Chronic Diarrhea & Celiac disease

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FESTIVE POO CHART

Type 1		Separate hard lumps like roast chestnuts (hard to pass)
Type 2		Brussel sprouts joined together and lumpy
Type 3		Like a yule log with cracks on the surface
Type 4		Like a sausage smooth soft and not wrapped in bacon
Type 5		Soft blobs (passed easily) after too much christmas pudding
Type 6		Turkey mince curry
Type 7		A trifle too much - complete over indulgence !

Bristol Stool Chart

Type 1		Separate hard lumps, like nuts (hard to pass)
Type 2		Sausage-shaped but lumpy
Type 3		Like a sausage but with cracks on its surface
Type 4		Like a sausage or snake, smooth and soft
Type 5		Soft blobs with clear-cut edges (passed easily)
Type 6		Fluffy pieces with ragged edges, a mushy stool
Type 7		Watery, no solid pieces. **Entirely Liquid**

Chronic diarrhea

- Decrease in stool consistency for > 4 weeks
- 3 major categories
  - Watery
    - Functional (IBS)
      - Smaller volume, improved overnight/fasting
    - Secretory
      - Think nocturnal, no prandial variation, fecal osmotic gap < 50 mOsm per kg
    - Osmotic
      - Osmotic gap > 100-125 mOsm per kg
  - Fatty
    - Malabsorption
    - Maldigestion
  - Inflammatory/exudative (increased WBC, bloody)
    - IBD
    - Infectious
    - Neoplastic
    - Radiation

Stool osmotic gap

Fecal osmotic gap = 290 – 2 * (stool Na + stool K)

Normal stool osm = 290 mOsm/kg

Fecal fat collection:

- Normal < 7g/day (patients consuming 100g/day)
- Steatorrhea > 14g/day (diagnostic)

Diagnosis

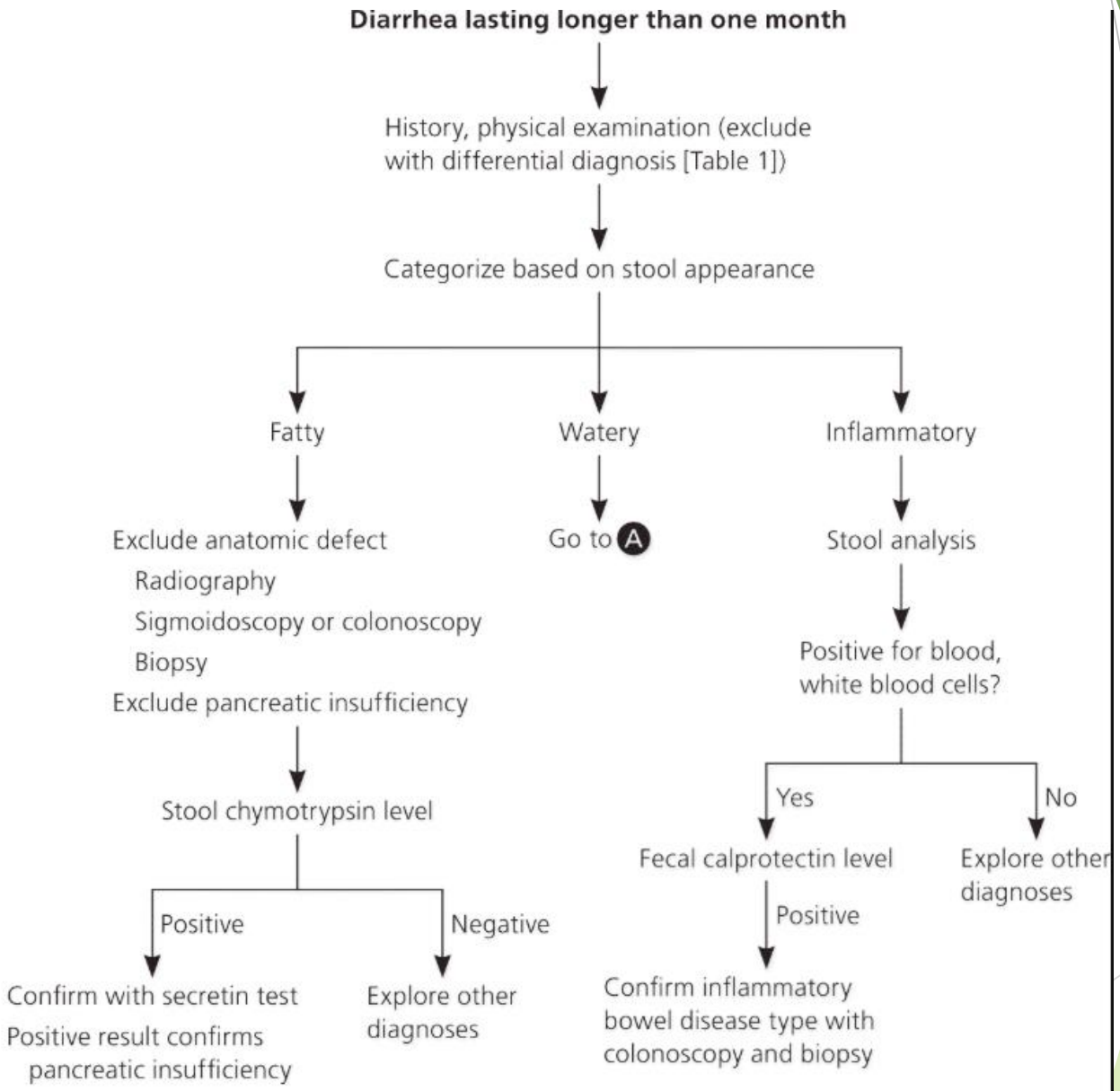
History: age, duration, food, family history, pattern, timing, travel

Physical examination: general, eye, skin, abdomen, anorectal

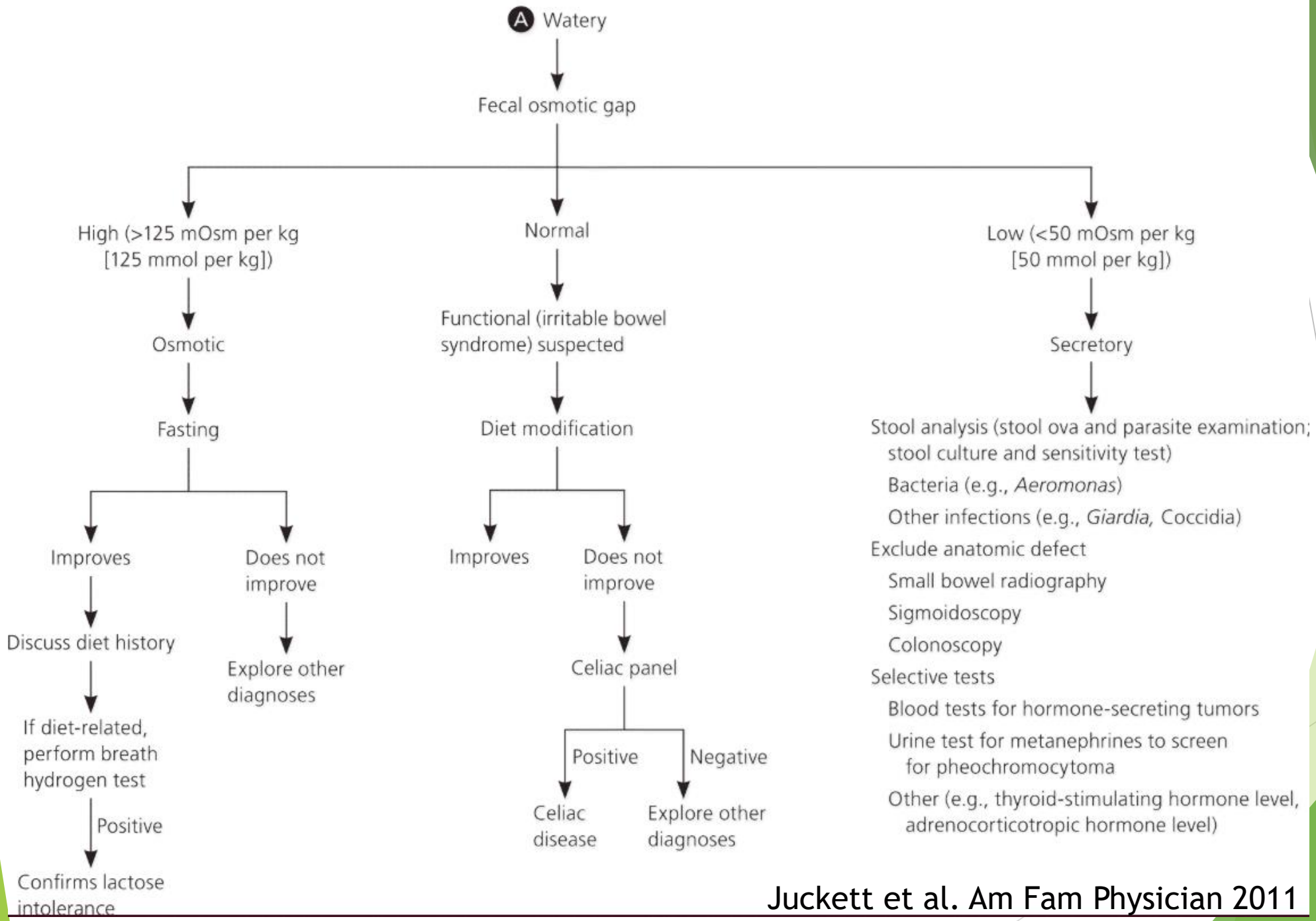
Laboratory tests

- Blood (albumin and thyroid-stimulating hormone levels; complete blood count; erythrocyte sedimentation rate; liver function testing)
- Stool (bacteria, blood, fat, leukocytes, ova and parasites, pH test, *Giardia* and *Cryptosporidium* antigen tests)
- Celiac panel
- *Clostridium difficile* toxin, if indicated
- Laxative screen, if indicated

Procedure: anoscopy



Juckett et al. Am Fam Physician 2011



Juckett et al. Am Fam Physician 2011

A 40-year-old man is evaluated for a 6-month history of intermittent episodes of two to four loose stools per day. When he has diarrhea, he also notices crampy abdominal pain and bloating. He has not had nausea, vomiting, anorexia, fever, melena, hematochezia, recent travel, or any new medications, including antibiotics. He is overweight but has been exercising and watching his diet for the past 6 months, and he has intentionally lost 6.8 kg (15.0 lb). The main change in his diet has been switching to diet soda and using sugar-free sweeteners. He takes no medications.

On physical examination, vital signs are normal. The abdomen is obese but soft with normal bowel sounds and no distention or tenderness.

Which of the following is the most appropriate management?

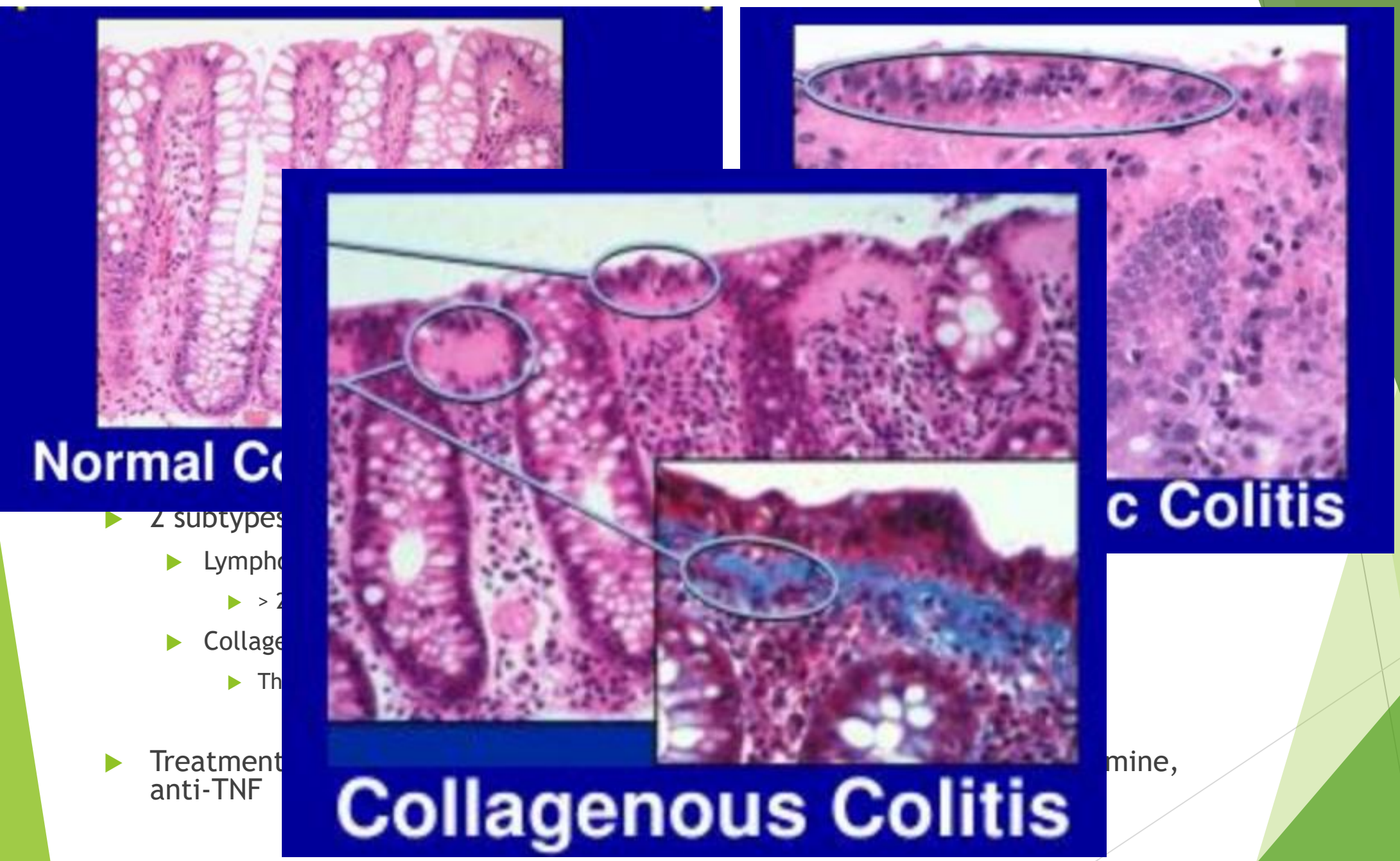
A **Abdominal CT scan**

B **Colonoscopy with biopsies**

C **Discontinuation of sugar-free sweeteners**

D **Gluten-free diet**

E **Tissue transglutaminase IgA antibody testing**



- 2 subtypes
  - Lympho
    - > 2
  - Collage
    - Th
- Treatment
  - mine,
  - anti-TNF


Liver
Stomach
Rectum
SMALL
INTESTINAL
BACTERIAL
OVERGROWTH
(SIBO)

SIBO – Small Intestinal Bacterial Overgrowth

- >10^5 organisms/mL in the small intestine

- Clinical picture: Bloating, flatulence, weight loss
- Vitamin B12 deficiency (and elevated serum folate)

- Risk factors: bypass surgery, vagotomy, PPI, dysmotility, diabetes

- Diagnose: lactulose breath test (look for H+ or methane)

- Treat: Rifaximin

Short bowel syndrome

- Seen in Crohn disease, mesenteric infarction, radiation enteritis, volvulus most commonly
- Ileum → B12 and bile acid absorption
- > 100cm ileum resected → Severe diarrhea, bile acid malabsorption
  - Vit ADEK deficiency, B12 deficiency
- < 100cm jejunum remaining → Often TPN dependent
  - If > 100cm remaining, require high fat/protein diet, low carbs
- Tx: Antidiarrheals, cholestyramine, vit supplements, octreotide, teduglutide

Celiac disease

- Described by Dr. Samuel Gee in an 1888 report: “On the Coeliac Affection”
  - Coeliac derived from the Greek *koiliakaos* – abdominal
- 2nd century AD – similar malabsorptive disorder described by Aretaeus from Cappadochia (modern day Turkey)
- Modern: small bowel disorder w/ mucosal inflammation, villous atrophy, crypt hyperplasia after exposure to dietary gluten
- Prevalence: 0.7%

A 23-year-old man is evaluated for chronic diarrhea. He has had intermittent loose stools over the past 2 to 3 years; however, over the past 6 months, diarrhea has become more severe (five to six bowel movements per day) and constant. Stools are described as mushy and malodorous and are accompanied by crampy abdominal pain and bloating. He has lost 2.3 kg (5.0 lb) over the past 6 months despite consuming more calories. He has not had fever or gastrointestinal bleeding and has no history of foreign travel. He has type 1 diabetes mellitus that is well controlled with insulin. He does not smoke cigarettes or drink alcohol.

On physical examination, vital signs are normal. He has evidence of muscle wasting and pedal edema. The abdomen is scaphoid but soft with increased bowel sounds. No distention or tenderness is noted.

Laboratory studies reveal a hemoglobin level of 10.4 g/dL (104 g/L) and a mean corpuscular volume of 100 fL.

Which of the following is the most appropriate diagnostic test to perform next?

A. Anti–*Saccharomyces cerevisiae* antibodies

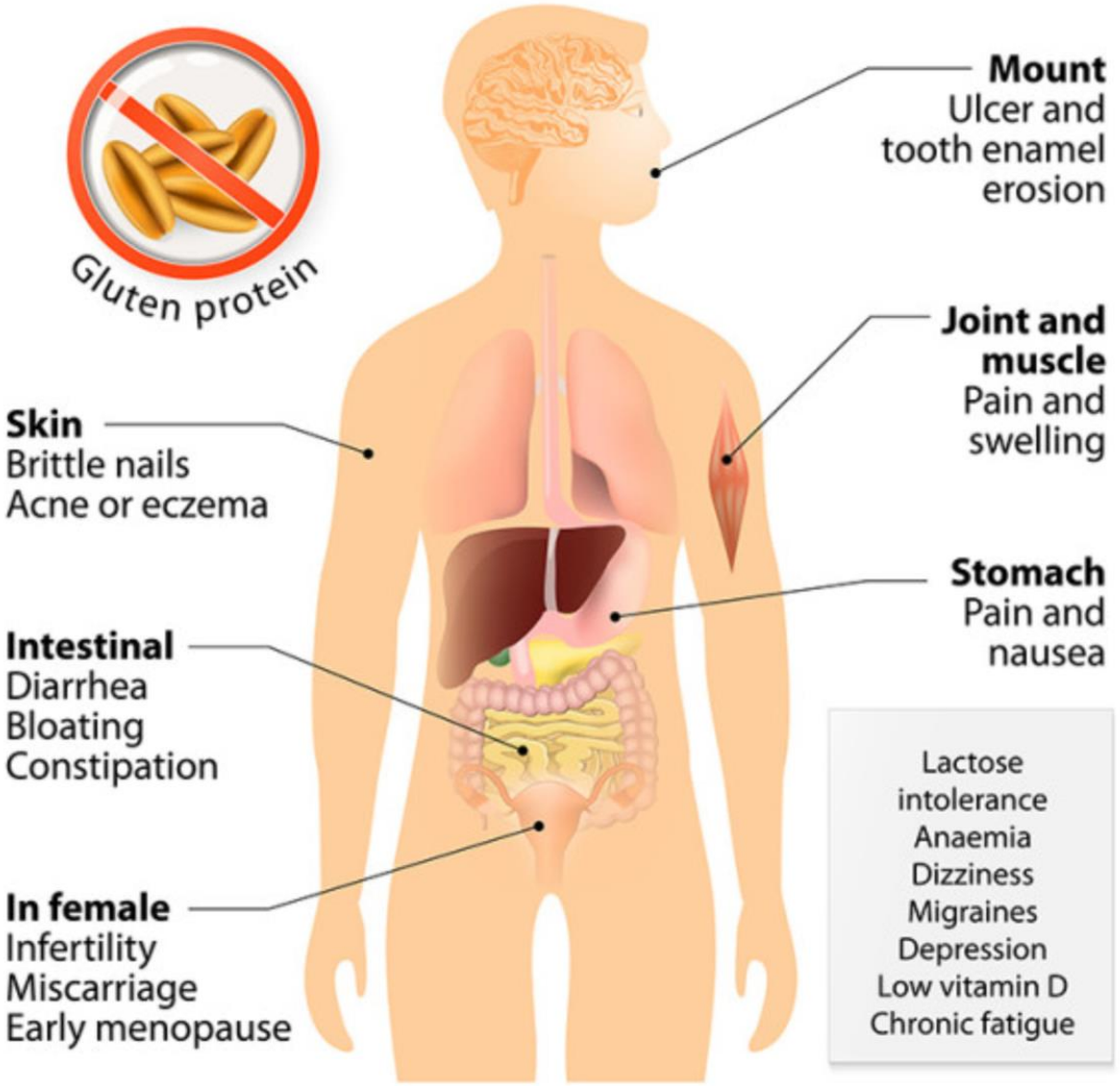
B. Flexible sigmoidoscopy

C. Tissue transglutaminase antibody testing

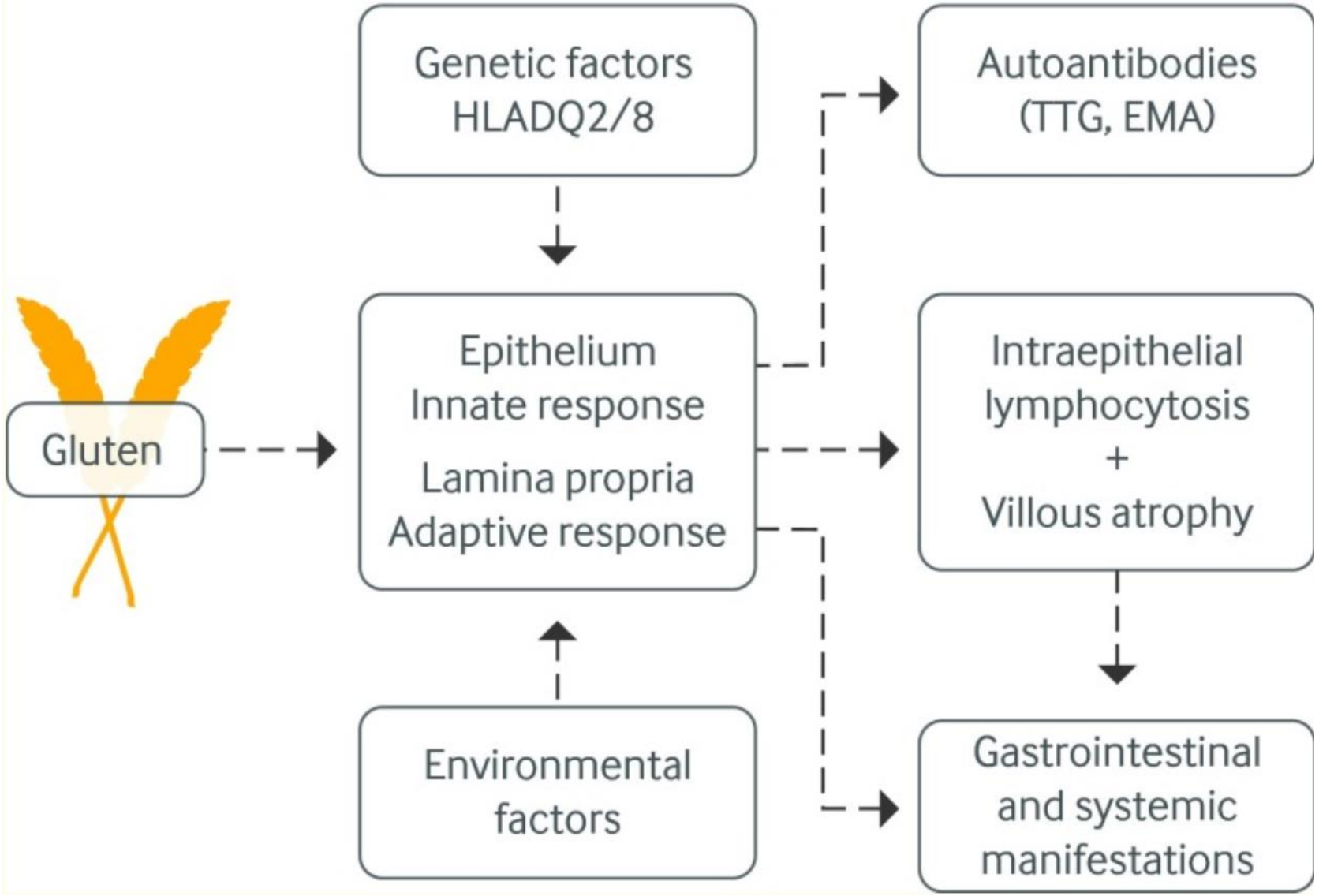
D. Upper endoscopy with small-bowel biopsies

E. Video capsule endoscopy

CELIAC DISEASE



DAPSONE



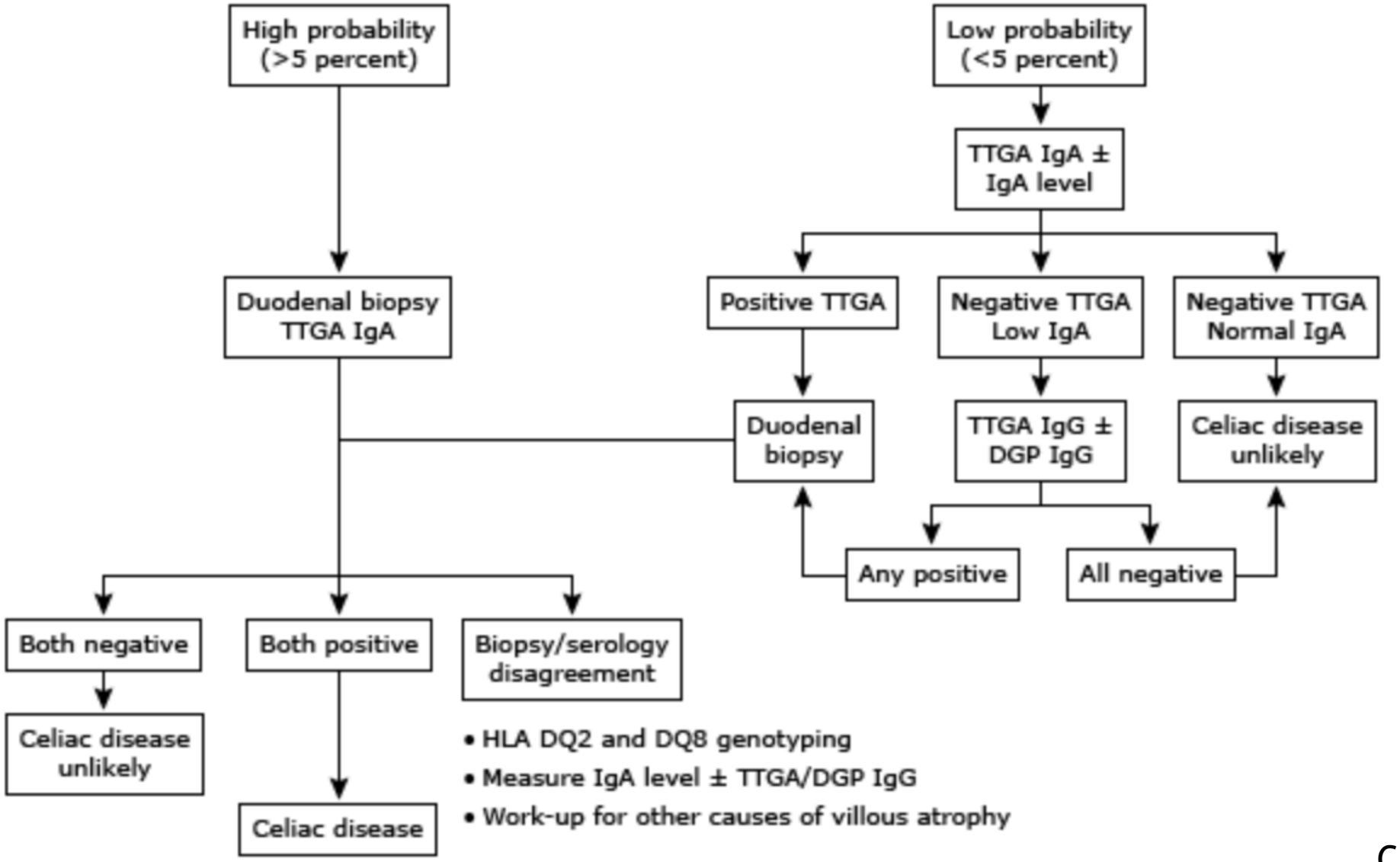
Lebwohl et al. BMJ 2015.

Grains with Gluten	Gluten-Free Grains	
• Barley	• Amaranth	• Oats
• Rye	• Buckwheat	• Quinoa
• Triticale	• Corn	• Rice
• Wheat (bulgur, durum, einkorn, emmer/farro, farina, graham flour, Kamut® khorasan, semolina, spelt, wheatberries)	• Job's Tears	• Sorghum
	• Millet	• Teff
	• Montina	• Wild Rice

Where Gluten May Hide

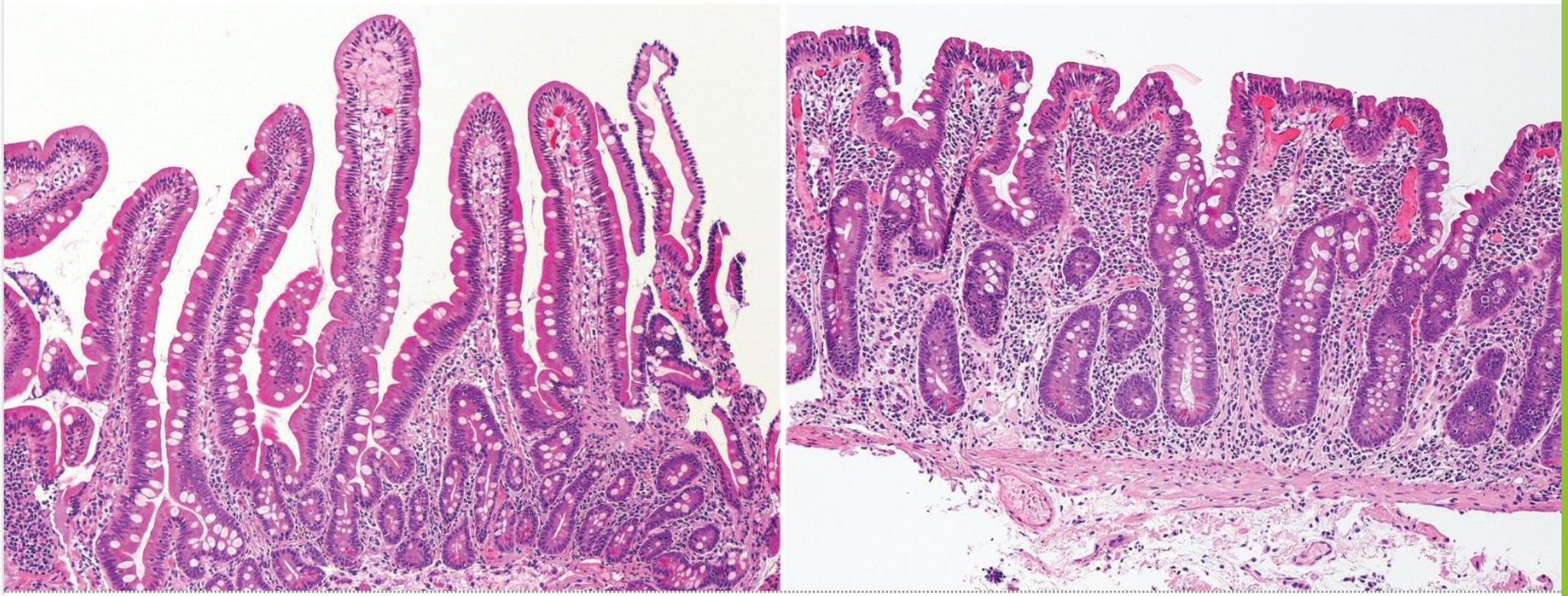
- Beer
- Brewer's yeast
- Brown rice syrup (possible)
- Food coloring
- French fries
- Meat substitutes
- Medications
- Malt (including malted barley flour, malted milk or milkshakes, malt extract, malt syrup, malt flavoring, malt vinegar, malt beverages)
- Processed lunch meats
- Roux
- Salad dressings
- Sauces (including soy sauce)
- Snack bars
- Soups
- Starch or dextrin
- Wheat starch (unless processed to remove the presence of gluten to below 20ppm and adhere to the FDA Labeling Law)

Diagnostic algorithm



Chronic diarrhea. UptoDate

Left panel: Histologic findings in a normal duodenum. *Right panel:* Histologic findings of celiac disease, with villous atrophy, crypt hyperplasia, and increased inflammatory infiltration of the lamina propria.



Courtesy of Thomas C. Smyrk, MD, Division of Anatomic Pathology, Mayo Clinic.

Villous Blunting ddx

- Celiac disease
- Tropic sprue
- Radiation enteropathy
- Severe giardiasis
- SIBO
- Chronic ischemia
- Chemo
- Autoimmune enteropathy
- CVID
- Enteropathy-assoc. T-cell lymphoma
- Olmesartan-induced

Management

- Lifelong strict gluten-free diet
- Symptom normalization in approx. 4 weeks
- Symptoms improvement → Serologic normalization TTG Ab → Normalization of histologic results
- Eval for micronutrient deficiencies (Fe, folic acid, vit D, vit B12)
- Refractory celiac?

Sources of dietary gluten

Primary sources

Wheat (triticale, semolina, spelt, khorasan wheat)
Rye
Barley (malt)

Hidden sources

Oats (unless harvested separately from wheat)
Sauces (marinades, soy sauce)
Drug fillers (prescription and over the counter items, including dietary supplements)
Shared food preparation equipment (pasta pot, toaster, deep fryer)
Processed meats

Long-term complications

- Osteoporosis
- Small bowel lymphoma
- Adenocarcinoma
- Other autoimmune conditions

ABIM Key Concepts - Celiac

- Patient demographic:
  - Young
  - Female
  - Caucasian
- Mildly elevated ALT/AST
- Iron deficiency anemia or malabsorptive history
- Refractory celiac?

Tropical sprue

Tropical Sprue

- Environmental enteropathy
  - Unknown cause – likely persistent or recurrent bacterial, viral, amoebic or parasitic infection
- Patient with recent travel or from endemic regions (Puerto Rico, Caribbean, SE Asia, South America)
- Diarrhea, fever, malaise → Steatorrhea, weight loss, anorexia
- Vit ADEK deficiency, B12 and folate deficiency
- Affects entire small bowel – though may appear normal on endoscopy
- Antibiotic responsive (Bactrim w/ folic acid and B12)

A 42-year-old man is evaluated for a 2-month history of two to four loose stools per day and abdominal cramps. He was diagnosed 1 year ago with celiac disease. Until recently, his symptoms responded to a strict gluten-free diet, with resolution of weight loss, diarrhea, abdominal pain, and iron deficiency anemia. He has not had fever, melena, or hematochezia. He has not taken any new medications.

On physical examination, vital signs are normal. The abdomen is soft with normal bowel sounds. There is no distention, tenderness, masses, or organomegaly.

Which of the following is the most appropriate management?

A **Abdominal CT scan**

B **Careful dietary review**

C **Colonoscopy with biopsies**

D **Upper endoscopy with small-bowel biopsy**