Appendix 4. Celiac disease modeling.

	Population	Adults
1	Theoretical population count	1,000,000
2	Estimated prevalence count of anemia in the theoretical population	56,500
3	Estimated prevalence count of iron-deficiency anemia (IDA) in the theoretical population	32,900
4	Estimated prevalence of celiac disease in IDA in the United States	1.15%
5	Estimated prevalence count of celiac disease in IDA patient	378
6	TTG IgA Sensitivity	92.5%
7	TTG IgA Specificity	97.9%
8	Estimated number of missed celiac disease patients due to false negatives	28
9	Estimated number of patients falsely diagnosed with celiac disease based on TTG IgA (false positives)	683
10	Estimated additional cost of performing routine small bowel biopsies (a single biopsy specimen container) to diagnosed celiac disease during the first endoscopic encounter (Strategy 1)	$2,869,538
11	Estimated additional cost of starting with TTG IgA before endoscopy, followed by biopsies of TTG IgA-positive patients and iron challenge in TTG-IgA negative patients, then repeat EGD with small bowel biopsies in patients who fail iron challenge (Strategy 2)	$967,695
12	Estimated additional cost of performing TTG IgA after initial endoscopy, followed by repeat endoscopy with biopsies of TTG IgA-positive patients and iron challenge in TTG-IgA negative patients, then repeat EGD with small bowel biopsies in patients who fail iron challenge (Strategy 3)	$1,506,181
13	Difference in additional costs between Strategy 1 versus 2	$1,901,842
14	Difference in additional costs between Strategy 1 versus 3	$1,363,356

1. A theoretical number of adult people from the age/gender group of interest
2. Calculated by multiplying the estimated prevalence percentage of anemia from Ioannou GN et al. (2002) by the theoretical population count{Ioannou, 2002 #2}
3. Calculated by multiplying the estimated prevalence percentage of iron-deficiency anemia from Ioannou GN et al. (2002) by the count in line 2{Ioannou, 2002 #2}
4. Pooled estimate of celiac disease prevalence in IDA in the United States.
5. Calculated by multiplying the estimated prevalence percentage of celiac disease in IDA from 4 by the estimated prevalence count of IDA from 3
6-7. From Maglione MA et al. (2016)
8. Calculated by multiplying the estimated prevalence count of celiac disease (line 5) by the false negatives rate (1-sensitivity from line 6)
9. Calculated by multiplying the false positives rate (1-specificity from line 7) by the estimated count of patients with iron deficiency anemia without celiac disease (line 5 subtracted from line 3)
10. Calculated by multiplying 3 by the additional cost of performing biopsies
11. Calculated by multiplying 3 by the cost of TTG IgA, then added the product of multiplying the cost of obtaining small bowel biopsies by the number of true and false positives, then added the product of multiplying the cost of endoscopy with small bowel biopsies by the number of false negatives.
12. Calculated by multiplying 3 by the cost of TTG IgA, then added the product of multiplying the cost of repeating endoscopy with small bowel biopsies by the number of true positive, false positives, and false negatives.
13. Calculated by subtracting 11 from 10
14. Calculated by subtracting 12 from 10