Calprotectin (CALPRO), Fecal

**Indications for Ordering**
- Aid in differentiation of inflammatory bowel disease (IBD) from irritable bowel syndrome (IBS) and other functional disorders of the gastrointestinal (GI) system
- Aid in monitoring IBD and prediction of relapse

**Test Description**
Quantitative enzyme-linked immunosorbent assay

**Tests to Consider**
**Primary test**
Calprotectin, Fecal 0092303
- Differentiate IBD from IBS
- Monitor IBD

**Related test**
Lactoferrin, Fecal by ELISA 0061164

**Clinical validation**
Test performance for diagnosis of IBD
- Sensitivity – 95%
- Specificity – 91%
- Precision of test was higher in children than adults
- Calprotectin was superior to CRP, ESR, ASCA, p-ANCA (von Roon AC, Am J Gastroenterol 2007; Henderson P, Am J Gastroenterol, 2012)

Fecal calprotectin reduces the number of unnecessary procedures (van Rheenen PF, BMJ, 2010)
- ~67% reduction in adults requiring endoscopy
- ~6% false negative test results

Appropriate use of fecal calprotectin saved $417 per individual in one study when pretest probability of IBD was <75% (adults) or <65% (children) (Yang Z, Clin Gastroenterol Hepatol, 2014)
- Cost saved by avoiding endoscopy
- Individuals with prior probability >75% should not be tested but go directly to endoscopy
- Test to triage with lower prior probability of IBD
- Confirm positive results by endoscopy, follow negative result clinically

**Disease Overview**

**Incidence**
IBD – ~1.4 million annually in U.S.

**Physiology**
- CALPRO accounts for 60% of total protein in neutrophils
  - Antibacterial and antifungal activity
  - Inhibits metalloproteinases
- CALPRO is stable in stool samples
- Any disorder that causes damage to the GI tract with release of neutrophils may increase CALPRO
  - CALPRO in feces is proportional to inflammation

**Diagnostic issues**
- IBD symptoms may be vague and similar to IBS (eg, diarrhea, abdominal pain)
  - IBS much more prevalent than IBD
- Differentiation of IBD from IBS may require invasive procedures, which are often unnecessary
  - CALPRO may be useful in differentiation of IBS from IBD, preventing unnecessary invasive procedures

**Monitoring issues**
- Monitoring by endoscopy is invasive
- CALPRO can differentiate quiescent from active IBD
- Mucosal healing is associated with sustained remission
  - New goal for IBD treatment
  - Normalization of CALPRO correlates with healing (Sipponen T, Inflamm Bowel Dis, 2008; Jones J, Clin Gastroenterol Hepatol, 2008)

**Test Interpretation**

**Results**
- Normal – ≤50 μg/g
  - Likely to rule out IBD in adults with <75% prior probability
- Borderline – 51-120 μg/g
  - Recommend reevaluation in 4-6 weeks
- Abnormal – ≥121 μg/g
  - Supports diagnosis of IBD

**Limitations**
- CALPRO is not specific for IBD
  - Elevated in infections
  - Other inflammatory conditions – eg, celiac disease (CD), microscopic colitis, diverticulitis
  - Colorectal cancer
- CALPRO is not diagnostic for IBD
- CALPRO does not distinguish CD from ulcerative colitis
- Results may fluctuate as disease activity fluctuates
  - GI bleeding results in increased CALPRO
- False negatives are more common in children than adults