

# Fecal Incontinence in the Elderly



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## KEYWORDS

- Fecal incontinence • Elderly • Diarrhea • Fecal seepage • Sacral nerve stimulation
- Algorithm • Rectal examination

## KEY POINTS

- Fecal incontinence can be a challenging and stigmatizing disease with a high prevalence in the elderly population.
- Despite effective treatment options, most patients with fecal incontinence are never asked by providers about the condition and do not receive care.
- Clues in the history and physical examination can assist the provider in establishing a diagnosis for fecal incontinence.
- Treating underlying bowel disturbances are one of the most effective first-line treatments for fecal incontinence.

## INTRODUCTION

Fecal incontinence (FI) can be a challenging, stigmatizing disease for elderly patients to manage alone. Fortunately, a variety of treatment options exist for patients once the diagnosis is established, with more promising therapies in development. Despite its potentially devastating psychosocial and economic impact, most patients do not receive care for FI. As the population in the United States ages, the prevalence of FI will increase in turn. Health care providers must therefore remain vigilance to assess for FI in their aging patients while directing sufferers to appropriate treatment resources. In this article, we review the epidemiology, risk factors, diagnosis, and management of FI in the elderly population.

## EPIDEMIOLOGY AND IMPACT

### *Definition*

FI is the unintentional passage of solid or liquid stool. It can coexist with diarrhea and constipation, as well as urinary incontinence. By the Rome IV criteria,<sup>1</sup> FI is no longer

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described as functional (as in the Rome III criteria),<sup>2</sup> and there is no distinction as to the presumed etiology in making the diagnosis. For research purposes, FI is now defined as at least 2 episodes in a 4-week period, whereas previous definitions were less stringent.<sup>3</sup>

Three subtypes have been described<sup>4,5</sup>:

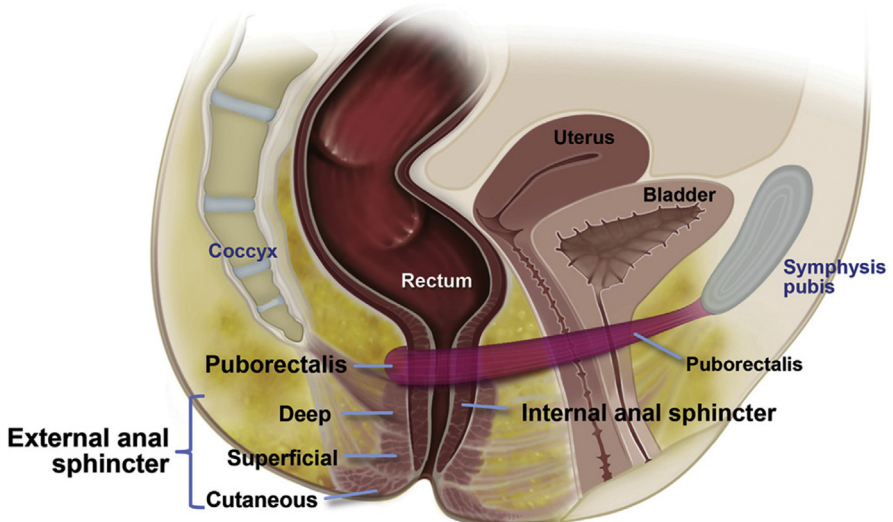
**Passive incontinence:** The unintentional passage of stool or gas without awareness of its occurrence.

**Urge incontinence:** The discharge of fecal matter despite active attempts to retain contents. These patients may describe constantly being unable to reach the bathroom in time.

**Fecal seepage:** The unintentional passage of stool that can follow an otherwise normal defecation, often presenting with fecal staining of undergarments. These patients may demonstrate dyssynergia with impaired rectal sensation.

### Risk Factors

Several factors drive FI. Anatomic factors involved in maintenance of continence include anorectal sensation, muscle strength, rectal compliance, and neurologic integrity.<sup>6</sup> Anal resting tone is composed 70% of the circular smooth muscle of the internal anal sphincter and 30% of the striated muscle of the external anal sphincter. At rest, the puborectalis component of the levator ani complex helps to form the rectoanal angle to provide an additional barrier to incontinence with resting anal sphincter tone serving as an important barrier to passive incontinence (Fig. 1). In healthy individuals, both the puborectalis and the external anal sphincter can be voluntarily contracted to avoid defecation. Aging results in several related neuromuscular changes, including decreased anal resting and squeeze pressures, decreased rectal compliance, decreased rectal sensation, and an increased threshold to sense volume<sup>7,8</sup>—all physiologic alterations that can predispose to FI.



**Fig. 1.** Anorectal anatomy relevant to FI. (From Rao SS, Bharucha AE, Chiarioni G, et al. Anorectal disorders. *Gastroenterology*. 2016;150(6):1432; with permission.)

There has been much debate over the role of obstetric injury in the development of FI. Vaginal delivery has been shown to cause anal sphincter injury despite the initial absence of clinical symptoms.<sup>9</sup> It was therefore previously thought that obstetric injury may be major contributing risk factor in FI in older women.<sup>10</sup> However, more recent data indicate that bowel disturbances such as diarrhea and Irritable bowel syndrome with diarrhea are the main risk factors for FI in the elderly, rather than obstetric history.<sup>11</sup> Such injuries likely remain an important risk factor in immediate post-partum FI,<sup>12</sup> rather than late-onset FI, although obstetric injuries may nevertheless work synergistically with the aforementioned neuromuscular changes to increase risk of FI with aging. In the elderly, recognition of bowel disturbances driving FI can have tremendous therapeutic implications, because they are relatively easier to correct than neuromuscular injuries to the pelvic floor.

Several important medical comorbidities are associated with FI. Among neurologic disorders, diabetes mellitus as well as stroke are correlated with FI in older patients,<sup>13</sup> and FI in patients with multiple sclerosis is common.<sup>14</sup> Within gastrointestinal disorders, FI is more common in patients with inflammatory bowel disease than controls without inflammatory bowel disease (odds ratio, 7.73) in a meta-analysis of 17 studies and 4671 patients, with a likely multifactorial etiology heightened by local inflammation during a flare.<sup>15</sup> In patients with ulcerative colitis who have undergone a curative colectomy with ileal pouch anal anastomosis, FI symptoms are a common complication. Of these patients, 19% suffer occasional daytime incontinence and 49% suffer nocturnal incontinence at 12 months after the procedure.<sup>16</sup> Other gastrointestinal disorders, including celiac disease and irritable bowel syndrome, are also more commonly associated with FI.<sup>17</sup> Among those with preexisting bowel disturbances and predisposing medical conditions and demographics, more aggressive screening for FI is warranted.

Demographic risk factors for FI remain murky. A cross-sectional survey found an increased likelihood of FI in Hispanic and male patients, although these patients may not frequently present for FI care. Alternatively, another study found that white women (not including those identifying as Hispanic) were more likely to develop incident FI compared with black male and female patients.<sup>18</sup> Those seeking care seem to be predominantly women,<sup>19,20</sup> which may have previously driven the assumption that obstetric injuries were the main risk factor for FI. Nonetheless, the sex split for FI remains controversial, with some arguing for an even distribution among men and women,<sup>19,21,22</sup> and others arguing for a strong female predominance.<sup>23</sup>

Furthermore, lifestyle factors such as obesity and smoking<sup>17,24</sup> have been demonstrated as modifiable risk factors for FI. Similarly, higher levels of physical activity have been associated with a 25% risk reduction in new FI.<sup>25</sup> Anal intercourse, in both men and women, increases risk of FI (prevalence odds ratios of 2.8 and 1.5, respectively), although this is an area that has received comparatively little research.<sup>26</sup> Dietary factors have been shown to decrease the risk for the development of FI, namely, fiber intake. Our group demonstrated a modestly decreased risk of new FI, primarily from liquid stool, with increased long-term fiber intake in older women.<sup>27</sup> This finding may in turn reflect an improvement in stool consistency among those with bowel disturbances and FI, with the benefit seen at current guideline-recommended fiber intake levels (25 g/d).<sup>28</sup>

Last, and of particular relevance to the elderly population, additional risk factors include cognition and neurologic diseases such as dementia or a compromised ability to communicate, and poor mobility.<sup>29</sup> Not surprisingly, patients with limitations in their ability to perform activities of daily living have a higher odds of FI than those without (odds ratio, 2.54 for mobility, 4.03 for dressing, and 7.37 for toilet use).<sup>30</sup> Prompted toileting and fitness training among nursing home residents with these issues have had mixed results.<sup>31,32</sup>

## Prevalence

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Studies from the 1980s to the 1990s cite FI estimates at 2% of the population (and 10%–13% of elderly community residents).<sup>23,33</sup> However, the prevalence of this disease is likely more common than previously appreciated, with a recent large population-based study reporting that 1 in 7 Americans have experienced FI,<sup>34</sup> and a cross-sectional survey finding self-reported FI in 36.2% of respondents.<sup>35</sup>

Estimates of FI prevalence increase with age, hospitalization, and most with institutionalization. In people over age 50, the incidence of FI has been estimated at 7% per 10 years,<sup>22</sup> and age is independently associated with FI for both men and women in other analyses.<sup>36</sup> Among hospitalized patients, the incidence of FI increases to 16% (12% of all patients have FI daily),<sup>37</sup> and this is estimated to be as high as 33% among the acutely ill.<sup>38</sup> Once institutionalized, nearly one-half of all residents have FI according to a recent systemic review on older people in care homes.<sup>39</sup>

## Impact

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Given these estimates, the overall burden of FI is significant. Medical complications of particular concern in the elderly are skin breakdown and pressure ulcers. FI can create excess moisture on the skin and enhances the permeability of irritants, including enteric enzymes, increasing the risk of pressure ulcer formation.<sup>40</sup> In elderly patients, pressure ulcer incidence is independently associated with FI within the first 48 hours of hospitalization.<sup>41</sup>

Economically, FI plays a major role in the \$12 billion adult diaper market, projected to reach a value of \$19 billion by 2023, with a growth far surpassing baby diapers.<sup>42</sup> An American mail-based study that analyzed the use of medical and nonmedical resources for FI as well as lost productivity found that the average annual total cost for FI is \$4110 per person.<sup>43</sup> Finally, patients with FI have more frequent health care visits per year than those without (average difference of 4.21 visits per year), and more severe symptoms are associated with increased cost.<sup>35</sup>

Several studies have demonstrated an increased risk for institutionalization among patients with FI.<sup>44–46</sup> FI is associated with an increased likelihood of geriatrician referral to a skilled nursing facility, ranking among mobility restrictions, cognitive decline, and multiple chronic illnesses as major factors in the risk for nursing home referral.<sup>47</sup> Moreover, FI disproportionately increases the burden on caregivers, increasing the likelihood for the institutionalization of a relative.<sup>48,49</sup>

Beyond its economic impact, the psychosocial burden of FI cannot be overstated. Major areas of restriction caused by FI include social life, physical activities, hygiene, fear, and embarrassment.<sup>50</sup> Interviews of patients with FI highlight poor self-esteem and feeling that others perceive them as repulsive and impolite.<sup>51</sup> The perceived shame of FI can lead to increased social isolation and job loss.<sup>52</sup> Understandably, FI is linked to increased depression and anxiety as well as decreased quality of life.<sup>53</sup> An association between FI and the likelihood of mortality has even been described in community-dwelling elderly adults, even after adjustment for variables otherwise linked to mortality.<sup>54</sup>

## WORKUP FOR FECAL INCONTINENCE

### History

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Asking the patient directly about FI is the most essential, yet frequently underused, aspect of the history. Despite its high prevalence, only 10% to 30% of patients with FI discuss treatment options with their physicians.<sup>55,56</sup> Part of this stems from a lack of systemic screening for FI in the primary care setting.<sup>35</sup> Only 13% of patients

report being screened by the primary care doctors. Among those who consulted with their doctors about FI, 88% say the discussion was initiated by themselves.<sup>57</sup> The same study noted that some patients do not consult their doctors about FI because they are unaware that effective treatments exist.

The language providers use to broach a conversation about FI is also important. Physicians can try asking the question using other terms such as “accidental bowel leakage,” which has been shown to be a preferred term by women when discussing FI.<sup>58</sup> Additionally, providers should take the health literacy of their patients into consideration with these questions, because many patients may not have ever heard of FI, or know this is a condition others experience, despite having symptoms themselves.<sup>59</sup> During the initial history, a physician should probe further if a patient endorses diarrhea, because this may be an intentional mislabeling of FI owing to embarrassment.

If FI is suspected, it should be better characterized to elucidate potential underlying, correctable causes. Providers should ask about the onset, frequency, volume, presence of blood, and pattern (gas vs liquid vs solid) of the patient’s FI. Incontinence of urgent liquid stools may suggest the presence of a treatable bowel disturbance, such as irritable bowel syndrome, with symptom improvement possible with conservative measures before referral to specialized care. Passive incontinence of solid stool may suggest more severe neuromuscular dysfunction of the pelvic floor, requiring early referral for specialized management. It is also crucial to ask about vision loss, difficulty with communication, and gait impairment, because these factors may point to an overall neurologic or cognitive decline in the elderly.

Next, a thorough medical history should be taken with special attention to diseases that affect the gastrointestinal tract, cognition, and the central or peripheral nervous systems. Dementia, stroke, multiple sclerosis, diabetes mellitus, Parkinson’s disease, inflammatory bowel disease, microscopic colitis, and chronic constipation are among the many age-related conditions that can increase risk of FI. These conditions deserve special mention because bowel disturbances are among the most important risk factors for developing FI. Approximately one-fourth of patients with inflammatory bowel disease experience FI,<sup>15</sup> and 10% to 15% of new cases of inflammatory bowel disease are diagnosed after the age of 60, despite commonly being seen as a young person’s disease.<sup>60,61</sup> Evidence of anemia, rectal bleeding, and bloody diarrhea as well as an increased fecal calprotectin or fecal lactoferrin should prompt further evaluation with colonoscopy or flexible sigmoidoscopy.

Microscopic colitis is an important cause of chronic diarrhea in the elderly population with an average age at diagnosis of 66 years and a female predilection.<sup>62</sup> Patients with microscopic colitis report new-onset watery diarrhea and the disease is associated with certain drugs (nonsteroidal anti-inflammatory drugs, selective serotonin reuptake inhibitors) and autoimmune disorders. Endoscopically, the mucosa typically seems to be normal; however, the diagnosis of microscopic colitis is based on characteristic pathology.<sup>63</sup> Therefore, it is important to communicate to the gastroenterologist performing the colonoscopy that random colonic biopsies are requested with this condition on the differential.

Fecal impaction owing to constipation can be complicated by FI, as seen with an overflow diarrhea. This diagnosis is supported by a history of constipation mixed with diarrhea, abdominal discomfort, and evidence of impaction of rectal examination. Although a kidney, ureter, and bowel examination demonstrating severe fecal loading can help to determine the etiology of symptoms, the clinical presentation may be the best predictor of this diagnosis.<sup>64</sup> Our patients frequently describe several days of constipation followed by a “dam breaking” sensation with hard stools progressing to looser stools over a short time period.

In addition to a thorough surgical and obstetric history, the provider should focus on the patient's diet and medications. New medications (with special attention to recent antibiotics), herbal supplements, or changes in dosing can provide clues to causes of bowel disturbances. Especially in the elderly, side effects as well as drug–drug interactions of all medications should be considered. With an FI prevalence of 22% in patients with diabetes,<sup>65</sup> providers should give careful attention to dietary and medication changes in this population. Artificial sweeteners such as sorbitol can aggravate diarrhea, as can medications such as metformin, with their effects on FI compounded by neuropathy-associated rectal hyposensitivity. Physicians should assess dietary fiber intake and evaluate for possible food triggers causing bowel disturbances such as lactose, fructose, or gluten.

### **Physical Examination**

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The physical examination should encompass several aspects, including a complete neurologic examination to encompass cognition, vision, and mobility. The rectal examination will be reviewed here. It is worth noting that confidence in making a diagnosis with rectal examination is strongly associated with the number of rectal examinations performed annually, and that patient refusal rates negatively correlate with the comfort level of the physician.<sup>66</sup>

With the patient on their left side with knees and hips flexed, inspect the perianal region for lesions, including skin tags, ulcers or skin breakdown, hemorrhoids, rashes, fissures, and warts or frank masses. Residual stool is frequently seen surrounding the anal opening in patients with FI. A gaping or patulous anal orifice can suggest a neuromuscular etiology of FI and often indicates internal anal sphincter dysfunction.<sup>67</sup>

Eliciting an anal wink can serve as a helpful (although insensitive) measure of S2 to S4 nerve root or pudendal nerve function.<sup>5,68</sup> The examiner gently strokes toward the anus with a finger or cotton swab in all 4 quadrants to assess for a brisk, involuntary anal contraction. Its absence may indicate a potential neuropathic problem.<sup>69</sup>

Rectal prolapse can contribute to FI and can be assessed by asking the patient to bear down—preferably in the standing position to take advantage of gravity. Proapsed rectal mucosa through the anus appears as a rosette of red tissue with care to note whether only radiating folds (suggestive of milder prolapse) or concentrically circular folds appear (suggestive of larger prolapse involving the entire bowel wall).<sup>70</sup> Having the patient bear down will similarly expose prolapsing internal hemorrhoids that may prevent an adequate seal of the anal canal and lead to seepage.

Inserting a gloved fingertip into the anal canal allows for an assessment of sphincter tone at rest and when asking the patient to squeeze voluntarily. The former maneuver primarily assesses the function of the internal anal sphincter and the latter the function of the external anal sphincter (under voluntary control). Next, the provider should request that the patient try to expel the inserted finger as the provider observes the degree of perineal descent (3 cm or greater is considered abnormal). Lack of coordination between the rectal push and the anal relaxation is suggestive of dyssynergic defecation, which can predispose to incomplete rectal evacuation and subsequent leakage through a weakened anal sphincter.

### **Further Testing**

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As described, if bowel disturbances are present, stool studies and colonoscopy or flexible sigmoidoscopy should be considered to evaluate for an underlying etiology. A kidney, ureter, and bowel examination assessing for stool burden can also be valuable when considering overflow incontinence or megarectum. Other more specific tests include anorectal manometry, balloon expulsion testing, and defecography.

These test can help to identify and characterize structural or sensory abnormalities. However, additional testing in FI does not always change management,<sup>71</sup> and therefore should not delay initial treatment or subspecialty referral.

## MANAGEMENT

There are several effective treatment options for the management of FI and referral to a gastroenterologist or colorectal surgeon (depending on local expertise) is essential to further determine the optimal treatment options for the patient. Conservative treatment, however, should begin immediately at the primary care level. As a rule, correcting bowel disturbances associated with loose stools and liquid stool incontinence is much easier, less invasive—and in many cases more effective—than invasive options targeting the anal sphincter. Dietary modifications such as increased fiber intake or fiber supplementation as well as decreasing foods that can prompt loose stools like

Bowel Disturbance	Diagnostic Workup	First-Line Treatment
IBS-D	History (suggestive features include absence of red flag symptoms, association with defecation), negative infectious and inflammatory work-up	Fiber supplementation, loperamide, antispasmodics (caution in elderly)
Bile acid diarrhea	History (suggestive features include history of cholecystectomy or suspicion of IBS-D)	Cholestyramine, colessevelam, colestipol (caution about spacing out from other medications)
Microscopic colitis	Pathology from endoscopic biopsies	Frequently directed by GI: budesonide (9 mg daily), smoking and NSAID cessation (may contribute to disease)
Chronic infectious diarrhea	History (suggestive features include recent travel or immunocompromise), fecal giardia/stool ova and parasites/stool culture, fecal leukocyte	Targeted antimicrobial therapy
Inflammatory bowel disease	Fecal calprotectin, endoscopy, iron studies	Treatment directed by GI
Lactose intolerance	Dietary history, note that prevalence increases with age	Lactose-free diet, lactase enzyme supplementation
Celiac disease	Dietary history, IgA/tissue transglutaminase	Gluten-free diet
Small bowel bacterial overgrowth	Breath testing, although significant accuracy issues	Antibiotics (preference for nonabsorbable agents, ie, rifaximin)
Constipation with overflow incontinence	History, kidney, ureter, and bowel examination	Laxatives, pelvic floor biofeedback

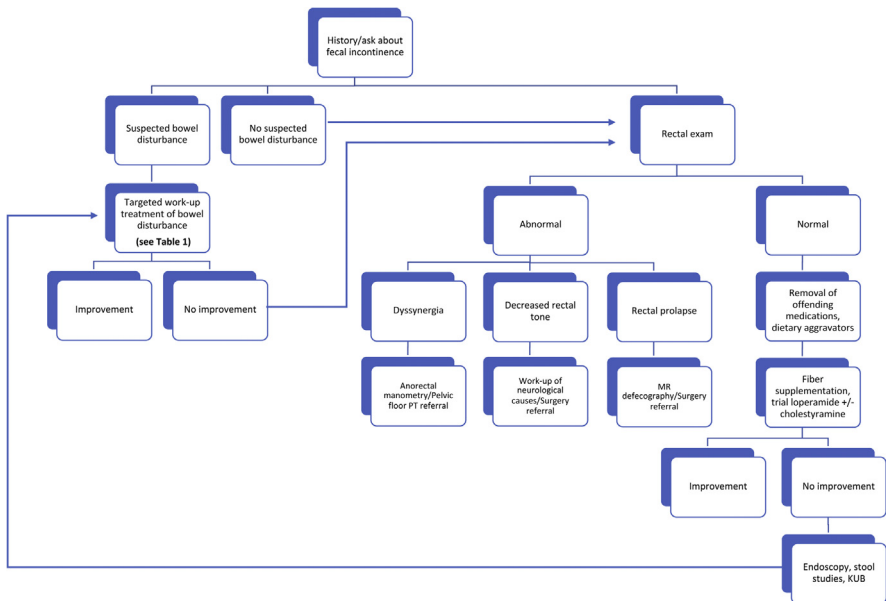
**Abbreviations:** IBS-D, irritable bowel syndrome with diarrhea; NSAID, nonsteroidal anti-inflammatory drug.

coffee or fructose can markedly improve FI.<sup>72</sup> Loperamide for diarrhea-associated FI<sup>73</sup> or laxatives for constipation or fecal impaction-associated FI are common first-line treatments,<sup>64</sup> with assessment and treatment of the underlying etiology initiated in the primary care office. For example, FI being driven by bile acid malabsorption can often be treated with cholestyramine effectively whereas FI resulting from an inability to reach the toilet in a patient with Parkinson's disease can be reduced by ordering a bedside commode. **Table 1** lists etiologies of common bowel disturbances, the diagnostic workup, and first-line treatments.

The current anorectum-specific treatments with the best evidence to date are sacral nerve stimulation, a type of neuromodulation involving outpatient surgical implantation of electrodes adjacent to the sacral nerves,<sup>74</sup> and biofeedback, which is performed with the assistance of a therapist to retrain a patient's neuromuscular coordination and improve rectal sensation.<sup>75,76</sup> These treatment modalities have been reviewed in depth,<sup>77</sup> and typically require subspecialty guidance. In all cases, treatment success is generally defined as a 50% or greater decrease in weekly FI episodes.<sup>78</sup>

It must be noted that, in women with normal stool consistency, loperamide was recently shown to be no more effective than placebo or an educational pamphlet on FI.<sup>79</sup> The same randomized controlled trial did not show a significant difference between biofeedback and an educational pamphlet in this population. This lack of improvement with some of the long-used, traditional interventions in FI with normal stool consistency suggests a patient population with more severe damage to the continence mechanism, warranting earlier subspecialty evaluation.

Nonetheless, conservative management by the primary care physician plays an integral role in FI, yielding a 60% improvement in symptoms and continence in 20% of patients.<sup>80</sup> It is therefore insufficient to merely make a diagnosis of FI. Rather, it is paramount that a plan is implemented to address it with our suggested algorithmic approach (**Fig. 2**), expediently involving specialists if needed.



**Fig. 2.** Suggested treatment algorithm for the evaluation of FI in the elderly. KUB, kidney, ureter, and bowel examination; MR, magnetic resonance.



## SUMMARY

FI is a widespread issue among the elderly with a significant toll on patients and society. With a purposeful history and physical examination, physicians can make the diagnosis and start effective FI treatments, which can be life changing. Although we still have much to learn about the pathophysiology of FI, several exciting new therapies are on the horizon.

Our institution is currently collaborating in a randomized clinical trial for translumbosacral neuromodulation therapy for FI. Translumbosacral neuromodulation therapy is a novel technique that delivers magnetic energy to the lumbosacral nerves, which, unlike sacral nerve stimulation, is noninvasive. As with other options for FI, it remains to be seen if a sham control clinical trial will demonstrate long-term efficacy.

A number of promising preclinical and observational studies have investigated local injections to the anal sphincter of muscle-derived or mesenchymal stem cells.<sup>81</sup> A recent phase II, randomized clinical trial using autologous myoblasts demonstrated sustained improvement in FI severity at 12 months.<sup>82</sup>

Despite these strides, stigma reduction remains an enormous barrier in FI. On an individual provider level, however, the first step in the right direction is as simple as asking the patient.

## DISCLOSURE

K. Staller has received research support from AstraZeneca, Gelesis, and Takeda; he has served as a consultant to Arena, Bayer, Shire, and Synergy; he has served as a speaker for Shire. T. Pasricha has nothing to disclose.

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