MANAGEMENT OF CONSTIPATION

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DEFINING CONSTIPATION

- Unsatisfactory defecation due to infrequent stools ± difficult or incomplete stool passage. It is subjective & symptom based.
- Health care providers often define constipation as the number of stools/week. Patients often use symptoms; top 3 most bothersome symptoms: straining, hard stools & bloating.
- What is "normal" varies amongst individuals.
- **Rome III Diagnostic Criteria in Adults**:
  - When 25% of bowel movements are associated with at least 2 of the following symptoms, occurring in the previous 3 months with an onset of symptoms >6 months:
    - Straining
    - Hard or lumpy stools
    - A sense of incomplete evacuation
    - A sense of anorectal obstruction
    - The need for manual maneuvres
    - Fewer than 3 defecations per week
  - Loose stools rarely present without the use of laxatives
  - Insufficient criteria for irritable bowel syndrome *
- **Rome III Criteria in Pediatrics** (development age of ≥4 yrs):
  - When ≥2 of the following occur at least once per week for at least 2 months prior to the diagnosis:
    - ≤2 defecations in the toilet per week
    - At least 1 episode of fecal incontinence per week
    - History of retentive posturing or excessive volitional stool retention
    - History of painful or hard bowel movements
    - Presence of a large fecal mass in the rectum
    - Hx of large diameter stools that may obstruct the toilet
  - Insufficient criteria for irritable bowel syndrome *

* IBS-C often presents with recurrent abdominal pain &/or discomfort. See the RxFiles IBS Chart, page 43.

- **The Bristol Stool Chart**: a validated tool to correlate stool consistency with colonic transit time. Use with patients for assessment & monitoring. Refer to the RxFiles Constipation Chart On-Line Extras.

TYPES OF CONSTIPATION

- **PRIMARY OR IDIOPATHIC:**
  - **1) Normal transit** (~60%): normal defecation frequency, but stool is hard &/or difficult to pass.
    - **Management**: lifestyle & laxative(s) AGA 2013
  - **2) Pelvic floor dysfunction** (~25%): pelvic floor or external anal sphincter cannot relax. May occur with anal fissures or hemorrhoids.
    - **Management:** pelvic floor retraining with biofeedback & relaxation training is recommended but is not readily available; suppositories or enemas may be preferred over oral laxatives. AGA 2013
  - **3) Slow transit** (~15%): infrequent bowel movements.
    - **Management:** lifestyle & laxative(s) AGA 2013
  - A pt may have both pelvic floor dysfunction & slow transit.
- **SECONDARY:** due to medications, diseases or conditions
  - **Management:** when possible:
    - **Medications:** ↓ dose or switch to another agent
    - **Disease/Conditions:** manage reversible causes

DISEASES/CONDITIONS THAT CAN CAUSE CONSTIPATION

- **CANCER/CANCER RELATED:** colorectal cancer, dehydration, intestinal radiation, tumour compression of large intestine
- **ENDOCRINE:** hormonal changes, hypothyroidism, diabetes, hyperparathyroidism
- **GI DISORDERS:** diverticulosis, Hirschsprung's dx, IBS, mega colon, pelvic floor dysfunction, rectoceles, strictures
- **METABOLIC:** hypercalcemia, hypocalcemia, hypokalemia, hypomagnesemia, (pan)hypopituitarism, uremia
- **NEUROLOGIC:** autonomic neuropathy, dementia, multiple sclerosis, muscular dystrophies, pain 2° to anal fissures or hemorrhoids, Parkinson's dx, spinal cord lesions, stroke
- **PSYCHOLOGICAL:** anxiety, depression, eating disorders
- **OTHER:** ↑ age, CKD, pregnancy, systemic sclerosis, sexual abuse

EXAMPLES OF DRUGS THAT CAN CAUSE CONSTIPATION

- **ANALGESICS:** NSAIDs, opioids 25-40% in non-cancer & ≤90% in cancer patients
- **ANTICHOLINERGICS:** antipsychotics, benztropine, oxybutynin
- **ANTI-PARKINSON:** amantadine, bromocriptine, pramipexole
- **ANTICONVULSANTS:** gabapentin, phenytoin, pregabalin
- **ANTIDEPRESSANTS:** tricyclic antidepressants
- **ANTIDIARRHEALS:** diphenoxylate, loperamide
- **ANTIEMETICS:** dimenhydrinate, ondansetron, prochlorperazine, promethazine, scopolamine
- **ANTIHISTAMINES:** diphenhydramine, hydroxyzine
- **ANTIHYPERTENSIVES:** α-adrenergic agonists (e.g. clonidine), β-blockers, calcium channel blockers especially verapamil, diuretics
- **ANTISPASMODICS:** dicyclomine
- **CATION AGENTS:** Al^{++}, bismuth, barium, Ca^{++}, Fe^{++}
- **CHEMOTHERAPY:** vincristine, cyclophosphamide
- **RESINS:** cholestryamine, sodium polystyrene sulfonate

ALARM SYMPTOMS

Additional investigations to rule out other causes are required if any of the following alarm symptoms are present: age ≥50 yrs with new onset of symptoms, rectal bleeding, nocturnal symptoms, significant weight↓, fever, anemia or abnormal physical exam.

MONITORING

- **Chronic Constipation:** goal is regular bowel movement patterns after 1 month of therapy.
- **Opioid Use:** goal is a bowel movement at least q3days.
- Bloating & cramping due to constipation should resolve after full bowel movement.

LONG-TERM LAXATIVE USE

- May result in malabsorption, dehydration, & fecal incontinence.
- Chronic laxative use may alter electrolytes, but limited data. Risk may be ↑ in pts predisposed to electrolyte imbalances:
  - MOM (↑Mg^{++}): e.g. Mg^{++} antacid use, CKD
  - Stimulants (↓K^{+}): e.g. diuretic use, eating disorders
  - PEG without electrolytes: abuse/overuse of high volumes
- Myenteric plexus/smooth muscle damage due to stimulants is rare. Unclear if damage due to constipation or laxative use.

DISCONTINUING CHRONIC LAXATIVE USE

- Gradually taper laxative over 3-4 weeks.
- Optimize non-pharmacological approaches.
- Use osmotic laxatives PRN until bowel pattern is normalized.

LIFESTYLE

- Limited data that lifestyle changes improve constipation, but universally accepted as 1st line for most patients. May only provide benefit in patients with fluid/fibre deficiencies.
- **Fibre Intake:** ↑ by 5g/week to minimize bloating & flatulence
  - **Pediatrics:** 1-3yrs 19g/day, 4-8yrs 25g/day, ♀ 9-18yrs 26g/day, ♂ 9-13yrs 31g/day, ♂ 14-18yrs 38g/day; may start at 6mos. Dietary changes can be challenging in pts <5yrs; encourage high fibre foods, but parents should not stress if unsuccessful.
  - **Adults:** 20-35 g/day
- **Fluid Intake:** ↑ intake likely only beneficial in dehydrated pts.
  - **Modern Day Myth**: drink at least 8 glasses/2L of water/day
  - There is limited evidence to quantify the amount of fluid intake required. Total fluid intake should include all consumed fluids – i.e. from all beverages (not just water) & food (e.g. fruits, vegetables). Ensure adequate intake. Consider hydration status, activity level, exposure to warm temperatures; caution in renal or heart failure.
- **Physical Activity:** promotes general well-being, but no evidence that physical activity alone improves bowel function.
- Implement a **regular toileting routine**. E.g. dedicate & allow time for BMs, do not ignore the urge to defecate.
- Encourage lifestyle measures when **travelling** constipation more common than diarrhea due to dehydration, altered diet, less activity, etc.

FECAL IMPACTION

- Inability to pass an accumulation of hard stool.
- May result from untreated or chronic constipation, or an intestinal blockage (e.g. a tumour pressing/growing into the lumen of the intestine).
- Can lead to fecal incontinence, & bowel obstruction - which, in severe cases, may result in bowel perforation.
- Symptoms include: constipation, rectal &/or abdominal pain, anorexia, vomiting, urinary &/or fecal incontinence.
- **Management:** fecal mass must be removed before preventative or maintenance measures are implemented.
- **Pediatrics** – see Pediatric Fecal Disimpaction on next page.
- **Adults** – options include:
  - **Manual Disimpaction** using 2% lidocaine gel to anesthetize & lubricate the rectum/anus.
  - **Enemas** daily for up to 3 days (e.g. tap water 500-800mL pr, **FLEET MINERAL OIL** 120mL pr). Onset: 5-15 minutes.
  - If the stool is located higher up in the intestine & manual disimpaction and enemas are ineffective, try **PEG 3350** (e.g. with electrolytes 2L po x 1-2 days or 1L po x 3 days).
  - A combination of the above, along with laxatives (oral &/or suppositories), may be required.
  - **AVOID**: soapsuds enemas due to colonic mucosa irritation & bulk-forming laxatives.

RXFILES RELATED DOCUMENTS

- **COLONOSCOPY BOWEL PREPARATIONS CHART** (http://www.rxfiles.ca/rxfiles/uploads/documents/members/CHT-Bowel-Preps.pdf)
- **IRRITABLE BOWEL SYNDROME CHART** (http://www.rxfiles.ca/rxfiles/uploads/documents/members/CHT-GI-IBS.pdf, pg 43)
- **OPIOID-INDUCED CONSTIPATION Q&A** (http://www.rxfiles.ca/rxfiles/uploads/documents/members/Opioid-Induced-Constipation-QandA.pdf)
- **OTC CHART-CONSTIPATION** (http://www.rxfiles.ca/rxfiles/uploads/documents/members/CHT-OTCs.pdf, pg 95)

TREATMENT APPROACH BY PATIENT POPULATION
There are no studies assessing a step-wise approach. The following is based on guidelines, available data & clinical practice. **Identify & treat reversible causes.**

PEDIATRICS

INFANTS <1 year old
- Glycerin suppository, lactulose or PEG 3350 are preferred
- **AVOID:** mineral oil (↑risk of aspiration→ lipid pneumonia)
- **CAUTION:** ↑risk of Mg^{++} toxicity with Mg^{++} laxatives
- Cow's milk introduced at ≥9 months may cause constipation. Limit cow's milk to 24 oz per day & assess for improvement. Soy, almond & rice milk are not recommended as alternatives due to nutritional inadequacy. Hydrolyzed formulas may be used.
- May try apple, pear or prune juice (contains sorbitol) if >6 mos

CHILDREN ≥1 year old **& ADOLESCENTS**
Try oral agents 1st as rectal therapies may be negatively perceived.
LIFESTYLE: Ensure adequate dietary fibre, fluid intake & physical activity. Give apple, pear or prune juice (contains sorbitol).
- Dairy may cause constipation, or child/teen may be consuming too much dairy & not enough dietary fibre. Limit dairy intake & assess for improvement (≤8yrs: 2 servings/day, 9-18yrs: 3-4 servings/day).
- **Behavioural modifications once potty trained:** schedule routine toilet sitting for 3-10 minutes daily-BID (ideally, within 1 hour after breakfast). Prop feet with stool. Positive reinforcement.

1) FECAL DISIMPACTION if large & hard abdominal mass, rectum filled with stool ± flow incontinence
- **Step 1** PEG 3350 **LAX-A-DAY** 1-1.5g/kg/day x 3d (max 100g/d)
  - No official indication in ≤18yrs. Minimal absorption (<0.3%).
- **Step 2** try another osmotic (e.g. lactulose, MOM) or add a stimulant (e.g. senna, bisacodyl) laxative
- **Step 3** switch to enemas (e.g. **MICROLAX**, **FLEET MINERAL OIL**) dosed every 2-3 days until disimpaction resolved usually ≤6 days.
  - As effective as PEG 3350, but oral route usually preferred.
- **AVOID:** manual disimpaction when possible

2) MAINTENANCE THERAPY following fecal disimpaction. Goal is 1-2 BM/day. May trial ~½ of the fecal disimpaction dose.
- **Step 1** osmotic laxative (e.g. **LAX-A-DAY** 0.4-1g/kg/d [max 17g/d])
  - PEG 3350 more effective than lactulose & MOM
  - Flatulence with PEG 3350 or lactulose may ↓ compliance
  - Anal fissure: try MOM (lubricates stool &↓ pain with BM)
- **Step 2** use stimulant laxatives as rescue PRN (e.g. senna, bisacodyl)
- Treatment will likely be required for 6 months. Reassess after 3 months. Gradually ↓ over several months when discontinuing.

PREGNANCY & LACTATION
- **INCIDENCE:** 30% of ♀ in late pregnancy & up to 3 months postpartum
- **CAUSES:** Ca^{++} & Fe^{++} supplements, ↑ progesterone/↓ motilin hormone levels & expanding uterus pushing on the colon
- **Step 1** ↑ dietary fibre, fluid intake & physical activity
- **Step 2** start a bulk-forming laxative (e.g. psyllium)
- **Step 3** add an osmotic laxative (i.e. PEG 3350, lactulose) or short-term magnesium hydroxide
- **Step 4** add a short-term stimulant laxative (e.g. senna, bisacodyl); more effective than bulk-forming laxatives, but ↑ AE (e.g. diarrhea, abdominal pain)
- **AVOID:** cascara & castor oil during pregnancy, and long-term mineral oil use during pregnancy & lactation
- **POSTPARTUM:** stool softeners (e.g. docusate) may help prevent constipation &/or straining

CHRONIC CONSTIPATION = present for ≥3 months
- **INCIDENCE**: up to 25% of the general population
- **Step 1** ↑ dietary fibre, fluid intake & physical activity
- **Step 2** start a bulk-forming laxative (e.g. psyllium)
- **Step 3** add an osmotic laxative (e.g. PEG 3350, lactulose, MOM)
- **Step 4** add PRN glycerin suppository, stimulant (e.g. senna, bisacodyl) laxative or enema (e.g. **MICROLAX**, **FLEET MINERAL OIL**)
- **Step 5** prucalopride **RESOTRAN** ✗ ⊗ 1-2mg po daily (currently only indicated in ♀), $82-122/month

ELDERLY
- **INCIDENCE:** ≥65 yrs: ♀ 26%, ♂ 16%; ≥84 yrs: ♀ 34%, ♂ 26%; long-term care residents: up to 80%.
- **CAUSES:** greater number of medications, diseases & conditions which cause constipation, along with lifestyle see previous page.

LIFESTYLE: ↑ dietary fibre, fluid intake & physical activity based on the patient's ability to mobilize, eat & drink, his/her health (e.g. renal or heart failure) & cognitive status. Give apple, pear or prune juice (contains sorbitol). Some LTC homes use dried fruit spreads (e.g. **FRUITRITE**, 2g fibre/25g).
- **Daily regimented bowel routine:** e.g. within 1 hour of waking do mild physical activity (e.g. walking, swimming, yoga, Thai Chi), have a hot beverage (preferably caffeinated) & a fibre cereal. End the day with a fibre supplement.
- **Exercises if bedridden:** pelvic tilt, trunk rotation & leg lifts.
- Refer to *Chronic Constipation* for tx, & consider the following:
  - **STRAINING** predominant symptom in the elderly **& INCOMPLETE EVACUATION:** lifestyle & bulk-forming agent (e.g. psyllium; ensure patient can drink ≥250mL with each dose)
  - **INFREQUENT BOWEL MOVEMENTS:** osmotic laxative (e.g. PEG 3350, lactulose, MOM)
  - **NEUROGENIC BOWEL:** stimulant (e.g. senna, bisacodyl)
  - **SLOW-TRANSIT OR SEVERE PELVIC FLOOR DYSFUNCTION:** avoid fibre supplements & high fibre diets
  - **CAUTION:** mineral oil (lipid pneumonia), and magnesium or sodium based laxatives if renal or cardiac disease

OPIOID-INDUCED CONSTIPATION see RxFiles Q&A On-Line
"The hand that writes the opioid Rx should write the laxative Rx."

In non-cancer pts, constipation is the 2nd most common opioid AE & occurs in ~25-40%. For cancer pts with advanced disease, constipation is the most common AE with an incidence of up to 90%. Tolerance does not develop & it is not thought to be dose dependent. **Goal is a non-forced BM q3days**, but individualize.
- **Step 1: PREVENTION**
  - Start a stimulant laxative ± stool softener when an opioid is started, e.g. **SENOKOT** or **SENOKOT-S** 1-2 tablets po HS.
  - **CANCER/PALLIATIVE CARE**: A few select patients may not require preventative measures, e.g. loose stools due to:
    - Mg^{++} supplements secondary to chemotherapy induced hypomagesmia, or
    - intestinal fibrosis secondary to abdominal radiation

OPIOID-INDUCED CONSTIPATION continued
- **Step 1: PREVENTION continued - LIFESTYLE:**
  - **Dietary Fibre**: may ↑ dietary fibre if deficient. Caution as excessive amounts ↑ risk of bowel obstruction due to opioid-induced ↓ GI peristalsis.
  - **Fluid**: ↑ fluid intake if dehydrated &/or not fluid restricted.
  - **Physical Activity**: impact of ↑ physical activity on opioid-induced constipation is unknown.
  - **CANCER/PALLIATIVE CARE**: lifestyle measures may not be feasible depending on the patient's status. Encourage as tolerated. Ensure adequate privacy & easy access to a toilet/commode.
- **Step 2: TREATMENT** If no BM after 3 days, treat the constipation
  - ↑ dose of preventative laxative until maximum dose achieved or administration is no longer practical, **OR**
  - Add an osmotic laxative (e.g. PEG 3350, lactulose, MOM)
  - **CANCER/PALLIATIVE CARE**: frail &/or nauseated patients may have difficulties ingesting large volumes of liquid laxatives or a large number of tablets/capsules.
- **Step 3** If patient becomes constipated despite the above:
  - Rule out fecal impaction & bowel obstruction.
  - Reassess potential causes, & treat if reversible. The cause is often multi-factorial.
  - Treat the constipation with rectal therapies (i.e. suppository, enema or manual disimpaction) AND adjust the scheduled laxative regimen by ↑ dose(s) ± adding a scheduled laxative with a different mechanism of action.
    - ? efficacy of bulk-forming laxatives for opioid-induced constipation & osmotic laxatives in dehydrated patients.
  - **CANCER/PALLIATIVE CARE**: **AVOID** bulk-forming laxatives if fluid intake is low, & rectal manipulation if thrombocytopenic or neutropenic due to ↑ risk of bleeding or infection, respectively.
- **Step 4** If moderate to severe constipation persists despite optimal laxative regimens:
  - **PALLIATIVE CARE**: add methylnaltrexone **RELISTOR**. May be considered earlier in select patients e.g. if incident pain on movement & repositioning for rectal therapies results in considerable pain.
  - Consider switching opioid. Insufficient evidence to support this, but it may be trialed.
- **Prevention & treatment of opioid-induced nausea**: consider a prokinetic (e.g. metoclopramide) which may offset ↓ peristalsis caused by opioids & lessen constipation.
- **PALLIATIVE CARE**: up to 90% of palliative care pts are on opioids
  - **CAUSES:** ↓ GI motility (e.g. opioids→try metoclopramide), tumour compression on the intestine (→try dexamethasone), or interference with colonic neural innervations
  - Continue laxatives until end of life. The body produces 1-2 ounces of stool/day even without oral intake.
  - **SK Palliative Care Drug Plan**: covers most commonly used OTC laxatives, but only if the patient has a prescription.

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GENERIC/TRADE (Strengths & formulations)	ONSET OF ACTION/COMMENTS	CONTRAINDICATIONS (CI)/ADVERSE EVENTS (AE) DRUG INTERACTIONS (DI)/MONITORING (M)	DOSE	$/MONTH
BULK-FORMING: improves stool weight & consistency by ↑ stool fluid content				
Psyllium METAMUCIL, g powder (original, smooth, sugar-free, flavoured) ✗ ▼ wafers, capsules ✗ ⊗ PL	• **Onset of Action:** 12-72 hours • **MODERATE** quality evidence. • Mean ↑ of 1.4 BM/week. • Similar efficacy as lactulose, better efficacy than dietary fibre. • Psyllium has most efficacy data. • May not aid patients with constipation due to slow-transit, pelvic floor dysfunction or medication-induced. • **Administration**: must be taken with ≥250mL of water/juice to prevent fecal impaction & esophageal obstruction.	**CI**: fluid restricted, dehydrated, dysphagia, esophageal strictures **AE**: transient, dose-dependent flatulence, bloating; titrate slowly to minimize. Rare: anaphylaxis, asthma & allergic reactions; esophageal obstruction & fecal impaction. Natural fibre (psyllium, inulin, guar gum) ↑ risk of flatulence & abdominal bloating vs synthetic (polycarbophil). **DI**: suggested to space by 2 hours from all other medications. – Psyllium: acarbose, carbamazepine, lithium – Polycarbophil: tetracyclines	3.4g = product dependent e.g. 1 tsp, 1 tbsp, 2 wafers, or 5 capsules. Refer to dosing instructions on package. **6-12yrs:** 1.7-3.4g po daily-TID. Max 15g/day. **Adults & >12yrs:** 3.4-6.8g po daily-TID. Max 30g/day.	Pwd: $3-16 Waf: $12-72 Cap: $17-102
Inulin ✗ ⊗ BENEFIBRE, METAMUCIL Simply Clear PL Powder - may be sprinkled onto soft food (hot or cold).			3g = 1 heaping teaspoon **6-11yrs:** 3g po daily-TID **Adults & ≥12yrs:** 3-6g po daily-TID	$3-18
Guar Gum BENEFIBRE chewable tablets ✗ ⊗ PL			**6-11yrs:** chew ½-1 tab 1-5x/day. Max 7.5 tabs/day **Adults & ≥12yrs:** chew 1-3 tabs 1-5x/day. Max 15 tabs/d	$3-52
Calcium Polycarbophil PRODIEM 6.25mg caplet PL			**6-12yrs:** 1 caplet po daily-QID. Max 4 caps/day. **Adults & >12yrs:** 2 caplets po daily-QID. Max 8 caps/day.	$5-41
LUBRICANTS: lubricates the gastrointestinal tract to aid stool passage & slows reabsorption of water from the gastrointestinal tract				
Mineral Oil (Heavy USP) enema FLEET MINERAL OIL, g oral liquid ▼ PL **Combination Products:** MAGNOLAX oral liquid (each mL = 0.25mL mineral oil + 60mg magnesium hydroxide)	• **Onset of Action:** PO: 6-8 hours PR: 2-15 minutes • **Administration**: to ↑ compliance esp. with peds mix with fruit juice or carbonated beverages, & chill to ↓ viscosity. • **Not recommended for chronic use.**	**CI**: infants, bedridden or dysphagic pts risk of aspiration; appendicitis; undiagnosed rectal bleeding. **AE**: lipid pneumonia, perianal pruritus if incontinent **DI**: docusate (↑ absorption of mineral oil), may ↓ absorption of oral contraceptives, digoxin & possibly fat soluble vitamins A, D, E, & K, may ↑ anticoagulant effect due to ↓ vitamin K.	**6-12yrs**: 10-25mL po HS **while sitting up**. **Disimpaction:** 15-30mL/year of age orally (max 240mL) **Adults & >12yrs:** 15-45mL po HS while sitting up **ENEMA** **2-12yrs**: 30-60mL daily pr PRN **Adults & ≥12yrs:** 60-150mL OD pr PRN, usual dose: 120mL	PO:$4-12 PR: $6/btl
OSMOTICS: poorly absorbed sugars which are broken down by colonic bacteria, osmotically draw fluid into the lumen & stimulate peristalsis				
Polyethylene Glycol (PEG 3350) powder for oral solution▼ LAX-A-DAY, RESTORALAX, PEGALAX, g (MIRALAX USA) PL	• **Onset of Action:** 48-96 hours Disimpaction dose onset: 0.5-1 hour • **HIGH** quality evidence. NNT=3. • Superior to lactulose for stool frequency, stool consistency & abdominal pain. • **Administration**: dissolve powder in 250mL of water, juice, soda, coffee or tea. Tasteless & odourless.	**CI**: known or suspected bowel obstruction **AE**: dose-dependent nausea, abdominal bloating, cramping, diarrhea (esp. elderly), & flatulence. Rare: pulmonary edema, Mallory-Weiss tears. Is not fermented into hydrogen or methane by microflora → ↓ flatulence & bloating vs lactulose. **DI**: no known significant DIs	17g = 1 sachet/ 1 heaping tablespoon/ 1 capful Not approved for ≤18 yrs age but clinical trials support safety & efficacy: **<2yrs**: 0.8 g/kg/day, **2-18yrs**: 0.4-1 g/kg/day (max 17g) **Disimpaction**: 1-1.5 g/kg/day x 3 days (max 100g/day) **Adults:** 17g po once daily	$24
Lactulose, g PL 667mg/mL oral soln ☎▼ (☎ portal systemic encephalopathy)	• **Onset of Action:** 24-48 hours • **MODERATE** quality evidence. NNT=4. • **Administration**: sweetness can be unpalatable. Mask taste by diluting in water, fruit juice, milk or desserts. Certain brands may be more palatable.	**CI**: galactose free diet **AE**: transient, dose-dependent abdominal cramps, flatulence, nausea, diarrhea. **DI**: antacids (lactulose ↓ colonic pH). May interact with anti-infectives (↓ the colonic bacteria that degrade lactulose) & warfarin (↑ INR due to ↓ intestinal absorption of vitamin K). **M**: not absorbed ∴ likely safe in pts with DM. By-products: 1 tbsp=<1.6g galactose, <1.2g lactose. Inform pt to report any signs/sx of hyperglycemia.	**<1yr:** 1-3mL/kg/day divided BID **1-5yrs:** 5mL po BID **6-12yrs:** 10mL po BID **Adults & >12yrs:** 15-30mL po daily up to TID. Max 90mL/day for constipation.	$7-36
Sorbitol 70% solution, g PL	• **Onset of Action:** PO: 24-48 hours PR: 5-15 minutes • Less sweet than lactulose, ∴ less nausea	**CI**: severe cardiopulmonary or renal impairment **AE**: abdominal cramping, bloating, flatulence **DI**: sodium polystyrene sulfonate (↑ risk of intestinal necrosis)	**Children**: 1-3mL/kg/day 70% soln po daily-BID, 30-60mL pr as 25-50% soln (dilute 70% soln with water) **Adults:** 15-30mL 70% soln po daily-BID, 120mL pr as 25-30% soln (dilute 70% soln with water)	PO: $6-24 PR:$9/btl
Glycerin, g▼ PL Suppositories: • Adult 2.65g/supp • Infant/Child: 1.8g/supp	• **Onset of Action:** 15-60 minutes • Less effective if stool is dry & hard. **Administration**: Moisten suppository in lukewarm water prior to insertion. Retain supp in rectum for 15-30 mins; does not have to melt to produce a BM.	**CI**: anal fissures, fistula, hemorrhoids, proctitis **AE**: rectal irritation **DI**: no known significant DIs	**≤2yrs:** ½ infant/child supp daily pr PRN (split lengthwise) **3-5yrs:** 1 infant/child supp daily pr PRN **Adult & ≥6yrs:** 1 adult supp daily pr PRN	<$1/supp
Magnesium Hydroxide MILK OF MAGNESIA, g▼ PL susp 400 mg/5 mL, 800 mg/5 mL **Combination Products:** MAGNOLAX liquid see above	• **Onset of Action:** 0.5-6 hours • **NO** quality evidence	**CI**: renal or cardiac impairment **AE**: electrolyte imbalances with chronic use (esp. infants), abdominal cramps, incontinence **DI**: may ↓ digoxin or tetracyclines absorption	**Children:** 1-3mL/kg/day of 400mg/5mL **Adults:** 2400-4800mg po HS or divided up to TID (e.g. 30-60mL of the 400mg/5mL strength)	$4-22

GENERIC/TRADE (Strengths & formulations)	ONSET OF ACTION/COMMENTS	CONTRAINDICATIONS (CI) /ADVERSE EVENTS (AE) / DRUG INTERACTIONS (DI)	DOSE	$/MONTH
STIMULANTS: Alters electrolyte transport in the colon, ↑ intraluminal fluids, stimulates the myenteric plexus & induces peristalsis. Tolerance may occur in patients with slow transit constipation, but it is rare.				
Bisacodyl **DULCOLAX**, g enteric coated (EC) tab: 5mg ▼ suppository: 5, 10mg ▼ **MAGIC BULLET** suppository 10mg ⊘ (spinal cord injury)	• Onset of Action: PO: 6-12 hours; PR: 15-60 minutes • **MODERATE** quality evidence. NNT=3. • Stronger stimulant vs senna or cascara. • **Administration**: do not crush, chew or break EC tablets. Space milk, antacids, H_2-blockers & PPIs by 1 hour. Suppositories: insert 30 mins after a meal to align with gastrocolonic response.[AGA'13]	**CI**: abdominal pain with nausea & vomiting, acute IBD, appendicitis, ileus, galactose or fructose intolerance, GI obstruction, severe dehydration, tartrazine allergy. **AE**: Oral: abdominal pain, cramps, diarrhea, hypokalemia. Suppository: rectal irritation or burning. **DI**: Diuretics - may ↑ risk of electrolyte disturbances. EC tabs: milk, antacids, PPIs, or H_2-blockers → ↓ acidity causes early disintegration → GI irritation.	**>1 month - 2yrs:** 5mg suppository OD pr PRN **3-12yrs**: 5-20mg po HS or 5-10mg supp OD pr **Adults & >12yrs**: 1-2 tabs po HS or 10mg supp daily pr. Max 30mg/day. Palliative Care: up to 4 tablets po TID. **MAGIC BULLET:6-12yr**: 5mg (½ supp) OD pr PRN **Adults & >12yrs**: 10mg OD pr PRN	PO: $4 PR: $17-33 MAGIC BULLET $14-29
Sennosides SENOKOT, EX-LAX, PRODIEM OVERNIGHT RELIEF THERAPY, g tablet: 8.6▼, 12▼, 15, 25mg syrup: 1.7mg/mL ▼ **Combination Product:** **SENOKOT-S**, g tablet▼ (docusate Na^+ 50mg + sennosides 8.6mg)	• Onset of Action: 6-12 hours • **LOW** quality evidence. • Mildest stimulant laxative. • Often found in herbals, cleanses or teas. • May discolour urine, feces & breast milk yellow-brown or red-violet. Urine discolouration may interfere with labs: phenolsulfonphthalein, estrogen, urobilinogen.	**CI**: GI obstruction, stenosis, atony, appendicitis, IBD, abdominal pain of unknown origin, severe dehydration with water & electrolyte depletion. **AE**: dose-dependent abdominal pain, diarrhea, hypokalemia, dehydration. Rare: allergic reactions, proctitis, idiosyncratic hepatitis, benign melanosis coli. **DI**: no known clinical significant DIs. May ↑ risk of electrolyte disturbances with drugs that ↓ electrolytes (e.g. diuretics).	**2-5yrs:** 2.5-7.5mL po HS. Max 5mL po BID. **6-12yrs & Pregnancy**: 5-10mL or 1-2 tablets po HS. Max 10mL or 2 tablets BID. **Adults & >12yrs:** 10-15mL or 2-4 tablets po HS. Max 15mL or 4 tablets po BID. Palliative Care: up to 4 tablets po TID. **SENOKOT-S**: Same dosing as above. The docusate component likely only effective at higher doses & with regular use.	Tabs: $3-35 Syrup: $13-40
STOOL SOFTENERS: reduces stool surface tension → ↑ fluid penetration into stool				
Docusate Sodium **COLACE**, g ▼ capsule: 100, 200, 250mg drops: 10mg/mL syrup: 4, 20, 50mg/mL **Combination Product:** **SENOKOT-S**, g tablet ▼ (docusate Na^+ 50mg + sennosides 8.6mg)	• **Onset of Action:** 12-72 hours • **LOW** quality evidence. • May help to prevent constipation or straining if recent rectal surgery or myocardial infarction, anorectal disorders, postpartum & unstable angina. • Lacks evidence for the tx of constipation. • **Administration**: syrup & drops taste bitter; mask by diluting in 120mL of milk, fruit juice or infant formula.	**CI**: acute abdominal pain, nausea, vomiting **AE**: well tolerated; occasional mild, transient nausea, GI cramping or rash. Throat irritation with docusate sodium solutions. **DI**: mineral oil (↑ absorption of mineral oil), ASA (↑ risk of mucosal damage). Theoretically may ↑ absorption of other medications; may space narrow therapeutic agents by 2 hours.	**<3yrs:** 10-40mg po daily or ÷ BID **3-6yrs**: 20-60mg po daily or ÷ BID **6-12yrs**: 40-150mg po daily or ÷ BID **Adults & >12yrs**: 100mg po BID **ENEMAS** (use drops, 10mg/mL): **Retention:** 5-90mL daily pr PRN **Flushing:** 1-100mL daily pr PRN	Capsule : $2 Drops : $10-107 Syrup: $3-$35
Docusate Calcium SOFLAX 240mg capsule, g ▼			240mg po daily or BID	$4-8
MEDICATIONS WITH A UNIQUE MECHANISM OF ACTION FOR TREATING CONSTIPATION				
Methylnaltrexone **RELISTOR** ✗ ▼ 20mg/mL vial or syringe Protect from light **Onset of Action:** 30 minutes – 4 hours	• **Mechanism of Action:** peripheral selective μ-opioid antagonist. Does not reverse analgesia. • **Indication:** adjunct for opioid-induced constipation in palliative care patients who have failed other laxatives. • NNT=3/16weeks, versus placebo.	**CI**: known or suspected mechanical GI obstruction or acute surgical abdomen. **AE**: abdominal pain, diarrhea, flatulence, nausea, dizziness. Risk of GI perforation in patients with cancer, GI malignancy, GI ulcer, Ogilvie's syndrome, certain medications (see DI). **DI**: ↑risk of GI perforation: bevacizumab, NSAID, steroids	**Adults:** Administered subq q 48 hours PRN Dosed by body weight & renal function: • 38-61kg: 8mg (=0.4mL) • 62-114kg: 12mg (=0.6mL) • <38 or >114: 0.15mg/kg • CrCl <30mL/min: ↓ dose by 50% Discontinue if no BM after 4 doses	$38/dose
Prucalopride **RESOTRAN** ✗ ⊗ tablet: 1, 2mg **Onset of Action:** 2-3 hours	• **Mechanism of Action:** prokinetic; highly selective 5HT-4 agonist. Cisapride & tegaserod are non-selective 5HT-4 agonists. • **Indication:** tx of chronic constipation in females who have failed other laxatives. • NNT=6, versus placebo	**CI**: renal dialysis patients, GI perforation or obstruction, severe inflammatory bowel disease, toxic megacolon **AE**: nausea, diarrhea, abdominal pain, headache **DI**: ketoconazole ↑ prucalopride; prucalopride ↑ erythromycin; prucalopride ↓ digoxin	**Adults:** 2mg po daily. If no BM in 3-4 days, add rescue laxative therapy. **Elderly (>65 years old):** 1-2mg po daily **CrCl <30mL/min:** 1mg po daily	$82-122

$**=cost **✗** =non-formulary in SK ☎=EDS in SK ⊗=non-formulary NIHB ⊘=prior approval for NIHB ▼=covered by NIHB ♀ =female ♂=male β=beta α=alpha **2°**=secondary **5-HT**=serotonin **AE**=adverse event **Al^{++}**= aluminum **ASA**=acetylsalicylic acid **BM**=bowel movement **btl**=bottle **Ca^{++}**=calcium **CI**=contraindication **CKD**=chronic kidney disease **CrCl**=creatinine clearance **d**=day **DI**=drug interaction **DM**=diabetes mellitus **dx**=disease **EC**=enteric coated **Fe^{++}**=iron **g**=generic **g**=gram **GI**=gastrointestinal **hx**=history **IBD**=inflammatory bowel disease **IBS-C**=irritable bowel syndrome-constipation **INR**=international normalized ratio **LTC**=long term care **M**=monitoring **Mg^{++}**=magnesium **MOM**=milk of magnesium **mos**=months **Na^+=sodium **NNT**=number needed to treat **NSAID**=non-steroidal anti-inflammatory drug **OTC**=over-the-counter **PEG**=polyethylene glycol **po**=oral **PR**=per rectum **PRN**=as needed **PPI**=proton pump inhibitor **pt**=patient **pwd**=powder **Rx**=prescription **SK**=Saskatchewan **soln**=solution **subq**=subcutaneous **supp**=suppository **susp**=suspension **sx**=symptom(s) **tx**=treatment **waf**=wafer **yrs**=years

NOT AVAILABLE IN CANADA Intestinal Secretagogues (lubiprostone, linaclotide): accelerate transit & facilitate ease of stool passage

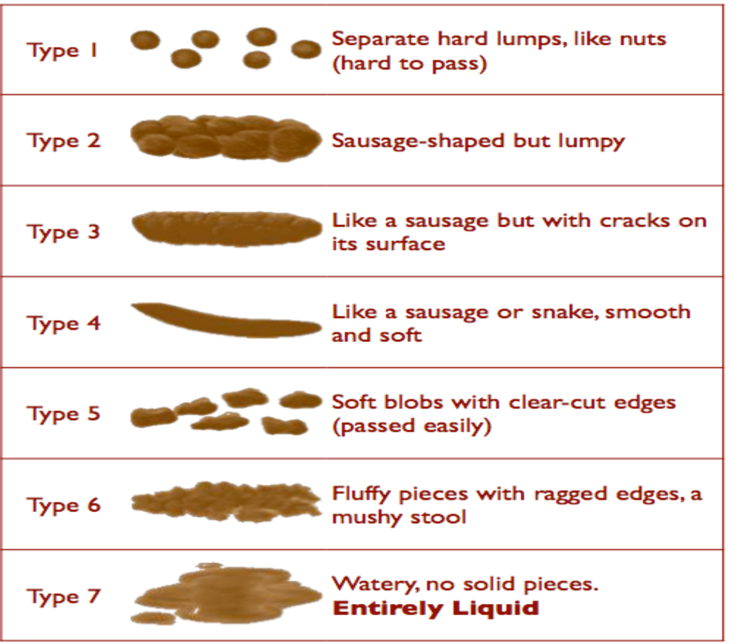
Lubiprostone AMITIZA 8 & 24mcg caps: Dose – chronic constipation or opioid-induced constipation 24mcg po BID (↓ to daily if +++ nausea), ♀ with IBS-C 8mcg po BID. NNT=4 for constipation, vs placebo. **AE**: nausea 30%, diarrhea 12%, dyspnea 3%, occurs 30-60 minutes after dose.

Linaclotide LINZESS 145 & 290mcg caps: Dose – chronic constipation 145mcg daily, IBS-C 290mcg daily. **AE**: diarrhea 20%, abdominal pain 7%.

OTHER PRODUCTS **MICROLAX** enema▼(sorbitol, glycerin, Na^+ citrate/lauryl sulfoacetate, sorbic acid). Dose for child/adult: 1 bottle pr. $9. **FLEET PHOSPHO-SODA**, g▼ oral soln. Do not use as a purgative due to serious electrolyte, kidney, CV & neurological problems. **CI**: Na^+ restricted pts. Caution in renal/cardiac dx. **Laxative doses: 5-12yrs:** 7.5-15 mL po OD. **Adult & >12yrs:** 5-15mL po OD-BID dilute in 250mL of H_2O, & follow with 250mL of H_2O.. $14-81.

NATURAL PRODUCTS Insufficient evidence to support the use of probiotics. Cascara 2-5mL (325mg/mL) or 0.3-1g po HS (320-487.5mg tabs/caps). Onset: 6-12 hours. **Do not use in pediatrics or pregnancy.** If used, ensure product has a Natural Product Number (NPN).

The Bristol Stool Chart: a validated tool to correlate stool consistency with colonic transit time. Use with patients for assessment & monitoring.



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