

GUIDELINE FOR THE DIAGNOSIS AND MANAGEMENT OF COELIAC DISEASE IN CHILDREN

Coeliac Working Group of BSPGHAN

This guideline is based on the NASPGHAN Celiac Guideline of 2005 (See References), by kind permission www.naspghan.org and the original guideline from the Welsh Gastroenterology MCN, to whom we are grateful for allowing us to use their template document. The 2006 BSG Coeliac Guideline for Adult Coeliac Disease will be available soon on the BSG website www.bsg.org.uk

'Coeliac Disease (CD) is a reversible immune-mediated enteropathy caused by a permanent sensitivity to gluten in wheat, and related proteins in barley and rye, in genetically susceptible individuals'.

1. WHO TO TEST

The prevalence of coeliac disease is estimated to be 1:100 in the UK. Universal population screening is not currently advised. However there should be low threshold for investigating both symptomatic children and those with associated conditions.

A. Symptomatic children (GI Tract and non-GI Tract symptoms)

- Persistent diarrhoea
- Faltering growth, idiopathic short stature
- Abdominal pain, vomiting, constipation, abdominal distension
- Dermatitis herpetiformis
- Dental enamel defects
- Osteoporosis / pathological fractures
- Delayed menarche
- Unexplained anaemia or Iron deficient anaemia unresponsive to treatment
- Recurrent aphthous stomatitis
- Unexplained raised transaminases
- Lassitude / weakness
- Irritable bowel syndrome

Also consider: JCA, epilepsy, with associated intracranial calcification, unexplained neurological problems (palsies, neuropathies, migraine)

B. Asymptomatic but with associated condition (estimated lifetime prevalence)

- Type I diabetes ($\geq 8\%$)
- Selective IgA deficiency (1.7 - 7.7%)
- Down's (5-12%), Williams' (8.2%) and Turner's (4.1 - 8.1%) Syndrome
- Autoimmune thyroiditis (~15%)
- Relatives of coeliac patient:
 - 1st degree relative (~10%)
 - HLA matched sibling (~30 - 40%)
 - Monozygotic twin (~70%)

If screening parents / patients, families should be counselled pre-testing as to relative risks of untreated coeliac disease and need for biopsy and GFD should blood tests come back positive.

Ensure adequate gluten intake pre-testing and consult dietician if formal assessment required (see section 3)

If possible, test when venesection done for other reasons (annual review etc).

2. BLOOD ANTIBODY TESTING TO SCREEN FOR COELIAC DISEASE

Total IgA and IgA anti-tTG are screening tests. All positive results will require biopsy confirmation.

- In IgA deficiency: IgG anti-EmA or IgG anti-tTG may help to decide on need for biopsy. However neither IgG anti-tTG nor IgG anti-EmA are as sensitive or specific as IgA antibodies and biopsy may still be clinically indicated if these tests are negative. Remember, false positive tests can occur in other bowel diseases (esp. Crohn's).
- Other blood tests to consider: FBC, U and Es, creatinine, LFTs, Total Protein, glucose, Coagulation (PT), IgA, IgG, IgM, ferritin, folate, B12, thyroid function tests.
- If serology negative but clinical suspicion persists, perform endoscopy and duodenal biopsies (e.g. chronic diarrhoea, faltering growth, IgA deficiency, positive family history) – to identify seronegative coeliac disease and other mucosal disorders.
- In asymptomatic children with associated condition and negative serology, consider HLA typing. If HLA DQ2 / DQ8 positive: continue surveillance (optimum frequency for repeat blood testing unclear) and perform endoscopy if symptomatic. If HLA DQ2/DQ8 negative: development of CD highly unlikely (see refs below). Discontinue regular antibody screening but clinical review if suggestive symptoms develop.

3. CONFIRMATION OF THE DIAGNOSIS

Requires biopsy in all cases.

Therapeutic trials of Gluten Free Diet (GFD) are NOT indicated if coeliac disease is suspected.

Children should not be started on a GFD on the basis of an antibody test.

- At endoscopy, take 4 biopsies from D2 or lower (as patchy changes may be present)
- Ensure adequate gluten intake prior to testing with advice from dietician if necessary. Typically, 10-15g gluten per day is required for adequate intake in most children (eg. 2-3g gluten are contained in one medium bread slice, one Weetabix® or Shredded Wheat®, two rusks or digestives and 4 tablespoons of cooked pasta).

3 months gluten challenge prior to testing is advised if asymptomatic with option to expedite blood testing if patient develops symptoms. Biopsy when serology positive or significant symptoms have developed.

Histology

The Marsh grading system is now accepted as the Standard method of analysis:

- Villous atrophy (Marsh type 3) **characteristic**
- Infiltrative changes with crypt hyperplasia (Marsh type 2) **compatible**;
 - diagnosis strengthened by positive serology
 - if serology negative, reconsider CD after exclusion of other disorders
- Infiltrative changes only (Marsh type 1) are **non-specific for CD but**
 - diagnosis strengthened by positive serology
- If diagnosis uncertain: negative serology and mild infiltrative changes, options are
 - consider HLA type (DQ2 and DQ8)
 - consider repeat biopsy after further challenge with increased gluten intake
 - consider repeat serology and biopsy after trial of GFD
- Document basis for diagnosis in case notes (appx 2)
- Document response to GFD in case notes at follow up

4. WHO TO TREAT WITH GFD

A. All symptomatic children with characteristic abnormal histology

Benefits of GFD

- Resolution of symptoms
- Reversed bone demineralisation (if pre-pubertal)
- Decreased rate of delayed puberty, menstrual problems, sub-fertility, spontaneous abortions and LBW babies
- Decreased rate of some intestinal cancers to normal population levels
- Prevention of onset of other autoimmune conditions unclear

B. Asymptomatic children with a condition associated with CD and characteristic histology

Benefits of GFD

- Unclear whether diabetes control improves
- No studies on long-term outcomes of GFD in children with associated conditions

5. HOW TO TREAT

Start GFD after diagnosis confirmed by histology. GFD will be required lifelong and needs early and regular dietetic support.

- Sensitivity to gluten, and acknowledgment of, symptoms after ingestion is variable between patients . Small amounts of gluten ingested regularly can cause mucosal changes even if patient feels asymptomatic. Current food standards in UK include <200 ppm as 'Gluten-free'. Some feel that this should be lowered to 20ppm. Better food labelling would allow more patient / parent choice.

- In theory, Oats are permissible if guaranteed gluten free. 'Gluten-free' Oats are often expensive and most UK sourced oats are contaminated due to milling issues, crop rotational methods and 'allowed' contamination).
- Ideally establish patient on strict GFD excluding Oats and consider reintroduction when baseline of wellness achieved, often after at least year on GFD. Monitor carefully for signs or symptoms.
- Normalisation of tTG prior to commencing oats, and continued low titres after reintroduction may provide further reassurance.
- Most coeliac patients tolerate wheat starch and malt extract although a few may be very sensitive and will need to exclude them. Currently the < 200 ppm rule allows certain products. With newer methodology for assessing Gluten levels in commercial items, those currently allowed may not be in future. Patients sensitive even at low levels will need to avoid products containing wheat starch and malt.
- Lactose-free diet is rarely needed, although in some, temporary lactose intolerance can co-exist and may need specific dietetic advice
- Ensure easy access to paediatric dietician(s)
- Advise to join Coeliac UK: website www.coeliac.co.uk

PO Box 220
 High Wycombe
 Bucks HP11 2HY
 Tel: 01494 437278 / Help line: 0870 444 8804

6. HOW TO MONITOR

The majority of patients/parents are well motivated and access good levels of support from Coeliac UK. Ongoing monitoring by experience paediatric dietitian and gastroenterologist is still necessary

- Post diagnosis Clinical assessment including dietician (symptoms, growth, physical examination, adherence to GFD) and anti-tTG antibodies 6 to 12 months after starting GFD
- Annual clinic assessment (as above), including anti-tTG antibodies annually or less often
- Urgent clinical review if symptoms reoccur
- Repeat anti-tTG antibodies may help to identify dietary non-adherence
- Ensure transition to "adult" team when appropriate

7. GLUTEN CHALLENGE TO CONFIRM DIAGNOSIS WHEN INITIAL DIAGNOSIS UNCERTAIN IN CHILDREN AGE < 2 YEARS

Routine re-challenge of this age group is not required if diagnosis is secure

3 months gluten challenge prior to testing is advised if asymptomatic with option to expedite blood testing when patient develops symptoms. Biopsy when serology positive or symptoms are difficult to tolerate.

If considering Gluten challenge

- Perform at age 6 - 7 years or after pubertal growth over
- Either add gluten powder 10-15 g / day to diet (NB. practically, gluten powder unpalatable and difficult to source) or normalise diet depending on patients/parent preference
- Monitor symptoms and serum anti-tTG antibodies, repeating biopsy if serology becomes positive. Patients require follow up for at least 2 years post challenge with serology at 6 monthly intervals if remaining symptom free. Consider biopsy at 2 years even if asymptomatic

8. PNEUMOCOCCAL VACCINE

This is currently recommended for patients with coeliac disease (DoH NICE guidelines).

Ahead of a 'universal' vaccination programme, Currently NO data and literature support the specific routine administration to Coeliac children unless immunodeficiencies exist (even sIgA deficient patients seem no more at risk of pneumococcal disease).

Current Working Group recommendation is for pneumococcal vaccination NOT to be routinely given unless associated other immune deficiency although this issue should be discussed with patient/parent as it may be raised within primary care.

References

Ahmed M et al. Consensus report for the management of childhood coeliac disease in Wales. *Welsh Paed J* 2005; 22:37-41.

Green PHR, Jabri B. Coeliac Disease. *Lancet* 2003; **362**:383-91.

Hill et al. Guideline for the diagnosis and treatment of celiac disease in children: recommendations of the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition. *JPGN* 2005; **40**:1-19.

Kaukinen K et al. HLA-DQ typing in the diagnosis of celiac disease. *Am J Gastroenterol* 2002; **97**:695-99.

Konig F et al. *Springer Semin Immunopathology*; Aug 10th 2005.

Nenna R et al. A sequential study in the screening of celiac disease among first degree relatives; Abstract. *JPGN* 2005; **40**:637.

Sollid LM. Coeliac disease: dissecting a complex inflammatory disorder. *Nat Rev Immunol* 2002; **2**:647-55.

COELIAC DISEASE CASE SUMMARY

File this sheet in the front of the case notes

Patient addressograph:

Clinical category:
Tick as appropriate

- Symptomatic – GIT symptoms
- Symptomatic – other / non- GIT symptoms
- Asymptomatic + record reason for testing:

.....

Investigations

Date

Level

Total IgA:

--	--

Anti-TTG antibodies:

1.		
2.		
3.		
4.		
5.		

HLA type:

SI biopsy: Code histology as either

- A.** Villous atrophy (Marsh 3; *characteristic*)
- B.** Infiltrative changes with crypt hyperplasia (Marsh 2 *compatible*)
- C.** Infiltrative changes only (Marsh 1; non-specific for CD)

Date

Histology

1.		
2.		

Date started GFD:

Clear evidence of clinical response to GFD? Y or N

Notes: