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No conflict of interest to declare

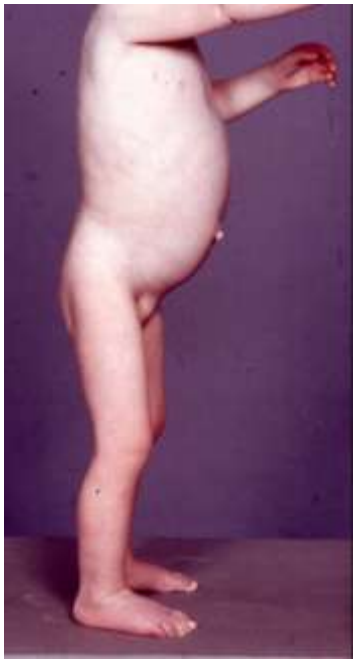
Aims

- Not bore you
- Differentiate between the different gluten related disorders
- Treatment for the different disorders
- Testing for coeliac disease
- Avoiding small bowel biopsy in CD
- Who perceives they have gluten induced symptoms when they don't really

3 gluten related conditions

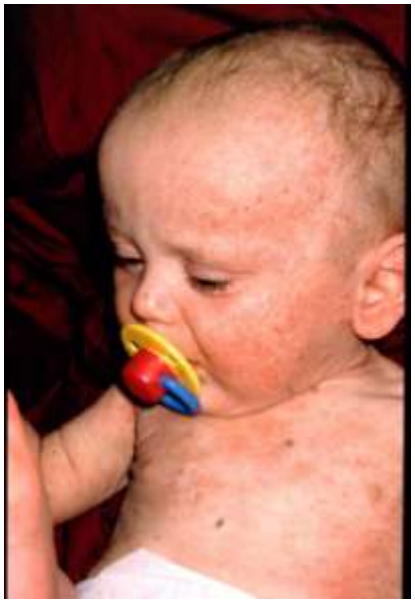
What is coeliac disease

- Immune mediated, triggered by gluten and prolamins
- Genetically susceptible
- Inflammatory enerteropathy
- Systemic
- Associated with coeliac specific autoantibodies



What is wheat allergy

- Hypersensitivity to wheat proteins
- Mediated via allergy
- Can be IgE or non IgE
- Usually food allergy but can be respiratory



Non coeliac gluten sensitivity

- Poorly defined
- Intestinal and extra intestinal symptoms

How to Beat
Brain Fog
Caused by Gluten
with Jennifer Fugo
&
Vikki Petersen, DC

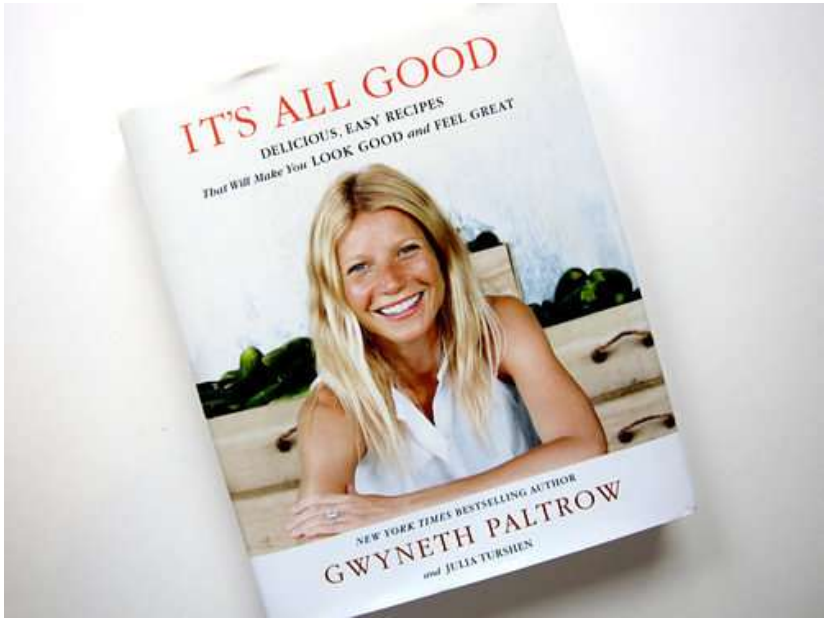


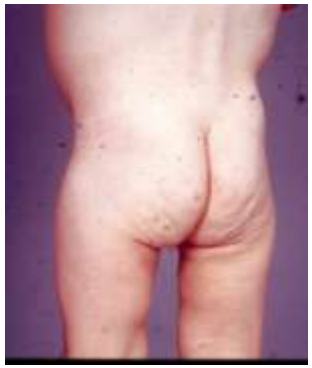
TABLE 1. Common clinical manifestations of gluten-related disorders

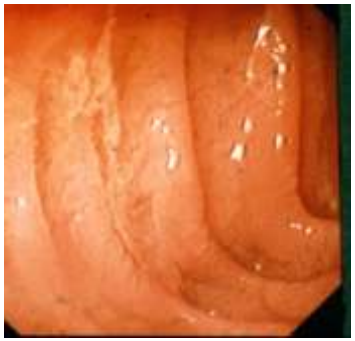
	Celiac	NCGS	WA
Time from exposure to symptoms	Hours-months	Hours-days	Minutes-hours
Gastrointestinal			
Diarrhea	X	X	X
Abdominal pain	X	X	X
Constipation	X	X	X
Gas/bloat/distention	X	X	X
Poor weight gain	X	X	X
Malodorous fatty stools	X		
Vomiting	X	X	X
Extraintestinal			
Pubertal delay	X		
Unexplained weight loss	X	X	X
Poor height gain	X		
Bone/joint pain	X	X	X
Rash of DH	X		
Eczema		X	X
Hives/atopic dermatitis			X
Fatigue	X	X	X
Headache/migraine	X	X	X
Foggy mind	X	X	
Angioedema			X
Anaphylaxis			X
Respiratory			
Asthma			X
Cough			X
Postnasal drip, throat clearing, rhinitis			X

DH = dermatitis herpetiformis; NCGS = nonceliac gluten sensitivity; WA = wheat allergy.

Coeliac disease

- Presentation - classical





Non classical

Rashes
Mouth ulcers
Dermatitis herpetiformis
Abnormal LFTs
Neurological manifestation

Most patients are asymptomatic

Non coeliac wheat symptoms

- Wheat allergy:
  - Atopic
  - Urticaria
  - Abdo pain
  - Bloating
  - Diarrhoea
  - Constipation
  - Vomiting
  - EoE
  - Wheat dependent excercie induced anaphylaxis
- NCGS
- Different organs
- Different symptoms
- Overlap with FODMAP reduced diet
- Symptoms within mins or hours, bit like IBD
- Headache, migraine

Why bother working out which condition?

TABLE 2. Indications to consider CD testing

Symptoms	Associated conditions
Abdominal pain	First-degree relatives of those with CD
Abdominal distension	Type 1 diabetes
Diarrhea	Autoimmune thyroid disease
Constipation	Autoimmune liver disease
Growth failure or deceleration	Trisomy 21
Weight loss	Williams syndrome
Arthralgia	Turner syndrome
Elevated hepatic transaminases	IgA deficiency
Iron deficiency anemia	Juvenile chronic arthritis
Unexplained osteopenia	
Dental enamel defects	
Recurrent aphthous stomatitis	
DH	

CD = celiac disease; DH = dermatitis herpetiformis; IgA = immunoglobulin A.

Testing for coeliac disease – avoiding the biopsy?

All got to line…….

Stonking TTG

Positive AEN

HLA DQ2 or DQ8

So what merits enough symptoms?

TABLE 3. Sensitivity and specificity of serological tests for CD

Test	Sensitivity (%)	Specificity (%)
Antigliadin antibody IgG (AGA-IgG)	83–100	47–94
Antigliadin antibody IgA (AGA-IgA)	52–100	72–100
tTG; tTG IgA (tTG-IgA)	90–100	95–100
Anti-EMA antibody IgA (EMA-IgA)	93–100	98–100
DGP; DGP IgA (DGP-IgA)	80–91	91–95
DGP; DGP IgG (DGP-IgG)	88–95	86–98

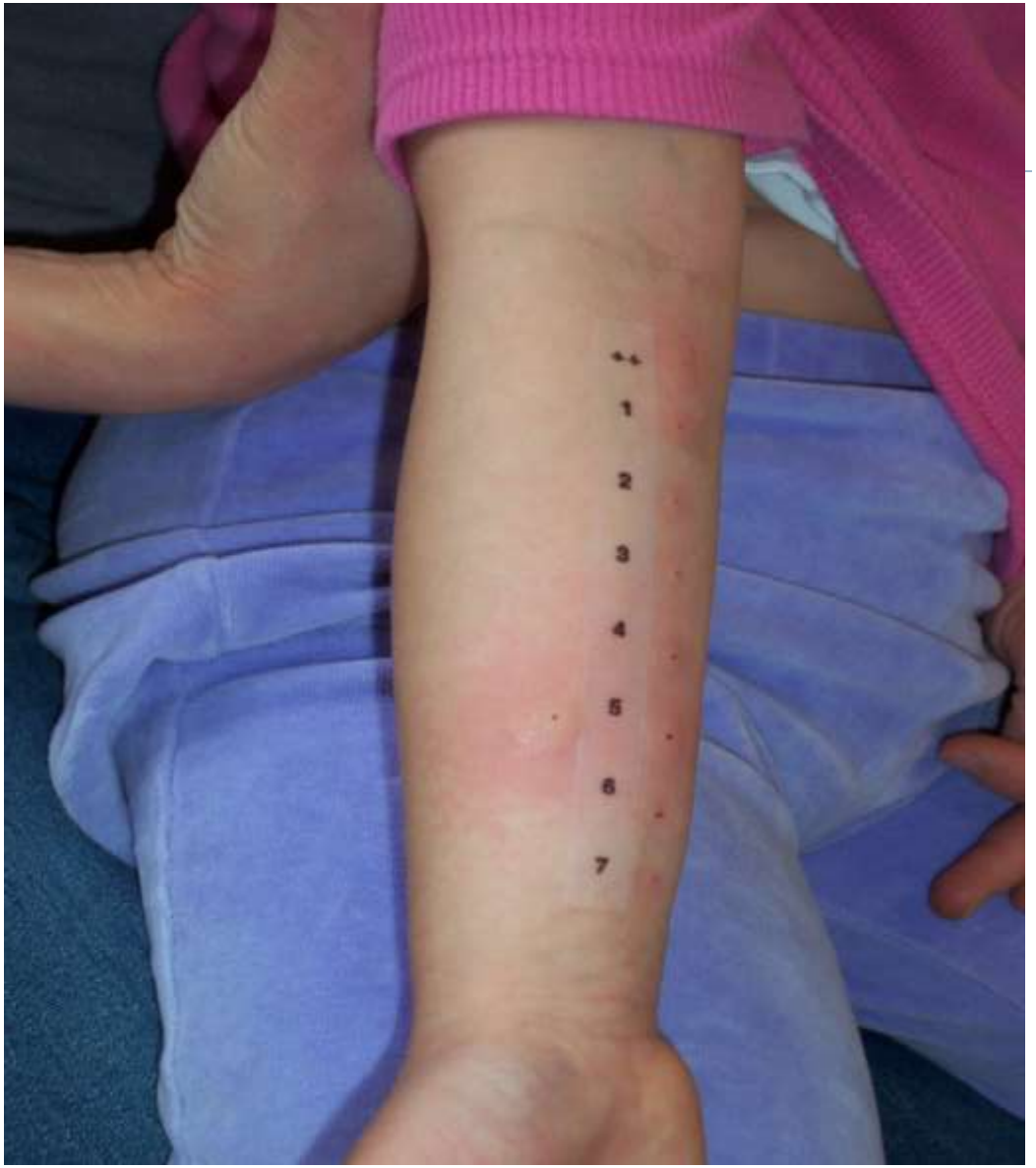
AGA = antibodies against gliadin; CD = celiac disease; DGP = deamidated gliadin peptide; EMA = endomysium; IgA = immunoglobulin A; IgG = immunoglobulin G; tTG = tissue transglutaminase.

Special considerations

- IgA deficiency
- Young children < 2 years
- Other auto immune conditions –
  - Diabetics and thyroid patients might have transient changes
- Concurrent infection

- Measuring HLA may be fraught
  - 40%of general population
- Point of care testing
- IgE testing for wheat allergy

Sensitivity & specificity only 73%



Testing for NCGS

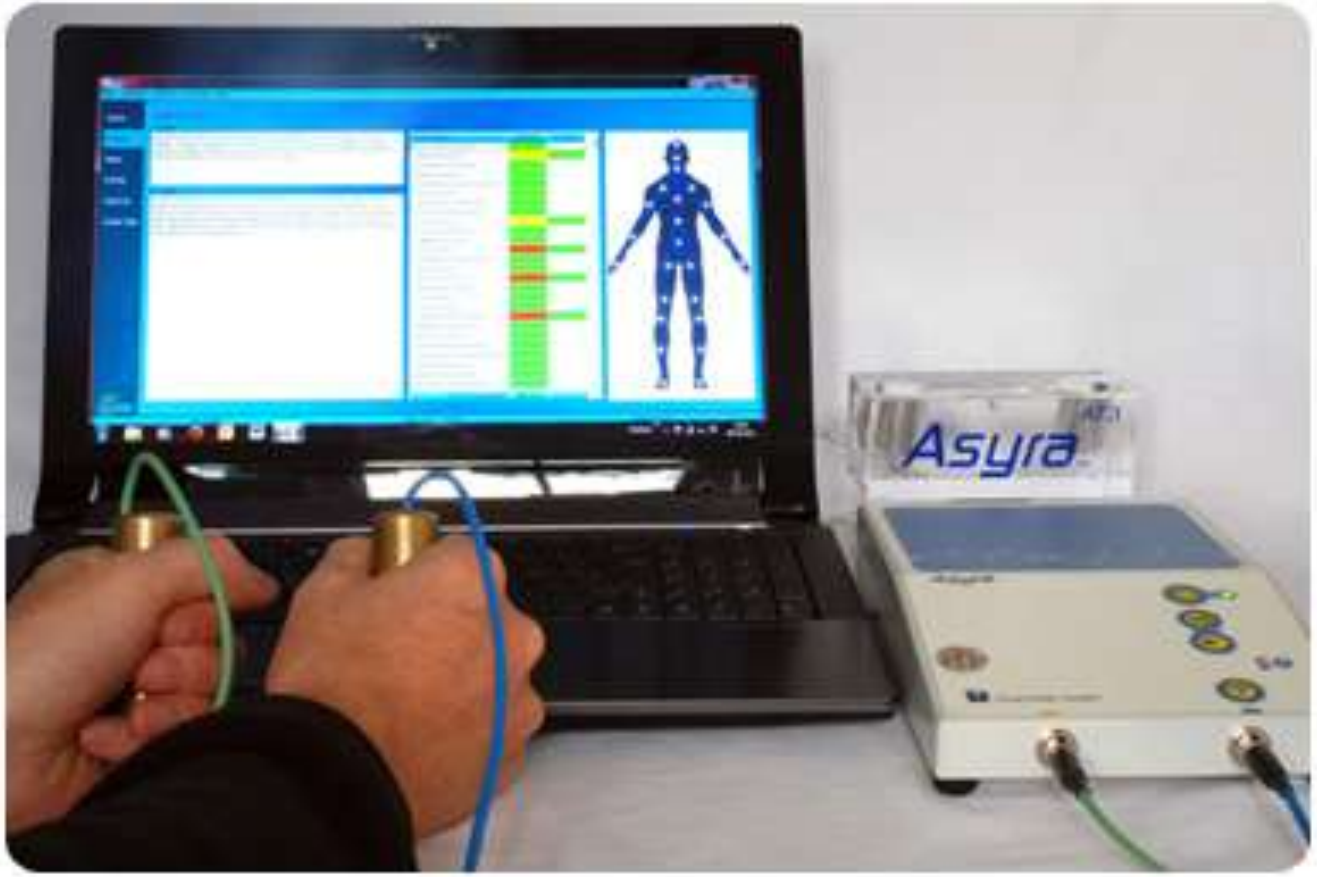
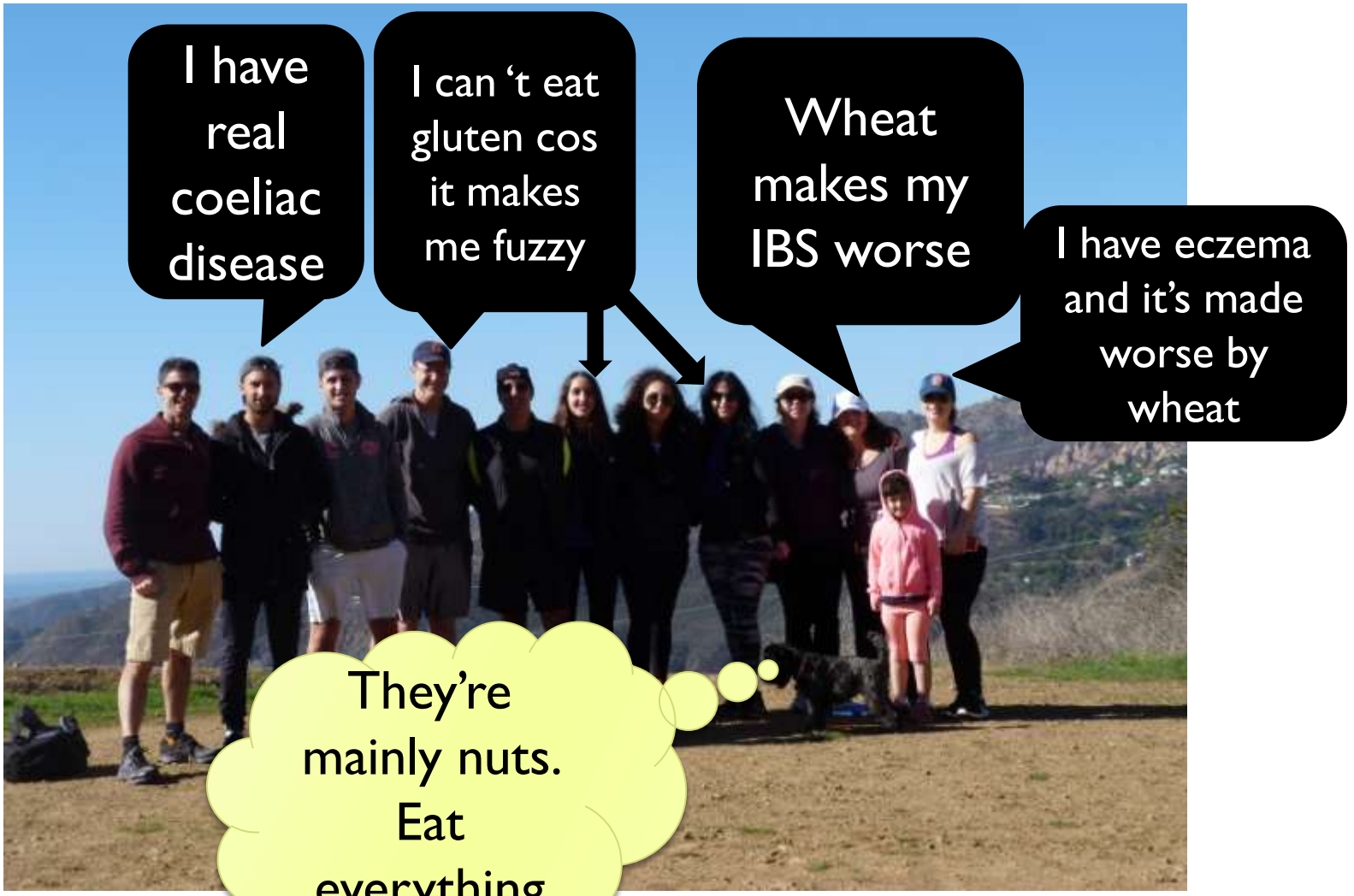


TABLE 5. Recommended testing and follow-up for children with CD

Timing	Visit	Tests
At diagnosis	Physician, dietitian	CD serology (tTG-IgA, EMA-IgA)*
		Complete blood count
		Iron profile
		Hepatic function panel
		Thyroid tests (TSH, free T4)
		Calcium
		Vitamin D level
3–6 mo after starting the GFD and every 6 mo thereafter until CD serology has normalized or other concerns have resolved	Physician†	CD serology (tTG-IgA or DGP-IgG)
	Dietitian (as necessary)	Additional testing based on clinical indication or previous abnormal results (eg, elevated liver enzymes)
Annually after symptom resolution and normalization of CD serology	Physician, dietitian†	CD serology (tTG-IgA or DGP-IgG)
		Complete blood count
		Thyroid tests (TSH, free T4)
		Vitamin D level
		Additional testing based on clinical indication.

3 gluten related conditions

3 gluten related conditions



Questions:

- Do we test patients with functional abdominal pain for coeliac disease?
- What do we advise at risk families when weaning
- What do you do if the child really has clinical features of an enteropathy and the TTG is low or just elevated?
- Should all children with a positive TTG have a small bowel biopsy – after all it is a diagnosis for life.
- What happens if the TTG is elevated, and the small bowel biopsy result does not identify coeliac disease?