Gastroenterology investigation/management algorithm ("do it yourself" kit)

Thank you for referring this patient. Under the current circumstances, I cannot provide an appointment but I am confident that I can help you sort out the problem.

It will require that you or your nursing staff access the information on my website, and follow simple instructions and recommendations that will either resolve the problem, or "fine tune" the clinical question.

The goal is to arrive at satisfaction for you and the patient, and a managed, or manageable, patient problem. Secondly, an e-consult may be appropriate. Thirdly, depending on the information, and the appropriate workup and initial management steps, we can expedite an office visit or endoscopic procedure.

1) Decide if the patient's main issue can be classified under the following classification (in anatomical order from esophagus to rectum) :

- A) Gastroesophageal reflux (heartburn)
  - i. Well controlled with PPI therapy (patient wants to discuss options and/or get off PPI therapy, and may need a "once in a lifetime gastroscopy")
  - ii. Inadequately controlled despite twice a day PPI therapy
- B) Dysphagia (limited to mechanical dysphagia which means for solids and no dysphagia for liquids unless there is a bolus impaction)
  - i. Dysphagia with alarm symptoms
  - ii. Dysphagia with no alarm symptoms
- C) Noncardiac chest pain
- D) Abdominal pain with normal bowel function
  - i. Abdominal pain with alarm symptoms or age criteria requiring urgent evaluation
  - ii. Abdominal pain with no alarm symptoms or age criteria requiring urgent evaluation
- E) Nausea and/or vomiting
  - i. With no symptoms of bleeding (hematemesis, coffee grounds, or melena)
  - ii. With trivial hematemesis or "dark stools"
  - iii. With significant hematemesis or definite melena
- F) Nonbloody diarrhea
- G) Chronic constipation without bleeding
- H) Irritable bowel syndrome

I) Rectal bleeding
   i. With solid or hard stools
   ii. Bloody diarrhea
   iii. With loose stools (i.e. presumed secondary to diarrhea)

J) Fatty liver
   i. On imaging only
   ii. With abnormal liver enzymes

2) go to the website (drlalor.ca/health-information) Find the heading "helpful documents", and find the heading/folder "primary care GI management algorithms":

3)Choose the appropriate symptomatic presentation. **The box has a left side of ACTIONS, the right side is some BACKGROUND/OPINIONS/FACTS/EXPLANATIONS:**

4) follow the instructions and the pathway to satisfaction.

A i) Gastroesophageal reflux, well-controlled with PPI therapy	
• Confirm that the symptom is classic heartburn or retrosternal burning discomfort • If the patient wants to discontinue the PPI, they need to review the document entitled "acid reflux", in the "helpful documents" section of the website. • Reassure patient that PPI therapy is very safe (the paper on acid reflux, which I wrote, goes into significant detail about the published risks, out-dated concerns, and the true safety of these medications) • Instruct that dietary and lifestyle measures need to be addressed aggressively, but may not result in the ability to stop the PPI	The diagnostic criteria are classic heartburn or retrosternal burning discomfort relieved by antacids and eradicated by a trial of PPI therapy. If the patient was solved with an H2-blocker, the diagnosis is confirmed and no GI follow-up is required. If the PPI is tolerated, then the criteria for being seen for discussion, or a "once in a lifetime gastroscopy" are usually the following : • the patient would like to come off the PPI • The patient, or yourself, believes in a "once a lifetime gastroscopy", which is recommended by some societies, mostly American societies, for

• Advise that other medical therapy may help diminish the requirement for PPI, but ranitidine (at the time of writing this paper) is not available, and famotidine seems to be difficult to find. Screening for Barrett's is controversial. The patient at most risk for Barrett's would be the patient with some or all of the following risk factors : • Male gender, age over 40, chronic reflux, never previously scoped, family history of Barrett's or esophageal cancer, obesity, ongoing smoking or alcohol excess, and significant nocturnal reflux. • These patients, in my opinion, need a "once in a lifetime" gastroscopy. Therefore, if you and your nursing staff have reached this point in this algorithm, please refer for nonurgent gastroscopy.	patients who are over 40, or have had reflux symptoms for at least 5 years, and are presumed to be at risk for Barrett's esophagus Unfortunately, the vast majority of patients with Barrett's complicated by adenocarcinoma have never discussed their reflux with their primary care practitioner, did not have significantly abnormal symptoms of reflux for any length of time, and/or never previously underwent gastroscopy. Fortunately, the vast majority of patients with Barrett's identified at endoscopy will not get esophageal cancer, and can be reassured about the low risk for malignancy after Barrett's is diagnosed.

A ii) Gastroesophageal reflux or heartburn not well-controlled by medical therapy	
▪ confirm that the symptom is either classic heartburn, or virtually classic heartburn ▪ confirm that the PPI is being taken: ▪ 15-30 minutes before breakfast or before supper ▪ on a daily basis without interruption ▪ increase the PPI to twice daily, taken both before breakfast and before supper	• At the time of writing this algorithm, February 2020, this is an extremely common reason for referral to GI. ▪ This obviously requires confirmation that there is no side effect, the commonest side effects being headache or diarrhea, and secondly confirmation for the patient that daily long-term PPI therapy is completely safe and appropriate ▪ There is little evidence for the efficacy of switching PPI, but some patients respond better to one PPI than others. I find that rabeprazole lacks potency, Dexilant more commonly produces headache or diarrhea, and to a lesser extent Prevacid/lansoprazole. My preferred

▪ have the patient review the document on "acid reflux" with careful and detailed attention to the lifestyle/dietary factors (especially regarding cigarette smoking, weight reduction, and avoiding eating and drinking before bedtime) ▪ switch PPI ▪ review consider the possibility of "hypersensitive esophagus" (significant sensitivity to small amounts of acid reflux, or perhaps "non-acid reflux"), and "functional heartburn", which seems to be esophageal pain without any significant acid reflux, like "IBS of the esophagus". • These diseases of visceral hypersensitivity may require central neuromodulators, the latest and more acceptable term for low-dose tricyclic antidepressants. • Suggest an e-consult at this time for further advice.	choice is pantoprazole magnesium, 40 mg, prescribed as Tecta because it is easy to write and does not require an LU code. ▪ My 2nd choice would be esomeprazole, 40 mg, and although in the past, we seemed to be seeing patients who responded poorly to generics and better to tradename drugs, there is no science to support this at the current time, and it is very difficult to get tradename PPI therapy.

B i) Dysphagia with alarm symptoms	
• alarm symptoms are : • recent onset, age over 40, progressively worsening dysphagia for solid food, weight loss, or any symptoms of upper GI bleeding, anemia especially iron deficiency • such patients need PPI therapy, and urgent gastroscopy	NB Dysphagia does not include globus sensation

B ii) Dysphagia without alarm symptoms	
• Assess and document duration, progression, intermittency, and whether for solids only, or both liquids and solids • Consider referral for SLP swallowing assessment • Even when they suggest a gastroenterology referral, understand that these patients may not be able to be accommodated in the current Barrie environment	• this is usually motility-type dysphagia which occurs with liquids as well as solids, is variable in severity, likely chronic, and nonprogressive. • More common in CNS disease, like stroke, Parkinson's, etc • May be associated with "choking" – ie things like liquids going down the wrong way. • Unfortunately, having liquids go down the wrong way, causing choking, coughing and sometimes significant distress, seems to be part of middle-age, and increasing with advanced middle-age, and old age. Additional exacerbating features probably include neurological disease.

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• Cardiac disease must be ruled out.

• Musculoskeletal disease should be ruled out by careful palpation of ribs, and costochondral junction. Localized tenderness of the costochondral junction is Tietze’s syndrome

Remaining GI diagnosis is esophageal spasm :

▪ treat aggressively for acid reflux-PPI 40 mg daily or twice daily before meals

▪ add antispasmodic, ideally Dicetel (a GI specific calcium channel antagonist) 50 mg 3 times a day

• If pain is refractory to Dicetel, increased to 100 mg 3 times a day or add nifedipine 10 mg 3 times a day and then convert to long-acting if tolerated

• Continue PPI therapy while using smooth muscle relaxants, otherwise reduced LES pressure might precipitate further reflux

▪ avoid very hot or cold drinks or foods

▪ explore for stress, anxiety, supratentorial/psychosocial factors

▪ consider neuromodulator therapy, i.e. low-dose tricyclic antidepressant
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Esophageal motility disorders are difficult to diagnose and treat.

The classic and most important esophageal motility disorder is achalasia which can present with chest pain and is often missed diagnosed as reflux. More classically it presents with dysphagia, for both liquids and solids, and frequent regurgitation, which is generally liquid or food that has not reached the stomach.

The 2nd most classic and important esophageal motility disorder is “scleroderma esophagus” which occurs more frequently in scleroderma and other similar connective tissue diseases, and will have the most severe reflux because there is a motor disturbance in the body of the esophagus with ineffective or absent peristalsis, and a severely incompetent lower esophageal sphincter, so these patients often require very high doses of PPI therapy and yet developed pain, bleeding and sometimes severe stricturing.

Beyond these 2 esophageal motility disorders, there is very little to be gained by esophageal motility testing.

Esophageal testing is not available in Barrie, and means a trip to Toronto or Hamilton, the testing is unpleasant and done wide-awake for reasons of cooperation, and most patients either do not tolerate the testing or will never have again.

Unfortunately, esophageal testing is required prior to consideration of antireflux surgery.

There is a very long waiting list for esophageal testing.
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D) Abdominal pain with normal bowel function	

• With alarm symptoms or age criteria requiring urgent evaluation- significant weight loss, significant loss of appetite or early satiety, age over 40 :
 	
  • Arrange abdominal ultrasound
  • refer for gastroscopy/colonoscopy
  • then CT scan
 	
• No alarm symptoms and age under 40 :
 	
  • Abdominal ultrasound, and if normal, then abdominal CT scan
  • Ensure that bowel function is regular, if not psyllium 1 teaspoon once daily, increasing to twice daily if necessary
 	
  • Explore anxiety/stress/depression/dementia
 	
  • Consider neuromodulator therapy (low-dose tricyclic antidepressant)
	Abdominal pain is probably the commonest GI reason for self-referral to primary care, or to the ER department, or for referral to gastroenterology/general surgery
	
	Abdominal pain should be identified as epigastric, mid abdominal, or lower abdominal, and ideally, if possible, left-sided, central, or right-sided.
	
	There is increasing concern, amongst patients and physicians, about the increasing incidence of colorectal neoplasia in patients under 50, previously considered to be low risk.
	
	Abdominal pain with normal bowel function could easily be hepatobiliary or pancreatic, renal/urological, could still be bowel spasm, dyspepsia, or if upper abdominal, even esophageal.
	
	Lower abdominal pain obviously includes various gynecological possibilities
	
	Chronic abdominal pain, present for more than 12 months and often years, is most commonly “functional” and can be exacerbated, or even sometimes caused by chronic narcotics.
	
	Narcotics play no role in chronic abdominal pain and very little role even an acute or recent onset abdominal pain, other than in the emergency department while awaiting surgical or gastroenterology diagnosis.
	
	In my opinion, patients should not be discharged from the ER with narcotics, new or increased, without a clear diagnosis and specialty follow-up.

E i) Nausea and/or vomiting, with no symptoms of bleeding	
• Inquire about cannabis/marijuana usage. Recommend strongly that this needs to be stopped immediately • Order urine toxicology for cannabinoids. If positive, wait for a further 2 months of abstinence, and retest • Consider recent or even long-standing medications and drug side effects • Consider long-standing or poorly controlled diabetes, as risk factor for gastroparesis • Order gastric emptying study • Discontinue NSAID therapy and low-dose aspirin unless the latter is required for secondary prophylaxis • Order HP serology and treat if positive • Refer for gastroscopy	Cannabinoid hyperemesis, and cyclical vomiting syndrome have similar features and significant overlap. In my opinion, any patients under 30, with regular and especially daily use of cannabis, need to completely give up cannabis, before further evaluation, especially in the absence of other alarm symptoms These patients frequently demonstrate the following : Insistence that the problem is not related to cannabis (they will demand investigation, they will point out that most of their friends and/or acquaintances use cannabis to the same or a greater amount, and do not have GI symptoms) They will insist that the cannabis is necessary for treatment of anxiety, insomnia, or poor appetite. Some of them use cannabis for chronic pain management Sometimes they will endorse relief of nausea and vomiting with very hot and frequent showers or baths-this is considered to be pathognomonic for cannabinoid hyperemesis syndrome

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<tr><th colspan="2">E ii) Nausea and/or vomiting with trivial hematemesis or “dark stools”</th></tr>
<tr><td>▪ CBC and ferritin, repeat in 1-2 weeks with reticulocyte count if initial hemoglobin is low

▪ start PPI once daily

▪ follow E i) protocol</td><td>Alcohol overindulgence, especially in patients under 40, but also in chronic alcoholics, frequently results in minor hematemesis, and occasional significant hematemesis, usually self-limited, related to Mallory-Weiss syndrome.

Chronic alcoholics are obviously at risk for severe reflux esophagitis, alcoholic liver disease with varices, and other causes of GI bleeding. The latter is more likely to be accompanied by significant melena and/or anemia</td></tr>
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<tr><th colspan="2">E iii) Nausea and/or vomiting with symptoms of significant upper GI bleeding</th></tr>
<tr><td>• CBC/ferritin/reticulocyte count, liver enzymes, bilirubin, albumin - if you feel that you have 24 hours to review this blood work along with the patient and that the patient does not need to be in the ER already.

• Start PPI

• Refer to ER for gastroscopy</td><td></td></tr>
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F) Nonbloody diarrhea	
• Duration **less than 4 weeks** • stools for C&S, C. difficile, ova and parasites, symptomatic therapy if required using loperamide • Duration **more than 4 weeks** • stool tests as above, CBC, ferritin, B12, ESR/C-reactive protein, celiac serology if patients can afford it • Consider a trial of psyllium, 1 teaspoon once daily or twice daily-many patients have dramatic improvement of diarrhea with psyllium. It is not just a "laxative" • Refer for gastroscopy/colonoscopy	An outpatient gastroenterology appointment is rarely required for a complaint of diarrhea that has been present for less than 4 weeks. The difference between acute diarrhea and chronic diarrhea (cutoff 4-6 weeks) is the strong likelihood that the acute diarrhea will resolve on its own, and is likely to be infectious, with a 40-80% chance that the stool test will be diagnostic. C. difficile infection is obviously related to previous antibiotics, and many situations but is also seen in the following patients groups, even without previous antibiotics : • IBD patients-especially ulcerative colitis • PPI patients-this remains controversial but there is little doubt that PPIs contribute to an increased risk for enteric/Traveler's infections, and almost certainly for C. difficile • Elderly patients • Patients recently admitted to hospital or possibly recently discharged from hospital Chronic diarrhea is less likely to have a positive stool test, except in immunosuppressed patients, immigrants, especially from parasitic and amoebic endemic areas. Chronic diarrhea, of new onset, after age 50, is rarely irritable bowel syndrome and requires consideration of the following : 1. the development of lactose intolerance (possible at any age) 2. The development or diagnosis of celiac disease

	3. medication side effect 4. the diagnosis of microscopic (i.e. lymphocytic or collagenous) colitis There is no role for a trial of gluten avoidance in any patient complaining of chronic diarrhea of new onset. It is reasonable to trial of gluten avoidance after celiac disease is definitively ruled out, and in patients with IBS

G) Chronic constipation without bleeding	
Management of chronic primary (idiopathic) constipation : 1. Encourage nonpharmacological managements including exercise, dietary fiber, and generous amounts of water 2. Some patients experience benefit from caffeine such as coffee, as a mild bowel stimulant 3. Encourage psyllium(Metamucil), 1 teaspoon daily, increasing after 2 weeks to a maximum dose of 2 teaspoons 1 teaspoon twice daily 4. I do not recommend the use of capsules - it seems to be a significant number of capsules required to equate to 1 teaspoon of powder, and the water taken with the powder clearly has a beneficial effect 5. A 2nd choice fiber supplement would be guar gum, either as Fiber 4, or purchased from a Bulk Barn. It does dissolve clear, but does not have the "track record" of psyllium.	The approach to chronic constipation, if there were adequate gastroenterology resources, would involve the following : Careful history and physical examination including rectal examination A search for endocrine/metabolic/neurological disorders, i.e. secondary constipation A careful review for alarm symptoms including bleeding, weight loss, family history, PCP "gut feeling" Blood work including CBC/ferritin/B12/renal function/electrolytes/inflammatory markers, and **calcium** Benefiber is frequently chosen (and marketed) as a more palatable an acceptable choice than psyllium, and indeed is a white powder that resolves clear in water. Unfortunately, the active and only ingredient, inulin, is a prebiotic and a major component of the FODMAPs, and hence a major contributor to abdominal bloating and gas in patients who have FODMAPs sensitivities

6. If symptoms are not resolved adequately with Metamucil/psyllium, continue the psyllium but add milk of magnesia, 1 tablespoon once or twice daily, especially after 24 hours of no stool 7. polyethylene glycol 3350 (RestoraLAX, ClearLax, Lax-A-Day) is the next choice, and often advertised and recommended as the 1st choice. I do not use it as a 1st choice, mainly because of cost, and a beneficial effect of psyllium, above and beyond the laxative benefit of polyethylene glycol 8. I usually prefer to avoid Senokot, Dulcolax, Fleet enemas and suppositories.	1. There is some concern about chronic use of stimulants, and I find that chronic Senokot can lead to loss of efficacy, and increased abdominal pain, especially in patients with chronic left lower quadrant pain and/or diverticulosis 2. there is however no evidence that chronic use of Dulcolax or even Senokot leads to dependency and deteriorating bowel function-this is an active area of research, but it appears that patients who use these products chronically in continue to get worse, we are probably going to get worse anyway

H) Irritable bowel syndrome	
• Simple blood work to exclude or at least reduce suspicion of organic disease : CBC, ferritin, B12, ESR/C-reactive protein, celiac serology if patients cannot afford it • Reassurance that the clinical picture is strongly supportive, and IBS is not a "diagnosis of exclusion" • Simple management with psyllium 1 teaspoon daily or up to twice daily and not more than 2 teaspoons a day, healthy diet and generous amounts of liquid • Referral to dietitian for exclusion of lactose intolerance, other suggestions such as identifying excess caffeine, fatty food, and	The syndrome requires chronic or recurrent abdominal pain over a period of 6 months or more, with a clear relationship between bowel function and abdominal pain. The pain may be relieved or exacerbated with defecation, and the bowel movements need to be altered from normal in either consistency, frequency or both. The commonest (IBS-M) involves both constipation and diarrhea, the other 2 types (IBS-D, IBS-C) are obviously either diarrhea dominant or constipation dominant. It is rare for IBS to appear after age 40, and it is common to have been present from teenage or 20s. Documents that I consider critical for both patients and primary care physicians are available, on the website, under the heading "health information" and the subheading "irritable bowel syndrome"

symptoms from red meat, and consideration of a FODMAPs reduction diet • Consideration of referral for gastroscopy and colonoscopy to exclude IBD and celiac disease	These documents are entitled: Irritable bowel syndrome Bloating Functional disorders/diseases Probiotics

H i) Rectal bleeding with solid or hard stools	
• Assess CBC/ferritin, and age, family history • If CBC or ferritin are abnormal, age over 30, or family history of colorectal neoplasia, then refer for colonoscopy • If CBC/ferritin normal, age under 30, with no family history, then treat with psyllium 1 teaspoon daily, and review in 3-6 weeks. • If bleeding has not resolved after 3-6 weeks, then refer for colonoscopy	Do not except internal hemorrhoids as a cause for internal bleeding until a specialist has made that diagnosis In a patient with known internal hemorrhoids, do not except ongoing intermittent or chronic bleeding. The bleeding must be resolved, even if it requires hemorrhoidal banding. Ongoing “hemorrhoidal” or “anorectal” bleeding leads to a dangerous diagnostic confusion already have, or will develop, rectal cancer, and diagnosis may be delayed if the bleeding is assumed to be related to hemorrhoids (even with previous specialist diagnosis) Hemorrhoids and hemorrhoidal bleeding frequently responds to psyllium 1 teaspoon daily or a short course of suppositories such as Anusol.

H ii) Rectal bleeding with bloody diarrhea	
• CBC/ferritin/ESR/C-reactive protein • stools for culture and sensitivity, O and P • travel history, and family history • Refer for colonoscopy (urgent)	Please try and distinguish between rectal bleeding and bloody diarrhea Bloody diarrhea is quite uncommon with C. difficile infection

H iii) Rectal bleeding with loose stools	
• CBC/ferritin • follow the nonbloody diarrhea protocol (see F above) • Refer for colonoscopy if bleeding is not resolved in 3-6 weeks	Bleeding is presumed secondary to diarrhea and anal irritation.