Diagnosis and Management of Adult Coeliac Disease

AUTHOR:
Dr Audrey Russell
Dr Eamonn Shanahan
Professor Eamonn Quigley
DISCLAIMER AND WAIVER OF LIABILITY
Whilst every effort has been made by the Quality in Practice Committee to ensure the accuracy of the information and material contained in this document, errors or omissions may occur in the content. This guidance represents the view of the ICGP which was arrived at after careful consideration of the evidence available at time of publication.

This quality of care may be dependent on the appropriate allocation of resources to practices involved in its delivery. Resource allocation by the state is variable depending on geographical location and individual practice circumstances. There are constraints in following the guidelines where the resources are not available to action certain aspects of the guidelines. Therefore individual healthcare professionals will have to decide whether the standard is achievable within their resources particularly for vulnerable patient groups.

The guide does however override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of individual patients in consultation with the patient and/or guardian or carer.

Guidelines are not policy documents. Feedback from local faculty and individual members on ease of implementation of these guidelines is welcomed.

EVIDENCE-BASED MEDICINE
Evidence-based medicine is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients.

In this document you will see that evidence and recommendations are graded according to levels of evidence (Level 1–5) and grades of recommendations (Grades A–C) respectively. This grading system is an adaptation of the revised Oxford Centre 2011 Levels of Evidence.

LEVELS OF EVIDENCE
Level 1: Evidence obtained from systematic review of randomised trials
Level 2: Evidence obtained from at least one randomised trial
Level 3: Evidence obtained from at least one non-randomised controlled cohort/follow-up study
Level 4: Evidence obtained from at least one case-series, case-control or historically controlled study
Level 5: Evidence obtained from mechanism-based reasoning

GRADES OF RECOMMENDATIONS
A Requires at least one randomised controlled trial as part of a body of literature of overall good quality and consistency addressing the specific recommendation. (Evidence levels 1, 2).
B Requires the availability of well-conducted clinical studies but no randomised clinical trials on the topic of recommendation. (Evidence levels 3, 4).
C Requires evidence obtained from expert committee reports or opinions and/or clinical experience of respected authorities. Indicates an absence of directly applicable clinical studies of good quality. (Evidence level 5).

ICGP QUALITY IN PRACTICE COMMITTEE 2015
Dr Paul Armstrong, Dr Patricia Carmody, Dr Harry Comber, Dr Mary Kearney, Dr Niamh Moran, Dr Maria O’Mahony, Dr Margaret O’Riordan, Dr Ben Parmeter, Dr Patrick Redmond, Dr Philip Sheeran Purcell.

CORRESPONDENCE TO
QRGfeedback@icgp.ie
TABLE OF CONTENTS

1. Introduction
   1.1 Background 1
   1.2 Aims of the document 1

2. Subtopics
   2.1 Clinical presentation and complications 2
   2.2 Who to test 3
   2.3 Investigations for diagnosis 5
   2.4 Management at initial diagnosis 6
   2.5 Follow up of patients 7
   2.6 Non coeliac gluten sensitivity 9

3. References 10

4. Appendices
   Appendix 1– Dietary advice 14
   Appendix 2– Diagram of patient follow up 19
1. Introduction

1.1 Background
Coeliac disease is a heightened immune response to ingested gluten and occurs in 0.5–1% of the Irish population. Currently coeliac disease is under diagnosed. It has a strong genetic component with a 10% chance of occurrence in a first degree relative. The only treatment is adherence to a gluten free diet. Studies have shown that dietary compliance is often poor ranging from 45–87%. Long-term health risks with poor compliance include increased risk of malignancy, nutritional deficiencies and reduced bone mineral density. Research has shown that dietary compliance positively correlates with regular follow up and knowledge of the disease.

Currently there are a number of guidelines published on the management of coeliac disease. However, all of these guidelines have been developed outside of the Republic of Ireland. This guideline has been developed for use within the context of the Irish Healthcare system and puts in place a framework for the diagnosis and management of patients with coeliac disease. Structured, comprehensive care for patients with coeliac disease is necessary for long-term follow up. This carries financial and resource implications for GP practices.

1.2 Aims of the document
The aim of this document is to provide Irish general practitioners with an up to date, easy to follow, evidence based guidance document on the diagnosis, initial management and follow up of patients with coeliac disease.
2. Subtopics

2.1 Clinical presentation and complications
Coeliac disease can present at any age and has a wide spectrum of clinical manifestations\(^1\)\(^2\). The majority of symptomatic patients present with gradual onset of gastrointestinal symptoms, however, there are still a number of patients who remain asymptomatic\(^3\)\(^4\).

**Table 1 – Clinical Presentations of Coeliac Disease**

| Gastrointestinal symptoms due to malabsorption | Diarrhoea  
|                                               | Steatorrhoea  
|                                               | Abdominal cramps  
|                                               | Abdominal bloating and distension  
|                                               | Borborygmi  
|                                               | Excessive flatulence  
|                                               | Weight loss but patients may also be overweight or obese  
| Gastrointestinal Symptoms due to dysmotility | Heartburn  
|                                               | Regurgitation  
|                                               | Dysphagia  
|                                               | Vomiting  
|                                               | Epigastric Pain  
|                                               | Constipation  
| Haematological\(^5\) | Iron/B12/Folate deficiency  
|                                               | Thrombocytopenia  
|                                               | Thrombocytosis  
|                                               | Thromboembolism  
|                                               | Leukopenia/neutropenia  
|                                               | Vitamin K malabsorption leading to coagulopathy  
|                                               | Hyposplenism  
|                                               | Ig A deficiency  
|                                               | Lymphoma  
| Hepatological | Abnormal LFTs – AST/ALT  
| Skin | Dermatitis Herpetiformis  
| | Alopecia  
| Oral\(^6\) | Aphthous mouth ulcers  
| | Glossodynia  
| | Defective tooth enamel  
| Rheumatological | Arthralgia  
| Bone | Osteopenia  
| | Osteoporosis  
| | Osteomalacia  
| Gynaecological\(^7\) | Late menarche  
| | Early menopause  
| | Infertility  
| | Recurrent miscarriage  
| Neurological\(^8\) | Ataxia  
| | Partial seizures  
| | Migraine  
| | Peripheral neuropathy  
| Psychological | Depression  
| | Chronic fatigue  
| | ‘Muzzy head’  

Gluten free diet is the only available treatment and non adherence can lead to complications of the disease such as:

<table>
<thead>
<tr>
<th>Table 2 – Complications of Coeliac Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osteopenia</td>
</tr>
<tr>
<td>Osteoporosis</td>
</tr>
<tr>
<td>Malignancy: oropharyngeal squamous cell carcinoma, Enteropathy-associated T-cell lymphoma, Adenocarcinoma of jejunum</td>
</tr>
<tr>
<td>Iron Deficiency Anaemia</td>
</tr>
<tr>
<td>Splenic Atrophy</td>
</tr>
<tr>
<td>Infertility</td>
</tr>
<tr>
<td>Recurrent Abortion</td>
</tr>
<tr>
<td>Ulcerative Jejunoileitis</td>
</tr>
<tr>
<td>Neurological disorders</td>
</tr>
<tr>
<td>Dermatitis Herpetiformis</td>
</tr>
</tbody>
</table>

2.2 Who to test

Patients with symptoms, signs or laboratory evidence suggestive of malabsorption such as chronic diarrhoea or steatorrhea should be tested for coeliac disease (9) Level 1 Grade A

Coeliac disease results in injury to the lining of the small intestine causing villous atrophy with subsequent loss of mucosal surface area and impaired absorption. The resultant inflammation leads to excess fluid secretion causing diarrhoea with abdominal pain and bloating. Coeliac disease is one of the most common causes of malabsorption in the Western world.

Patients with a first degree relative with coeliac disease should be tested if they have signs or symptoms consistent with coeliac disease (9) Level 3 Grade B

The frequency of coeliac disease is substantially increased in patients with a positive family history. A large community based study in the USA in 2003 found that the prevalence of coeliac disease was:

- At risk, first-degree relatives: 1 in 10
- At risk, second-degree relatives: 1 in 39
- At risk, symptomatic patients: 1 in 56
- Groups not at risk: 1 in 100

Newly diagnosed patients with coeliac disease should be informed of the risks and familial screening should be advised.
Patients with a first degree relative with coeliac disease should be considered for testing even if they are asymptomatic\(^{(9)}\) Level 3 Grade B

Even if first degree relatives are asymptomatic it is reasonable to consider screening these patients. Studies in patients who have been diagnosed on the basis of screening report improvements in quality of life and improved health\(^{(12)}\) with adherence to a gluten free diet.

Patients with Type 1 DM should be tested for coeliac disease if there are any digestive symptoms\(^{(9)}\) Level 3 Grade C

Coeliac disease is substantially more common in patients with type 1 DM than in the general population. The prevalence rates of coeliac disease in children with type 1 diabetes are estimated to be between 1.7 and 12%.\(^{(13)}\) Screening studies have shown the prevalence among adults with type 1 diabetes to be similar, between 1.3 and 6.4%, which is 10 times the prevalence in the general population.\(^{(14)}\)

Population screening is currently not recommended for coeliac disease\(^{(6)}\) Level 3 Grade B

The current view is that there is not enough evidence to support a decision to carry out mass screening of the general population. Despite the fact that coeliac disease fulfils 5 of the WHO criteria for a screening test this still remains controversial due to cost effectiveness issues\(^{(15)}\) and potential harm\(^{(16)}\).

Active case finding may increase detection of those with coeliac disease who are attending a GP surgery\(^{(17)}\). 5% of patients with irritable bowel syndrome have coeliac disease. Symptomatic patients or those with closely related conditions should be considered for testing.

Table 3 – Conditions Associated with an increase prevalence of coeliac disease\(^{(9)}\)\(^{(15)}\)\(^{(18)}\)

<table>
<thead>
<tr>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1 Diabetes Mellitus</td>
</tr>
<tr>
<td>Autoimmune thyroid Disease</td>
</tr>
<tr>
<td>Metabolic bone disease/early osteoporosis</td>
</tr>
<tr>
<td>Irritable bowel disease</td>
</tr>
<tr>
<td>Primary biliary cirrhosis</td>
</tr>
<tr>
<td>Autoimmune hepatitis</td>
</tr>
<tr>
<td>Sjogren’s syndrome</td>
</tr>
<tr>
<td>Addison’s disease</td>
</tr>
<tr>
<td>Down syndrome</td>
</tr>
<tr>
<td>Turner syndrome</td>
</tr>
<tr>
<td>Selective Ig A deficiency</td>
</tr>
<tr>
<td>Abnormal AST/ALT</td>
</tr>
</tbody>
</table>
2.3 Investigations for diagnosis

Initial diagnosis is by a single blood test for Immunoglobulin A (IgA) anti tissue transglutaminase\(^{(9)}\) Level 1 Grade B

The IgA tTGA is relatively sensitive and specific for diagnosing coeliac disease making it the preferred test for detection. Many studies demonstrate a specificity of >95% and a sensitivity in the range of 90–96%.\(^{(2)}\)\(^{(19)}\)\(^{(20)}\)

Measurement of IgA antiendomysial antibodies should be used as a confirmatory test in the case of elevated anti tTG antibodies\(^{(21)}\) Level 5 Grade C

Measurement of anti EMA is nearly 100% specific for active coeliac disease and has >90% sensitivity\(^{(2)}\). It should be used as a confirmatory test when anti tTG is borderline or to rule out false positive results. A false positive anti TTG can occur in other autoimmune conditions such as autoimmune hepatitis\(^{(22)}\) and type 1 Diabetes mellitus\(^{(23)}\).

If IgA deficiency is suspected then Ig A level should be checked and where a deficiency exists then IgG based tests should be performed. Level 4 Grade C

Ig A deficiency is more common in coeliac disease than in the general population and occurs in 2-3% of patients with coeliac disease. Measurement of serum IgA level is an appropriate next step if IgA based testing is negative and there is a strong clinical suspicion of coeliac disease. Figures for Ig G tTG sensitivity and specificity vary widely while Ig G DGP (deaminated gliadin peptide) has a sensitivity and specificity of >90%.\(^{(24)}\) If an IgA deficiency exists then IgG based tTG should be requested from the laboratory.

All diagnostic serological testing should be performed while the patient is on a gluten diet.\(^{(9)}\)\(^{(21)}\) Level 4 Grade C

False negative test results will occur if testing is performed on a gluten free diet.

HLA-DQ2/DQ8 testing should not be done routinely in the diagnosis of coeliac disease\(^{(2)}\)\(^{(9)}\) Level 2 Grade B

The addition of HLA-DQ typing to serological tests does not improve the accuracy of blood test alone for diagnosis\(^{(25)}\). In cases where there are still doubts regarding the diagnosis after histology or in some other specific clinical situations then HLA-DQ2/DQ8 genotyping should be considered\(^{(9)}\). Such testing has a high negative predictive value meaning those who test negative are very unlikely to develop the disease.\(^{(26)}\)

The confirmation of coeliac disease is based on upper GI endoscopy with multiple biopsies of the duodenum\(^{(9)}\) Level 3 Grade B

A positive coeliac disease specific serology in patients with villous atrophy on endoscopy confirms the diagnosis of coeliac disease\(^{(27)}\).
2.4 Management at initial diagnosis

Patients with Coeliac disease should adhere to a gluten free diet for life\(^{(6)}\) Level 2 Grade A

(See Appendix 1)

There is currently no other treatment available for coeliac disease and so patients must exercise strict avoidance of all products containing gluten including wheat, barley and rye. It is difficult to avoid gluten completely due to gluten contamination of food.

It is unclear whether patients with coeliac disease should avoid oats. The majority of patients can tolerate a moderate amount of raw oats but side effects can occur in some patients. For adults up to 70g/day is safe\(^{(48)}\). There is still need for caution when introducing oats due to the possibility that commercial oats may be contaminated with gluten.

A gluten free diet will lead to resolution of symptoms and repair of villous damage over time.

Other benefits of a gluten free diet:

- Risk of malignancies is reduced (small bowel adenocarcinoma, B cell and T cell lymphoma)\(^{(29)}\)
- Improved bone mineral density and reduced fractures\(^{(30)}\)
- Reduces risk of infertility, spontaneous abortions, preterm deliveries and low birth weight infants to that of the general population\(^{(31)}\)\(^{(32)}\)

Patients with coeliac disease should be referred to a dietician\(^{(6,33)}\) Level 4 Grade C

Improved patient knowledge of the disease is associated with better compliance with a gluten free diet\(^{(34)}\). Many GPs do not have adequate knowledge or the required time to evaluate and educate patients regarding their diet. Dieticians can perform the initial assessment and advise on gluten free diet as well as conduct long-term follow up for ongoing compliance.

People with newly diagnosed coeliac disease should be tested for B12/folate/iron deficiency. Vitamin D testing should also be considered\(^{(6)}\) Level 3 Grade B

Coeliac disease is associated with iron, B12, folate and other vitamin deficiencies\(^{(35,36)}\). It is thought that low Vitamin D levels are related to low bone mineral density.

All patients should have a DXA scan at presentation. Females with normal bone mineral density at presentation should be reassessed after the menopause and males at age 55 years\(^{(37)}\). Level 2 Grade A

Osteopenia and osteoporosis have been reported in almost half of non treated coeliac disease patients\(^{(36)}\). Many current guidelines recommend a DXA scan at diagnosis to reverse early osteopenia and also because the latent period to diagnosis may be long in some cases signifying a longer period of calcium malabsorption\(^{(39)}\). Despite this, some controversy remains as to the cost benefit of routinely performing DXA scan at diagnosis\(^{(58)}\).
Because coeliac disease is an independent risk factor for osteoporosis then peri-menopausal women and men over 55 years are at increased risk despite treatment with a gluten free diet.

**All individuals with coeliac disease should be advised to consume 1500mg calcium per day ideally from dietary sources. Calcium supplementation should only be used if dietary intake is inadequate. Patients should be advised regarding usual care conservative measures to reduce osteoporosis risk** (37) **Level 5 Grade C**

**If calcium intake is adequate then Vitamin D replacement is not routinely needed unless in special circumstances such as the elderly or housebound** (39) **Level 5 Grade C**

### 2.5 Follow up of patients

*(See diagram – Appendix 2)*

**Patients with coeliac disease should have an annual review** (37). **Level 3 Grade B**

Most of the currently published guidelines recommend an annual follow up review of patients (39).

**At the annual review patients should be assessed for BMI, symptomatology, compliance with diet and complications of their disease** (39). **Level 4 Grade C**

**If there are concerns regarding compliance Coeliac serology should be taken** (37). **Level 4 Grade C**

Monitoring of adherence to diet should be based on history and IgA TTG or IgA DGP (deaminated gliadin peptide) antibodies. The TTG take longer to normalise on a GFD although they have been suggested to better correlate with the degree of villous atrophy (41).

**Patients should be investigated for micronutrient deficiencies if diet is poor and any previously abnormal blood tests should be repeated** (39). **Level 5 Grade C**

**Patients with coeliac disease should receive vaccination against encapsulated organisms** (37). **Level 4 Grade C**

Coeliac disease is associated with splenic atrophy and is sufficiently severe to cause peripheral blood change in approximately 25% patients (39). There is no easily applied technique that reliably identifies those with hyposplenism. Nor is there a defined degree of hyposplenism that can be used to decide when a person is at increased risk of sepsis. As overwhelming sepsis can occur rapidly, it is advisable that the following vaccines should be considered for those with coeliac disease - PCV13, PPV, Hib, Men ACWY, Men B and annual influenza vaccines (40). Patients should be educated regarding the infectious complications associated with hyposplenism. Patients who show signs of overt splenic atrophy such as acanthocytes, Howell Jolly bodies or target cells on blood film should be treated in a similar fashion to asplenic patients (5).
If symptoms persist after 6 months on a gluten free diet patients should be referred to a dietician with expertise in coeliac disease to assess dietary compliance.

*(Level 5 Grade C)*

If symptoms persist despite a gluten free diet other conditions should be considered:

- Lactose intolerance
- Pancreatic insufficiency
- Wheat/malt intolerance
- Lymphoma
- Microscopic colitis
- Bacterial overgrowth
- Irritable bowel syndrome
- Refractory coeliac disease

Lactose Intolerance is associated with coeliac disease and can be a presenting feature or a late complication of non-compliance with a gluten free diet. Villous atrophy and the subsequent damage to the intestinal brush border causes a secondary disaccharidase deficiency leading to lactose intolerance. Patients present with bloating, stomach pain and/or cramps, diarrhoea, flatulence and nausea. Referral to a dietician is necessary both for diagnosis and ongoing follow up as these patients are at high risk of calcium deficiency. Lactose intolerance improves with adherence to a gluten free diet.

There is a clear association between coeliac disease and intestinal non-Hodgkins lymphoma. This lymphoma is known as Enteropathy- type T cell lymphoma. These are rare lymphomas and account for <1% of all non Hodgkins lymphomas. Current epidemiological studies report the relative risk of developing NHL in the range 3–6. The risk of adenocarcinoma of the small intestine is also increased in patients with coeliac disease. However, the absolute risk of this cancer is still quite low given its rarity. At present routine screening for malignancy in patients with coeliac disease cannot be justified.

*Referral to a gastroenterologist for repeat endoscopy or further investigation should be considered if there is:*?

- Poor response to gluten free diet
- Weight loss on a gluten free diet
- Blood in stools
- Onset of unexplained abdominal pain
- Abnormalities in blood results

*(Level 5 grade C)*

There is currently no consensus on follow up endoscopy for surveillance in asymptomatic patients.
2.6 Non coeliac gluten sensitivity

Non Coeliac Gluten Sensitivity (NCGS) is emerging as a more frequently encountered condition in clinical practice. It was recognised as far back as 30 years ago (47) but it is only in recent years that the increasing prevalence of this condition has been recognised. It is thought that the prevalence is much higher than that of coeliac disease with one US study documenting a prevalence of 6% (48).

Gluten sensitivity is defined as a reaction to gluten in which allergic and autoimmune mechanisms have been excluded. Patients have negative coeliac serology and normal duodenal mucosa but have resolution of symptoms on adherence to a gluten free diet.

NCGS is largely a diagnosis of exclusion. After adherence to a gluten free diet with resolution of symptoms a gluten challenge may be performed to make a definitive diagnosis (49).

The aetiology of this condition is currently unknown and further study is needed to elucidate any long term complications that may result from this condition.
3. References


37. Primary Care Society for Gastroenterology. The Management of Adults with Coeliac Disease in Primary Care. London: Primary Care Society for Gastroenterology; May 2006.


4. Appendices

Appendix 1 – Dietary advice

Adapted with permission from Patient website, http://www.patient.co.uk/health/coeliac-disease-diet-sheet ©2015, Egton Medical Information Systems Limited. All rights reserved.

Since September 2012 gluten free foods are no longer available on the general medical scheme or drugs payment scheme. The only financial support for those with coeliac disease is tax reimbursement at the end of the tax year by filling in a Med 1 Form.

Gluten free foods are available in all major supermarkets and healthfood shops in Ireland.

Reading labels and identifying gluten in foods

By law, if a food contains gluten it must be listed on the label. You may see an allergen advice box saying ‘contains gluten’. Many processed foods contain gluten, as it is used as an additive or foods become contaminated during the production process. Therefore, it is important to check the labels when out shopping.

Avoid products that contain any of the following:

- Wheat
- Barley
- Rye
- Spelt
- Oats (contaminated oats)
- Malt and malted barley (found in breakfast cereals, vinegar, sauces, pickles and confectionary)

Not all foods that are gluten-free will mention this on the label, so always check to see whether it contains gluten. The crossed grain symbol is used by many manufacturers to highlight that a product is gluten-free. Some manufacturers may use their own symbol. Other products may simply state it on the packaging. For example, you may see:

- Gluten-free
- Suitable for coeliacs
- Free from gluten

Foods that contain gluten

Checking the labels is useful when identifying foods that contain gluten. However, it is helpful to have a general idea of what foods to avoid and what foods are allowed.
<table>
<thead>
<tr>
<th>FOOD GROUP</th>
<th>FOODS ALLOWED</th>
<th>FOODS TO AVOID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereals and flour</td>
<td>Cornflour, polenta, potato, cassava, bean and lentil flour, split pea flour, millet, quinoa, buckwheat, rice (all types), maize, arrowroot, sorghum, teff, amaranth. Breakfast cereals allowed are: some branded and equivalent supermarket brands of corn or rice based cereals e.g. cornflakes, rice snaps, honey nut cornflakes. (Always check the label as some varieties may not be gluten-free.)</td>
<td>Wheat, rye, barley, bulgar wheat, spelt, durum wheat, triticale, khorasan wheat (Kamut®), wheat flour, wheat starch, wheat bran, oat bran, semolina, couscous, malt and malted barley, bale. Avoid all wheat-based breakfast cereals and muesli.</td>
</tr>
<tr>
<td>Breads, cakes and biscuits</td>
<td>Gluten-free products specially manufactured (supermarkets have specialised ranges): eg, breads, biscuits, pizza bases, flour mixes, cakes. Products made from cereals or flours from the allowed list. Products made without flour (check the label for other gluten sources) or with gluten-free flour.</td>
<td>All bread and bread products- e.g., croissants, bagels, pitta bread, chapatti, naan bread, crispbreads, crackers, matzos, muffins, scones, croutons, pancakes, pizza, yorkshire puddings, wafers and ice cream cones, pastries and pies.</td>
</tr>
<tr>
<td>Pasta, rice and noodles</td>
<td>All types of fresh rice. Rice noodles (check the label). Gluten-free pasta, corn pasta.</td>
<td>Any fresh, dried or tinned pasta, and noodles. Processed rice found in salads or ready meals.</td>
</tr>
<tr>
<td>Potatoes</td>
<td>All fresh potatoes. Some crisps (check the label). Home-made chips made from fresh potatoes.</td>
<td>Processed potatoes - e.g., potato salad, waffles, some chips, instant mash, crisps or potato snacks</td>
</tr>
<tr>
<td>Meat, fish and poultry</td>
<td>All fresh meat, fish and poultry. Tinned fish- e.g., tuna/salmon. Smoked, kippered or dried fish. Gluten-free sausages. Gluten-free fish fingers.</td>
<td>Some processed meats or products coated in batter or breadcrumbs. Pies, puddings, suet, stuffing, fish fingers, chicken nuggets, fishcakes, sausages, burgers, haggis, taramasalata, rissoles, Quorn®.</td>
</tr>
<tr>
<td>Milk, dairy, eggs and dairy alternatives</td>
<td>Natural plain cheese, fresh milk, cream, condensed milk, yoghurts, fromage frais, soya milk, goat’s milk, coconut milk, almond milk, rice milk, dried skimmed milk powder, eggs.</td>
<td>Check the labels of processed cheese, low-fat cheese spreads, artificial cream and yoghurts. Yoghurts containing muesli or cereals. Scotch eggs.</td>
</tr>
</tbody>
</table>
Fats and oils

| Vegetable oil, olive oil, butter, lard, reduced fat/low-fat spreads (check the labels). | Suet, some brands of low-fat spreads. |

Fruit, vegetables, nuts and pulses

| Fresh, dried or tinned fruit, vegetables, nuts, beans, pulses and seeds. Check labels of some baked bean brands. | Processed fruit and vegetables that are coated in breadcrumbs/or in sauces. Some brands of nuts |

Desserts and puddings

| Meringues, sorbets, ice creams, jelly, mousses, custard powders, milk puddings made with gluten-free ingredients. Always check labels of these food products. | Trifles, sponge puddings, semolina, tarts, and puddings made from flours in the 'foods to avoid' list. |

Snack foods

| Prawn crackers, rice cakes, poppadoms, home-made popcorn, gluten free crisp breads and crackers. | Pretzels, Bombay mix, snacks made from flours in the 'foods to avoid' list. |

Confectionary, sweets and preserves

| Sugar, golden syrup, icingsugar, treacle, molasses, jam, honey, marmalade, peanut butter, boiled sweets and jellies. | Some chocolate bars, toffees and sweets (always check labels). |

Soups, sauces and seasonings

| Fresh salt and pepper, herbs, spices, vinegars (e.g., rice wine, balsamic), homemade fresh soups, gluten-free soups, sauces and seasonings. | Malt vinegar, packet soups and sauces, gravies, soy sauce, ketchups, mayonnaise, salad dressings, pickles and chutneys, stuffing and stuffing mixes, stock cubes, bouillon, Worcestershire sauce (some brands may be gluten-free). |

Drinks and alcohol

| Tea, coffee, fizzy drinks, squashes, cordials, fresh juices, milk, some cocoa powders, cider, spirits, wines, liqueurs, sherry, port. | Barley drinks or squashes, cloudy fizzy drinks, melted milk drinks, instant vending machine drinks, some milkshakes and sports drinks, beer, lager, stout, ale. |

Other

| Bicarbonate of soda, fresh and dried yeast, marzipan, yeast extracts, tofu, food colourings and flavourings, gelatine. | Baking powder, some medicines and vitamins. |

**Foods naturally free from gluten**

If foods are being excluded from the diet, it is important to ensure you are still having a balanced diet to get all the nutrients you need. Foods naturally free from gluten include fruit, vegetables, meat, fish, rice, potatoes, beans, pulses, nuts, eggs, milk and dairy. Sticking to a gluten-free diet can be difficult, so including plenty of these in the diet will make it easier.
Gluten-free alternatives

Living with a diet free from gluten can be difficult, and so there are products available to help keep the diet varied and easier to maintain. These products will also help to provide you with the energy and nutrients you need.

There is a wide range of gluten-free products available. It’s likely that you’ll find gluten-free alternatives of most foods. Products available include the basics such as gluten-free bread, pasta, flour, plain biscuits and cakes, crackers, crispbreads and pizza bases. Luxury products include biscuits, cakes, muesli, muffins, stuffing mix, confectionary, cereal bars, fish fingers, chicken nuggets and other convenience foods.

Many of the supermarket chains have gluten-free ranges. Some companies that provide gluten-free products include:

- Free From
- Juvela
- Glutafin
- Genius
- Ener-G
- DS-gluten free
- Warburtons
- Proceli
- Barkat

Some companies offer free starter packs, so you can try a range of products and find ones that you prefer. Some gluten-free products contain Codex wheat starch, which improves the taste and texture of these items. This contains a very low level of gluten, which has been shown to be tolerated by most of those with coeliac disease. However, a small percentage of people who are highly sensitive to gluten may find that symptoms occur and so choosing products without Codex wheat starch may be more appropriate.

Oats

Oats can be a useful addition to the diet, as they are a valuable source of fibre and improve variety in the diet. This makes it easier to comply with a gluten-free diet. However, oats should be excluded for the first six months after diagnosis. This allows your body to become used to a gluten-free diet. Oats can then be gradually introduced but should be done with the assistance of a dietician in case you react to pure oats.

Overall balance of the diet

Once you have successfully achieved a gluten-free diet, it is important to consider other aspects of your diet to keep you healthy. A diet in line with the ‘eatwell plate’
will provide you with all the nutrients and energy you need. After commencing a gluten-free diet, the lining of the intestine will repair, restoring normal absorption of nutrients. This means that deficiencies such as iron-deficiency anaemia should begin to resolve and improve.

**Calcium**

Those with coeliac disease are more at risk of weak bones (osteoporosis). This is partly due to having poor absorption of calcium when gluten has been included in the diet. Those with coeliac disease have a higher requirement for calcium. An intake of 1,000mg–1,500mg each day is recommended. Sources of calcium include:

<table>
<thead>
<tr>
<th>Source</th>
<th>calcium (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass of milk/soya milk enriched with calcium</td>
<td>245</td>
</tr>
<tr>
<td>Cheese (30g)</td>
<td>216</td>
</tr>
<tr>
<td>Yoghurt/soya yoghurt (one pot)</td>
<td>225</td>
</tr>
<tr>
<td>Gluten-free bread fortified with calcium</td>
<td>300</td>
</tr>
<tr>
<td>Sardines with bones (100g)</td>
<td>460</td>
</tr>
<tr>
<td>Tofu (100g)</td>
<td>510</td>
</tr>
<tr>
<td>Dried figs (100g)</td>
<td>250</td>
</tr>
<tr>
<td>Broccoli</td>
<td>50</td>
</tr>
<tr>
<td>Baked beans (half a tin)</td>
<td>100</td>
</tr>
</tbody>
</table>

You may need a supplement if you are unable to meet your calcium requirements through diet. Additionally, vitamin D is necessary to help absorb calcium from food. We mainly get our vitamin D from sunlight, as it is not in many foods. Ask your GP or dietician whether you need calcium or vitamin D supplements.

**Iron**

It can be helpful to include iron-rich foods in your diet to help you achieve normal iron levels. Animal sources are better absorbed by the body, but iron is found in plant sources too. Vitamin C can help to absorb iron, so you may want to have a glass of orange juice with meals, eat a piece of fruit after a meal or include fruit and vegetables at mealtimes.

Iron is found in:
- Red meat such as beef or lamb
- Other meat including chicken and turkey
- Fish and shellfish - e.g., sardines, mackerel, salmon, prawns, mussels
- Liver, kidney, pâté
- Beans and pulses - e.g., lentils, chickpeas and baked beans
- Green leafy vegetables - e.g., broccoli, cabbage, spinach
- Nuts and seeds - e.g., Brazil nuts, almonds, peanut butter
- Dried fruit - e.g., raisins, apricots and dates

In summary, the gluten-free diet is the only treatment for coeliac disease. Eliminating gluten completely from your diet for life should help to improve any damage that has occurred to the lining of the intestines. This will improve symptoms and your ability to absorb nutrients from food.
Appendix 2

Annual Follow Up Appointment

1. Check BMI
2. Ask re symptoms
3. Check either anti TTG or anti DGP for compliance if appropriate
4. Ask regarding any red flags
   a. Persistent symptoms
   b. Blood pr
   c. Weight loss
5. Check bone health -do they need a DXA scan? Is calcium intake adequate? Advise re alcohol, smoking and exercise
6. Check Hb, ferritin, B12, folate if indicated
7. Consider immunisation against PCV13, PPV, Hib, Men ACWY, Men B and influenza
8. Advise re coeliac society membership and tax reimbursement on gluten free foods

- Well – review in a year
- Symptomatic/dietary questions/compliance issues – refer to a dietician
- Persistent symptoms despite dietician review – consider alternative diagnosis and refer to gastroenterology
- Red flag symptoms – refer to gastroenterology