

Gastrointestinal Nursing

Transanal irrigation as a treatment for bowel dysfunction

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Abstract

Transanal irrigation (TAI) is a treatment for bowel dysfunction, with UK approval in patients with constipation and faecal incontinence. This article is intended for health-care professionals involved in the management of patients with bowel dysfunction and describes what TAI is and the proposed method of action. It also considers the latest evidence related to the safety and efficacy of TAI. There is now a potentially overwhelming range of equipment available on prescription to deliver this treatment. The factors to consider in the appropriate selection of equipment for individual patients will be considered, alongside an algorithm for the selection of equipment to aid health professionals with this choice.

Transanal irrigation (TAI), also known as rectal irrigation, is used throughout the UK as a treatment for bowel dysfunction, and it has recently received National Institute for Health and Care Excellence (NICE) approval for treating both constipation and faecal incontinence (NICE, 2018). Following adequate training by a specialist, TAI is self-administered by the patient (or by their carer or other health professional), at home, usually sitting on the toilet or commode chair.

Warm tap water (36–38°C) is instilled into the rectum and sigmoid colon via the anus, using either a rectal catheter or a cone. When the catheter or cone is removed, the water is expelled, along with the contents of the rectum, sigmoid colon and possibly descending colon. TAI can re-establish controlled bowel evacuation, enabling the user to choose the time and place of evacuation (Emmanuel, 2010).

Frequency of irrigation and volume of water used (typically 70–1000 ml) varies depending on the patient's response and tolerance. Where there is electrolyte imbalance, Norton and Coggrave (2016) anecdotally advised the use of normal saline and monitoring of electrolyte balance. If the tap water available is not drinkable, bottled water is advised (Emmanuel et al, 2013).

Mechanism of action

Proposed mechanisms of action include simple mechanical washout in the recto-sigmoid colon, increased colonic peristalsis stimulated by the washout or a combination of these (Christensen and Krogh, 2010). A scintographic study (*Figure 1*) has shown that, on average (mean), the irrigation fluid reaches just beyond the right colonic flexure, and antegrade colonic propulsions are induced through the colon. This occurred especially in those with spinal cord lesions and faecal incontinence, where most of the recto-sigmoid and descending colon was emptied. In patients with idiopathic constipation, only 59% of the recto-sigmoid colon emptied; however, this was sufficient for patients to feel benefit from TAI. For all 19 patients in this study, bowel function and quality of life improved, reinstating predictability and control over defaecation (Christensen et al, 2003).

Christensen et al (2003) suggested that, for patients with faecal incontinence, efficient emptying of the colon and rectum means that new faeces does not reach the rectum for around 2 days, reducing leakage between irrigations. In patients with constipation, regular evacuation of the recto-sigmoid area can promote transport through the entire colon, preventing impaction (Emmanuel, 2010).

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Key words

- Constipation
- Efficacy
- Equipment
- Faecal incontinence
- Safety

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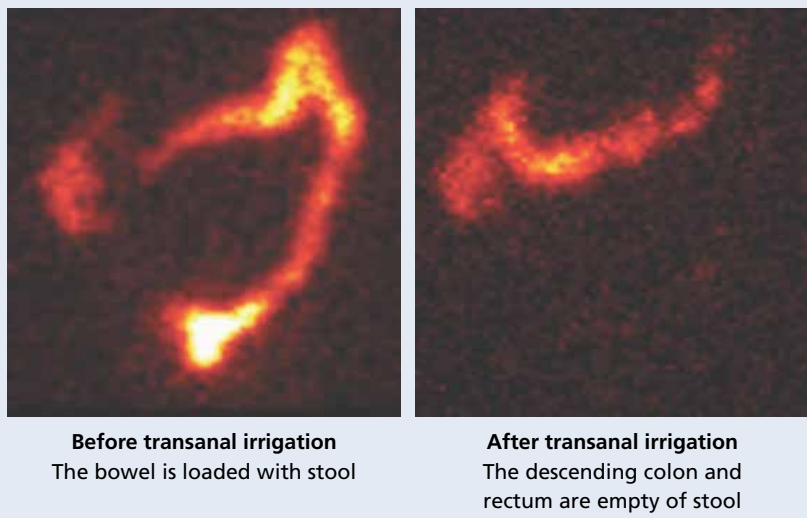


Figure 1. Scintigraphic images of the colon before and after transanal irrigation

Table 1. Indications for transanal irrigation

Chronic constipation	Chronic faecal incontinence
Idiopathic, IBS-C, opioid-induced, neurological or result of obstructive defaecation syndrome, in which symptoms are present for over 6 months and there is inadequate response to: <ul style="list-style-type: none"> • At least two types of laxatives used at maximum tolerated dose • Biofeedback therapy • Lifestyle changes • Specialist initiated drugs if indicated and available locally, such as Prucalopride, Lubiprostone, Linaclotide, Naloxegol 	Idiopathic, IBS-D, neurological or result of obstructive defaecation syndrome, in which symptoms are present for over 6 months and there is inadequate response to: <ul style="list-style-type: none"> • Biofeedback therapy • Lifestyle changes • Constipating medication

Note: IBS=irritable bowel syndrome, either constipation-dominant (-C) or diarrhoea-dominant (-D)

Patient benefits

TAI was first used in patients with neurogenic bowel dysfunction, a significant number of whom develop constipation and/or faecal incontinence. Levinthal et al (2013) studied gastrointestinal symptoms in 218 people with multiple sclerosis. Constipation and faecal incontinence were common, reported by 36.6% and 15.1% of the study population respectively. Previously, Christensen et al (2006) had definitively established the benefit of TAI for patients with spinal cord injuries. They undertook a large (n=87), randomised controlled, multi-centre trial of TAI (using Peristeen) and conservative bowel management strategies in patients with spinal cord injury. TAI significantly reduced constipation and faecal incontinence when compared with conservative strategies. Subsequent observational studies have shown TAI to be effective in patients with other neurogenic bowel conditions,

including multiple sclerosis and Parkinson's disease (Emmanuel, 2010).

TAI is an effective treatment for chronic constipation that has proven refractory to medical management (Emmett et al, 2015). Chronic constipation is a common condition, occurring in 14% of the community, particularly in women, and increasing in prevalence as the population ages (Suares and Ford, 2011). Patients with obstructed defaecation syndrome, functional defaecation disorder, chronic idiopathic constipation or constipation-predominant irritable bowel syndrome can benefit from TAI (Emmett et al, 2015). Recent NICE guidance (2018)—focussing on the Coloplast Peristeen system—recognised that TAI can reduce constipation and faecal incontinence in patients with bowel dysfunction, supporting earlier findings.

Applicability

TAI is indicated as a treatment for constipation and/or faecal incontinence and should only be initiated when conservative approaches have proven inadequate (Table 1).

A full patient assessment should be undertaken prior to initiating TAI, during which red flags should be excluded. These include blood in faeces, weight loss, abdominal pain, new or continuing changes in bowel habits and family history of colorectal cancer or inflammatory bowel disease (IBD) (Emmanuel et al, 2013). If present, TAI is contraindicated until malignant disease is excluded or IBD becomes quiescent. Patient assessment should include an assessment of the patient's motivation for undertaking this treatment, as well as the presence of any conditions affecting dexterity, mobility or cognition. Medical and surgical history should be ascertained to identify any contraindications or circumstances requiring extra care (Table 2). All patients should undergo digital rectal examination to exclude anorectal obstruction (that is, the rectum could be loaded with faeces), anal stenosis, anal stenosis or painful conditions, such as anal fissure. Results and patient consent to proceed with TAI should be documented according to local policy (Norton and Coggrave, 2016).

Efficacy

Several studies document the success of TAI in patients with spinal cord injury and cauda equina syndrome. The most robust of these was

a randomised controlled trial that compared TAI with conservative bowel management over a 10-week period. TAI was more effective, significantly reducing the severity of constipation and faecal incontinence. Additional benefits included greater general satisfaction, reduced time spent on bowel management (from 74 to 47 minutes per day) and fewer urinary tract infections (Christensen et al, 2006). In the author's experience, the time taken for TAI can be as little as 15 minutes. Subsequent prospective studies confirmed improvement in symptoms and quality of life (Christensen et al, 2008; Del Popolo et al, 2008). Importantly, success is maintained in the long term (Christensen et al, 2006; Christensen et al, 2009; Faaborg et al, 2009).

There is limited data on the efficacy of TAI in adults with specific neurogenic bowel conditions, such as spina bifida or multiple sclerosis. These patients are often included in studies with mixed populations, so results for specific neurogenic conditions should be interpreted with caution. These include Del Popolo et al (2008), whose prospective non-randomised study included 12 patients with spina bifida and two with multiple sclerosis in a population of 33 with neurogenic bowel dysfunction. This short, 3-week study reported significant improvement with TAI, with similar success rates for both constipation and faecal incontinence (63% and 68% respectively), reducing reliance on laxatives, time spent on evacuation and reliance on caregivers.

Faaborg et al (2009), in a mixed population of spinal cord injury, multiple sclerosis and spina bifida, reported a successful outcome for 46% of users of TAI, with 35% ongoing success at 3 years. Christensen et al (2009) reported effectiveness in the long term (at 10 years) for 50% of users. In a small study of 10 patients with mixed neurogenic bowel dysfunction, Storrie et al (2009) suggested TAI is beneficial where rectal compliance is reduced. Rectal compliance is the ability of the rectum to stretch and therefore store faeces prior to defaecation. When this is reduced, patients are unable to 'hold on' and typically make frequent visits to the toilet to pass small amounts of stool. TAI has also proven beneficial in patients with Parkinson's disease, stroke, cerebral palsy and cerebral thrombosis (Christensen et al, 2009).

In addition to patients with neurogenic conditions, TAI has been reported as successful for other types of bowel dysfunction (Figure 2).

Table 2. Circumstances when transanal irrigation is contraindicated or should be discontinued or used with caution

Contraindicated or discontinued	Used with caution
<ul style="list-style-type: none"> • Active inflammatory bowel disease • Acute diverticulitis • Anal or colorectal stenosis • Change in bowel habit, until cancer is excluded • Colorectal cancer • During chemotherapy • Ischaemic colitis • Pregnancy (even for established users) • Within 12 months after radical prostatectomy • Within 3 months of rectal or colorectal surgery • Within 4 weeks of polypectomy 	<ul style="list-style-type: none"> • Cognitive impairment • Congestive cardiac failure • Faecal impaction • Inactive inflammatory bowel disease • Low blood sodium • Long-term steroid therapy • Painful anal conditions, including fissure, fistula, haemorrhoids, solitary rectal ulcer syndrome • Pelvic radiotherapy • Pregnancy (planned) • Previous anal, colorectal or pelvic surgery • Previous diverticulitis or diverticular abscess • Prone to rectal bleeding or on anticoagulant therapy, not including aspirin or clopidogrel • Renal disease • Severe autonomic dysreflexia • Severe diverticulosis (diffuse disease or dense sigmoid disease) • When rectal medications are used for other conditions • Within 3 months of colonic biopsy • Within 6 months of rectal or colorectal surgery

Source: Adapted from Emmanuel (2013)

Christensen et al (2009) identified factors correlating to success as:

- Low rectal volume at urge to defaecate
- Reduced rectal capacity
- Low anal squeeze pressure
- Anal insufficiency in neurogenic bowel dysfunction.

In a systematic review of TAI as a treatment for chronic functional constipation, Emmett et al (2015) identified seven small studies using high-volume irrigation with patient reported satisfaction (subjective or visual-analogue scale) as the outcome measure. With an aggregate success rate of 50%, similar to that for neurogenic conditions, this may be considered adequate in the treatment of a chronic, refractory condition, especially given the simple and reversible nature of the treatment (Christensen et al, 2010; Etherson et al, 2017).

A subsequent large retrospective report by Etherson et al (2017) examined outcome questionnaires from 102 of 148 consecutive patients with chronic idiopathic constipation. Patients reported 21476 irrigations over 119 patient years; mean duration of therapy was 60.5 weeks. Figure 3 shows the proportion of patients in whom symptoms improved.

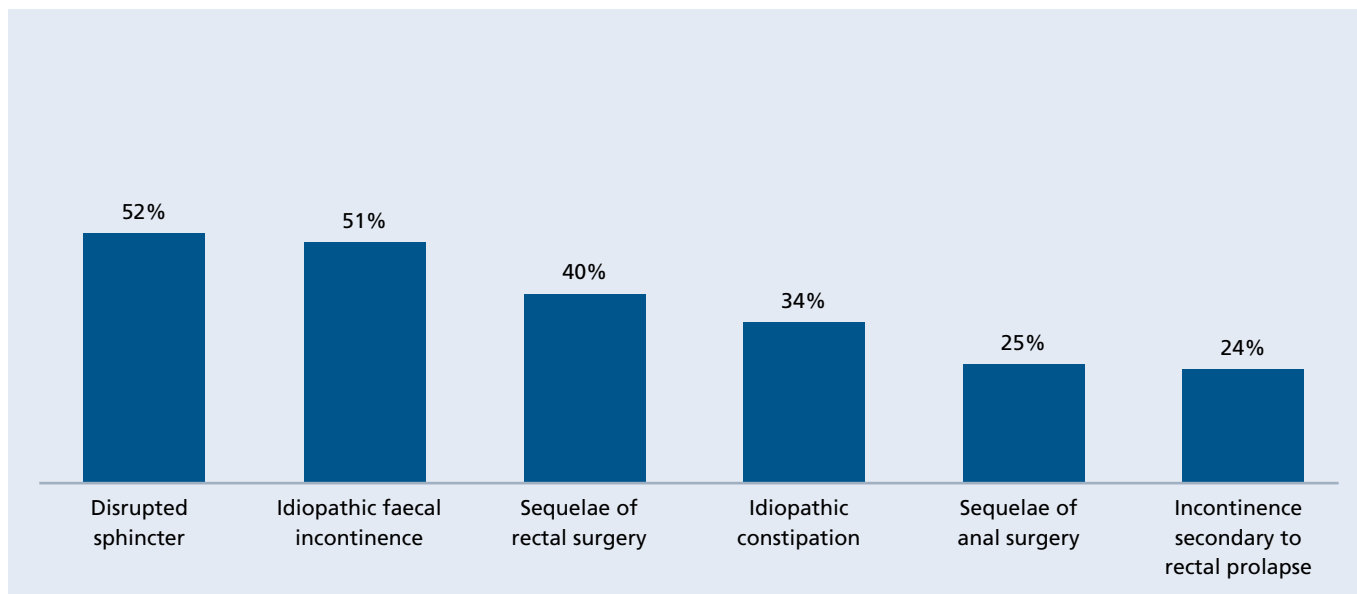


Figure 2. Efficacy of transanal irrigation in different types of bowel dysfunction (Christensen et al, 2009)

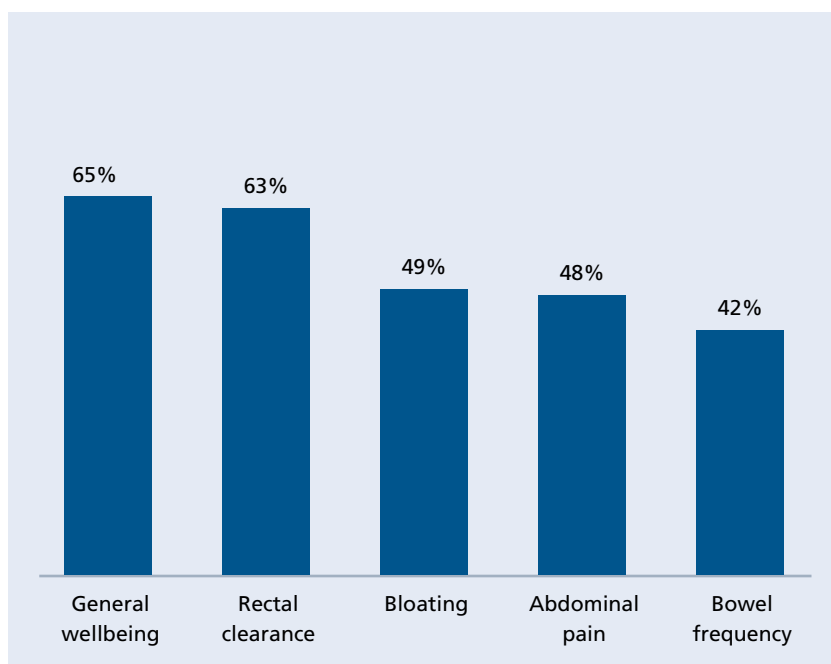


Figure 3. Symptom improvement in transanal irrigation for chronic idiopathic constipation (Ethersen et al, 2017)

Overall 67% of patients were ‘moderately’ or ‘very much’ better. Baseline characteristics—age, duration of constipation, proctographic findings of obstructive defaecation and colonic transit time—did not predict the response to TAI.

Unpublished observations by Emmett recorded impressions from patients recently commenced on TAI:

‘I thought it [TAI] would have been hard; I’d never done anything like that before, but

I tried it ... really, really good; I felt great with it.’

One patient who had stopped socialising, was missing out on family holidays and was unable to take his dog out on long walks found that TAI significantly improved his quality of life:

‘So I use the water solution and I, it’s there, you just do it straight away, use it; you go outside, walk around, clear; if you don’t use it, you’re stuck indoors all day.’

Safety

TAI is performed routinely, often on alternate days (Norton and Coggrave, 2016), although, in the author’s experience, patients with refractory constipation will undertake daily TAI. It is generally regarded as a safe treatment, although mild and transient side-effects may occur and be tolerated by patients. For example, Gosselink et al (2005) reported a 43% incidence of ‘technical issues’, and up to 74% of long-term users reported expected adverse events. The most commonly reported were abdominal discomfort, anorectal pain, anal-canal bleeding, leakage of irrigation fluid and expulsion of rectal catheter (where used) (Christensen et al, 2009), although only 28% of users discontinued irrigation for these reasons.

Patients with neurogenic bowel dysfunction experienced different side effects in the Christensen et al (2006) study, the most common being abdominal pain (15.7%),

sweating (10.5%), chills (7%) and pronounced general discomfort (5.9%). However, these symptoms occurred in patients using conservative bowel management too, except for sweating, which was significantly less common in TAI.

It is well recognised that inserting a rectal catheter into the rectum, inflating a balloon and instilling water under pressure carries the risk of a potentially lethal perforation. Christensen et al (2016) examined 49 reported cases of perforation and calculated an average risk of perforation of six per million irrigations. More recent data indicates a risk of only two perforations per million irrigations. In 67% of cases, perforations occurred within the first 8 weeks of treatment; the risk did not increase with long-term use. This is highly relevant, as most indications for irrigation require prolonged treatment.

For comparison purposes, the standard quoted risk for perforation during flexible sigmoidoscopy is 1 per 40000 (Atkins et al, 2002). For many patients undertaking TAI, the alternative is a colostomy, which carries a 30-day mortality risk of 2% (Iversen et al, 2014).

Patients may have increased risk of perforation if they have had previous rectal surgery (transanal rectal resection, ventral mesh rectopexy or rectal prolapse repair), irradiation or diverticular disease (Christensen et al, 2016). Following resection for rectal cancer, more than 80% reported a change in bowel habits, and 45% had bowel problems that severely impact on quality of life, termed low anterior resection syndrome (LARS). TAI is an effective treatment for this (Rosen et al, 2011). Emmanuel et al (2013) recommended endoscopy prior to initiating TAI in this patient group. Christensen et al (2016) noted 15 cases of perforation in patients with non-neurogenic dysfunction, 11 (67%) of whom had previous pelvic organ surgery. Patients should be informed of this increased risk. If rectal catheters are used, the balloon should be inflated to the minimum size that allows the rectal catheter to be held in situ, thus preventing unnecessary pressure against the rectum wall.

Equipment

There is a growing range of equipment available for use in the delivery of TAI (Figure 4). All should be used according to the manufacturer's instructions. There is potential for health professionals to feel overwhelmed by the choice.



Figure 4. Examples of equipment for transanal irrigation

There are several factors to consider when selecting equipment. A decision as to whether a high or low volume of water is likely to be required is a pertinent first step. In the author's experience, patients with neurogenic dysfunction, constipation-predominant irritable bowel syndrome, idiopathic constipation, obstructive defaecation syndrome or faecal incontinence do well with high-volume irrigation. Several systems can deliver this.

The patient should choose whether they prefer using either a rectal catheter or a cone. In the author's experience, most patients can use any system. There are some factors that require special consideration. If the patient has reduced dexterity and/or mobility, they may find it difficult to hold a cone in position while the water is instilled, a rectal catheter may be more appropriate in these circumstances. Patients who experience anal pain due to anismus may find rectal catheters more comfortable, as they clear the anal canal and sit within the lumen of the rectum. For those who are dependent on carers delivering TAI, a catheter-based system may be more convenient. All rectal catheters and some cones have a hydrophilic coating activated by water. The balloon is inflated

with air or water. The author has found water filled balloons useful in circumstances where the water leaks during instillation or the balloon is expelled while inflated.

For high-volume irrigation, the patient can choose either a pump system (manual or electric) or a gravity-fed system to instil the water. This will determine where the water container sits, either on the floor or hung up (manufacturers supply a wall hook). Patient dexterity and mobility may again influence this choice. Although there is no recent comparison data between equipment, it seems likely that efficacy is similar, as demonstrated by Crawshaw et al's (2009) comparison of a gravity-fed system with an electric pump (the forerunner of B Braun IryPump). They concluded similar results and patient satisfaction with both systems, although 75% of respondents preferred the electric pump as a mode of delivery.

Low-volume irrigation (up to 250ml) can be used successfully in patients who experience passive faecal incontinence or post-defaecation soiling (Collins and Norton, 2013). Small volumes

of water can also wash out rectoceles. Irrigation should be used with caution in patients following surgery. Clinicians can seek advice from the surgeon, as well as refer to *Table 2*. For patients with urgency and faecal incontinence resulting from LARS, the author starts with low-volume irrigation, usually with effective clearance and significant improvement in quality of life. Some patients are very nervous about starting TAI, therefore low-volume irrigation can be a gentle introduction to this treatment. *Figure 5* offers an algorithm for equipment selection.

Despite these considerations, sometimes the patient cannot use or tolerate the equipment of choice. In the author's experience, it is very important to ascertain what patients mean if they state TAI is not working, as technical issues with equipment can usually be overcome. Health professionals can be reassured that it is simple for patients to change to an alternative system. Recent guidance from NICE (2018) recommended that clinicians and patients should discuss the options available and that different systems may be tried

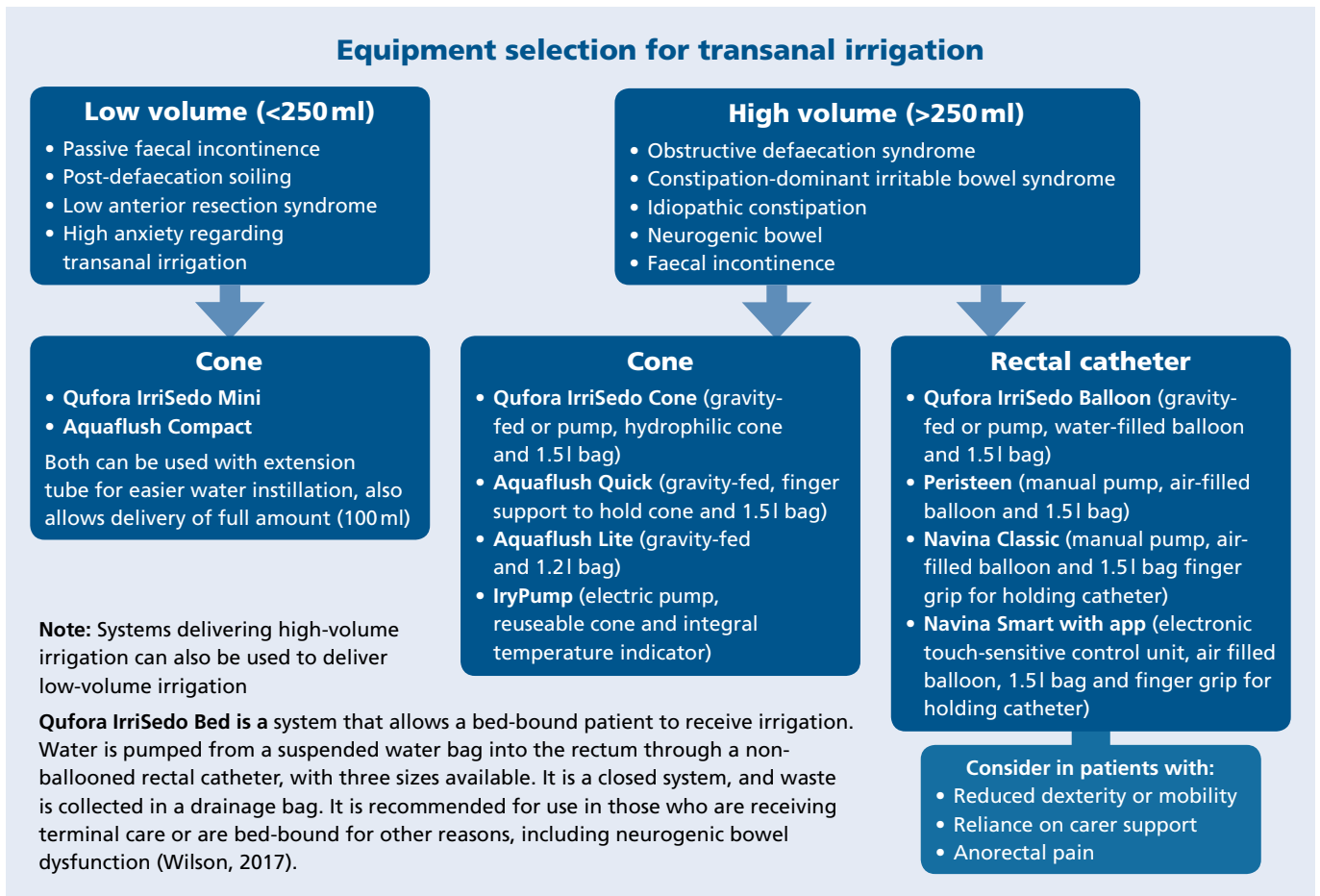


Figure 5. Equipment selection for transanal irrigation

before deciding which is most suitable. It takes 6–8 weeks for the patient to become familiar with TAI (Emmanuel et al, 2013). It is most effective when offered with specialist training and structured support (NICE, 2018), particularly in the initial phase to adjust the regimen and address safety concerns. Gallo et al (2018) reported a case of TAI-induced enterovaginal perforation in a female patient who had self-initiated TAI. Competencies of the specialist required to initiate, monitor and evaluate TAI developed from a TAI pathway developed by the Northern Regional Irrigation Specialist Group are outlined in *Box 1*.

Conclusion

TAI has been shown to be an effective treatment for constipation and faecal incontinence in selected patient groups. It is safe and well tolerated by patients, with a very small risk of perforation. Recent reports of safety and efficacy demonstrate the benefit-to-risk ratio in support of the use of TAI. Careful patient selection and consideration of contraindications and cautions improves the safety of TAI. It is most effective when initiated by specialist health professionals and where patients have access to structured ongoing support. For those patients with refractory bowel dysfunction whose symptoms improve with TAI, it can be considered as a long-term management solution. The following quote, recorded in Emmett's unpublished observations, summarises one patient's response to TAI:

'It's not unpleasant; it's nothing to be embarrassed about. You fit it into your daily routine easily; it's quick to use; it's discreet—the packaging comes nobody knows what you're getting delivered—and if it works just try it, and if it is working, keep going.' **GN**

Declaration of interest *The authors have no conflicts of interest to declare*

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Box 1. Competencies for health-care professionals teaching transanal irrigation

Demonstrate competency in using the equipment

Demonstrate knowledge of the range of commercially available systems

Evaluate progress and adjust regimes accordingly

Show understanding of benefits and risks associated with transanal irrigation

Teach patients how to use chosen equipment

Undertake and interpret findings of digital rectal examination

Identify suitable equipment, considering:

- High-volume versus low-volume
- Cone systems versus rectal catheter systems, as well as bed systems
- Gravity systems versus manual or electric pumps
- Patient dexterity and mobility
- Availability of carer support if available
- Toilet access and provision of suitable aids, such as a commode

Undertake holistic assessment of patient, including:

- In-depth assessment of bowel symptoms, including onset, duration, triggers, previous treatment and effect on quality of life
- Medical and surgical history
- Medications
- Ascertain patient expectations in relation to treatment
- Assessment of mobility and dexterity
- Availability of carer or other support to assist with irrigation if appropriate
- Consider home environment, such as access to toilet, and provision of required mobility equipment, such as a shower chair or commode

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CPD reflective questions

- Reflect on the ways in which transanal irrigation can be a useful therapy for patients
- Consider how to advise patients on finding the right irrigation system for their needs
- In what situations should transanal irrigation be used with particular caution or discontinued entirely?

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