

CLINICAL UPDATE

Coeliac Disease

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Digestive Health Foundation

The Digestive Health Foundation (DHF) is an educational body committed to promoting better health for all Australians by promoting education and community health programs related to the digestive system.

The DHF is the educational arm of the Gastroenterological Society of Australia, the professional body representing the specialty of gastrointestinal and liver disease in Australia. Members of the Society are drawn from physicians, surgeons, scientists and other medical specialties with an interest in GI disorders.

Since its establishment in 1990 the DHF has been involved in the development of programs to improve community awareness and the understanding of digestive diseases.

Research and education into gastrointestinal disease are essential to contain the effects of these disorders on all Australians.

Guidelines for General Practitioners and patient leaflets are available on a range of topics related to GI disorders. Copies are available by contacting the Secretariat at the address below.

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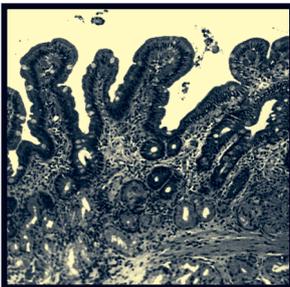
Coeliac Disease

What is Coeliac Disease?

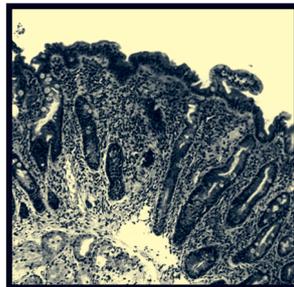
Coeliac disease is a condition characterised by chronic inflammation of the intestinal mucosa when it is exposed to even small amounts of dietary gluten. It is an inappropriate immune response and is unique among the autoimmune diseases in that the precise trigger is known to be gluten, it is not an allergy and should not be confused with wheat intolerance. Gluten is a protein found in wheat, barley, rye and oats.

As a result of the intestinal damage, affected people absorb food and nutrients poorly. This can result in bowel symptoms and deficiencies of vitamins, minerals and other nutrients. Coeliac disease is successfully treated by avoiding eating all foods containing gluten. This is called a “gluten-free diet”. Following a gluten-free diet after the diagnosis of coeliac disease should allow an improvement in symptoms and restoration of health.

The cause of coeliac disease is complex, with multiple factors involved. People affected by coeliac disease have a genetic predisposition, where the gene, human leukocyte antibody (HLA)-DQ2 and -DQ8 are strongly associated with the disease. Gluten is consumed as protein, but specific peptide residues are resistant to hydrolysis. There is deamidation of these peptides, where HLA DQ2 binds these peptides to T cells. This causes the subsequent release of cytokines which induces the mucosal injury (villous atrophy) of coeliac disease.



Biopsy of Normal Intestine



Biopsy of Coeliac Intestine

Aretaeus the Cappadocian first detected the condition in the first century A.D, however it wasn't until World War II that the link between diet and disease was made. A Dutch paediatrician, Dicke,

noticed that during the war, when wheat flour used to make bread was scarce, children suffering coeliac disease appeared to improve. After the war, when the cereal supply was again in abundance, the children with coeliac disease relapsed.

How common is Coeliac disease?

Coeliac disease is an under diagnosed disease that affects at least one per cent of the population mostly Caucasians, Middle Eastern and West Asians. It is not common in Asians as they typically do not possess the DQ2 or DQ8 HLA profiles. It is common in adults and children. First degree family members have a 1 in 10 risk of suffering from the disease Age of onset is from 6 months to 90+ years.

What are the symptoms?

Coeliac disease can vary in its symptoms, ranging from many to none at all. Patients may present with the following symptoms:

- Fatigue, tired all the time
- Iron deficiency and anaemia
- Nutritional deficiencies
- Altered bowel habits (including diarrhoea and/or constipation)
- Abdominal pain or bloating
- Flatulence
- Irritability and depression
- Weight loss or gain
- Developmental delay (in children)
- Failure to thrive (in children)
- Bone or joint pain and stiffness
- Dental enamel defects
- Mouth ulcers
- Itchy and blistering skin rash (dermatitis herpetiformis).

Many of the above-mentioned complaints are very common and non specific in the community due to causes other than coeliac disease. However, it is widely accepted now that this condition is under-diagnosed and should be considered more than has been the practice in the past.

At risk groups

- Coeliac disease in the family
- Thyroid disease
- Type 1 diabetes mellitus
- Down Syndrome
- Abnormal liver tests
- Osteoporosis
- High suspicion e.g. family history, anaemia
- Undefined neurological disorder/epilepsy
- Infertility/recurrent miscarriage

Dermatitis Herpetiformis

Dermatitis Herpetiformis (DH), is a rare gluten-sensitive blistering skin condition that is very itchy, even in the presence of only a mild rash. The rash is typically found over the kneecap, on the outer surface of the elbows, on the buttock area, around the ears, the shoulder blades, and in the hairline and eyebrows. It tends to be fairly evenly spread on both sides of the body. The rash typically consists of raised lesions, looking like small insect bites with tiny fluid filled blisters.

Treatment of DH usually includes the use of the antibiotic Dapsone. Research suggests that all people with dermatitis herpetiformis will have villous atrophy on a gluten-containing diet, therefore a gluten-free diet is part of long term treatment.

Diagnosis of coeliac disease

The patient must continue to consume gluten in the diet at the time of investigations as withdrawal of gluten from the diet will cause false-negative serology and histology results.

Screening for coeliac disease by a simple blood test

- Ask for “coeliac serology and IgA” (one serum tube)
- Interpretation:
 - Endomysial antibody (EMA) (IgA) or Transglutaminase antibody, (TTG) (IgA) have high specificity
 - Anti-gliadin antibodies (AGA) (IgG & IgA) are less specific

Beware of false negatives due to:

- IgA deficiency (2% of people with coeliac disease, also transient deficiency common in children)
- Gluten-free diet (can be negative tests after >3 months on GF diet)
- Children <2 years – EMA/TTG may not be positive

Gastroscopy with small bowel biopsy

A biopsy of the distal duodenum is the only definitive diagnostic test for coeliac disease. Biopsy should be performed if the patient's screening antibody blood tests are elevated (tTG IgA or EMA). Anti Gliadin antibodies should be interpreted in the clinical context if tTG is negative. Biopsy should also be performed in at risk groups and/or symptomatic patients with negative serology as false negatives can occur.

Treatment: gluten-free diet

Coeliac disease **is treated by a strict life-long gluten-free diet**. The diet needs to be continued for life, because the sensitivity to gluten does not disappear. Mild symptoms do not mean mild disease – all people with coeliac disease require the same strict gluten free diet, irrespective of severity of symptoms.

A visit to a dietitian is highly recommended for a comprehensive explanation and planning of the gluten-free diet.

An initial diet low in lactose may also assist in minimising gastrointestinal symptoms.

The gluten-free diet

In Australia, a *gluten-free* claim can be made if the food contains no detectable gluten and also does not contain oats or malt. Most package food must declare ingredients derived from a gluten-containing grain (ie: wheat, rye, oats or barley) on the food label's ingredient list. Alcoholic beverages are exempt from this labelling law – it is important to note: *all regular beers contain gluten*.

The following list is intended as a general guide only. People with coeliac disease are encouraged to consult with a dietitian with experience in coeliac disease for individual dietary planning, information about how to read food labels, ensuring adequate nutritional intake, and determining the need for dietary supplements.

Coeliac Disease

Note: In this table, "check" indicates that some brands contain gluten, others are gluten-free.

Gluten-free breads, biscuits, pastas, cereals and other foods are available from supermarkets and health food stores.

FOOD TYPE	FOODS TO AVOID	FOODS TO INCLUDE
Flour	Wheat flour, rye flour, barley flour, wheaten cornflour, triticale flour and oat flour. Wheat varieties including spelt, dinkie and kumut.	Rice flour, pure maize cornflour, cornmeal/polenta, soya flour, potato flour, arrowroot, buckwheat, sorghum, millet, sago, tapioca, lentil flour, baby rice cereal, amaranth, lupin.
Bread & Baked Goods	All bread including wheat, rye, spelt and sourdough bread, biscuits, pastries, buns, muffins, pikelets, crumpets, croissants, breadcrumbs (unless labelled gluten-free).	Rice cakes, corn cakes, some rice crackers (check), gluten-free bread, biscuits, pastries, rolls, breadcrumbs, cakes, and desserts made from allowed flours, gluten-free bread, biscuit, cake mixes.
Cereals	Breakfast cereals containing wheat, oats, semolina, barley, rye, malt extract, wheatbran, oatbran.	Rice, corn and soy breakfast cereals (check), gluten-free muesli, home-made muesli using allowed ingredients.
Pasta & Grains	Wheaten noodles, pasta, spaghetti, vermicelli & instant pasta meals. Triticale, couscous, bulgur, semolina.	Rice, corn, cornmeal, tapioca, buckwheat and gluten-free pastas, rice noodles, rice vermicelli, rice, buckwheat, polenta, quinoa, millet.
Fruit	Commercial thickened fruit pie filling.	Fresh, frozen, canned or dried fruit, fruit juices.
Vegetables	Canned or frozen vegetables in sauce, commercially prepared vegetable and potato salad (unless dressing checked).	Fresh, frozen, dehydrated, or canned vegetables without sauces, vegetable juices.
Meat, Fish & Poultry	Foods prepared or thickened with flour, batter or crumbs, sausages, most processed meats and fish, corned beef, meat pies, frozen dinners.	Fresh, smoked, cured, frozen without sauces, crumbs or batters. Canned meat or fish without sauce or cereal. Ham off the bone (check), bacon, gluten-free sausages.
Dairy Products	Cheese mixtures, pastes and spreads (unless checked), malted milks, ice cream with cone or crumbs, soy drinks containing malt (check).	Block, processed, cream, cottage or ricotta cheese, fresh, UHT, evaporated, powdered or condensed milk, yoghurt (check), buttermilk, fresh or canned cream, plain or flavoured ice cream (check).

FOOD TYPE	FOODS TO AVOID	FOODS TO INCLUDE
Legumes & Nuts	Processed varieties of legumes if thickened (unless checked), textured vegetable protein products.	Dried or fresh beans, nuts and seeds, gluten-free canned baked beans, canned beans or legumes (check).
Takeaway Food	Hamburgers, pizza, souvlaki, sausages, battered food (e.g. fried fish), crumbed food (e.g. crumbed chicken), stuffed roast chickens.	Steamed rice, grilled fish (check no flour), chicken (no stuffing), steak, Asian dishes without flour or soy sauce, steamed vegetables, baked potato, some chips (check).
Snacks	Packet savoury snacks, many sweets and filled chocolates, licorice, many frozen desserts, flavoured potato crisps and corn chips (check).	Plain chocolate, plain popcorn, jelly, plain potato crisps (check), plain corn chips, plain rice crackers, yoghurt.
Beverages	Cereal-based coffee substitutes, malted cocoa beverages (e.g. Milo [®] Ovaltine [®] Aktavite [®]), barley waters, milk flavourings (unless checked), beer, ale, stout and lager, alcoholic soft drinks containing malt extract.	Water, tea, coffee, cocoa, milk, cordials, soft drinks, soda water, mineral water, fruit and vegetable juices. Wine (including sparkling and fortified wines), most spirits and liqueurs, cider and gluten-free beer.
Miscellaneous	Malt vinegar, soy sauce containing wheat, mixed seasonings, yeast extract spreads (e.g. Vegemite [®] , Marmite [®] , Promite [®]), sauces, pickles, relish, chutney, thickened salad dressings, stock cubes, custard powder containing wheat starch, baking powders, chicken salt (check), gravy powder (check).	Tomato sauce, gluten-free soy sauce, most vinegars, sugar, honey, golden syrup, jam, peanut butter, salad dressings not thickened, gluten-free stock cubes, gelatine, gluten-free baking powder and custard powder, herbs, spices, salt, pepper.

Coeliac Disease

Other initial action

Consider performing the following periodically (six monthly) in the first year following diagnosis.

- Coeliac serology
- Full blood count
- Iron, vitamin B12, folic acid test
- Thyroid function
- Calcium, phosphate, vitamin D, zinc, PTH test
- Liver function tests.

Correct any nutritional deficiencies with supplements. A bone mineral density test (DEXA scan) should also be performed in all adults at the time of diagnosis. Family members should be screened for coeliac disease.

Patients should be encouraged to join the Coeliac Society of Australia. It is a policy of the Society that patients have a letter from a medical practitioner stating their requirement for a gluten-free diet. The Coeliac Society of Australia is very helpful, with access to excellent information, including the availability of special gluten-free foods and recipes for people with coeliac disease and their families.

Consider referral to a counsellor if the patient is struggling with adjusting to coeliac disease and the impact on lifestyle.

Beware that some medications (prescribed and over the counter) can contain gluten.

Follow up action

Most of the gastrointestinal symptoms such as abdominal pain, bloating, diarrhoea and constipation should start to gradually subside in the first few weeks of commencing a strict gluten-free diet. If symptoms have not improved it suggests there may still be gluten in the diet (inadvertent or deliberate), or there may be another cause other than coeliac disease for the symptoms. This can include co-existing conditions of malabsorption such as lactose intolerance and fructose malabsorption, or other food intolerances. These should be investigated and referral to dietitian for dietary review is recommended. Routine medical follow ups are required to gauge the activity of coeliac disease after the implementation of the gluten-free diet. Compliance can be

poor in some patients. Repeated blood tests 3-6 monthly and at 12 months can assist in confirming the response to the gluten free diet. Loss of antibodies (EMA/TTG/AGA) indicates dietary compliance, however even in compliant patients, these can take longer than twelve months to return to normal.

A follow up duodenal biopsy approximately 12 months after diagnosis may be required. After 12 months on a strict gluten-free diet, the biopsy may not be normalised, however an improvement from initial small bowel histology is expected.

Continue to monitor weight and measurement of growth in children and adolescents. Follow up on micronutrient deficiencies. Coeliac disease is associated with osteoporosis. Compliance with a gluten-free diet, together with calcium and vitamin D supplements, protects against further bone loss. Refer to an endocrinologist for management of osteoporosis if necessary. Gluten-free dietary compliance may also significantly increase bone mineral density, even in the early stages of treatment.

Long term management

Long-term compliance with the gluten free diet is mandatory. Failure to adhere to a strict gluten-free diet can increase risk of osteoporosis, poor growth, infertility, miscarriage, iron deficiency, twice the overall mortality rate and twice the risk if gastrointestinal tumours. The risks of these are no greater than normal when a gluten-free diet is followed. Better well-being, improved vitality, improved mental function should be motivation to maintain long term dietary compliance. Continued membership of the Coeliac Society should be encouraged.

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This fourth edition has been prepared by the Digestive Health Foundation, of the Gastroenterological Society of Australia. Every care has been taken in its compilation. The booklet is intended to be used as a guide only and not as an authoritative statement of every conceivable step or circumstance which may or could relate to the management of coeliac disease.

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Information leaflets on coeliac disease for patients and the general public are available through the Digestive Health Foundation, 145 Macquarie Street, Sydney, NSW, 2000.

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