A 6 week-old baby is presented for complaints of hematochezia. The baby had been delivered at full term without complications and the mother was able to breast-feed him from the beginning. His neonatal period was unremarkable and he has been gaining weight and developing normally. One week prior to the visit, mom noticed flecks of bright red blood in the diaper, mixed with somewhat looser stools. This presentation recurred twice in the following days and has caused great maternal anxiety. The mother explains that there are no other problems and that there is no family history of GI disorders. The mother is allergic to shellfish. The physical examination shows a happy, well-nourished, well-hydrated baby, without any positive physical findings.

The best course of action for the baby in the above vignette is:

A. Schedule a colonoscopy  
B. Order a barium enema  
C. Recommend discontinuation of breast feeding  
D. Recommend dietetic changes to mother to eliminate all milk protein and reassess in 2 weeks  
E. Start antibiotic coverage

The recommended response is D.

There is no need to perform procedures such as colonoscopy or barium enema in this case. The most likely diagnosis is obvious and direct therapeutic intervention is the best option. This would initially consist of recommending discontinuation of the intake of any milk protein-containing foods from the mother’s diet, while allowing breast-feeding to continue. This intervention is efficacious in about two-thirds of the cases and disappearance of hematochezia can be expected to occur within 7 to 10 days. Therefore, reassessing the child after this time is recommended. At that time the symptom persists (one-third of cases), then discontinuation of breast-feeding, to be replaced by an extensively hydrolyzed formula, will be required. Clearly there is no rationale for an antibiotic coverage.
Chapter 5: Training in Ethics, Medical Economics, and System-Based Practice

An African-American 13-year-old child is seen because of recurrent abdominal pain. He started to complain of vague mid-abdominal pain almost 2 years before; initially the episodes were mild, occurred about once every other week, and lasted a few minutes. Subsequently, however, they have appeared more frequently and their intensity may have increased. Currently, he has sharp pain at least twice a week, vaguely localized in the mid-abdominal area, rated 6 to 7 on a pain scale of 1 to 10, presenting in no clear association with any event, but sometimes following a meal. No nausea, vomiting, and/or constipation are reported. However, he does occasionally present loose stools and in 2 occasions they may have been blood-tinged. He reports no major change in appetite, but for the fear that eating may trigger the pain, his food intake has decreased, and his mother thinks he may have lost 2 to 3 kg in the past few months. No contributory elements are found in the past medical history. In review of systems, there has been in the past couple of years some concern about his growth in stature, and parents are planning a visit to an endocrinologist. No family history of GI disorder is reported. Both parents are tall. On physical examination, the boy appears thin; his weight is just below the 3rd percentile and his height is in the 10th percentile. The abdomen is full, with some tenderness at palpation of the mid and lower quadrants; there are no masses. His Tanner stage is II.

Which initial investigations listed below would be most high yield to narrow the differential diagnosis?

A. None, as this boy evidently is affected by functional abdominal pain.
B. An EGD
C. A plain X-ray film of the abdomen
D. Lab work: CBC with differential, ESR, CRP, ASCA, and p-ANCA titers, iron panel, albumin
E. Lab work: amylase, lipase, liver function tests (LFTs)

The recommended response is D.

Assessing a child for abdominal pain is a daunting task. Functional causes are known to be very common, occurring in approximately 15% of school-age children and teenagers, and they may have protean manifestations. There are, however, elements in this patient’s history that seem to indicate an organic origin: his stunted growth, his weight loss, the presence of occasional bloody, loose stools, and the objective finding of abdominal tenderness, typically absent in functional abdominal pain. Thus, performing no investigations would be a poor choice. An EGD is definitely an option, however, the patient does not present symptoms or signs clearly pointing to an upper GI involvement and, thus, the procedure is unlikely to provide support for a diagnosis at this initial stage. Even less informative would be a plain film of the abdomen, unlikely to disclose any abnormalities responsible for recurrent abdominal pain. Pancreatitis would have presented with a more acute course, would not have caused any blood in the stools, and the location of the pain would have been different. In addition, liver diseases do not cause recurrent abdominal pain. Thus, to obtain the tests in option E is clearly not a valid option. Rather, this young teenager with somewhat inadequate skeletal growth and weight loss, recurrent abdominal pain, and occasional bloody and loose stools may well be affected by Crohn’s disease. It is in fact known that changes in linear growth and in weight gain can precede, often by years, any obvious GI signs/symptoms, to the point that it is not infrequent that children with Crohn’s disease are first evaluated by endocrinologists.
A 67-year-old woman presented because of a three-year history of watery bowel movements. She had been in good health except for arthritis treated with ibuprofen and heartburn treated with omeprazole. The onset of diarrhea had been insidious. There was no accompanying weight loss and no blood in her stools. She always had unformed bowel movements, ranging in consistency from “pure water” to “milkshake-like.” She typically had a few bowel movements after breakfast and lunch; symptoms would then settle down for the day. She had no bowel movements at night. Defecation typically was urgent and she had several episodes of fecal incontinence. There had been little improvement with over-the-counter loperamide.

She had recently been widowed after her husband had succumbed to a long illness. She has been reclusive and is unwilling to leave the house because of fear of having to move her bowels. She was brought in by her daughter who was quite concerned about her mother’s health. She had no previous evaluation.

Physical examination shows a well-nourished older woman in no distress. T98, P 86 regular, R 16, BP 150/85. Height: 65 inches, weight: 160 pounds. There were no skin lesions. She had no jaundice. Mucous membranes were well-hydrated. Her chest was clear and cardiac examination was normal. Abdomen was soft; there was no organomegaly or mass. Digital rectal examination revealed reduced anal sphincter tone, adequate squeeze pressure, and no stool in the rectal vault.

Initial laboratory testing included a normal complete blood count. Serum chemistries showed: BUN 25 mg/dL, creatinine 1.1 mg/dL, K⁺ 3.2 mmol/L, Na⁺ 134 mmol/L, and albumin 3.5 g/dL. Liver tests were normal. TSH and T₄ were normal.

Urinalysis revealed a specific gravity of 1.020 and pH of 5.5; dipstick was negative.

Stool culture yielded normal flora; stool examination for ova and parasites was negative; stool *Clostridium difficile* toxin was negative.

The test most likely to give a definitive diagnosis in this patient is:

A. Stool for giardia antigen
B. 48-hour quantitative stool collection for electrolytes and fat
C. **Biopsy of colonic mucosa**
D. Biopsy of small bowel mucosa
E. Fat pad biopsy

The recommended response is C.

Selection of a definitive test depends on the utility of the test in making a particular diagnosis and the pre-test probability of that diagnosis. This relationship is formalized as Bayes’ theorem and is used—consciously or not—by physicians as they evaluate patients with specific problems. Utility is assessed by sensitivity (the likelihood that a patient with the problem will be detected, i.e., true positive) and specificity (the likelihood that a patient without the problem will not have a positive test, i.e., true negative). These are characteristics of the test and are not affected by the frequency of the problem in
the population. The higher the sensitivity and specificity are, the more definitive the test is. Even a definitive test will yield false positives on occasion, however. This is most likely to occur when the prevalence of a condition is low and many more people without the condition will be tested in the hope of identifying those that do have the condition. In those situations preliminary testing to enrich the population to be tested with affected individuals makes sense. On the other hand, if a diagnosis is very likely based on presentation and initial testing, use of a definitive test can confirm the diagnosis with a high degree of certainty.

In the case presented an older woman has developed watery diarrhea without evidence for malabsorption. The onset was not precipitous; she had no bleeding, had been in good health except for arthritis and heartburn, and had been ill for a long time. These features make a diagnosis of microscopic colitis (lymphocytic colitis or collagenous colitis) more likely than any other competing diagnosis. It is therefore quite reasonable to proceed with a definitive test (e.g., colonoscopy) that is likely to confirm the diagnosis, rather than proceeding with a screening test (e.g., stool analysis) to narrow down the differential diagnosis by identifying the type of diarrhea (i.e., secretory vs. inflammatory vs. fatty), as in Answer B. Answers A, D and E are all definitive tests for less likely diagnoses, such as giardiasis (course too long), celiac disease (unlikely to present at this age), and amyloidosis (a rare disease).

