Laboratory tests can be very helpful in evaluation or diagnosis of a patient with gastrointestinal (GI) disease. A complete blood count, biochemistry profile, and urinalysis should always be performed as part of the work-up to identify abnormalities in other organ systems that may cause clinical signs of gastrointestinal disease, as well as abnormalities that may support GI disease.

**Trypsin-like immunoreactivity (TLI):** The current gold standard for diagnosis of canine and feline exocrine pancreatic insufficiency (EPI) is the TLI assay, which is based on the fact that in health, a small amount of trypsinogen (the inactive precursor of trypsin) is released into the vascular space and can thus be measured in serum. In patients with EPI, the decrease in pancreatic functional mass causes a markedly decreased serum TLI concentration.

**Pancreatic lipase immunoreactivity (PLI):** Serum amylase and lipase activities have traditionally been used to diagnose pancreatitis; however, the utility of these is limited due to low sensitivity and specificity. Currently, the most sensitive and specific laboratory test for pancreatitis in cats and dogs appears to be the PLI assay (Idexx Spec cPL® or fPL®). In contrast to catalytically measured lipase activity, the PLI is an immunoassay that only measures pancreas-specific lipase, with a reported sensitivity of ~80%. Bed-side use SNAP® cPL and fPL tests are also available. While the serum TLI concentration may also be increased in patients with pancreatitis due to increased release of trypsinogen or trypsin, it has been shown to be less sensitive than the PLI for diagnosis of pancreatitis.

**Serum cobalamin and folate concentration:** Cobalamin (vitamin B12) is a water-soluble vitamin derived from dietary sources. Cobalamin undergoes a complex mechanism of absorption, involving gastric and exocrine pancreatic secretions (most importantly pancreatic intrinsic factor in cats and dogs), as well as a specific mucosal receptor in the ileum (cubam). It is therefore not surprising that multiple factors can affect cobalamin absorption, including EPI (decreased secretion of proteases and intrinsic factor), and chronic ileal disease (damaged receptors). *Folic acid* (vitamin B9) is another water-soluble vitamin, but unlike cobalamin, it is absorbed in the proximal small intestine, where it first must undergo deconjugation from its dietary polyglutamate form to folate monoglutamate, with subsequent absorption via mucosal folate carriers. Proximal small intestinal disease can disrupt this process by affecting the brush border enzyme folate conjugase, and/or the folate carrier mechanism.

**Fecal α1-proteinase inhibitor (α1-PI) concentration:** α1-Pl is a plasma protein of similar size to albumin, causing it to be lost into the GI tract at a similar rate to albumin in patients with protein-losing enteropathy. Unlike albumin, however, it resists intestinal proteolytic degradation and can be measured in fecal samples, where increased concentrations suggest GI protein loss.

**References:**
Steiner JM. Review of commonly used clinical pathology parameters for general gastrointestinal disease with emphasis on small animals. *Toxicol Pathol* 2014; 42: 189-194.