Chronic Abdominal Pain Primary Care Pathway

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1. Diagnostic criteria

Must have the following for 3 months prior, with symptom onset ≥ 6 months ago:

- Continous or near continuous abdominal pain
- No, or only occasional relationship of, pain with physiological events
- Pain limits some aspect of daily functioning
- Pain is not feigned
- Pain is not explained by another structural or functional GI disorder or medical condition

2. Symptoms better explained by another GI disorder?

Is it GERD?
Predominant heartburn or regurgitation

Yes → Follow GERD pathway

Is it IBS?
Pain related to defecation or change in stool form/frequency

Yes → Follow IBS pathway

Is it dyspepsia?

- Epigastric discomfort
- Upper abdominal pain/bloating

Yes → Follow Dyspepsia

No

3. Alarm features?

- Family history (first degree relative) of IBD or colorectal cancer
- Onset of symtoms after age 50
- Unintended weight loss (> 5% over 6-12 months)
- Persistent vomiting
- Visible blood in stool
- Iron deficiency anemia (see Iron Primer)

Yes → 7. Refer for consultation/ endoscopy

No

4. Optimize management of alternate diagnosis or secondary causes

- Consider referred pain from other systems
- Review medications and discontinue or reduce dose of culprit medications
- Identify and eliminate dietary triggers and allergens

If unsatisfactory response to management, consider using an advice service before referring

5. Baseline investigations

Initial work up

- CBC, electrolytes (Na, K, Cl, Ca, Mg, P), creatinine
- Liver enzymes (ALT, ALP), albumin, bilirubin, lipase
- CRP - if suspecting inflammatory or infectious conditions
- *C. difficile*, ova and parasites
- Ferritin and transferrin saturation (see Iron Primer)

Consider based on clinical context

- Celiac disease screen
- Thyroid test (TSH)
- *H. pylori* test (HpSAT or UBT)
- Urinalysis
- Pregnancy test (β-hCG)
- Abdominopelvic ultrasound

Abnormal results → Treat or refer for consultation

Consistent with Centrally Mediated Abdominal Pain Syndrome (CAPS)

6. Management

- Patient reassurance: reassessment and reappraisal to establish therapeutic relationship
- Lifestyle modifications: stress reduction may include physical activity, mindfulness, meditation, hypnotherapy, and acupuncture
- Dietary modifications: assess common food triggers and keep a food journal. Consider referral to a Registered Dietitian.
- Psychological therapy: refer to behavioural health specialist. If psychiatric symptoms predominate, consider psychiatry.
- Pharmacological therapy: for moderate to severe CAPS symptoms only (antispasmodics, TCAs, SNRIs, or SSRIs)

This primary care pathway was co-developed by primary and specialty care and includes input from multidisciplinary teams. It is intended to be used in conjunction with specialty advice services, when required, to support care within the medical home. Wide adoption of primary care pathways can facilitate timely, evidence-based support to physicians and their teams who care for patients with common low-risk GI conditions and improve appropriate access to specialty care, when needed. To learn more about primary care pathways, check out this short video.

CHRONIC ABDOMINAL PAIN PATHWAY PRIMER

- Chronic abdominal pain is a challenging complaint for primary care and specialist physicians. The multitude of patients presenting with this problem reflects the many causes and non-specific nature of abdominal pain.
- In the absence of alarm features, most patients with chronic abdominal pain will have a benign cause. These patients can be safely observed, and symptoms can treated within the Patient Medical Home.
- **Centrally Mediated Abdominal Pain Syndrome (CAPS)**: Formerly known as *functional abdominal pain syndrome,* this chronic condition is characterized by continuous or near-continuous, often severe abdominal pain, not due to an organic cause, and rarely associated with disturbances in gastrointestinal (GI) function.
    - CAPS is distinguished from other functional GI disorders, such as irritable bowel syndrome (IBS) and functional dyspepsia, by the predominance of pain as the central complaint and the lack of a consistent relationship of pain with food intake or defecation. It may be associated with other somatic disorders such as fibromyalgia and chronic fatigue syndrome.
    - CAPS is less common than other functional GI disorders, affecting approximately 0.5-2.1% of the general population.[1] It is 1.5-2 times more common in women than in men.[2] Prevalence reaches a peak at age 40 and decreases with age.[3]
    - Many patients with CAPS will seek consultation with different specialists, have repeated imaging or endoscopic procedures, and undergo invasive surgeries (most often being hysterectomy and exploratory laparotomy) without benefit.[4]
    - CAPS can significantly impact quality of life.

Checklist to guide in-clinic review of your patient with Chronic Abdominal Pain	
☐	CAPS diagnostic criteria (Rome IV) must have the following for 3 months prior, with symptom onset ≥ 6 months ago: • Continuous or near continuous abdominal pain • No, or only occasional relationship of, pain with physiological events (e.g. eating, defecation, or menses) • Pain limits some aspect of daily functioning (e.g. work, intimacy, social/leisure, family life, and care giving for self or others) • Pain is not feigned • Pain is not explained by another structural or functional GI disorder or other medical condition
☐	Ensure symptoms are not better explained by another GI disorder (see algorithm Box 2).
☐	Confirm absence of alarm features (see algorithm Box 3). If alarm features are identified, refer for specialist consultation
☐	Exclude alternate diagnoses and/or secondary causes (see algorithm Box 4).
☐	Evaluate for underlying organic causes with baseline investigations (see algorithm Box 5). If other causes identified, treat or refer for specialist consultation.

[1] Drossman, D. A., Li, Z., Andruzzi, E., Temple, R. D., Talley, N. J., Thompson, W. G., ... & Koch, G. G. (1993). US householder survey of functional gastrointestinal disorders. *Digestive diseases and sciences*, *38*(9), 1569-1580.
[2] Thompson, W. G., Irvine, E. J., Pare, P., Ferrazzi, S., & Rance, L. (2002). Functional gastrointestinal disorders in Canada: first population-based survey using Rome II criteria with suggestions for improving the questionnaire. *Digestive diseases and sciences*, *47*(1), 225-235
[3] Bharucha, A. E., & Camilleri, M. (2001). Functional abdominal pain in the elderly. *Gastroenterology Clinics of North America*, *30*(2), 517-529.
[4] Maxton, D. G., & Whorwell, P. J. (1992). Use of medical resources and attitudes to health care of patients with 'chronic abdominal pain'. *Br J Med Econ*, *2*, 75-79.

☐	If unsatisfactory response to management (see algorithm Box 6), consider using an advice service before referring. Otherwise, continue care in the Patient Medical Home.

EXPANDED DETAILS

1. Diagnostic criteria

- CAPS diagnostic criteria (Rome IV) must have the following for 3 months prior, with symptom onset ≥ 6 months ago:
    - Continuous or near continuous abdominal pain
    - No, or only occasional relationship of, pain with physiological events (e.g. eating, defecation, or menses)
    - Pain limits some aspect of daily functioning (e.g. work, intimacy, social/leisure, family life, and care giving for self or others)
    - Pain is not feigned
    - Pain is not explained by another structural or functional GI disorder or other medical condition
- The biologic etiology of CAPS is thought to be like that of other chronic visceral pain disorders, including IBS, functional dyspepsia, and interstitial cystitis. An abnormality in central pain processing signals and modulation of pain regulatory pathways in the brainstem results in an exaggerated sensitivity to both noxious and innocuous stimuli.
    - Predisposing factors are likely to include a combination of genetic, environmental, and behavioural traits. Alterations in serotonin reuptake, disruption of mucosal barrier function, and changes in the balance of pro- and anti-inflammatory cytokines have been implicated in the development of functional GI disorders.[5]
    - Psychological factors, such as the presence of psychosocial stressors, underlying depression, anxiety, somatic disorders, history of trauma, eating disorders, and poor coping skills can all trigger or amplify the pain experience.[6,7]
- Initial work-up should consist of a detailed history and physical examination, thorough medication review, and, in the absence of alarm features, a conservative approach to exclude other medical conditions.
    - History should include assessment of pain duration and quality, and a review of any patterns in presentation or associated symptoms.
    - Assessment should include screening for underlying sleep or mood disorders. Patients with mental health issues, such as depression and anxiety, often have refractory symptoms until those issues are addressed.
    - A significant percentage of patients with chronic abdominal pain or other functional GI disorders have a history of trauma (e.g. sexual assault or physical and psychological abuse) or PTSD. This type of trauma may contribute to symptoms through the brain-gut axis, so it is important to explore this in a compassionate manner. Undergoing endoscopy may trigger a negative response in survivors of trauma; addressing this possibility may be appropriate if considering a referral for endoscopy when the clinician is aware of a history of trauma. For additional information, see Abuse, Trauma, and GI Illness: Is There a Link? and Trauma-informed care.
    - It is important to recognize states of immunosuppression. Whether comorbid or drug related, immunosuppression may mask other important clinical signs of significant pathology (e.g. poorly controlled diabetes, cirrhosis, chronic kidney disease, human immunodeficiency virus (HIV), and use of immunosuppressive agents, such as glucocorticoids, chemotherapy, and some biologics).

[5] Mayer, E. A. & Collins, S. M. (2002). Evolving pathophysiologic models of functional gastrointestinal disorders. *Gastroenterology, 127*(7), 2032-2048.
[6] Wegener, S. T., Castillo, R. C., Haythornthwaite, J., MacKenzie, E. J., Bosse, M. J., & LEAP Study Group. (2011). Psychological distress mediates the effect of pain on function. *Pain*, *152*(6), 1349-1357.
[7] Drossman, D. A. (2011). Abuse, trauma, and GI illness: is there a link? *American Journal of Gastroenterology*, *106*(1), 14-25.

- A physical exam, including a complete abdominal assessment, should be performed to clarify pain location and radiation, rule out significant pathology, and legitimize symptoms.
- If abdominal pain is suspected to be abdominal wall in origin (MSK), the Carnet's test may be useful. Raise the head or the feet to contract the musculature of the abdominal wall, and the pain stays the same or is worse is suggestive. Pain improvement or resolution with abdominal wall injections with lidocaine confirms the diagnosis.

2. Symptoms better explained by another GI disorder?

- There is significant overlap of CAPS and other functional GI disorders, such as functional dyspepsia, IBS, gastroesophageal reflux disease (GERD).
- Typically, CAPS is distinguished by the absence of, or only occasional relationship with, pain associated with other physiologic events, such as eating or defecation. A careful history is essential to determine if symptoms are more consistent with one of these other disorders:
  - Does the patient suffer from associated heartburn or regurgitation that suggests GERD? See GERD pathway.
  - Is the pain related to defecation or associated with change in stool form/frequency that is more consistent with IBS? See IBS pathway.
  - Is there post-prandial epigastric discomfort, upper abdominal pain, and/or bloating that is more typical of dyspepsia? See Dyspepsia pathway.

3. Alarm features

If any of the following alarm features are identified, refer for consultation/endoscopy. Include any and all identified alarm features in the referral to ensure appropriate triage.

- Family history (first-degree relative) of inflammatory bowel disease (IBD) or colorectal cancer
- Onset of symptoms after age 50
- Unintended weight loss (> 5% over 6-12 months)
- Persistent vomiting
- Visible blood in stool
- Iron deficiency anemia (see Iron Primer)

4. Optimize management of alternate diagnoses and/or secondary causes

- Many disorders can produce chronic abdominal pain (Table 1), so it is important for the clinician to consider a broad diagnostic differential before concluding on a functional disorder.
- A careful review of medications should be performed to identify ones that may be causing GI side effects. Discontinue use or reduce dose of culprit medications.
  - A multitude of over-the-counter and prescription medications can cause GI upset (e.g. iron, potassium, and calcium supplements, antidiarrheals, laxatives, antibiotics, statins, metformin, and bisphosphonates). If coincident timing of initiation or dose escalation is suspicious, the drug monograph should be consulted.
  - Non-steroidal anti-inflammatory drugs (NSAIDs), tobacco, and alcohol may cause injury to GI mucosa.
  - Narcotics can alter gut motility and paradoxically worsen pain (narcotic bowel syndrome).
  - Long-term habitual cannabis usage can sometimes lead to cannabinoid induced gut dysfunction and colicky abdominal pain. It is often associated with nausea and vomiting, which may be relieved by hot showers. Treatment includes gradual dose reduction, followed by discontinuation of cannabis.
- Dietary history is also key in identifying triggers and allergens. These will not cause chronic abdominal pain, but may cause bloating and gas that can exacerbate abdominal pain.

- Ingestion of large amounts of carbonated beverages and fruit juices (which may contain significant quantities of fructose and sugar alcohol), or gas-producing foods (e.g. beans, onions, cabbage, and cauliflower).[8]
- Other dietary culprits include gluten (found in wheat, barley, oats, rye, and triticale; is associated with gluten intolerance or celiac disease), lactose (milk and ice cream; is associated with lactose intolerance), and other high FODMAPS foods (associated with IBS).
- Dietary allergens/sensitivities such as milk protein, wheat (gluten), soy, eggs, fish, shellfish, peanuts, and tree nuts are rarely causes of isolated chronic abdominal pain, in the absence of other signs or symptoms. True allergies, like milk protein allergies, are extremely rare. Most food related symptoms are not true allergies.

Table 1. Major differential diagnoses to consider in the evaluation of chronic abdominal pain

System	Differential diagnosis
Gastric	• GERD • NSAID-related gastritis • Helicobacter pylori gastritis • Gastric malignancy • Peptic ulcer disease • Alcohol induced gastritis • Gastroparesis, impaired emptying, accommodation • Parasitic infection
Small bowel	• Peptic (duodenal) ulcer disease • Small intestinal bacterial overgrowth (SIBO) • Chronic mesenteric ischemia • Small bowel malignancy • Celiac disease • IBD • Incomplete obstruction • Parasitic infection
Colon	• IBD • Recurrent ischemic colitis • Chronic constipation • Parasitic infection • Recurrent episodes of diverticulitis • Incomplete obstruction and pseudo-obstruction • Colon malignancy
Hepatic-pancreatic-biliary	• Biliary colic, sphincter of Oddi dysfunction • Liver abscess • Pancreatic or biliary tree malignancy • Hepatitis • Chronic pancreatitis
Functional GI	• CAPS • IBS • GERD • Functional dyspepsia • Abdominal migraine
Non-GI	• **Cardiac** - angina • **Endocrine** - adrenal insufficiency, hypothyroid, hypercalcemia • **Gynecologic** - pregnancy complications, pelvic inflammatory disease, endometriosis, fibroids, ovarian malignancy • **Hematologic** - porphyria, sickle cell, angioedema, familiar Mediterranean fever • **Musculoskeletal** - bony pain, muscular strain or spasm, abdominal wall pain, costochondritis • **Dermatologic** - post herpetic neuralgia • **Psychological** - somatic disorders, anxiety, depression, post-traumatic stress disorder (PTSD), eating disorders • **Spleen** - splenomegaly • **Urogenital** - kidney stones, urinary retention • **Vascular** - abdominal aortic aneurysm
Medications/ supplements	• Cannabinoid hyperemesis syndrome • Narcotic bowel syndrome • NSAID-related gastropathy, enteropathy, colopathy • Bisphosphonates • Iron, potassium, calcium supplements • Antidiarrheals • Laxatives • Antibiotics • Statins, metformin • Immunosuppression medications (can mask other etiologies and alter presentation)

[8] Gotfried, J. (2020). Chronic abdominal pain and recurrent abdominal pain. *Merck Manual*.

Allergens/ sensitivities	• Food antigen	• Environmental exposure

5. Baseline Investigations

- The appropriateness of a limited diagnostic workup and avoidance of unnecessary (repeated) endoscopic procedures is supported by a low miss rate for significant GI pathology[9] and a failure of a negative endoscopy to provide reassurance or improve health-related quality of life.[10]
- Assessment of historical investigations should be completed to rule out other medical disorders (e.g. colonoscopy, gastroscopy, ultrasound, abdominopelvic computerized tomography (CT)).
    - **Note:** It may be reasonable that these investigations are at least done once depending on the clinical presentation.
- Initial investigations include:
    - CBC
    - Electrolytes - sodium, potassium, chloride, calcium, magnesium, phosphate
    - Creatinine
    - Liver enzymes (alanine aminotransferase (ALT), alkaline phosphatase (ALP)), albumin, bilirubin, lipase
    - C-reactive protein (CRP) if suspecting inflammatory or infectious conditions
    - *C. difficile* or ova and parasites if there has been recent travel
    - Ferritin and transferrin saturation if GI bleeding or iron deficiency anemia is suspected (see Iron Primer).
- Based on clinical context, additional investigations may be warranted:
    - Celiac disease screen
    - Thyroid testing (TSH)
    - Depending on local availability, test with the *H.pylori* Stool Antigen Test (HpSAT) or the Urea Breath Test (UBT)
        - HpSAT is the primary test for *H. pylori* in the Edmonton, Calgary, and South Zones, as well as selected sites in the North and Central Zones.
    - Urinalysis
    - Pregnancy test (β-hCG)
    - **Note:** The fecal immunochemical test (FIT) is for colorectal cancer screening. It has NOT been validated for investigation of GI symptoms. Ordering FIT in this circumstance is inappropriate. GI malignancies are very uncommon in those meeting usual criteria for functional GI disorders.[11]
- Abdominopelvic ultrasound is commonly performed and helps to rule out common pathology.
    - If clinical suspicion remains elevated despite other normal tests, limited cross-sectional imaging (e.g. abdominopelvic CT scan) may be considered, if not ordered within the timeframe of symptom onset/change in symptom pattern.

[9] Chey, W. D., Nojkov, B., Rubenstein, J. H., Dobhan, R. R., Greenson, J. K., & Cash, B. D. (2010). The yield of colonoscopy in patients with non-constipated irritable bowel syndrome: results from a prospective, controlled US trial. *The American Journal of Gastroenterology*, *105*(4), 859.

[10] Spiegel, B. M., Gralnek, I. M., Bolus, R., Chang, L., Dulai, G. S., Naliboff, B., & Mayer, E. A. (2005). Is a negative colonoscopy associated with reassurance or improved health-related quality of life in irritable bowel syndrome? *Gastrointestinal Endoscopy*, *62*(6), 892-899.

[11] Vanner, S. J., Depew, W. T., Paterson, W. G., DaCosta, L. R., Groll, A. G., Simon, J. B., & Djurfeldt, M. (1999). Predictive value of the Rome criteria for diagnosing the irritable bowel syndrome. *The American journal of gastroenterology*, *94*(10), 2912-2917.

6. Management

Treatment options (non-pharmacological)	
These modifications may be all that is required in those with mild or intermittent symptoms.	
Patient reassurance	• A key to effective long-term management of chronic abdominal pain is to provide patients reassurance after their initial diagnosis and offer points of reassessment and reappraisal to establish a therapeutic relationship. This will allow the patient to report changes in symptom frequency, severity, and development of alarm features. • Changes in the character of the pain, basic investigations, or physical exam should warrant reconsideration of attribution of the abdomen pain to CAPS. • Emphasize managing symptoms rather than completely resolving them.

Lifestyle modifications	• **Stress reduction:** Regular physical activity, mindfulness (thebreathproject.org), meditation, hypnotherapy, and acupuncture is foundational.
	• Additional therapies are based on symptom severity and degree of disability.
	  ○ **Note:** Stress can contribute to functional GI disorder symptoms, but does NOT cause them.
	• **Physical Activity**: 20+ minutes of physical activity/day, aiming for 150 min/week is known to be an effective strategy for stress reduction.
	  ○ See the Canadian 24-Hour Movement Guidelines.

Dietary modifications	• **Assess common food triggers:** Follow a systematic approach of removing each trigger for 1-2 weeks and assessing symptoms before permanent elimination is recommended.
	• **Consider avoidance of:**
	  ○ Gas producing foods (beans, lentils, onions, cabbage, and cauliflower)
	  ○ Large amounts of sugar (fructose) or sugar alcohols (sorbitol) from carbonated beverages or fruit juices (regular or sugar-free)
	  ○ Caffeine
	  ○ Lactose, if lactose intolerant
	  ○ Food allergens, if clear symptom correlation (milk protein, wheat (gluten), soy, eggs, fish, shellfish, peanuts, and tree nuts)
	• It may be helpful for patients to use the Food, Lifestyle, and Symptom Diary to understand their symptoms, food triggers, and stressors. Use the diary to determine how dietary modifications, psychological, and pharmacological therapies impact their symptoms.
	• Assess dietary intake compared to Canada's Food Guide.
	• Referral to a Registered Dietitian can be helpful to support dietary changes.

Psychological therapy	• Referral to a behavioral health specialist can be helpful in managing pain and reducing emotional distress associated with symptoms. If psychiatric symptoms predominate, consider psychiatry referral.

Treatment options (pharmacological)
The use of pharmaceuticals is generally reserved for those who have not adequately responded to dietary and lifestyle interventions, or in those with moderate or severe symptoms that impair quality of life. • Clinical trials specific for CAPS are limited, so treatment recommendations for patients with CAPS often relies on observations from IBS. • Centrally acting pharmacologic agents, such as tricyclic antidepressants (TCAs) or serotonin norepinephrine reuptake inhibitors (SNRIs), can be used alone or in combination for their pain modulating effects. TCAs and SNRIs are thought to be more effective than selective serotonin reuptake inhibitors (SSRIs) due to their additional noradrenergic effects. • Avoid narcotics as they can cause narcotic bowel syndrome and paradoxically worsen pain.

Antispasmodics	• **Evidence:** May reduce symptoms of abdominal pain, however, it is not clear if one agent is more effective than another.[12] • **Place in therapy:** May provide symptom relief. Consider peppermint oil as first line as it is generally well tolerated and appears to be effective. • **Mechanism of action:** Smooth muscle relaxation by various mechanisms. • **Adverse effects:** Anticholinergic reactions with some agents (CNS depression, xerostomia), dyspepsia (peppermint oil).[13] • **Dose:** A reasonable trial is 1-2 agents (not at once) given for 4 weeks as listed below. Could use regularly or PRN. **Recommended Medications:** • Enteric coated peppermint oil capsules (0.2-0.275 mL caps). 2 capsules BID ($20-25/month, unlikely to be covered by insurance providers). • Trimebutine (Modulon®) - 100-200 mg TID ($40-80/month). • Pinaverium Bromide (Dicetel®) - 50-100 mg TID ($50-75/month). • Hyoscine Butylbromide (Buscopan®) - 10 mg TID-QID ($25-40/month). • Dicyclomine hydrochloride (Bentylol®) - 20 mg TID-QID ($25-40/month).
Tricyclic antidepressants (TCA)	• **Evidence:** The most studied antidepressant class for treatment of abdominal pain.[14] • **Mechanism of action:** Suggested to be beyond serotonin and norepinephrine, and as a result of blocking voltage-gated ion channels, opioid receptor activation and potential neuro-immunologic anti-inflammatory effects.[14] • **Place in therapy:** May be particularly useful for patients with CAPS, as well as sleep issues, anxiety, or depression. • **Adverse effects:** Anticholinergic and antihistaminic (drowsiness/insomnia, xerostomia, palpitations, weight gain, constipation, urinary retention).[14] • Use with caution in patients at risk of prolonged QT. • It can take 2-3 months to reach maximum effect. • The lowest effective dose should be used. Reassess therapy after 6-12 months. • Dose should be gradually reduced if discontinuing. **Recommended Medications** • Nortriptyline - 10-25 mg qhs. Increase dose by 10-25 mg every 3-4 weeks (due to delayed onset). May require 25-75 mg/day. Often takes 2-3 months for peak effect. ($20-60/month). • Amitriptyline - 10-25 mg qhs. Increase dose by 10-25 mg every 3-4 weeks (due to delayed onset). May require 25-75 mg/day. Often takes 2-3 months for peak effect. ($15-20/month). • Desipramine - 25 mg qhs. Increase based on response and tolerability. Doses up to 150 mg daily have been evaluated for IBS (~$25/month).
Serotonin norepinephrine reuptake inhibitors (SNRIs)	• **Evidence:** Duloxetine is marketed for chronic pain, neuropathic pain, and fibromyalgia. Venlafaxine may alter GI compliance, tone, and reduce colonic contraction. There are currently no high-quality studies to guide SNRI therapy recommendations for CAP. • **Mechanism of action:** Proposed to modulate pain sensation by blocking presynaptic serotonin and norepinephrine transporters.[13] This mechanism along with the advantageous adverse effect profile (compared to TCAs) make this class ideal in theory.

[12] Ruepert, L., Quartero, A. O., de Wit, N. J., van der Heijden, G. J., Rubin, G., & Muris, J. W. (2011). Bulking agents, antispasmodics and antidepressants for the treatment of irritable bowel syndrome. *Cochrane database of systematic reviews*, (8).

[13] Lexicomp, Inc., Lexi-Drugs Online, Hudson, Ohio: UpToDate, Inc; 2013; [cited 27 Apr 2021].

[14] Törnblom, H., & Drossman, D. A. (2016). Centrally targeted pharmacotherapy for chronic abdominal pain: understanding and management. *Gastrointestinal Pharmacology*, 417-440.

Serotonin norepinephrine reuptake inhibitors (SNRIs) cont'd	• **Place in therapy:** For patients in which TCAs are contraindicated or not tolerated, SNRIs may provide benefit, especially in the setting of concurrent chronic pain, diabetic neuropathic pain, or fibromyalgia. • **Adverse effects:** nausea, agitation, dizziness, sleep disturbance, fatigue, and liver dysfunction. • It can take 2-3 months to reach maximum effect. • Lowest effective dose should be used. Reassess therapy in 6-12 months. • Dose should be gradually reduced if discontinuing. **Recommended Medications** • Venlafaxine (Effexor®) - 37.5 mg daily. May dose escalate by 37.5 mg/week to max 225 mg (~$20/month). • Duloxetine (Cymbalta®) - 30-60 mg daily. May dose escalate by 30 mg/week to max 60 mg BID ($15-65/month).
Selective serotonin reuptake inhibitors (SSRIs)	• **Evidence:** Limited data to support use of SSRIs for abdominal pain. • **Place in therapy:** Include patients with concurrent depression or anxiety-specific GI symptoms. • **Adverse effects:** Nausea, diarrhea, weight gain, sexual dysfunction, tremor, insomnia. • Caution with citalopram in patients with prolonged QT. • Lowest effective dose should be used. It can take 2-3 months to reach maximum effect. Reassess therapy in 6-12 months. Dose should be gradually reduced if discontinuing. **Recommended Medications** • Fluoxetine (Prozac®) - 10 mg daily. May dose escalate up to 60 mg daily (~$25/month). • Citalopram (Celexa®) - 10-20 mg daily. May dose escalate up to 40 mg daily (~$15/month).

7. When to refer for consultation and/or endoscopy

- If alarm features are identified.
- If investigations reveal iron deficiency anemia, a positive celiac disease screen, high clinical suspicion of IBD, or cancer of the GI tract.
- If recommended strategies have led to unsatisfactory treatment or management of symptoms.
    - **Note**: Consider using an advice service before referring
- Provide as much information as possible on the referral form, including identified alarm feature(s), important findings, and treatment/management strategies trialed with the patient.

Still concerned about your patient?

The primary care physician is typically the provider who is most familiar with their patient's overall health and knows how they tend to present. Changes in normal patterns, or onset of new or worrisome symptoms, may raise suspicion for a potentially serious diagnosis, even when investigations are normal and typical alarm features are not present.

There is evidence to support the importance of the family physician's intuition or "gut feeling" about patient symptoms, especially when the family physician is worried about a sinister cause such as cancer. A meta-analysis examining the predictive value of gut feelings showed that the odds of a patient being diagnosed with cancer, if a GP recorded a gut feeling, were 4.24 times higher than when no gut feeling was recorded.[15]

When a "gut feeling" persists in spite of normal investigations, and you decide to refer your patient for specialist consultation, document your concerns on the referral with as much detail as possible. Another option is to seek specialist advice (see Advice Options) to convey your concerns.

[15] Friedemann Smith, C., Drew, S., Ziebland, S., & Nicholson, B. D. (2020). Understanding the role of General Practitioners' gut feelings in diagnosing cancer in primary care: A systematic review and meta-analysis of existing evidence. *British Journal of General Practice*, 70(698), e612-e621.

PRIMERS

Iron Primer

Evaluation of measures of iron storage can be challenging. Gastrointestinal (occult) blood loss is a common cause of iron deficiency and should be considered as a cause when iron deficiency anemia is present. Menstrual losses should also be considered.

There are two serological tests to best evaluate iron stores (ferritin, transferrin saturation) - neither of which are perfect.

The first step is to evaluate **ferritin**:

- If the ferritin is below the lower limit of normal (lower limit of normal is 30 µg/L for men and 20 µg/L for women), it is diagnostic of iron deficiency with high specificity (98% specificity).
- Ferritin is an acute phase reactant which may be elevated in the context of acute inflammation and infection. If ferritin is normal or increased, and you suspect it may be acting as an acute phase reactant, order a transferrin saturation test (see below).
    - However, if the ferritin is > 100 µg/L and there is no concurrent significant chronic renal insufficiency, iron deficiency is very unlikely - even in the context of acute inflammation/infection.

The second step is to evaluate **transferrin saturation**:

- The transferrin saturation is a calculated ratio using serum iron and total iron binding capacity. Serum iron alone does **not** reflect iron stores.
- Low values (< 16%) demonstrate low iron stores in conjunction with a ferritin < 100 µg/L.

In the absence of abnormal iron indices, anemia may be from other causes other than GI (occult) blood loss (e.g. bone marrow sources, thalassemia, and sickle cell anemia).

BACKGROUND

About this Pathway

- Digestive health primary care pathways were originally developed in 2015 as part of the Calgary Zone's Specialist LINK initiative. They were co-developed by the Department of Gastroenterology and the Calgary Zone's specialty integration group, which includes medical leadership and staff from Calgary and area Primary Care Networks, the Department of Family Medicine, and Alberta Health Services.
- The pathways were intended to provide evidence-based guidance to support primary care providers in caring for patients with common digestive health conditions within the patient medical home.
- Based on the successful adoption of the primary care pathways within the Calgary Zone, and their impact on timely access to quality care, in 2017 the Digestive Health Strategic Clinical Network (DHSCN) led an initiative to validate the applicability of the pathways for Alberta and to spread availability and foster adoption of the pathways across the province.

Authors & Conflict of Interest Declaration

This pathway was reviewed and revised under the auspices of the DHSCN in 2021 by a multi-disciplinary team led by family physicians and gastroenterologists. For more information, contact the DHSCN at Digestivehealth.SCN@ahs.ca.

Pathway Feedback and Review Process

Primary care pathways undergo scheduled review every three years, or earlier if there is a clinically significant change in knowledge or practice. The next scheduled review is April 2024, however, we welcome feedback at any time. Click on the Provide Feedback button to provide your feedback.

Provide Feedback >

Disclaimer

This pathway represents evidence-based best practice but does not override the individual responsibility of health care professionals to make decisions appropriate to their patients using their own clinical judgment given their patients' specific clinical conditions, in consultation with patients/alternate decision makers. The pathway is not a substitute for clinical judgment or advice of a qualified health care professional. It is expected that all users will seek advice of other appropriately qualified and regulated health care providers with any issues transcending their specific knowledge, scope of regulated practice or professional competence.

PROVIDER RESOURCES

Advice Options

Non-urgent advice is available to support family physicians.

- Gastroenterology advice is available across the province via Alberta Netcare eReferral Advice Request (responses are received within five calendar days). View https://www.albertanetcare.ca/eReferral.htm for more information.
- Non-urgent telephone advice connects family physicians and specialists in real time via a tele-advice line. Family physicians can request non-urgent advice from a gastroenterologist:
    - In the Calgary Zone at specialistlink.ca or by calling 403-910-2551. This service is available from 8:00 a.m. to 5:00 p.m. Monday to Friday (excluding statutory holidays). Calls are returned within one (1) hour.
    - In the Edmonton and North Zones by calling 1-844-633-2263 or visiting pcnconnectmd.com. This service is available from 9:00 a.m. to 6:00 p.m. Monday to Thursday and from 9:00 a.m. to 4:00 p.m. Friday (excluding statutory holidays and Christmas break). Calls are returned within two (2) business days.

References	
Keefer, L., Drossman, D. A., Guthrie, E., Simrén, M., Tillisch, K., Olden, K., & Whorwell, P. J. (2016). Centrally mediated disorders of gastrointestinal pain. *Gastroenterology*, *150*(6), 1408-1419.	
Resources	
Interactive Drug Benefit List (iDBL)	idbl.ab.bluecross.ca/idbl/load.do?reset=true&_cid=095cf5f4-30b5-4bd6-b960-a0c72669cd7e
Poverty: A Clinical Tool for Primary Care Providers (AB)	cep.health/media/uploaded/Poverty_flowAB-2016-Oct-28.pdf
Nutrition Guideline: Household Food Insecurity	ahs.ca/assets/info/nutrition/if-nfs-ng-household-food-insecurity.pdf

PATIENT RESOURCES

Information

Description	Website
Functional Abdominal Pain Syndrome (International Foundation for Gastrointestinal Disorders (IFFGD))	iffgd.org/lower-gi-disorders/functional-abdominal-pain-syndrome.html
Common Questions About Functional Abdominal Pain Syndrome (IFFGD)	iffgd.org/gi-disorders/functional-abdominal-pain-syndrome/common-questions/
Patient Resource Centre: Abdominal Pain Syndrome (American College of Gastroenterology)	gi.org/topics/abdominal-pain/
The Science of Pain (GI Society & Canadian Society of Intestinal Research)	badgut.org/information-centre/a-z-digestive-topics/the-science-of-pain/
Dealing with Chronic Pain (GI Society & Canadian Society of Intestinal Research)	badgut.org/information-centre/a-z-digestive-topics/chronic-pain/
Food, Lifestyle, and Symptom Diary	ahs.ca/assets/info/nutrition/if-nfs-food-lifestyle-symptom-diary.pdf
Fibre Facts	ahs.ca/assets/info/nutrition/if-nfs-fibre-facts.pdf
Nutrition Education Material	ahs.ca/NutritionResources
Gut Health Patient Journal (Physician Learning Program)	9c849905-3a37-465a-9612-7db1b9a0a69c.filesusr.com/ugd/7b74c1_81f1695f08214a66bc339462c52cd011.pdf

Services available

Description	Website
Services for patients with chronic conditions (Alberta Healthy Living Program - AHS)	ahs.ca/ahlp
Supports for working towards healthy lifestyle goals and weight management (Weight Management - AHS)	ahs.ca/info/Page15163.aspx
Better Choices, Better Health® Program	ahs.ca/services/bcbh.aspx
Referral to a Registered Dietitian	• Visit Alberta Referral Directory and search for nutrition counselling. • To learn more about programs and services offered in your zone, visit Nutrition Services. • Health Link has Registered Dietitians available to answer nutrition questions. If a patient has nutrition-related questions, they can call 8-1-1 and ask to talk to a Dietitian. • Patients can also complete the Health Link Dietitian Self-Referral Form.

PATIENT PATHWAY

- Chronic abdominal pain patient pathway