

## Testing for Celiac Disease<sup>1,2</sup>

### Introduction:

- Celiac disease occurs in ~1% of healthy average Americans.
- In people with 1st degree relatives with celiac disease, 1 in 22 will have celiac disease.
- Celiac disease is ubiquitous throughout the world.
- The rate of occurrence may vary in different ethnic groups.

### Diagnosis - Order the following 2 blood tests:

#### Blood Tests:

- Tissue transglutaminase IgA (tTG IgA) - It is the most sensitive (98%) and specific (95%) blood test for celiac disease and is the single test preferred by the *American Gastroenterological Association* and *American College of Gastroenterology*. Patients must be on a gluten-containing diet for antibody testing to be accurate. If not, eat 4 slices of bread/day for 1 month prior to testing.
- Total serum IgA – Used to rule out selective IgA deficiency, a harmless condition which is one of the most common primary immunodeficiency diseases. *It is present in up to 1 in 300 Caucasian people and is present in 3% of patients with celiac disease.*
  - Selective (complete) IgA deficiency is defined as an undetectable serum immunoglobulin A (IgA) level at a value < 7 mg/dL.
  - In selective IgA deficiency, order a tTG-IgG and *deamidated gliadin peptide* (DGP) IgG test (see below). These tests have a similar sensitivity and specificity to tTG IgA tests in those who are IgA deficient. IgG antibody testing is generally only ordered in this situation.
  - In partial IgA deficiency, the tTG IgA is still highly sensitive (100%).

Small bowel biopsy: Confirm a positive blood antibody test result with duodenal biopsies (at least 6) via upper endoscopy. One or two biopsies should be taken in the duodenal bulb. Patients must be on a gluten-containing diet for biopsy results to be accurate.

### Discussion Regarding Different Blood Tests:

The *tTG IgA is the single most accurate test and the most economical*. The endomysial IgA is also a good test but isn't as sensitive as the tTG IgA and is expensive. Older versions of anti-gliadin testing were very inaccurate and are no longer of any use in the diagnosis of celiac disease, though can be used to verify that a patient is following a gluten-free diet (i.e. the level of the antibody drops). A newer form of this test, the DGP IgA is an excellent test but is more expensive than the tTG IgA test. IgG antibody testing, as noted above, is not generally ordered except in patients with selective IgA deficiency. *Note that though it is very rare, it is possible for someone with celiac disease to have negative antibody test results and for patients without celiac disease to have positive antibody test results.*

Genetic testing is another celiac disease blood test. It is not useful in diagnosis, but can be used to rule out celiac disease. The absence of HLA-DQ2 and HLA-DQ8 is 100% accurate for zero risk of developing celiac disease. However, only a negative result is useful, as the presence of HLA-DQ2 and/or HLA-DQ8 is seen in all patients with celiac disease and 40% of all people. *Note that patients can be on a gluten-free diet for this test.* This test can be expensive and is not covered by some 3<sup>rd</sup> party payors.

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<sup>1</sup> Silvester JA. *Am J Gastroenterol* 2021; 116:1148–1155.

<sup>2</sup> Rubio-Tapia A, et al. *Am J Gastroenterol* 2013; 108:656–676.