

V. N. KARAZIN KHARKIV NATIONAL UNIVERSITY
SCHOOL OF MEDICINE
DEPARTMENT OF PROPEDEUTICS OF INTERNAL MEDICINE AND PHYSICAL REHABILITATION
STUDENT SCIENTIFIC COMMUNITY



MANAGEMENT OF CONSTIPATION IN ADULTS



Karyna UVAROVA
Assistant of the Department

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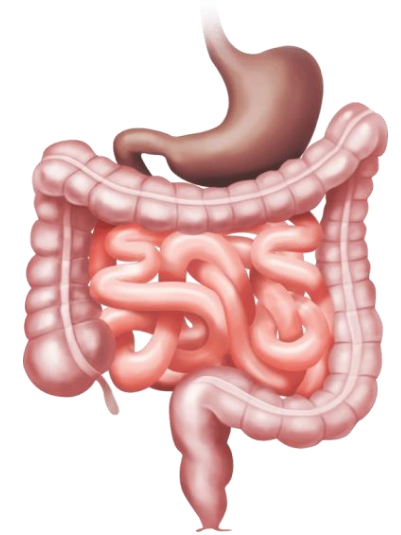
Definition

- Constipation is often treated on the basis of a patient's impression that there is a disturbance in bowel function
- However, the term constipation has varied meanings for different people. Stools may be too hard or too small for some, while for others defecation is too difficult or infrequent. The first three complaints are difficult to quantify in clinical practice
- Constipation has been defined as a stool frequency of less than three per week

Bristol Stool Form Scale – Type 1 or 2 predominantly

Type 1		Separate hard lumps, like nuts
Type 2		Sausage-shaped but lumpy
Type 3		Like a sausage but with cracks on the surface
Type 4		Like a sausage or snake, smooth and soft
Type 5		Soft blobs with clear-cut edges
Type 6		Fluffy pieces with ragged edges, a mushy stool
Type 7		Watery, no solid pieces.

Causes of chronic constipation



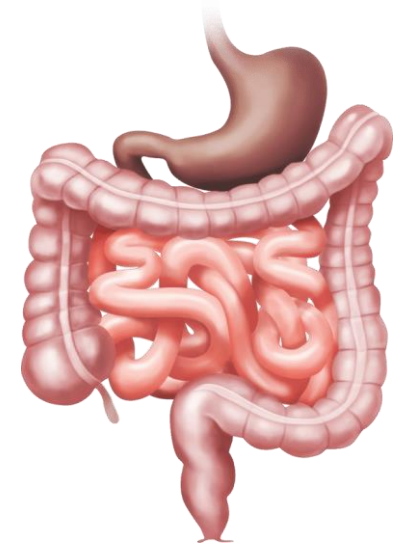
Neurogenic disorders
Peripheral
Diabetes mellitus
Autonomic neuropathy
Hirschsprung disease
Chagas disease
Intestinal pseudoobstruction
Central
Multiple sclerosis
Spinal cord injury
Parkinson disease
Irritable bowel syndrome

Non-neurogenic disorders
Hypothyroidism
Hypokalemia
Anorexia nervosa
Pregnancy
Panhypopituitarism
Systemic sclerosis
Myotonic dystrophy
Idiopathic constipation
Normal colonic transit
Slow transit constipation
Dyssynergic defecation

Analgesics
Anticholinergics
Antihistamines
Antispasmodics
Antidepressants
Antipsychotics
Cation-containing agents
Iron supplements
Aluminum (antacids, sucralfate)
Barium
Neurally active agents
Opiates
Antihypertensives
Ganglionic blockers
Vinca alkaloids
Calcium channel blockers
5HT ₃ antagonists

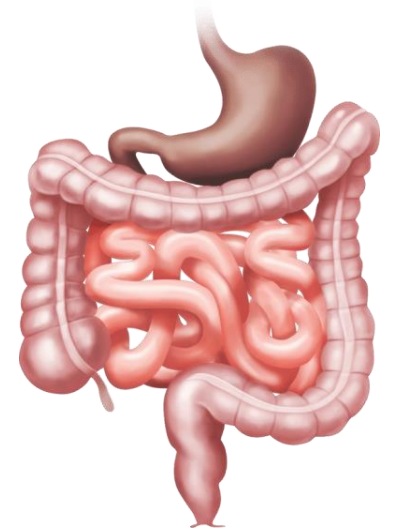
The initial management of chronic constipation includes:

- ✓ patient education
- ✓ dietary changes
- ✓ bulk-forming laxatives
- ✓ and/or the use of non-bulk-forming laxatives or enemas



Patient education

- ✓ Reduction of dependency on laxatives
- ✓ Increase fluid and fiber intake
- ✓ Defecation after meals



Dietary changes -Fiber supplementation

Dietary fiber content of frequently consumed foods

Food	Fiber, g/serving	Juices		Raw		Pasta and rice cooked	
Fruits		Apple	0.74/1 cup	Cucumber	0.2/6-8 slices with skin	Macaroni	1.0/1 cup (cooked)
Apple (with skin)	3.5/1 medium-sized apple	Grapefruit	1.0/1 cup	Lettuce	2.0/1 wedge iceberg	Rice, brown	2.4/1 cup (cooked)
Apricot (fresh)	1.8/3 apricots	Grape	1.3/1 cup	Mushrooms	0.8/half cup (sliced)	Rice, polished	0.6/1 cup (cooked)
Banana	2.5/1 banana	Orange	1.0/1 cup	Onions	1.3/1 cup	Spaghetti (regular)	1.0/1 cup (cooked)
Cantaloupe	2.7/half edible portion	Vegetables		Peppers, green	1.0/1 pod	Flours and grains	
Dates	13.5/1 cup (chopped)	Cooked		Tomato	1.8/1 tomato	Bran, oat	8.3/oz
Grapefruit	1.6/half edible portion	Asparagus	1.5/7 spears	Spinach	8.0/1 cup (chopped)	Bran, wheat	12.4/oz
Grapes	2.6/10 grapes	Beans, string, green	3.4/1 cup	Legumes		Rolled oats	13.7/1 cup (cooked)
Oranges	2.6/1 orange	Broccoli	5.0/1 stalk	Baked beans	18.6/1 cup	Nuts	
Peach (with skin)	2.1/1 peach	Brussels sprouts	4.6/7-8 sprouts	Dried peas	4.7/half cup (cooked)	Almonds	3.6/half cup (slivered)
Pear (with skin)	4.6/1 pear	Cabbage	2.9/1 cup (cooked)	Kidney beans	7.4/half cup (cooked)	Peanuts	11.7/1 cup
Pineapple	2.2/1 cup (diced)	Carrots	4.6/1 cup	Lima beans	2.6/half cup (cooked)		
Prunes	11.9/11 dried prunes	Cauliflower	2.1/1 cup	Lentils	1.9/half cup (cooked)		
Raisins	2.2/packet	Peas	7.2/1 cup (cooked)	Breads, pastas, and flours			
Strawberries	3.0/1 cup	Potato (with skin)	2.3/1 boiled	Bagels	1.1/half bagel		
		Spinach	4.1/1 cup (raw)	Bran muffins	6.3/muffin		
		Squash, summer	3.4/1 cup (cooked, diced)	Cracked wheat	4.1/slice		
		Sweet potatoes	2.7/1 baked	Oatmeal	5.3/1 cup		
		Zucchini	4.2/1 cup (cooked, diced)	Pumpernickel bread	1.0/slice		
				White bread	0.55/slice		
				Whole-wheat bread	1.66/slice		

American Gastroenterological Association, Kim YI. AGA technical review: impact of dietary fiber on colon cancer occurrence. *Gastroenterology* 2000; 118:1235.

Dietary changes -Fiber supplementation

- ✓ Cereal fibers - resist digestion and retain water within their cellular structures
- ✓ Fiber in citrus fruits and legumes - stimulates the growth of colonic flora, thereby increasing fecal mass
- ✓ Wheat bran may aggravate bloating and abdominal pain in irritable bowel syndrome
- ✓ Dose response between fiber intake, water intake, and fecal output: larger particle size of the fiber source enhances fecal bulking effects
- ✓ Sugar components (sorbitol and fructose) of foods such as apples, peaches, pears, cherries, raisins, grapes, and nuts are also beneficial
- ✓ The recommended amount of dietary fiber is 20 to 35 g/day
- ✓ In addition to consuming foods with high fiber, patients may add raw bran (two to six tablespoons with each meal) followed by a glass of water or another beverage to achieve the fiber intake goal.
- ✓ For some patients fiber increases bloating and distention. Patients should be warned that consuming large amounts of fiber can cause abdominal bloating or flatulence; this can be modulated by starting with small amounts and slowly increasing fiber intake according to tolerance and efficacy



1. Clinical response to dietary fiber treatment of chronic constipation. Voderholzer WA, Schatke W, Mühlendorfer BE, Klauser AG, Birkner B, Müller-Lissner SA Am J Gastroenterol. 1997;92(1):95.
2. Water supplementation enhances the effect of high-fiber diet on stool frequency and laxative consumption in adult patients with functional constipation. Anti M, Pignataro G, Armuzzi A, Valenti A, Iacone E, Marmo R, Lamazza A, Pretaroli AR, Pace V, Leo P, Castelli A, Gasbarrini G. Hepatogastroenterology. 1998;45(21):727.
3. Chronic constipation. Lembo A, Camilleri M. N Engl J Med. 2003;349(14):1360.

Bulk-forming laxatives

- ✓ Psyllium seed (eg, Metamucil)
 - ✓ Methylcellulose (eg, Citrucel)
 - ✓ Calcium polycarbophil (eg, FiberCon)
 - ✓ Wheat dextrin (eg, Benefiber)
- Laxative effect - absorbing water and increasing fecal mass. Increase the frequency and soften the consistency of stool with a minimum of adverse effects.
 - May be used alone or in combination with an increase in dietary fiber.
- ❖ Clinical experience => benefit for bulk-forming laxatives,
 - ❖ Objective evidence regarding effectiveness => inconsistent

Bulk-forming laxatives			
Psyllium	Up to 1 tablespoon ($\cong$ 3.5 grams fiber) 3 times per day	12 to 72 h	Impaction above strictures, fluid overload, gas and bloating
Methylcellulose	Up to 1 tablespoon ($\cong$ 2 grams fiber) or 4 caplets (500 mg fiber per caplet) 3 times per day	12 to 72 h	
Polycarbophil	2 to 4 tabs (500 mg fiber per tab) per day	24 to 48 h	
Wheat dextrin	1 to 3 caplets (1 gram fiber per caplet) or 2 teaspoonsful (1.5 gram fiber per teaspoon) up to 3 times per daily	24 to 48 h	

1. American Gastroenterological Association technical review on constipation. Bharucha AE, Pemberton JH, Locke GR 3rd. Gastroenterology. 2013 Jan;144(1):218-38.
2. Efficacy and safety of traditional medical therapies for chronic constipation: systematic review. Ramkumar D, Rao SS. Am J Gastroenterol. 2005;100(4):936.

Other laxatives

For those who respond poorly to fiber, or who do not tolerate it

Surfactants

- little evidence to support the use of
- are intended to lower the surface tension of stool => water more easily enters the stool
- these agents have few side effects, are less effective than other laxatives

Osmotic agents

- cause intestinal water secretion => increase stool frequency
- excessive use of these agents => electrolyte and volume overload in patients with renal and cardiac dysfunction

Stimulant laxatives

- alter electrolyte transport by the intestinal mucosa, increase intestinal motor activity
- continuous daily - hypokalemia, protein-losing enteropathy, and salt depletion.
Caution if taken chronically



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Severe Constipation

Suppositories

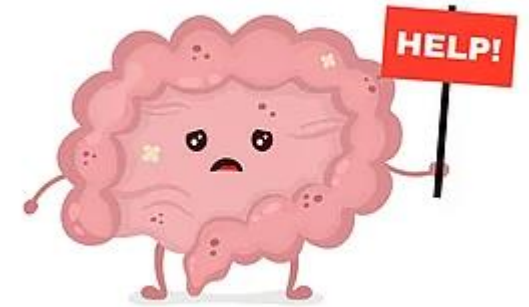
- defecatory dysfunction => an initial trial of suppositories (glycerin or bisacodyl) - liquid stool, overcome obstructive defecation.

Disimpaction

- fecal impaction (a solid immobile bulk of stool in the rectum) should initially be disimpacted starting with manual fragmentation if necessary.
- after an enema with mineral oil will help to soften the stool and provide lubrication

If disimpaction is unsuccessful or only partially successful

- a water-soluble contrast enema (Gastrografin or Hypaque) administered under fluoroscopy to assure absence of any obstruction and to eliminate more proximal impactions
- occasionally, fractionation of impacted stool beyond the reach of the finger using flexible or rigid sigmoidoscopy with instrumentation. Thorough evacuation of the colon with daily warm water enemas for up to three days, or by drinking a balanced electrolyte solution containing polyethylene glycol (PEG) until cleansing is complete



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Behavioral approaches

- Habit training in children with severe constipation.
- A modified program may also be helpful in adults with neurogenic constipation, dementia, or those with physical impairments.



Biofeedback

- Biofeedback - behavioral approach to correct inappropriate contraction of the pelvic floor muscles and external anal sphincter during defecation in patients with defecatory dysfunction such as dyssynergic defecation
- Anal plugs and anorectal manometers to monitor external anal sphincter pressures during attempted expulsion of the apparatus
- not widely available, not well standardized, results may vary at different centers
- an attractive alternative for patients with pelvic floor dysfunction and severe constipation as it provides the potential for treatment without laxatives.

1. Randomized controlled trial of biofeedback, sham feedback, and standard therapy for dyssynergic defecation. Rao SS, Seaton K, Miller M, Brown K, Nygaard I, Stumbo P, Zimmerman B, Schulze K. Clin Gastroenterol Hepatol. 2007;5(3):331.
2. Randomized, controlled trial shows biofeedback to be superior to alternative treatments for patients with pelvic floor dyssynergia-type constipation. Heymen S, Scarlett Y, Jones K, Ringel Y, Drossman D, Whitehead WE. Dis Colon Rectum. 2007;50(4):428.

Pharmacologic therapy

Linacotide

- a minimally absorbed peptide agonist of the guanylate cyclase-C receptor, stimulates intestinal fluid secretion and transit
- Is approved by the US Food and Drug Administration for the treatment of chronic idiopathic constipation at a dose of 145 micrograms daily

Plecanatide

- is approved by the US Food and Drug Administration for the treatment of chronic idiopathic constipation at a dose of 3 mg daily

Lubiprostone

- is a locally acting chloride channel activator that enhances chloride-rich intestinal fluid secretion

Misoprostol

- is a prostaglandin analog which has been used successfully to treat some patients with severe constipation
- should not be used in women who could become pregnant since it induces labor and can lead to loss of the fetus. It can also increase menstrual bleeding

Prucalopride

- 5HT₄ prokinetic agent in a dose of 1 to 4 mg once daily has been shown to be superior to placebo

1. FDA approves Linzess to treat certain cases of irritable bowel syndrome and constipation. Available at: <http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm317505.htm> (Accessed on September 04, 2012).
2. <http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm537725.htm>.
3. Lubiprostone, a locally acting chloride channel activator, in adult patients with chronic constipation: a double-blind, placebo-controlled, dose-ranging study to evaluate efficacy and safety. Johanson JF, Ueno R. Aliment Pharmacol Ther. 2007;25(11):1351.

Other approaches

Subtotal colectomy with ileorectal anastomosis can dramatically ameliorate incapacitating constipation in carefully selected patients. At least five criteria should be met prior to consideration of surgery:

- The patient **has** chronic, severe, and disabling symptoms from constipation that are unresponsive to medical therapy.
- The patient **has** slow colonic transit of the inertia pattern.
- The patient does **not** have intestinal pseudoobstruction, as demonstrated by radiologic or manometric studies.
- The patient does **not** have pelvic floor dysfunction based on anorectal manometry, balloon expulsion testing, or defecography.
- The patient does **not** have abdominal pain as a prominent symptom.



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Thank you for your attention!