The management of constipation in adults

Angela Gardiner and Andrea Hilton

Abstract
Definitions of constipation vary, but in general are related to straining at stool, reduced frequency of defecation and/or a sensation of incomplete bowel emptying. These definitions are reflective of the effectiveness of colonic transit (movement of contents around the large bowel) and emptying, and may also be associated with irritable bowel syndrome. This paper provides an overview of constipation, its classification, and management approaches commonly used in an attempt to relieve symptoms. An exploration of pharmacological agents provides an overview of current evidence based practice surrounding the prescribing of medicines suitable for individuals (adults) presenting with constipation, in addition to more conservative methods such as lifestyle and dietary modification.

Constipation is a common, often debilitating disorder with a variety of symptoms and diverse aetiology. Defined as infrequent defecation, which is frequently associated with hard stool, constipation also encompasses dysfunctional emptying, which can include excessive straining, sensation of incomplete evacuation, and the need for digital/manual evacuation (American College of Gastroenterology Chronic Constipation Task Force, 2005). Constipation is part of a complex pelvic floor disorder, which can include bladder and sexual dysfunction in addition to pain syndromes (Chatoor and Emmanuel, 2009). Constipation ranges from simple to complex, and can be influenced by factors which include physical, psychological, physiological, emotional and environmental (Kyle, 2010).

Affecting all ages, constipation has a higher incidence in females (around double that of males) and has an estimated prevalence of 15–20% in the general population (Levitt et al, 2011). It has been suggested that up to one fifth of the United Kingdom (UK) will suffer with constipation at some time in their life (Kamm, 2003). The prevalence of constipation increases with age, particularly over 65 years, thereby causing significant healthcare problems for the elderly and having a negative impact on quality of life (Gallagher and O’Mahony, 2009).

Faeces move along the colon via peristaltic movement and are stored in the rectum until the need/desire to empty (Martini and Nath, 2011). During defecation, coordination of various muscles of the anal canal and pelvic floor result in defecation (Gardiner, 2013). In central nervous system impairment, ano-rectal sensation can become impaired and the ‘call to stool’ may be significantly delayed or absent, which can result in constipation. Delayed transport of the faeces through the colon can result in infrequent, hard stools, which can be difficult to expel.

Classifying constipation
Constipation presents as a symptom not a disease (Blane and Blagrave, 2011), and can be classified as either primary or secondary. Table 1 illustrates three subgroups of constipation and related symptoms. Constipation associated with normal bowel transit is the most common type of constipation. Bowel transit time is the time taken for faeces to pass through the large bowel and has been considered to be a component of irritable bowel syndrome (Gallagher et al, 2009). Slow transit constipation and outlet obstruction are less common, but cause significant problems for the sufferer and can be challenging to manage.

Causes of constipation
It is suggested that abnormal function of the autonomic and/or enteric nervous system is responsible for delayed bowel transit time (Frattini and Nogueras, 2008), which is in contrast to outlet obstruction which is related to abnormal pelvic floor coordination (Chew, 2007) or rectocele. A rectocele results from thinning of the recto-vaginal septum and weakening of the pelvic floor muscles, resulting in bulging of the anterior rectal wall into the anterior vaginal wall. Table 2 illustrates some causes of secondary constipation that require careful consideration in terms of management. This is particularly the case in terms of pharmacological agents used to treat other conditions. Drugs associated with an
stool within the colon and barium enemas are useful in identifying structural abnormalities, whereby endoscopic investigations enable direct visualisation of the bowel wall to identify any structural or luminal (e.g. malignancies) abnormalities (Longstreth et al, 2006). Radiological investigations vary and can aid diagnosis of delayed bowel transit time and structural abnormalities of the bowel wall and pelvic floor (Avery, 2004).

Management of constipation

Management of constipation aims to relieve symptoms, restore normal bowel habit and improve quality of life. Dietary and lifestyle modifications are the first-line options; however, if insufficient, various medications and pharmacotherapies can be attempted. Surgery for constipation is possible, however this tends to only be considered when all conservative options have been exhausted (Kamm, 2003).

Assessment of constipation

Longstreth et al (2006) define constipation using the ROME III diagnostic criteria, as symptoms being present for the previous three months, with an onset of greater than six months previously. In the case of functional constipation, irritable bowel syndrome must have been excluded and two of the following be evident at least 25% of the time:

- Straining
- Lumpy/hard stools
- Sensation of incomplete evacuation (tenesmus)
- Sensation of obstruction/blockage
- Manual/physical manipulation to assist evacuation (digitation)
- Less than three bowel motions per week.

Assessment and diagnosis of constipation is usually symptom-based, whereby a full history including medical, surgical, dietary and drug history is obtained. It is important to gain understanding of challenges associated with emptying of the bowel in relation to straining and/or incomplete evacuation (often referred to as tenesmus), and also whether or not individuals find it necessary to digitate to manually remove faeces from the rectum. Abdominal examination can identify impacted stool and can be combined with tools such as a symptom and stool diary utilising the Bristol Stool Form Scale (Lewis and Heaton, 1997) to identify stool type in conjunction with a food diary to assess fibre and fluid intake. Digital rectal examination is essential to aid identification of haemorrhoids, rectal prolapse, anal fissure (tear in the lining of the anal canal), anal tone (pressure which closes the anal canal), rectocele and faecal impaction. Routine blood tests may also be conducted to assess anaemia, thyroid function, calcium, glucose and electrolytes to exclude the possibility of a metabolic disorder (Rao and Meduri, 2011).

Plain abdominal radiographs can detect excessive stool within the colon and barium enemas are useful in identifying structural abnormalities, whereby endoscopic investigations enable direct visualisation of the bowel wall to identify any structural or luminal (e.g. malignancies) abnormalities (Longstreth et al, 2006). Radiological investigations vary and can aid diagnosis of delayed bowel transit time and structural abnormalities of the bowel wall and pelvic floor (Avery, 2004).

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Diets low in fibre, fruit and vegetables can increase the risk of constipation. Therefore, increasing fluid, fresh fruit and vegetable intake can provide effective methods of managing constipation. Chronic constipation, however, is unlikely to be due to poor dietary fibre and dehydration alone, although low fibre intake can be a contributing factor. Therefore, dietary fibre is recommended with the aim of an intake of around 25g of fibre per day in conjunction with increased fluid (Fenandez-Banares, 2006). Care should be exercised, however, in patients with delayed bowel transit time, since increased fibre aggravates symptoms (Cummings, 1994).

Physical activity is recommended to enhance gastrointestinal transit in addition to behavioural changes to toilet practices where possible—ignoring the call to stool can make symptoms worsen and hence developing regular times for defecation and avoiding excessive straining are important strategies in the management of constipation. Rectal irrigation is a conservative method involving introduction of water via a catheter into the rectum and flushes residual faecal matter from the descending colon, sigmoid colon and rectum, relieving symptoms of constipation for a short period of time (Gardiner, 2009). Biofeedback has been found to be an effective treatment regime for constipation related to obstructed defecation, in an attempt to enhance emptying through increased...
muscular control and sensory awareness of the need to defecate. Patients may undergo therapy utilising an intra-rectal balloon or artificial stool to coordinate pelvic floor relaxation and abdominal manoeuvres to facilitate defecation while receiving visual/auditory feedback on progress (Chiarioni et al, 2005). This intervention is normally offered after failure of laxatives and lifestyle modification and only for chronic constipation.

As outlined, management of constipation frequently focuses around diet modification; however, pharmacological agents may be necessary when diet and lifestyle modifications prove unsuccessful.

Pharmacological management of constipation

Pharmacology of laxatives

There are several classes of laxatives that can be prescribed; all have different pharmacodynamics and kinetics properties. Firstly, a quick revision of the key terms encountered within pharmacology; as prescribers, consideration must be given to pharmacodynamic properties, often termed what the drug does to the body. With laxatives, the aim of prescribing is to relieve constipation, but each class will do slightly different things in the body, which may give a rationale of the drug choice.

Pharmacokinetics is usually referred to as what the body does to the drug in terms of absorption, distribution, metabolism and elimination. The pharmacokinetics of the drug (medicine) will influence a prescriber’s choice, particularly with interactions and side effects. Antagonist drugs will generally block a receptor and do not create a biological response, i.e. they have affinity but no efficacy, whereas an agonist drug will bind to a receptor and produce a biological response having affinity and efficacy. All prescribing should be evidence based; trial evidence for laxatives is however limited.

The National Institute for Health and Care Excellence (NICE) guidance recommends the review and revision of prescribing laxatives for adults to ensure that they are prescribed routinely only for the short-term treatment of constipation when dietary and lifestyle measures have proven unsuccessful or if there is an immediate clinical need. ‘In adults, laxatives should be reserved for constipation that has not responded adequately to simple interventions, or for when rapid relief of symptoms is needed’ (NICE, 2013a).

However, please note there is separate guidance on constipation in children and young adults, as well as guidance on the use of strong opioids in palliative care in adults and prescribing in irritable bowel syndrome.

As a prescriber your own trust or organisation will have a laxative policy, and as part of your ongoing continuing professional development this should be accessed and reviewed.

The information in Table 3 is a summary based on prescribing considerations in adults; utilising information from the British National Formulary (BNF), NICE Clinical Knowledge Summaries (NICE 2013b) and Summary of Product Characteristics (SPC). The current edition of the BNF (Joint Formulary Committee, 2013) or SPC should always be consulted for comprehensive information before any prescribing decisions are made.

Conclusion

As outlined, constipation is a symptom not a disease and hence effective management of the underlying cause can afford significant improvements in quality of life for the individual. Investigation of constipation focuses around careful history taking and assessment of bowel function and dietary influences. Constipation can be caused and/or worsened by a number of factors including reduced mobility, concomitant illness, diet and medication. As outlined there are a number of conditions that are significantly linked with constipation and hence it is essential that a detailed history is taken to enable full consideration.
### Table 3. Medications for constipation

<table>
<thead>
<tr>
<th>Category</th>
<th>Mode of action</th>
<th>Examples</th>
<th>Kinetics considerations</th>
<th>Side effects</th>
<th>Prescribing considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk forming laxatives</td>
<td>Increase the faecal mass. This increase in mass stimulates peristalsis. The faeces are softened due to increase in bacterial cell mass.</td>
<td>Ispaghula husk, methylcellulose and sterculia. These can be bought over-the-counter.</td>
<td>Usually does not depend on systemic absorption.</td>
<td>Flatulence, bloating, impaction.</td>
<td>Can take several days to have a full effect. Must maintain adequate fluid intake. Useful for hard small stools. Contraindicated—difficulty in swallowing, intestinal obstruction, faecal impaction, infective bowel disease and colonic atony. Useful when patients have difficulty getting enough fibre in their diet.</td>
</tr>
<tr>
<td>Stimulant laxatives</td>
<td>Stimulate the colonic nerve in the case of senna (eMC, 2011). Bisacodyl and sodium picosulphate stimulate the colonic and rectal nerve. Sodium docusate—as well as acting as a stimulant will also soften. Glycerol suppositories have an irritant effect.</td>
<td>Bisacodyl tablets and suppositories, senna, sodium docusate, sodium picosulphate, glycerol suppositories, dantron (with a ingredient poloxamer which allows water to penetrate the stool, thus softening it). Some stimulants can be bought over-the-counter, such as senna and bisacodyl, but with restriction on the number of days used.</td>
<td>Absorption of the drug can occur and will differ between the different drugs. Usually act the day they are administered or overnight, hence given at bedtime.</td>
<td>Can include nausea and vomiting. Since the mode of action is stimulation, these can cause abdominal cramps. They should be avoided in intestinal obstruction. Prolonged use may be justified in some situations, but monitoring of potassium and electrolytes may be required. The summary of product characteristics should be consulted for contra-indications, but can include severe dehydration, acute inflammatory disease and acute surgical abdominal conditions.</td>
<td>Dantron should only be prescribed for constipation in terminally ill patients; patients should be aware that it can change the colour of the urine. Generally licensed for short-term use. Glycerol suppositories need to be placed alongside the bowel wall. Enemas such as docusate sodium must be administered correctly to avoid damage to the mucosa.</td>
</tr>
<tr>
<td>Osmotic laxatives</td>
<td>These draw water into the large bowel from the body or the water in the bowel is increased because these laxatives are taken with fluid and this is retained. In the example of lactulose—this is metabolised in the colon and this increases the osmotic pressure. There is an increase in peristalsis and water content of the faeces.</td>
<td>Lactulose, macrogols (e.g. Movicol, Laxido). Can be bought over-the-counter.</td>
<td>Lactulose is not absorbed, but is metabolised in the colon.</td>
<td>Flatulence, abdominal pain, nausea and vomiting. If diarrhoea occurs then electrolyte imbalance can occur. Lactulose is contra-indicated in galactosaemia and Acute inflammatory bowel disease (ulcerative colitis, Crohn's disease), gastrointestinal obstruction or subocclusive syndromes, digestive perforation or risk of digestive perforation, painful abdominal syndromes of undetermined cause' (eMC, 2013 (lactulose)). Movicol is contraindicated in 'Intestinal perforation or obstruction due to structural or functional disorder of the gut wall, ileus, severe inflammatory conditions of the intestinal tract, such as Crohn's disease and ulcerative colitis and toxic megacolon' (eMC, 2013 (Movicol)).</td>
<td>Can take up to 2–3 days to have effect—oral use. The osmotic enemas (such as phosphates or sodium citrate) will work within minutes. Macrogols are also licensed for faecal impaction and can be used for chronic constipation.</td>
</tr>
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</table>
of all potential contributory factors to be taken into account. Wherever possible, constipation is managed conservatively through lifestyle changes, dietary modification or alteration of prescribed medications where possible. In a number of instances pharmacological agents will be required to manage symptoms of constipation, however care should be exercised when assessing individuals and ensuring the most appropriate agent is used in accordance with symptoms.

Non-medical prescribers should only prescribe within their sphere of competency and should have the relevant clinical/physical examinations skills needed for an accurate diagnosis. As with any prescribing activity, prescribers should have a thorough understanding of the pharmacology of the medications that they prescribe, their side effects and contraindications. All prescribers should utilise during their practice the ‘single competency framework for all prescribers’ published by the National Prescribing Centre (2012).

### Table 3. (Continued)

#### Faecal/stool softeners

<table>
<thead>
<tr>
<th>Mode of action</th>
<th>Used to soften the stools.</th>
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<tbody>
<tr>
<td>Examples</td>
<td>Arachis oil and liquid paraffin. See also above with docusate and glycerol.</td>
</tr>
<tr>
<td>Kinetics considerations</td>
<td>Liquid paraffin can be absorbed.</td>
</tr>
<tr>
<td>Side effects</td>
<td>Adverse effects of liquid paraffin include anal seepage and irritation. Pneumonia (lipoid) and problems with absorption of fat soluble vitamins.</td>
</tr>
<tr>
<td>Prescribing considerations</td>
<td>Liquid paraffin is now no longer recommended and is deemed by the Joint Formulary Committee to be less suitable for prescribing. Arachis oil is peanut oil; avoid in someone who is allergic to nuts.</td>
</tr>
</tbody>
</table>

#### Peripheral opioid-receptor antagonist

<table>
<thead>
<tr>
<th>Mode of action</th>
<th>A selective antagonist of the mu receptor. Is unlikely to cross the blood brain barrier, hence the peripheral action not central nervous system action.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examples</td>
<td>Methylaltedroxone bromide (Relistor injection). Prescription only medicine.</td>
</tr>
<tr>
<td>Kinetics considerations</td>
<td>Rapidly absorbed with moderate tissue distribution and minimally metabolised.</td>
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<tr>
<td>Side effects</td>
<td>This is contraindicated in gastrointestinal obstruction and acute surgical abdomen. Common side effects includes abdominal pain, nausea, diarrhoea and flatulence; sometimes injection site reaction.</td>
</tr>
<tr>
<td>Prescribing considerations</td>
<td>Indicated for opioid-induced constipation in terminally ill patients; adult patients who have failed to responded to usual laxative therapy. It is used as an adjunct to existing laxative therapy. Caution is needed in hepatic impairment and should be avoided in severe hepatic impairment— the pharmacokinetics have not been studied. In renal impairment the dose should be reduced according to the SPC.</td>
</tr>
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#### 5HT4 receptor agonists

<table>
<thead>
<tr>
<th>Mode of action</th>
<th>A selective high affinity 5-HT4 receptor agonist with prokinetic effects.</th>
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</thead>
<tbody>
<tr>
<td>Examples</td>
<td>Prucalopride (Resolor). Prescription only medicine.</td>
</tr>
<tr>
<td>Kinetics considerations</td>
<td>It is rapidly absorbed following oral administration and extensively distributed. Live metabolism is very slow and not the major route of elimination.</td>
</tr>
<tr>
<td>Side effects</td>
<td>Contraindicated in ‘renal impairment requiring dialysis and Intestinal perforation or obstruction due to structural or functional disorder of the gut wall, obstructive ileus, severe inflammatory conditions of the intestinal tract, such as Crohn's disease, and ulcerative colitis and toxic megacolon/megarectum’ (eMC, 2013 (Resolor)). A common side effect is headache, very common side effects include nausea, diarrhoea and abdominal pain.</td>
</tr>
<tr>
<td>Prescribing considerations</td>
<td>‘The NICE technology appraisal on prucalopride recommends this as a possible treatment for chronic constipation only in women for whom treatment with at least 2 laxatives from different classes, taken at the highest tolerated recommended doses for at least 6 months, has failed to provide adequate relief and invasive treatment for constipation is being considered’ (NICE, 2013a). This should only be prescribed by a clinician experienced in treating chronic constipation and should be reviewed after four weeks if treatment not effective.</td>
</tr>
</tbody>
</table>
Dietary and lifestyle modifications are the first-line treatment for the management of constipation. Assessment and diagnosis of constipation is usually symptom-based. Constipation is a common, often debilitating disorder with a variety of symptoms and diverse aetiology. There are several classes of laxatives that can be prescribed for the treatment of constipation.

Key Points
- Constipation is a common, often debilitating disorder with a variety of symptoms and diverse aetiology.
- Assessment and diagnosis of constipation is usually symptom-based.
- Dietary and lifestyle modifications are the first-line treatment options.
- There are several classes of laxatives that can be prescribed for the treatment of constipation.
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