# Effective Health Care

## Diagnosis and Screening for Celiac Disease
## Nomination Summary Document

## Results of Topic Selection Process & Next Steps

- The topic *Diagnosis and Screening for Celiac Disease* was addressed by an AHRQ systematic review titled *Diagnosis of Celiac Disease*, as well an in-process AHRQ research review titled *Celiac Disease: Screening* for the US Preventive Services Task Force (USPSTF). Given that these in-process reports cover this nomination, no further activity will be undertaken on this topic.
  - Maglione MA, Okunogbe A, Ewing B, Grant S, Newberry SJ, Motala A, Shanman R, Mejia N, Arifkhanova A, Shekelle P, Harmon G. Diagnosis of Celiac Disease. Comparative Effectiveness Review No. 162. (Prepared by the Southern California Evidence-based Practice Center under Contract No. 290-2012-00006-I.) AHRQ Publication No. 15(16)-EHC032-EF. Rockville, MD: Agency for Healthcare Research and Quality; January 2016.. Available at: http://effectivehealthcare.ahrq.gov/search-for-guides-reviews-and-reports/?pageaction=displayproduct&productID=2175
  - US Preventive Services Task Force. Final research plan: Celiac disease: Screening. November 2014. Available at: http://www.uspreventiveservicestaskforce.org/Page/Document/ResearchPlanFinal/celiac-disease-screening
    - To sign up for notification when this and other USPSTF topics are posted, please go to: http://www.ahrq.gov/clinic/prevenix.htm.

## Topic Description

**Nominator(s):** Individual

**Nomination Summary:** The nominator would like to know about the diagnostic accuracy of various tests (e.g., serologic tests, human leukocyte antigen [HLA] typing, video capsule endoscopy, questionnaires) in patients with symptoms compatible with celiac disease. The nominator would also like to understand the comparative benefits and harms of different screening tests for patients at high risk of celiac disease. Finally, the nominator asks about the implications of universal screening for celiac disease.

**Staff-Generated PICOs**
**Key Question 1**
**Population(s):** Pediatric and adult patients with symptoms compatible with celiac disease
**Intervention(s):** Diagnostic tests (various serologic tests, HLA typing, video capsule endoscopy, questionnaires); no test (clinical diagnosis by elimination diet)

**Comparator(s):** Endoscopy and multiple biopsies (gold standard)
**Outcome(s):** Test sensitivity and specificity, positive and negative predictive value, area under the ROC curve

**Key Question 2**
**Population(s):** Pediatric and adult patients at high risk for celiac disease (e.g., trisomy 21, Turner syndrome, type 1 diabetes mellitus, family history)
**Intervention(s):** Screening tests (various serologic tests, HLA typing, video capsule endoscopy, questionnaires)
**Comparator(s):** Other screening tests, no screening
**Outcome(s):** Complications of celiac disease (e.g., stunted growth [in children], low bone mineral density, mortality); benefits of screening (e.g., earlier diagnosis and treatment); harms of screening (e.g., complications of the procedure, misdiagnosis, overdiagnosis); health care costs; health-related quality of life (HRQoL).

**Key Question 3**
**Population(s):** General population (without symptoms or risk factors for celiac disease)
**Intervention(s):** Screening tests (various serologic tests, HLA typing, video capsule endoscopy, questionnaires)
**Comparator(s):** Other screening tests, no screening
**Outcome(s):** Complications of celiac disease (e.g., stunted growth [in children], low bone mineral density, mortality); benefits of screening (e.g., earlier diagnosis and treatment); harms of screening (e.g., complications of the procedure, misdiagnosis, overdiagnosis); health care costs; HRQoL

**Key Questions from Nominator:**

What is the diagnostic accuracy of different screening tests for celiac disease? Additionally, given the high prevalence of celiac disease and the varied presentation of symptoms, what are the comparative benefits and harms of different screening tests and what are the implications of universal screening for celiac disease?

In consultation with our clinical reviewer, we revised the original Key Questions slightly to further clarify and differentiate the areas of focus from the topic nomination. The revised Key Questions are as follows:

1. What is the diagnostic accuracy of tests for celiac disease?
2. What are the benefits and harms of screening people who are at high risk for celiac disease?
3. What are the benefits and harms of universal screening for celiac disease?

## Considerations

- The topic meets EHC Program importance criteria. (For more information, see http://effectivehealthcare.ahrq.gov/index.cfm/submit-a-suggestion-for-research/how-are-research-topics-chosen/.)

- Celiac disease is estimated to affect 3 million people in the US, and many people remain undiagnosed. Considering the burden associated with the gold standard test to diagnose the disease, it is important

for clinicians to understand the harms and benefits of various other diagnostic methods. It is also important to assess the benefits and harms of screening at-risk populations as well as people who are asymptomatic.

- The topic is addressed by an AHRQ systematic review titled *Diagnosis of Celiac Disease*. This systematic review is specifically relevant to Key Questions 1 and 2 of the topic nomination. The key questions of this review are:

  1. What is the comparative effectiveness of the different diagnostic methods (various serological tests, HLA typing, video capsule endoscopy, used individually and in combination) compared with endoscopy with biopsy as reference standard, to diagnose celiac disease (CD) in terms of:
     - Accuracy (sensitivity, specificity, LR+, LR-, summary ROCs)
     - Intermediate outcomes such as clinical decision making and dietary compliance
     - Clinical outcomes and complications related to CD
     - Patient-centered outcomes such as QoL and symptoms
  2. Does accuracy/reliability of endoscopy with duodenal biopsy vary by:
     - pathologist characteristics, i.e. level of experience or specific training?
     - method, i.e. type or number of specimens?
     - length of time ingesting gluten before diagnostic testing?
  3. How do accuracy (sensitivity, specificity, LR+, LR-, summary ROCs) and outcomes differ among specific populations? (subgroups of KQ1)
     - Symptomatic patients vs. non-symptomatic individuals at risk
     - Adults (over age 18) versus children & adolescents
     - Children under age 24 months vs. older children
     - Demographics, including race, genetics, geography, SES
     - Patients with IgA deficiency
     - Patients previously testing negative for CD
  4. What are the direct adverse effects (i.e. bleeding from biopsy) or harms (related to false positives, false negatives, indeterminate results) associated with testing for CD?

- The topic will also be addressed by an in-process research review for a USPSTF recommendation statement titled *Celiac Disease: Screening*. The recommendation statement is expected to be released in 2016 and will be based on another systematic review performed by AHRQ. This review will be relevant to Key Questions 1, 2, and 3 of the topic nomination. Relevant questions from the research plan for the recommendation statement include the following:

  1. What is the effectiveness of screening versus not screening for celiac disease in asymptomatic adults, adolescents, or children on morbidity, mortality, or quality of life?
  2. What is the effectiveness of targeted (testing in patients with a family history or other risk factors) versus universal screening for celiac disease in asymptomatic adults, adolescents, or children on morbidity, mortality, or quality of life?
  3. What are the harms of screening for celiac disease?
  4. What is the accuracy of screening tests for celiac disease?
  5. Does treatment of screen-detected celiac disease lead to improved morbidity, mortality, or quality of life compared with no treatment?
  6. Does treatment of screen-detected celiac disease lead to improved morbidity, mortality, or quality of life compared with treatment initiated after clinical diagnosis?
  7. What are the harms associated with treatment of celiac disease?