortified with calcium, vitamin D and other nutrients • Once a client is asymptomatic, re-introduce lactose in small amounts to assess tolerance.

Adapted from: Case S, Kaplan CR. Gluten-Free Guidance: Practical Tips for Dietitians and their Celiac Patients. *Today's Dietitian*. March 2003: 44-49.:



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Nutritional Consideration	Comments	Counselling Suggestions
Osteopenia or Osteoporosis	<ul style="list-style-type: none"> • Early bone disease is common in both men and women with celiac disease due to malabsorption. In the Canadian Celiac Health Survey 9 % of respondents reported osteopenia and 26 % reported osteoporosis (1). • The high prevalence of osteoporosis in celiac disease warrants a Bone Mineral Density (BMD) be ordered at the time of diagnosis (9). • Vitamin D deficiency, which is common in celiac disease, needs to be treated to maintain serum 25-dihydroxyvitamin D levels in the target range (9). • Osteoporosis may persist even with strict adherence to the gluten-free diet (10-12). • A North American study found that osteoporosis and low BMD affected adults with celiac disease whether or not they followed a gluten-free diet (13). • Adult celiac patients on a gluten-free diet with adequate calcium intake for four years had reduced fractional calcium absorption and BMD compared with control subjects despite the remission in their clinical symptoms (14). 	<ul style="list-style-type: none"> • Treatment with a strict gluten-free diet, with special attention to calcium and Vitamin D rich foods. • Calcium rich sources: milk, cheese, yogurt, gluten-free calcium fortified beverages (orange juice, gluten-free rice milk/ soy milk), broccoli, kale, turnip, mustard greens, bok choy, almonds, teff. • Vitamin D rich sources: milk, fatty fish (sardines, salmon, herring), fish oil, gluten-free vitamin D enriched beverages (soy, rice, orange juice), teff. • Gluten-free supplementation of vitamin D and calcium may be required with inadequate dietary intake. • Consider recommending yearly bone density as part of regular follow-up. • Encourage regular physical activity, with concentration on weight bearing exercises.
Folate Deficiency	<ul style="list-style-type: none"> • Folate deficiency may occur in severe cases of malabsorption. • It is important to assess folate intake and adherence to the gluten-free diet in women with celiac disease who are planning a pregnancy or who are pregnant. 	<ul style="list-style-type: none"> • Treatment with a strict gluten-free diet, with special attention to folate rich foods. • Folate rich sources: legumes, green leafy vegetables, broccoli, asparagus, orange juice, liver, peanuts, walnuts, sesame seeds, sunflower seeds, bean flour, amaranth, flax. • Recommend enriched and whole grain gluten-free foods. • Gluten-free supplementation of folate is required in pregnancy. It may also be required with inadequate dietary intake.

Adapted from: Case S, Kaplan CR. Gluten-Free Guidance: Practical Tips for Dietitians and their Celiac Patients. Today's Dietitian. March 2003: 44-49.:



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Nutritional Consideration	Comments	Counselling Suggestions
Vitamin B ₁₂ Deficiency	<ul style="list-style-type: none"> Although celiac disease predominately affects the proximal bowel, vitamin B₁₂ deficiency can occur in severe cases of malabsorption. Vitamin B₁₂ nutritional status should be assessed before administering any therapies that provide additional folate / folic acid. Deficiency should normalize with strict adherence to a gluten-free diet. 	<ul style="list-style-type: none"> Treatment with a strict gluten-free diet, with special attention to Vitamin B₁₂ rich foods. B₁₂ rich sources: liver, eggs, milk, meat, poultry, fish, seafood. Gluten-free supplementation of B₁₂ may be required with inadequate dietary intake and strict vegan diet.
Diarrhea	<ul style="list-style-type: none"> In the Canadian Celiac Health Survey, 76% of respondents reported diarrhea as a symptom prior to diagnosis. Potential causes: 1) damaged villi; 2) malabsorption; 3) lactose intolerance. 	<ul style="list-style-type: none"> Treatment with a strict gluten-free diet. Ensure adequate fluid and electrolyte intake. Limit high simple sugar sources. May need to limit gassy vegetables. Lactose restriction may be beneficial in patients who have lactose intolerance (should be challenged at a later date to see if this has resolved).
Constipation	<ul style="list-style-type: none"> In the Canadian Celiac Health Survey 32 % of respondents reported constipation as a symptom prior to diagnosis. The gluten-free diet tends to be low in fibre; constipation may develop once the diet has been initiated. 	<ul style="list-style-type: none"> Treatment with a strict gluten-free diet, with special attention to fibre containing foods. Ensure adequate fluid intake. Gradually increase dietary fibre to minimize adverse gastrointestinal side effects. Sources of dietary fibre: fruits, vegetables, raisins, nuts and seeds, legumes and beans, bean flours, flax, brown/rice/wild rice, corn bran, quinoa, amaranth, pure uncontaminated oats, teff.

Adapted from: Case S, Kaplan CR. Gluten-Free Guidance: Practical Tips for Dietitians and their Celiac Patients. Today's Dietitian. March 2003: 44-49.:



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Nutritional Consideration	Comments	Counselling Suggestions
Growth Failure in Children	<ul style="list-style-type: none"> • In a recent Canadian Survey, 70% of children had poor growth and 18% had short stature prior to diagnosis. • Growth problems may occur when undiagnosed celiac disease interferes with nutrient absorption. • If children are diagnosed and treated early enough, catch-up growth is possible. • In rare cases of severe malabsorption and / or weight loss, children may benefit from supplemental nutrition (oral or enteral). 	<ul style="list-style-type: none"> • Treatment with a strict gluten-free diet. • Aim for the achievement of appropriate weight for height. • Encourage intake of high calorie foods to promote growth and / or weight gain.
Calorie/Protein Deficiency	<ul style="list-style-type: none"> • Potential causes: 1) poor intake secondary to gastrointestinal symptoms (e.g. poor appetite, vomiting, diarrhea); 2) malabsorption. 	<ul style="list-style-type: none"> • Treatment with a strict gluten-free diet. • Consider energy and/or protein boosting.
Calorie Excess and Overweight/Obesity	<ul style="list-style-type: none"> • Gluten-free prepared foods tend to be higher in fat, carbohydrates and calories and lower in fibre. • As the intestine heals, there is increased absorption of macronutrients. • Patients with celiac disease are at risk of becoming overweight. 	<ul style="list-style-type: none"> • Treatment with a strict gluten-free diet. • Encourage general healthy eating. • Choose lower fat, high fibre (e.g., whole grain) gluten-free food alternatives when available. • Encourage appropriate serving sizes (according to Canada's Food Guide). • Encourage regular physical activity.
Vitamin deficiencies	<ul style="list-style-type: none"> • If patients with a history of steatorrhea and diarrhea, vitamin deficiencies may occur. • Bruising and / or hemorrhaging may be an indication of Vitamin K malabsorption. 	<ul style="list-style-type: none"> • Treatment with a strict gluten-free diet. • Encourage enriched and whole grain gluten-free products. • Gluten-free multi-vitamin mineral supplements may be required with inadequate dietary intake.

Adapted from: Case S, Kaplan CR. Gluten-Free Guidance: Practical Tips for Dietitians and their Celiac Patients. *Today's Dietitian*. March 2003: 44-49.:

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Celiac Disease & the Gluten-Free Diet

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Celiac Disease

Celiac disease (CD) is one of the most common inherited disorders, with an estimated prevalence rate of 1:100 to 1:200. Originally thought to be a rare disorder, a multi-center study revealed that 1:133 people in the US have CD. This translates into 3 million Americans with the disease, although it is estimated that 90-95% remain undiagnosed. Prevalence of CD in Canada is thought to be similar as in the US. A high prevalence of CD is also found in individuals with other disorders such as Type 1 diabetes, autoimmune thyroid disease and Down syndrome.

Celiac disease (CD) is an autoimmune disorder in which the villi of the small intestine are damaged by specific prolamins from the grains wheat, rye and barley (collectively called gluten). Symptoms of CD are highly variable, may occur at any age (including the elderly) and involve not only the gastrointestinal system but many other organ systems. Infants and young children can present with bloating, gas, diarrhea, weight loss, poor growth, irritability, dental enamel defects and/or anemia. In older children and adults, symptoms can vary from mild to severe. Some may present with only a few symptoms while others can have many different symptoms. These include anemia, nausea, reflux, bloating, gas, diarrhea or constipation (or both), lactose intolerance, weight loss (note that CD can also occur in obese individuals), mouth ulcers, extreme fatigue, bone and joint pain, easy bruising of the skin, menstrual irregularities, miscarriage, infertility in both women and men, migraines, depression, ataxia, seizures, neuropathy and elevated liver enzymes.

Another presentation of CD is the skin condition called dermatitis herpetiformis (DH) that is characterized by an intense burning, itchy rash that is symmetrically distributed. Initially, groups of small blisters are formed that soon erupt into small erosions. Areas affected can include the elbows, knees, back of the neck and scalp, upper back and buttocks. Most people with DH will also have varying degrees of small intestinal villous atrophy, although many will have no bowel complaints.

Untreated CD can result in nutritional deficiencies; osteoporosis; increased risk of intestinal cancers; reproductive complications such as infertility and miscarriage; and development of other autoimmune disorders. Because the symptoms of CD vary so widely in the nature and severity, especially among adults, misdiagnoses such as irritable bowel syndrome, lactose intolerance, fibromyalgia, chronic fatigue syndrome and ulcers are common. Also, diagnosis is often delayed for many years after symptoms appear. Studies by Columbia University in New York and the Canadian Celiac Association revealed that adults suffer from the disease for an average of 10-12 years before being correctly diagnosed.

There are specific serological tests that can be used to screen for CD, however the only definitive test for diagnosis is the small intestinal biopsy. Diagnosis for DH is a skin biopsy from unaffected skin adjacent to the blisters or erosions. In DH, an intestinal biopsy is not essential if the skin biopsy is positive. **A gluten-free diet should never be started before the blood tests and biopsy are done as this can interfere with making an accurate diagnosis.**

The only treatment for CD is a strict gluten-free diet (GFD) for life. It is essential that individuals with CD be referred for an initial assessment, education and follow-up with a registered dietitian with expertise in CD and the GFD. Individuals should also be encouraged to join a local and/or national celiac group for ongoing support.

Gluten defined

Gluten is the common name for storage proteins (prolamins) found in wheat, rye and barley. The specific names of the toxic prolamins are gliadin in wheat, secalin in rye and hordein in barley. All forms of wheat, rye and barley must strictly be avoided, including spelt, kamut, einkorn, emmer, faro, durum, couscous, semolina, bulgur and triticale. Barley malt, barley malt extract, barley malt flavour, brewer's yeast, malt vinegar, as well as barley-based ale, beer and lager must also be avoided.

The avenin prolamin in oats was originally thought to trigger the same toxic reaction as wheat and other gluten-containing grains. New research in Europe and the US over the past 15 years has revealed that consumption of moderate amounts of oats is safe for the majority of children and adults with celiac disease. Most of these studies used pure, uncontaminated oats, but it should be noted that a very small number of individuals with celiac disease may not even tolerate pure oats. The mechanism causing this intolerance has yet to be established.

Based on this new research, a growing number of celiac organizations and health professionals around the world now allow consumption of moderate amounts of pure, uncontaminated oat products in diet. An extensive technical review on the safety of oats is published on Health Canada's website:

http://www.hc-sc.gc.ca/fn-an/securit/allerg/cel-coe/oats_cd-avoine_e.html

Unfortunately the majority of commercial oats products on the market are cross contaminated with wheat, barley or rye which occurs during harvesting, transportation, storage, milling, processing and packaging. The good news is that there are companies in the US, Canada and Europe who produce pure, uncontaminated specialty oat products. The North American companies are:

Bob's Red Mill	www.bobsredmill.com
Cream Hill Estates (Lara's brand)	www.creamhillestates.com
Avena Foods (Only Oats™)	www.onlyoats.com
Gifts of Nature	www.giftsofnature.net
Gluten-Free Oats	www.glutenfreeoats.com

Sources of gluten

Gluten is found in a wide variety of foods such as breads and other baked products, cereals, pastas, soups, sauces such as soy sauce which is often made from wheat and soy, seasonings, salad dressings, snack foods, prepared meats (e.g., deli meats, hot dogs, hamburger patties, imitation seafood), beer, flavoured coffees and teas, some candies (e.g., licorice) and chocolate bars, as well as some nutrition supplements and medications.

Foods allowed on a gluten-free diet

A wide variety of foods that are naturally gluten-free include plain meat, poultry, fish, eggs, legumes, nuts, seeds, milk, yogurt, cheese, fruits, vegetables, as well as many gluten-free flours, cereals and starches that can be substituted for wheat, barley and rye (see below). Distilled alcoholic beverages and wine are also allowed, however beer derived from barley must be avoided. All vinegars are gluten-free except for malt vinegar.

Gluten-Free Flours, Cereals and Starches

- Amaranth
- Arrowroot
- Buckwheat
- Corn
- Flax
- Indian ricegrass (Montina™)
- Legumes flours (*bean, chickpea/garbanzo, lentil, pea*)
- Mesquite flour
- Millet
- Nut flours (*almond, hazelnut, pecan*)
- Potato Flour
- Potato Starch
- Quinoa
- Rice (*black, brown, glutinous/sweet, white, wild*)
- Rice Bran
- Rice Polish
- Sago
- Sorghum
- Soy
- Sweet Potato Flour
- Tapioca (*cassava/manioc*)
- Teff

Gluten-free specialty products

A growing number of gluten-free specialty products from companies in the USA, Canada and Europe are available in health food and grocery stores, as well as mail order companies. Examples include ready-to-eat baked products (e.g., breads, buns, bagels, muffins, cakes, cookies, pies, pizza crusts), baking mixes and specialty flours, hot and cold cereals, crackers, snack foods, entrees, pastas (corn, legumes, quinoa and rice), bread crumbs, coating mixes, gravy mixes, soups, sauces, communion wafers, ice cream cones and snack bars. Gluten-free beer made from rice, buckwheat and/or sorghum is also available in the US, Canada and some European countries.

Gluten-free labeling

There is no single world-wide definition for the term "gluten-free". Various countries have different gluten-free labeling regulations, terminology allowed and acceptable levels of gluten. Unfortunately, these differences have caused great confusion within the celiac community and food industry, resulting in various interpretations of gluten-free and labelling.

On August 2, 2004, the US *Food Allergen Labeling and Consumer Protection Act (FALCPA) of 2004* became law. This legislation required manufacturers to identify the eight major food allergens, including wheat (but not barley and rye) on the food label effective January 1, 2006. The FALCPA also mandated the FDA to issue a proposed rule to define and permit the use of the term "gluten-free" on food labels by August 2006, with the final ruling by August 2008. The proposed gluten-free regulation was released January 2007 and the FDA reviewed comments from

consumers, industry, health professionals and others. The final rule to establish a regulatory definition for the term “gluten-free” was expected in August 2008; however it has been delayed until a safety assessment report on gluten exposure in individuals with celiac disease has been published.

Health Canada proposed a new regulation on July 26, 2008 entitled *Enhanced Labelling of Food Allergen and Gluten Sources and Added Sulphites* which will require manufacturers to declare on the food label the major food allergens, all gluten sources and sulphites when present as ingredients or components of ingredients. Until the final mandatory amendments become law, Health Canada and the Canadian Food Inspection Agency strongly urge manufacturers to declare on their food labels the allergens, gluten sources and sulphites. Canada has a specific regulation for the term “gluten-free” that was established over 25 years ago. On May 13, 2010 Health Canada announced that the gluten-free regulation (B.24.018) is under review, including the labelling of pure, uncontaminated oats.

Nutritional concerns

The nutritional status of people with newly diagnosed CD can vary considerably depending on the length of time delay between onset and diagnosis and the degree of malabsorption. For many with delayed diagnosis, which is the majority, there is a significant risk for a variety of vitamin and mineral deficiencies. In severe cases of CD, malabsorption of fat, fat-soluble vitamins A, D, E and K, iron, folic acid, B12, calcium and magnesium, as well as secondary lactose intolerance can occur. In order for the intestinal villi to regenerate and reverse the nutritional deficiencies, it is important to follow these dietary guidelines:

- 1) **Follow a strict gluten-free diet for life.** Eliminate all forms of wheat, rye and barley. Response to the GFD varies greatly among individuals. Symptoms may resolve within a few weeks; however the intestinal villi can take months to several years to normalize.
- 2) **A temporary lactose-free diet may also be necessary.** There is no concrete data on the incidence of lactose intolerance in people with CD; however, gastroenterologists estimate that 30-60% of people may develop secondary lactose intolerance, especially if they present with severe malabsorption. There are several options to manage lactose intolerance and ensure adequate calcium intake: a) Lactase enzyme drops or tablets when consuming dairy products, b) lactose-reduced milk products, and c) soy, rice, nut and potato beverages are lactose-free. Check the ingredients since some brands may contain barley malt as a flavouring agent, which contains gluten. Choose products that are enriched with calcium, vitamin D and other nutrients.
- 3) As chronic iron deficiency anemia is common, **encourage consumption of iron-rich, gluten-free foods.** Red meat is an excellent source of heme iron. Chicken and fish provide lesser amounts, but still contribute to overall intake of heme iron. Good sources of non-heme iron include many gluten-free flours, cereals and starches (e.g., amaranth, legume flours, millet, Montana™, quinoa, rice bran and teff), nuts, seeds, legumes, dried fruits (apricots, prunes and raisins), and blackstrap molasses.
- 4) **Ensure adequate amounts of calcium and vitamin D.** Early bone disease, including osteopenia and osteoporosis, is common in people with CD. For those unable or not willing to consume enough calcium and vitamin D through dietary sources, encourage gluten-free supplements.
- 5) **Choose more nutritious ingredients** such as amaranth, brown rice flour, buckwheat, flax, Montana™, nut flours, quinoa, legume flours (e.g., garbanzo/chick pea, Garfava™, yellow or green pea, bean {black, cranberry, soy} and teff when preparing or purchasing gluten-free foods.
- 6) **Look for enriched gluten-free products.** Most gluten-free products are not enriched and/or are made from refined flours and starches that are low in vitamins, minerals and dietary fibre. However, some companies enrich their gluten-free products with iron and B vitamins at the same levels as gluten-containing breads, cereals, pastas and flours.
- 7) **Consume adequate amounts of dietary fibre.** People with newly diagnosed CD may initially present with diarrhea due to malabsorption. Once a gluten-free diet is introduced and the gut heals and diarrhea subsides, constipation often occurs due to the absence of high-fibre, gluten containing foods such as wheat bran and whole-wheat breads and cereals. Emphasize fibre-rich gluten-free products such as fruits, vegetables, nuts, seeds, legumes and their flours, amaranth, flax seed, mesquite flour, Montana™, oats (pure, uncontaminated), quinoa, rice bran, rice (brown and wild) and teff. Gradually increase fibre and increase the consumption of fluids, especially water.

8) **Avoid cross-contamination** of gluten-free foods with gluten-containing foods/ingredients. Key points to remember:

- Store all gluten-free products in separate covered containers labeled gluten-free. One tip is to buy bright stickers and put them on everything that is and/or should remain gluten-free. In addition, you may want to keep all gluten-free foods in a separate place in the cupboard and refrigerator. Another tip is to store gluten-free products on the upper shelves of the pantry or cupboards ABOVE the gluten-containing products to prevent flour dust and crumbs from falling onto the packages and containers of gluten-free items.
- Buy separate containers of items such as peanut butter, jam or mayonnaise and label them with a sticker saying "gluten-free" to prevent them from being cross-contaminated by other family members preparing gluten-containing products (e.g., toast, sandwiches).
- Use squeeze bottles of condiments such as ketchup, mustard and relish.
- Have a separate butter or margarine dish and cutting board that are used for gluten-free foods only.
- Keep a second toaster or use a toaster oven where the rack can be removed and washed. Another option is to use special toaster bags for gluten-free bread that can be placed in a regular toaster. The bags can be washed and re-used. Available from www.celinafoods.com, www.elpeto.com or www.glutenfree.com
- Always make sure the counter space used to prepare gluten-free foods is freshly washed to ensure it is free from crumbs or flour dust.
- Do not boil gluten-free pasta in the same water that previously had gluten-containing pasta. Also use a separate colander to drain gluten-free pasta, as it is difficult to remove traces of pasta from colanders.

Celiac Disease and Gluten-Free Diet Resources

Resources are available from a variety of sources such as health professionals, complimentary health practitioners, celiac support groups, the internet, food companies, family and friends. Unfortunately there is a significant amount of outdated, inaccurate and conflicting information from many of these sources. As the knowledge of celiac disease and the gluten-free diet is rapidly expanding, it is essential to use evidenced-based and current resources.

Books

Gluten-Free Diet - A Comprehensive Resource Guide, Revised and Expanded Edition, 2010

Shelley Case, RD. www.glutenfreediet.ca

Celiac Disease for Dummies: Dr. Ian Blumer and Dr. Sheila Crowe

Celiac Disease - A Hidden Epidemic: Dr. Peter Green and Rory Jones

Real Life with Celiac Disease -Troubleshooting and Thriving Gluten-Free: Melinda Dennis, RD and Daniel Leffler, MD www.reallifewithceliacdisease.com

Celiac Disease - The Road to Diagnosis <http://celiacstories.ca>

The Gluten-Free Nutrition Guide: Tricia Thompson, RD

Gluten-Free Friends - An Activity Book for Kids: Nancy Falini, RD

Cookbooks

1,000 Gluten-Free Recipes: Carol Fenster <http://1000glutenfreerecipes.com/default.aspx>

250 Gluten-Free Favourites: Donna Washburn and Heather Butt www.bestbreadrecipes.com/glutenfree.htm

The Gluten-Free Gourmet Bakes Bread: Bette Hagman

Wheat-Free Gluten-Free Cookbook for Kids and Busy Adults: Connie Sarros

National Celiac Associations

Canadian Celiac Association www.celiac.ca and www.celiacguide.org

Celiac Disease Foundation www.celiac.org

Gluten Intolerance Group of North America www.gluten.net

Celiac Sprue Association www.csaceliacs.org

National Foundation for Celiac Awareness www.celiaccentral.org

American Celiac Disease Alliance www.americaneliac.org

Other Resources

National Institute of Health Celiac Awareness Campaign: www.celiac.nih.gov

Acceptability of Foods and Food Ingredients for the Gluten-Free Diet Pocket Dictionary
Canadian Celiac Association www.celiac.ca

Gluten-Free Living Magazine www.glutenfreeliving.com

Allergic Living Magazine www.allergicliving.com

Living Without Magazine www.livingwithout.com

Gluten-Free Passport www.glutenfreepassport.com

Triumph Dining Resources www.triumphdining.com

Gluten-Free Restaurant Awareness Program www.glutenfreerestaurants.org

Gluten-Free Drugs www.glutenfreedrugs.com

Gluten-Free Certification Organization www.gfco.org



For Celiacs and their Gluten-Free Diet

THE UNSAFE GRAINS and GRAIN PRODUCTS - DO NOT USE!

ATTA (Chappati flour made from wheat)	BARLEY (in any form)	BEER	BRAN (from unknown source or from wheat, oats, barley, rye)
BULGUR	CEREAL BINDING (unknown source)	COUSCOUS (coarsely ground wheat)	DURUM (a type of wheat)
EDIBLE STARCH (source unknown)	EINKORN (a type of wheat)	EMMER (a type of wheat)	FARRO (a type of wheat)
FILLER (unidentified)	FOOD STARCH (source unknown)	FU (Asian food ingredient made from wheat)	GERM (source unknown)
GRAHAM FLOUR (whole wheat flour)	GUM BASE (source unknown)	HYDROLIZED PLANT PROTEIN – HPP (source unknown)	HYDROLIZED VEGETABLE PROTEIN – HVP (source unknown)
KAMUT (durum wheat)	MALT (usually from barley)	MALT extract, vinegar, malted milk	MALT FLAVOURING
MALT SYRUP	MISO	MODIFIED STARCH (source unknown)	OATS & OAT PRODUCTS (unless certified pure and used in small amounts)
RYE (in any form except for rye whiskey)	SEITAN (made from wheat – use tofu instead)	SEMOLINA (a type of wheat)	SPELT – also known as faro or faro (dinkle, a type of wheat)
TABOULI (salad made from cooked wheat grain)	TRITICALE (cross between wheat and rye)	WHEAT (bran, flour, germ or starch and anything made from wheat such as cakes, cookies, bread, pies, rolls, crumbs, croutons, noodles, batters)	MATZOH (matzoh meal)



THE QUESTIONABLE PRODUCTS - READ ALL LABELS – USE WITH CAUTION

BAKED GOODS (pies, cakes, cookies, muffins, bread, rolls, crackers, etc.)	BAKING POWDER	BATTERED OR BREADED FLOURS	BEVERAGES (flavoured dairy drinks, dairy substitutes, instant tea, hot chocolate mixes, coffee substitutes, etc.)
BOUILLON CUBES (and dried soup mixes)	BUCKWHEAT FLOUR & NOODLES (contamination with wheat is possible)	BREAKFAST CEREALS (even rice & corn cereals may contain malt)	CHEESE DIPS, SAUCES AND SPREADS
DRIED FRUITS (flour may be added to prevent sticking)	FRENCH FRIES (frozen or restaurant made fries may have added wheat)	GRAVIES (may be thickened with wheat flour)	ICING SUGAR
LOW FAT OR “LITE” FOODS	MALTO DEXTRIN (European brands may contain wheat, but North American brands are made from corn)	MEATS (burgers, hot dogs, ham, sausage, processed lunch meats, baked beans, imitation fish, meat substitutes)	POTATO FLAKES
RICE (such as seasoned rice and rice crackers or multigrain rice crackers)	SALAD DRESSINGS	SAUCES (such as Worcestershire, soy sauce, barbeque, and other seasoned or thickened sauces)	SNACK FOODS (candies, seasoned nuts, flavoured chips)
SOUPS (includes canned and dried soups)	SEASONINGS (blends of spices)	TEMPE (made from soy but contains soy sauce which may contain wheat)	YOGHURT



For Celiacs and their Gluten-Free Diet

THE SAFE GRAINS AND FOODS

AMARANTH	ARROWROOT	BAKING SODA	BEANS AND BEAN FLOUR
BUCKWHEAT AND BUCKWHEAT FLOUR	CASSAVA OR MANIOC FLOUR	CHICKPEA (garbanza, besan, channa)	CORN OR MAIZE (as meal, flour, starch, hominy grits, masa harina)
CREAM OF TARTAR	DAL OR DAHL (a legume from India)	EGGS (if fresh)	FLAX
FISH (if fresh)	FRUITS (if fresh)	GELATIN	GREEN PEA FLOUR
GUMS (Arabic, carrageen, guala, guar, karaya, locust bean, carob bean, xanthan, cellulose, tragacanth)	HERBS (when packaged separately from other herbs and spices)	INVERT SUGAR	KUDZU
LECITHIN	LEGUMES	MALT SUGAR OR MALTOL	MANNITOL
MILLET	MOLASSES	MUSTARD FLOUR	NUTS (which have not been salted or seasoned)
POI (taro)	POTATO (flour, starch)	QUINOA (seed, flakes and flour)	RICE (whole, bran, starch, flour, polishings, sweet)
SAGO (from palm trees)	SORGHUM (a grain like corn)	SOY (bean, flour, starch)	SPICES (when packaged or bottled separately from other spices)
SUGAR	SWEET POTATO (fresh and flour)	TAPIOCA (flour and starch)	TEFF (a grass seed from Africa)
TOFU (made from soybean)	VEGETABLES (if fresh)	VINEGAR (white, wine, balsamic and apple cider)	WINE
XANTHAM GUM	YAM	YEAST	

**See the Canadian Celiac Association website at www.celiac.ca for detailed information.



Acceptability of Food & Food Ingredients for the Gluten-Free Diet

Pocket Dictionary - Acceptability of Foods & Food Ingredients for the Gluten-Free Diet.

This dictionary in pocket size (11 x 14 cm - 5 1/2 x 4 1/4 in) was developed to assist persons with celiac disease and dermatitis herpetiformis in selecting acceptable foods and in interpreting food labels so that they may avoid foods containing gluten. It provides a brief description of each item along with an assessment of its acceptability for the gluten-free diet. Contact the Celiac Association for more information and ordering a pocket dictionary.

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www.CeliacEdmonton.ca

Read every label, every time.