

MANAGEMENT OF CHRONIC CONSTIPATION IN THE ELDERLY

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ABSTRACT

INTRODUCTION. This review focuses on the approach and treatment of chronic constipation, non-pharmacological and pharmacological, in the elderly.

METHODS. Pubmed searches were made for papers published between 2004 and 2009 using the key words of “chronic constipation” and “elderly”. Relevant papers were shortlisted for further study. Supplementary searches were made to obtain local statistics, and for references cited in the shortlisted papers.

RESULTS. Chronic constipation can be due to primary disease processes (functional bowel disorders), medication induced causes, and secondary causes. In the absence of secondary causes and medication induced causes, lifestyle changes, fibre supplements and simple osmotic laxatives (lactulose, or PEG 3350) are likely to be adequate. Magnesium hydroxide, polycarbophil, methylcellulose, senna, bisacodyl, decusate preparations, bran, colchicine, misoprostol, and lubricants which are given Grade B recommendations by American College of Gastroenterology are alternatives. Enemas, suppositories, and biofeedback exercises have a place in dyssynergic defaecation disorders. Pruclopride and lubiprostone show promise but studies in the elderly are needed. Tagaserod was voluntarily withdrawn by the manufacturer because of cardiovascular adverse effects. Intractable constipation may need surgery.

CONCLUSIONS. In the elderly with chronic constipation, history and physical examination to exclude medication induced constipation and secondary causes are the first step. For those with functional bowel disorders, lifestyle alterations, fibre, and osmotic laxatives remain the staple management strategies. For those with pelvic dyssynergia, biofeedback should be considered. Surgery may be needed for those with intractable chronic constipation.

SFP2009; 35(3): 84-92

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INTRODUCTION

This review focuses on the approach and treatment of chronic constipation in the elderly. A local study in 2000 found the prevalence of constipation to be $7.3\% \pm 3.5\%$ ¹. Women had a higher prevalence of $11.3 \pm 6.0\%$ of chronic constipation as compared with men $3.6 \pm 3.5\%$, $p < 0.05$. In North America, constipation has an average prevalence of 12-19% in North America, increasing with increasing age, and female to male preponderance of 2.2:1². The reported prevalence in institutionalized elderly is up to 50%^{3,4}. Age-related problems e.g. decreased mobility, comorbid medical conditions, and the resultant increased use of medications explains the increase in prevalence of constipation in old age. A detailed medical history and physical examination is needed to exclude secondary causes of constipation.

METHODOLOGY

PubMed searches using the keywords of “chronic constipation”, and “elderly”, and limited to subjects aged 65 years and older, randomized controlled trials, reviews, and were made for papers published from 2004-2009. The search obtained 44 articles of which of which six were used in this review. Supplementary searches were made in UpToDate dot com which short-listed a further two articles; e-Medicine Portal which short-listed one article; and Google Scholar with the search term “Singapore” and “constipation” which revealed 41 articles of which six articles were short-listed. Finally, hand searching of the relevant referenced articles or the abstracts from Pub Med quoted in the articles yielded another 34 articles. These 49 articles provided the information for this review article.

DEFINITION OF CHRONIC CONSTIPATION

Constipation may be defined as having two of the following symptoms of straining, hard stools, sensation of incomplete emptying, sensation of anorectal obstruction/ blockage, requiring manual manoeuvres to evacuate the stools, and having fewer than 3 evacuations per week using the Rome III criteria^{5,6}. For the constipation to be described as chronic, the Rome criteria need to have been met for the previous three months, with the onset of symptoms six months prior to diagnosis. See Table 1.

The reasons for using the Rome criteria to define constipation are because (a) most patients over report the presence of constipation⁷ and (b) we need to distinguish it from Irritable Bowel Syndrome (IBS) which have also a set of Rome criteria to define it⁵. See Table 2. The most important difference between chronic constipation and IBS with constipation (IBS-C) is the relative absence of abdominal pain in chronic constipation.

TABLE 1. DEFINITIONS OF CHRONIC CONSTIPATION

ROME III criteria for functional constipation⁵

Presence of two or more of the following symptoms:

- straining during at least 25% of the defaecations
- lumpy or hard stools in at least 25% of defaecations
- sensation of incomplete evacuations for at least 25% of defaecations
- sensation of anorectal obstruction/blockage for at least 25% of defaecations
- manual manoeuvres to facilitate at least 25% of defaecations (such as digital evacuation, support of the pelvic floor)
- fewer than three bowel movements per week
- Loose stools are rarely present without the use of laxatives

Insufficient criteria for irritable bowel syndrome

Criteria fulfill for the last 3 months, and symptom onset \geq 6 months prior to diagnosis

American College of Gastroenterology definition of chronic functional constipation^{7,12}

Symptom-based disorder defined as unsatisfactory defaecation and characterized by infrequent bowel movements, difficult stool passage or both. Difficult stool passage includes straining, sense of incomplete evacuation, hard/lumpy stool, and prolonged time to defaecate or pass stool or need for manual manoeuvres to pass stool.

TABLE 2. CRITERIA FOR IRRITABLE BOWEL SYNDROME⁵ ROME III CRITERIA

Recurrent abdominal pain or discomfort for at least 3 days per month in the last 3 months associated with 2 or more of the following:

- Improvement with defaecation.
- Onset associated with a change in frequency of stool.
- Onset associated with a change in form (appearance) of stool.

Note: Discomfort means an uncomfortable sensation not described as pain. In pathophysiology research and clinical trials, a pain/discomfort frequency of at least 2 days a week during screening evaluation for subject eligibility.

PRIMARY DISEASE PROCESSES CAUSING CONSTIPATION (PRIMARY CONSTIPATION, FUNCTIONAL CONSTIPATION)

Primary constipation can be divided into 3 pathophysiological groups⁹.

- **Normal transit constipation (NTC).** This is the most common subtype of primary constipation. Despite stool passing through the colon at a normal rate, patients perceive difficulty in evacuating their bowels. This group frequently overlaps with patients experiencing irritable bowel syndrome with constipation (IBS-C). The primary distinction between chronic constipation and IBS-C is the prominence of abdominal pain or discomfort in IBS.
- **Slow-transit constipation (STC).** This most commonly in women and is characterized by infrequent bowel, limited urgency, or straining to defaecate. Most patients with STC have impaired phasic colonic motor activity from a decrease in high-amplitude propagated contractions, abnormal rectosigmoid contractile activity, and reduced release of neurotransmitters or altered contractile response.

- **Pelvic floor dysfunction (pelvic floor dyssynergia).** This is characterized by dysfunction of the pelvic floor or anal sphincter, with patients having poor ability to co-ordinate these muscles during defecation. Such patients frequently report straining at stools and feeling of incomplete evacuation. At times, such patients will require perineal or vaginal pressure during defaecation to allow stools to pass. There is considerable overlap of patients with pelvic floor dyssynergia and STC. Hence, patients with STC should be evaluated for pelvic floor dysfunction.

APPROACH TO THE ELDERLY PATIENT WITH CONSTIPATION

History and Physical Examination

A detailed history is needed to identify medication induced constipation, and to rule out secondary causes of constipation. Most patients with idiopathic constipation are otherwise asymptomatic. New onset or worsening of constipation, blood in the stools, weight loss, fevers, anorexia, nausea, vomiting or a family history of inflammatory bowel disease or colon cancer dictate complete examination of the colon, particularly in adults over the age of 50 years¹⁰.

The following steps need to be taken:

- Take a detailed medication history, particularly the temporal relationship between starting a particular drug and the onset of constipation. TABLE 3 shows the medications associated with constipation^{11,12}.
- Check for presence of symptoms besides constipation. Many systemic or neurologic disorders that impair colonic motility affect organs outside of the gastrointestinal tract. Patients with these disorders may have other symptoms in addition to constipation. See TABLE 4^{6,11,13,14}.
- Check for symptoms of abdominal pain and rectal bleeding. Local process e.g. tumours often produce other symptoms such as abdominal pain or rectal bleeding.

TABLE 3: DRUGS ASSOCIATED WITH CONSTIPATION^{10,11}

Anticholinergics
Antidepressants
Antihistamines
Anticonvulsants
Antipsychotics
Calcium-channel blockers
Clonidine (Catapres)
Diuretics
Iron
Levodopa
NSAIDS
Opioids
Psychotropics

TABLE 4: SECONDARY CAUSES OF CONSTIPATION IN ELDERLY PERSONS^{6,11,13,14}

- Cardiac disorders. Congestive cardiac failure
- Dietary causes. Low fibre in diet, fluid depletion.
- Endocrine and metabolic. Diabetes mellitus, hypothyroidism, hypercalcaemia, hypokalaemia, hypermagnesaemia, hyperparathyroidism.
- Myopathic disorders. Amyloidosis, dermatomyositis, systemic sclerosis.
- Neurological. Dementia, depression, autonomic neuropathy, Parkinson's disease, spinal cord lesion (tumour, injury).
- Gastrointestinal disorders. Anal fissure, external compression (e.g. from a tumour), diverticular disease, strictures, (inflammatory, post diverticulitis, post ischaemic, post-radiotherapy), irritable bowel disease, rectal prolapse, rectocoele, volvulus, megacolon.
- General. Bedridden status.

Physical examination

A general examination to exclude the presence of secondary causes of constipation listed in TABLE 4 should be done. Inspection of the perianal area may reveal scars, fistulas, fissures and presence of external haemorrhoids. Observe the extent of perineal descent (normally 1.0-3.5 cm). Reduced descent may indicate an inability to relax the pelvic floor muscles. Excessive perineal descent (> 3.5 cm) may indicate laxity of the perineum and may lead to incomplete evacuation¹⁰.

A digital examination of the rectum is also essential to access for faecal impaction, anal stricture or the presence of rectal masses. A patulous anal sphincter may suggest trauma or neurological disorder, pressure of the anal sphincter at rest should be assessed. Loss of continuity of the anterior wall of the rectum suggest a rectocoele¹⁰.

Stool inspection

The stool consistency type based on the Bristol stool chart is useful to estimate the colonic transit time. (Fig 1). Type 1 stool in the takes about 100 hours (slow transit) while Type 7 takes approximately 10 hours (rapid transit). When used as part of the defaecation diary, the Bristol Stool chart^{15,16} has been validated as being correlated with faecal output, straining and urgency¹³.

Investigations

The British Society of Gastroenterology's guidelines advise that investigations in primary care should be limited to full blood count to exclude anaemia and thyroid function test to exclude hypothyroidism. Other investigations may be relevant if other more unusual causes are suspected. However, these complex test are usually done in secondary care¹³.

Imaging Studies and Procedures to Evaluate Constipation








- Imaging studies are used to rule out acute processes that may be causing colonic ileus or to evaluate causes of chronic constipation. In patients with acute abdominal pain, fever, leucocytosis, or other symptoms suggesting possible systemic or intra-abdominal processes, imaging studies are used to rule out sources of sepsis or intra-abdominal problems¹⁷.

- Air contrast barium enema is useful to access the possibility of an obstructing colon cancer, intermittent volvulus, or colonic stricture in the setting of chronic constipation¹⁷.
- Controlled pressure-based rectal distension with fluoroscopic rectal imaging to measure the rectal diameter at the minimal distension pressure may be useful in identifying idiopathic magabowel in the absence of an organic cause of other problems¹⁸.
- Conversely, colonic transit time should be determined in patients suspected to have colonic motility disorder. This is accomplished by observing the passage of orally administered radioopaque markers via daily abdominal roentgenograms¹⁷.
- A patient with outlet obstruction tends to retain the markers in the left colon and sigmoid, while a patient with colonic dysmotility may retain the markers throughout the colon¹⁷.
- Dynamic pelvic magnetic resonance imaging (MRI). This test provides an assessment of the functional anatomy during defaecation and therefore may identify pelvic floor dyssnergia as well as anatomical defects that entrap the rectum and obstruct defaecation¹⁹.

Other studies

- Lower Gastrointestinal (GI) endoscopy, anorectal manometry, electromyography, and balloon expulsion, colonic transit, dynamic pelvic magnetic resonance imaging and defaecography may be used in the evaluation of constipation^{9,17}.
- Lower GI endoscopy is useful in patients who are acutely constipated if large bowel obstruction is suspected on an empty rectal vault and a distended proximal colon.

Fig 1. Bristol Stool Chart^{15,16}

Bristol Stool Chart	
Type 1	 Separate hard lumps, like nuts (hard to pass)
Type 2	 Sausage-shaped but lumpy
Type 3	 Like a sausage but with cracks on its surface
Type 4	 Like a sausage or snake, smooth and soft
Type 5	 Soft blobs with clear-cut edges (passed easily)
Type 6	 Fluffy pieces with ragged edges, a mushy stool
Type 7	 Watery, no solid pieces. Entirely Liquid

Colonoscopy should not be performed if perforation or acute diverticulitis or other infectious disease process is suspected. Deep rectal biopsy may be used to diagnose Hirschsprung's disease²⁰.

- Anal manometry assesses the anal sphincter, pelvic floor and the associated nerves. A special pressure sensitive catheter is inserted into the anus to measure resting pressure and squeeze pressure of the sphincter. The principle purpose of it is to exclude adult-onset or short-segment Hirschsprung's disease. In the balloon expulsion test, a balloon is filled with varying amounts of water. A silicone filled stool like device or a 4 cm long balloon filled with 50 ml warm water is placed in the rectum, and the patient is asked to expel the device. In healthy volunteers, the balloon can be expelled within one minute; if the patient is unable to expel the device within three minutes, dyssynergic defaecation should be suspected⁹.
- Defaecography is similar to dynamic MRI. Defaecography evaluates the functioning of the anorectum (e.g. anorectal angle and pelvic floor descent) as well as anatomical abnormalities²⁰.

MANAGEMENT OF CONSTIPATION

Aims

The aims of management of chronic constipation are to relieve symptoms, restore normal bowel habit namely, the passage of a soft, formed stool at least three times a week, without straining, and to improve the quality of life with minimal adverse effects⁶.

Non-pharmacological measures

Physical activity

Low physical activity is associated with a twofold increased risk of constipation. Patients who are sedentary are more likely to complain of constipation. Prolonged bed rest and immobility are often associated with constipation^{21, 22}.

Bowel training

Having a bowel movement may partly be a conditioned reflex. Most patients with a regular bowel pattern report that they empty their bowels at approximately the same time every day. The optimal times to have a bowel movement are soon after waking and soon after meals, when colonic transit is greatest. Most importantly, patients should recognize and promptly respond to the urge to defaecate. Failure to do so can result in a build up of faeces that continue to have water absorbed from them, making them increasingly more difficult to pass²³.

Toileting position

A study on a small series of comparative positions for defaecation suggests that patients should be encouraged to adopt a "semi-

Fig 2. Semi-squatting position to defecate¹¹



squatting" position to defecate²⁴. Most people aren't good at squatting, but you can get closer to the proper position by using a footstool and leaning forward on the toilet. A pillow can also help brace abdominal muscles²⁵.

Fluid intake

Fluid intake is the key to treatment. Patients should be advised to drink at least 8 glasses of water daily. In some patient fluids consists of coffee, tea or alcohol. This practice is counterproductive because of the diuretic effects of the products. They should decrease consumption of coffee, tea and alcohol as much as possible, and they should consume extra glass of water for every drink of coffee, tea or alcohol¹⁷.

Fibre

Increasing fibre intake is commonly recommended for the initial treatment for constipation²⁶. This can be accomplished by recommending the patients eat high fibre foods (fruits, vegetables) or taking fibre/bulk supplements Psyllium (ispaghula husk), methylcellulose, polycarbophil, or bran). However, patients must be counselled that they may need to continue such therapy for 2-3 months before they experience any measurable symptom relief. Despite the widespread use of fibre supplementation, this approach is effective in only a subset of patients, and clinical trial evidence supporting the use of fibre intake is limited.

Several studies that have looked at dietary fibre intake by people with chronic constipation did not find any difference in fiber intake compared with controls^{27, 28}. It should be emphasized that a diet poor in fibre should be assumed to be the cause of chronic constipation. It was found that many patients with severe constipation deteriorated when dietary fibre is increased²⁹. In Germany 149 patients were treated with *Plantago ovata* seeds, 15-30g/day for a period of six weeks. They found that 80% of patients with slow transit and 63% of patients with a disorder of defecation did not improve with the additional dietary fibre³⁰. A prospective crossover trial comparing ispaghula husk with lactulose in Singapore resulted in a significantly higher bowel frequency and less bulking consistency. The adverse effects were similar. More patients preferred the use of lactulose (61.5%) over fibre (35.9%) to ease constipation³¹.

Pharmacological measures

TABLE 5 shows the agents available for relieving constipation^{10,11,32}. They can be classified into bulk laxatives, osmotic laxatives, stimulant laxatives, other agents, and novel agents. TABLE 6 shows the graded recommendations and levels of evidence for treatment of chronic constipation⁶. TABLE 7 shows onset of action, dosage, adverse effects of the main agents for relieving constipation which are supported by evidence^{6,9,14}.

TABLE 5: AGENTS AVAILABLE TO TREAT CONSTIPATION^{10,11,32}

Bulk laxatives
Psyllium (ispaghula husk), methylcellulose, polycarbophil, bran
Osmotic laxatives
Poorly absorbed sugars: lactulose, sorbitol, mannitol; Saline products; salts of magnesia, sulphate, phosphate, polyethylene glycol
Stimulant laxatives
Surface acting docusates, bile salts; Anthraquinolones (Senna, cascara); Diphenlmethane derivatives (e.g. bisacodyl); Ricinoleic acid (Castor oil)
Enemas
Phosphates
Lubricants
Liquid paraffin
Others
Probiotics: E.g. Lactobacillus rhamnosus GG, L. plantarum 299v, L. casei Shirota Misoprostol, Colchicine, botulinum toxin
Novel agents
Chloride Channel Activator Lubiprostone
5HT-4 Receptor Agonists
Prucalopride

(1) Bulk-forming laxatives

The principal fibre and bulk forming laxatives are psyllium (ispaghula husk), methylcellulose, and polycarbophil. They increase the weight and water-absorbent properties of the stool, thereby increasing faecal bulk and accelerating luminal propulsion. Increased gastrointestinal motility results in more rapid colonic transit time and increased frequency of bowel movements.

(2) Osmotic laxatives

The most commonly used osmotic laxatives that are magnesium salts are oral magnesium hydroxide (Milk of Magnesia), oral magnesium citrate, and sodium biphosphate. These hyperosmolar agents cause secretion of water into the intestinal lumen by osmotic activity. They have been associated with electrolyte imbalance within the colonic lumen and may precipitate hypokalaemia, fluid and salt overload, and diarrhoea. They should be used carefully in patients with congestive heart failure and chronic renal insufficiency, with hypermagnesaemia³⁶.

Alternative hyperosmolar laxatives are sorbitol, lactulose, and polyethylene glycol (PEG) 3350. Poor absorption of these agents may lead to flatulence and abdominal distension. In a

multicentre trial of 164 patients, lactulose was found to be more effective in producing normal stool by day seven compared with laxatives containing senna, anthraquinone derivatives or bisacodyl (Dulcolax)³⁷. In a multicentre, placebo controlled trial of 150 patients, PEG 3350 was found to be an effective agent for softening stools and increasing frequency³⁸. In a comparison study of 99 patients with chronic constipation, PEG 3350 was found to be more effective and caused less flatulence than lactulose³⁸.

(3) Stimulant laxatives

Stimulant laxatives increase intestinal motility and secretions. They work within hours and may cause abdominal cramps. They may be recommended if osmotic laxatives fail. They exert their effects via alteration of electrolyte transport by the intestinal mucosa; they also increase intestinal motor activity. Excessive use of these agents may be associated with side effects, including hypokalemia, protein losing enteropathy, and salt overload¹¹. Melanosis coli may develop in patients who take stimulant laxatives containing anthraquinolones. This does not lead to cancer development and it decreases over time on discontinuation of the responsible drug³⁹.

(4) Enemas and rectal suppositories

Enemas and rectal suppositories induce bowel movements by distension of the rectum and colon. Elderly patients who have serious mobility problems may need occasional enemas to avoid faecal impaction. It is necessary to remain mindful of the significant and even fatal, disturbances of water and electrolyte balance that can occur with use of sodium phosphate enemas in vulnerable patients, (Mendoza et al, 2007)⁴⁰.

(5) Other agents

- Probiotics. Probiotics has been shown to improve the frequency in patients with constipation as lactic acid producing bacteria has been shown to improve intestinal motility and transit time. However, the trials reported in the studies did not reach statistical significance³².
- Stool softeners. Stool softeners (sodium dioctyl sulphosuccinate and liquid paraffin) are no longer recommended for the treatment of constipation. Evidence of their usefulness is limited and liquid paraffin has important potential adverse effects (reduction of fat-soluble vitamin absorption and risk of lipoid pneumonia after aspiration¹⁴).
- Tegaserod. This is a partial 5-HT₄-receptor agonist. Although found to be effective in stimulating the peristaltic reflex, resulting in acceleration of intestinal and colonic transit, the manufacturer has voluntarily removed it from the market because of cardiovascular adverse effects in the elderly^{9,20}.
- Colchicine and misoprostol. Both of these agents accelerate colonic transit time and increase stool frequency in patients with constipation, although neither has been approved by the U.S. Food and Drug Administration for this indication^{41,42}.

TABLE 6. GRADED RECOMMENDATIONS AND LEVELS OF EVIDENCE FOR TREATMENT OF CHRONIC CONSTIPATION

Grade	Support	Evidence	Agents
American College of Gastroenterology Chronic Constipation Task Force³³			
A	> 2 level 1 trials without conflicting evidence from other level 1 trials	Level 1: RCTs with $p < 0.05$; adequate sample size; appropriate methods (high quality)	Polyethylene glycol (PEG 3350), lactulose, tegaserod
B	Single level 1 trial or > 2 level 2 trials with conflicting evidence from other level 1 trials or > 2 level 2 trials	Level 2: RCTs with $p < 0.05$; or inadequate sample size; and/ or inappropriate methods (inter-mediate quality) milk	Psyllium (ispaghula), polycarbophil, methylcellulose, bran, stool softeners, of magnesia (magnesium hydroxide), stimulant laxatives
C	Level 3 – 5 trials	Level 3: non-RCTs with contemporaneous controls Level 4: non-RCTs with historical controls Level 5: case series	Herbal supplements, alternative treatments, lubricants, combination laxatives
Ramkumar and Rao systematic review³⁵			
A		Good evidence (level 1) consistent results from well designed, well conducted studies	Polyethylene glycol (PEG 3350), tegaserod
B		Fair evidence (level 2); results show benefit, but strength is limited by the number, quality or consistency of the individual studies (fair quality)	Psyllium, lactulose
C		Poor evidence (level 3); insufficient because of limited number or power of studies or flaws in design or conduct (poor quality)	Magnesium hydroxide, polycarbophil, methylcellulose, senna, bisacodyl, docusate preparations, bran, colchicines, misoprostol

RCT = randomized controlled trials

References:

33 = American College of Gastroenterology Chronic Constipation Task Force, 2005

34 = Brandt et al, 2005

35 = Ramkumar, Rao, 2005

(6) Novel agents

Lubiprostone. This is a locally acting chloride channel activator that enhances chloride-rich intestinal fluid secretion. It works by activating type-2 chloride channels on the surface of intestinal epithelial cells to enhance intestinal fluid secretion and integrity of the epithelial tight junctions⁹.

It is the only agent for chronic constipation that is FDA approved for patients >65 years. Its approval was based upon two placebo-controlled trials⁴³. The recommended dose for chronic constipation is 24 mcg twice daily. Those patients receiving active treatment achieved the primary endpoint (an increase in spontaneous bowel movements to at least three per week) during each week of observation. Corresponding improvements was observed for abdominal bloating, discomfort, stool frequency and straining. The use of this drug is best reserved for patients with severe constipation in whom other approaches have been unsuccessful¹¹.

Prucalopride. This is a highly selective 5-HT₄ agonist that has been shown to increase bowel movements by initiating peristalsis in the intestines. It appears to be effective in the treatment of chronic constipation⁹. Two randomized, double blind, placebo-controlled trials in patients with severe constipation (mean age 46 years) reported prucalopride to be more effective than

placebo^{44,45}. However, high quality data supporting its use in the elderly are unavailable.

Botulinum toxin. Injections of 60 to 100 units of type A botulinum toxin into both sides of the puborectalis muscle under ultrasound guidance was effective in treating patients with dyssynergic defaecation⁴⁶.

Biofeedback and sacral nerve stimulation

Biofeedback, or pelvic floor retraining, is the mainstay of treatment for patients with dyssynergic defaecation. Patients are trained to relax their pelvic floor muscles and anal sphincter during straining and to correlate relaxation and pushing to achieve defaecation^{7,14}. Biofeedback can be performed with anorectal electromyography or a manometry catheter. Patients receive visual and auditory feedback by stimulating an evacuation with a balloon or a silicon-filled artificial stool²⁶. There are now three studies, two of them randomized controlled trials, that provide convincing evidence of efficacy for biofeedback in patients with pelvic floor dyssynergia⁶. Sacral nerve stimulation is now widely used in the management of faecal incontinence, and some preliminary data suggest a possible role for this approach in intractable constipation^{6,47}.

TABLE 7. AGENTS USED IN THE TREATMENT OF CONSTIPATION IN THE ELDERLY^{9,14}

Drug class/drug	ACG Grade	Onset of action	Dosage	Adverse effects
Bulk-forming laxatives				
Psyllium	B	3-4d	10-20g o.n. with water	Flatulence, abdominal cramps, rarely allergic reaction.
Methycellulose	B	3-4d	3-6g daily with water	Same as psyllium but less flatulence.
Polycarbophil calcium	B	3-4d	4-8g daily	Less flatulence than other bulk-forming laxatives
Osmotic laxatives				
Magnesium hydroxide	B	1-3 h	30-60ml daily	Flatulence, hypermagnesaemia in patients with renal failure, hypokalemia
Lactulose	A	24-48h	10-30 ml daily, up to bd	Flatulence, abdominal bloating and cramps, hypokalaemia.
Propylene glycol (PEG 3350)	A	24-48h	10-30g daily, up to bd	Rarely flatulence, abdominal pain.
Stimulant laxatives				
Anthraquinolones (senna, cascara)	B	8-12h	12-30mg daily	Abdominal cramps, hypokalaemia
Diphenylmethane derivatives (bisacodyl)	B	6-12h	5-10mg daily up to 3 times a week; 10mg rectal suppository daily	Abdominal cramps, flatulence, rectal burning with suppository form.
Enemas				
Phosphate enemas	-	Few minutes	When needed	It is necessary to remain mindful of the significant and even fatal, disturbances of water and electrolyte balance that can occur with use of sodium phosphate enemas in vulnerable patients, such as those with renal impairment and cardiac disease.

Surgery

Subtotal colectomy with ileorectal anastomosis can dramatically ameliorate incapacitating constipation in carefully selected patients. At least four criteria should be met prior to consideration of surgery^{48,49}:

- The patient has chronic, severe, and disabling symptoms from constipation that were unresponsive to medical therapy.
- The patient has slow colonic transit of the inertia pattern.
- The patient does not have intestinal pseudo-obstruction, as demonstrated by radiologic or manometric studies.
- The patient does not abdominal pain as a prominent symptom.

For rectoceles and rectal intussusceptions, surgical repair may not repair constipation unless improved rectal evacuation can be demonstrated when pressure is placed on the posterior wall of the vagina during defaecation. In addition, tests to exclude dyssynergic defaecation should be done prior to surgery.

Surgery is the treatment of choice for Hirschsprung's disease and varies accordingly to the length of the aganglionic segment. In patients with short segment disease, anal myotomy, in which the internal sphincter and a varying length of rectal smooth muscle are incised, is often effective. In patients with larger

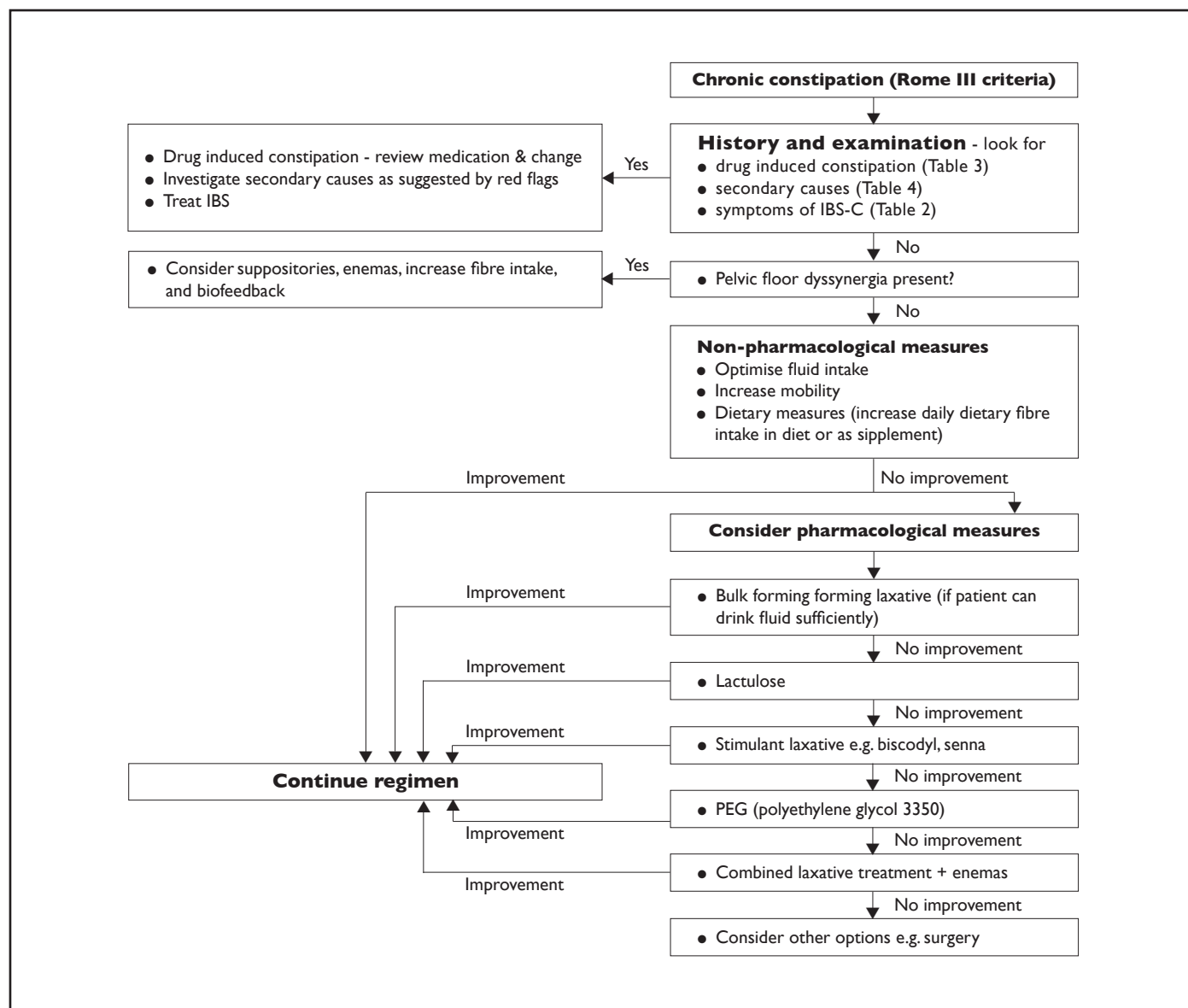
aganglionic segments, bypassing or removing the abnormal bowel is necessary to overcome the obstructing effect of the denervated segments¹¹.

CONCLUSIONS

7.4% of the population in Singapore suffer from chronic constipation. In the elderly with chronic constipation, history and physical examination to exclude medication induced constipation and secondary causes are the first step. For those with functional bowel disorders, lifestyle alterations, fibre, and osmotic laxatives remain the staple management strategies. For those with pelvic dyssynergia, biofeedback should be considered. Surgery may be needed for those with intractable chronic constipation. Fig 3 is an algorithm for management of chronic constipation in the elderly.

ACKNOWLEDGMENT

Thanks are due to A/Prof Goh Lee Gan for his constructive comments and suggestions in the preparation of this paper.

FIG 3. Algorithm for Management of Chronic Constipation in the Elderly^{14,20}**REFERENCES**

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