



Published in final edited form as:

*Obstet Gynecol.* 2015 May ; 125(5): 1063–1070. doi:10.1097/AOG.0000000000000755.

## Standard Compared With Mnemonic Counseling for Fecal Incontinence: A Randomized Controlled Trial

**Sara B Cichowski, M.D. [Assistant Professor],**

Division of Urogynecology, 1 University of New Mexico, MSC 10-5580, Albuquerque, NM 87131-0001

**Gena C Dunivan, M.D. [Assistant Professor],**

Division of Urogynecology, 1 University of New Mexico, MSC 10-5580, Albuquerque, NM 87131-0001

**Rebecca G Rogers, M.D. [Regent's Professor, Director],**

Division of Urogynecology, Director, Fellowship Program - Female Pelvic Medicine & Reconstructive Surgery, 1 University of New Mexico, MSC 10-5580, Albuquerque, NM 87131-0001

**Ambrosia M Murrietta, MHS, and**

Clinical and Translational Science Center, 1 University of New Mexico, MSC 08-4635, Albuquerque, NM 87131-0001

**Yuko M Komesu, M.D. [Associate Professor]**

Division of Urogynecology, 1 University of New Mexico, MSC 10-5580, Albuquerque, NM 87131-0001

### Abstract

**Objective**—To estimate whether women who underwent mnemonic counseling had better recall of fecal incontinence therapies at 2 months and if mnemonic counseling resulted in greater satisfaction with physician counseling and improvement in quality of life when compared to a group who underwent standard counseling.

**Methods**—Counseling naive women with fecal incontinence were recruited from an academic Urogynecology clinic. Women underwent physical examinations, completed the Quality of the Physician-Patient Interaction, recorded fecal incontinence treatment options they recalled, and completed the Fecal Incontinence Severity Index and Manchester Health Questionnaire immediately after counseling and again at 2 months.

**Results**—Ninety women consented to participate, were randomized and completed baseline questionnaires. At baseline women did not differ in age, ethnicity, education, fecal incontinence

---

Reprint Requests/Corresponding Author: Sara Cichowski, M.D. 1 University of New Mexico, MSC 10-5580, Albuquerque, NM 87131-0001, 505-272-9712 Ph., 505-272-1336 Fax, scichowski@salud.unm.edu.

**Financial Disclosure:** The other authors did not report any potential conflicts of interest.

Accepted for oral presentation at the combined meeting of American Urogynecologic Society and International Urogynecology Society, July 22<sup>nd</sup>-26<sup>th</sup>, 2014 in Washington, D.C.

Clinical Trial Registration: Clinicaltrials.gov, [www.clinicaltrials.gov](http://www.clinicaltrials.gov), NCT01778660.

severity index or Manchester Health Questionnaire scores. After counseling the mnemonic group reported higher satisfaction on Quality of the Physician-Patient Interaction ( $66.4 \pm 6.5$  vs  $62.2 \pm 10.7$ ,  $p=0.03$ ). Ninety percent (81/90) of women followed-up at 2 months. Our primary endpoint, two month recall of fecal incontinence treatments was not different between groups ( $2.3 \pm 1.6$  mnemonic counseling vs  $1.8 \pm 1.0$  standard counseling;  $p=0.08$ ). Secondary endpoints the mnemonic group reported greater improvement on total Manchester Health Questionnaire ( $p=0.02$ ), emotional ( $p=0.03$ ), sleep (0.045), role limitations ( $<0.01$ ), and physical limitations ( $p=0.04$ ) when compared to the standard group.

**Conclusions**—Fecal incontinence counseling with a mnemonic aid did not improve recall at 2 months but improved patient satisfaction and quality of life at 2 months.

## Introduction

Patients with debilitating conditions often forget important aspects of their treatment options (1-4). Explaining therapeutic options to patients is particularly challenging with chronic diseases that require multi-modal therapy such as fecal incontinence. Fecal Incontinence is defined as the involuntary loss of liquid or solid stool that causes a social or hygienic problem (8). Women with fecal incontinence report significant changes in their lifestyle such as limiting time away from home and avoiding social situations (9,10,11). The best therapeutic options for fecal incontinence typically involve multiple approaches which may be difficult for providers and patients to remember including behavioral therapy, medications and dietary changes (12).

Mnemonics are rhymes or acronyms used to aid recall and are commonly used in physician training. Examples include: “Asymmetry, Border, Color, Dimensions (ABCD)” for melanoma screening (13); and CAGE questions for alcohol screening (14).

Mnemonics positively influence provider performance; pharmacy students demonstrated fewer prescribing errors (15) and nursing students had better patient assessment after learning a mnemonic (16). While mnemonics have been developed for provider use, their use in patient education is relatively unexplored.

Our primary objective was to estimate whether women who underwent mnemonic counseling had better recall of first-line fecal incontinence therapies at 2 months compared to women who received standard counseling. We hypothesized that standard therapies for fecal incontinence would be better remembered and implemented by patients when they were presented to them with the use of a mnemonic. We also aimed to estimate whether mnemonic counseling resulted in greater patient satisfaction with physician counseling and greater improvement in fecal incontinence symptoms and quality of life at 2 months compared with standard counseling.

## Materials and Methods

Prior to conducting this randomized, controlled trial, our group conducted cognitive physician interviews and patient focus groups to explore commonly employed therapies recommended for fecal incontinence using qualitative methods (17). In these focus groups

the patients helped create a mnemonic for fecal incontinence treatments that they found easy to remember, interpret, and useful. Along with the physicians, patients agreed that fiber, food diary, pelvic floor exercises, a routine lifestyle and bowel habits and at times an anti-diarrheal medication were important for managing symptoms. Additionally patients wanted physicians to communicate the importance of living their life and personal effort as part of the “treatment” for fecal incontinence; therefore the word “effort” was used in the mnemonic to explain to patients the importance of developing personal strategies and habits that would improve their fecal incontinence. Patients also requested that the brand name “Imodium” be used rather than the generic loperamide, as this was easier for them to identify as an anti-diarrheal. The mnemonic chosen by the focus groups was “RELIEF” (Box 1).

For the present study, women who reported never receiving counseling for fecal incontinence and who responded affirmatively to having bothersome fecal incontinence for greater than 3 months were recruited from an academic Urogynecology clinic from February 2013 to November 2013. Bothersome fecal incontinence was defined as changes in lifestyle or women reporting changes in quality of life related to fecal incontinence. Women with diagnosis(es) of colorectal or anal malignancy, inflammatory bowel disease, recto-vaginal fistula, rectal prolapse, or history of pelvic floor or abdominal radiation were excluded. Women were recruited prior to reviewing therapeutic options for fecal incontinence. This study was Institutional Review Board– approved (#12-429), and all women gave written informed consent prior to randomization; the consent described the patient satisfaction aim of this study but patients were masked to the recall aim of this study as we felt that if women knew they were going to be tested on recall it might bias the recall outcome. In order to standardize both study arms, physicians used scripted counseling that contained the same information but was presented with or without the aid of the mnemonic. An anti-diarrheal was recommended when patient symptoms were predominantly loose, accidental stool passage after regular bowel movements. Pelvic floor exercises were presented to all patients with recommendations to perform 40-60 contractions per day. Patients who could not contract their pelvic floor were offered a referral to physical therapy. Because our physical therapy has a 2-3 month waiting period during the course of the study no patients received formalized physical therapy even if a consult was placed. The scripted counseling lasted approximately 5 minutes and was approximately one typed page in length. The specific counseling points were identical in the two arms; what varied between groups was the delivery. For the standard counseling, the provider was given a printed sheet with each of the counseling points on it to review with the patient verbally. For the mnemonic counseling a placard with the mnemonic was held where the patient could visualize it. The definition of each letter in the mnemonic was on the placard. During the counseling, the provider referred to the mnemonic letter corresponding to the counseling. (See the Appendix entitled “Standard and Mnemonic Counseling Scripts for fecal incontinence”, available online at <http://links.lww.com/xxx>)

Physicians recorded any additional memory aids provided such as teach back or pictures. All patients also received written handouts on fiber and pelvic floor exercises. Simple randomization generated from a random numbers table was used to assign intervention groups. Randomization assignments were placed into sealed, numbered, opaque envelopes

that were opened sequentially once a patient had consented to participate. Randomization was assigned by a study coordinator not involved in the generation of the randomization scheme. The physician was notified by the study coordinator of randomization prior to beginning the patient counseling. All physicians used the same packet of information (+/- the mnemonic) and scripted counseling for both arms of the study. Study personnel maintained the envelopes in a locked box and the researchers did not have access to the randomization.

Women underwent a complete history and physical exam prior to undergoing the counseling assigned by randomization. The physical exam included assessment of pelvic floor strength using the Oxford grading scale. In this scale 0=no contraction, 1=flicker, 2=weak, 3=moderate 4= good and 5=strong contraction. This scale was also used to assess external anal sphincter contraction strength by digital rectal examination. The examining physician also documented the presence or absence of a dovetail sign and hemorrhoids. The examining physician then completed a questionnaire about patient's medical history including diagnosis(es) of memory disorder, urinary incontinence, irritable bowel syndrome and chronic constipation. Pelvic organ prolapse was measured using the validated pelvic organ prolapse quantification system. (18)

After receiving counseling the women completed the Quality of the Physician-Patient Interaction (19), a validated measure of clinical encounter satisfaction. In this questionnaire patients are asked to rate specific portions of the clinical encounter on a 5 point scale ranging from 1= "I do not agree" to 5= "I fully agree". Examples of statements asking for the patient level of agreement on the Quality of the Physician-Patient Interaction include: "I felt I could have trusted the physician with my private problems", "the physician gave me detailed information about the available treatment options", "the physician gave me detailed information about my illness". Higher scores indicate higher satisfaction with the clinical encounter.

Patients also recorded fecal incontinence treatment options they recalled immediately post-counseling and at 2 months. Recall was assessed for the following items: routine bowel habits, routine lifestyle, exercise, live, Imodium, effort, fiber and food diary. Each item was marked as either present or absent on the patient written list of treatment options. For the loperamide item, the physician marked whether or not this was recommended to the patient, and if it was not recommended then this item was removed from the total recall count for that patient. This was the only item that was not consistently recommended. In cases where alternative terms such as "anti-diarrheal" were written rather than "Imodium" or "Kegel" rather than exercise, a person masked to randomization determined if the term(s) written were synonyms and should count as an item on the list. Patients completed the Fecal Incontinence Severity Index) and Manchester Health Questionnaire (20)(21) immediately after counseling and again at 2 months. The Manchester Health Questionnaire uses a 5 point-system and scores in each domain range between zero and 100 with a higher score indicating greater impairment. Therefore, a reduction in score indicates improvement. Research staff not involved in the counseling and masked to the randomization administered the post-counseling questionnaires at baseline and again at 2 months. Physicians performing the counseling and patients were not masked.

Power calculation was based on the only previous study to evaluate mnemonic training for patients. In that study memory impaired patients (n=42) and normal controls (n=45) were randomized in both groups to mnemonics versus other memory training. In that study, mnemonics improved recall immediately ( $p=0.006$ ) and at one-month ( $p<0.001$ ) in both healthy controls and memory impaired patients. (22) This study found an immediate recall effect size of 0.43 in the mnemonic group. Based on these observations, a sample size of 41/arm was adequate to detect a 40% difference in recall of all therapies initially recommended for fecal incontinence with 80% power and  $\alpha=0.05$  at 2 months. Assuming a dropout rate of 10%, we planned to recruit a total of 90 women.

Baseline demographics, comparison in the number of fecal incontinence treatments recalled, fecal incontinence severity index, and satisfaction with the physician encounter were compared between groups using Fischer's exact test and t-test of differences. Scores for quality of life on the Manchester Health Questionnaire were not normally distributed and were therefore analyzed using Wilcoxon's rank sum test (a nonparametric test). Two way repeated measures ANOVA with standard versus mnemonic as grouping factor and time as repeated factor was used to compare recall and quality of life scores. Data were analyzed using SAS 9.3 (Cary, NC). Significance was set at  $P<0.05$ .

## Results

Ninety women consented to participate, were randomized, and completed baseline questionnaires; 47 to standard counseling and 43 to mnemonic counseling (See Figure 2: Consort Diagram). At baseline women did not differ in age, ethnicity, education, Stage 2 prolapse, or any urinary incontinence, although the mnemonic counseling group had slightly lower BMI (Table 1). Use of other memory aids such as teach back and pictures was similar between mnemonic and standard counseling groups (all ancillary memory aids  $p>0.05$  (Table 1)).

At baseline, Fecal Incontinence Severity Index and Manchester Health Questionnaire scores were not different between groups. Immediately post-counseling, the mnemonic counseling group reported higher satisfaction on Quality of the physician patient interaction and recalled more fecal incontinence therapies than the standard counseling group.

Ninety percent (81/90) of randomized women were re-contacted 2 months after counseling and repeated the Fecal Incontinence Severity Index and Manchester Health Questionnaire. At baseline, ninety percent of this cohort reported solid and liquid stool leakage while the other 10% reported either solid or liquid stool leakage. Nearly half (48%) of the entire cohort reported at least weekly loss of stool. The severity and type of fecal incontinence was not different between the two groups as measured by t-test. Two month recall of fecal incontinence treatments was not different between groups ( $2.3 \pm 1.6$  mnemonic counseling vs  $1.8 \pm 1.0$  standard counseling;  $p=0.08$ ). We believed that age, BMI, education and memory impairment may effect the results therefore we also performed a multivariable analysis between 2 month recall and these items and the results remained unchanged. Both groups reported significant improvement in the Fecal Incontinence Severity Index at 2 months from baseline (mean score change  $-7.4 \pm 13.3$  standard counseling group, and  $-4.33$

± 11.1 mnemonic counseling group,  $p=0.20$ ), When comparing the mnemonic group to the standard group, the mnemonic counseling group reported greater improvement on total Manchester Health Questionnaire, and emotional, role limitations, physical limitations and sleep sub-scales (Table 2). Item analysis of fecal incontinence therapies recalled at baseline was significantly higher in the mnemonic group for routine bowel habits, lifestyle, exercise, counseling to “live”, loperamide and effort (all  $P<0.05$ ). At 2 months item analysis of fecal incontinence therapies recalled did not demonstrate any significant difference between mnemonic versus standard counseling (Table 3).

## Discussion

We assumed prior to starting this study that recall would be associated with improvement in quality of life, but this appears not to be the case. There was no difference between groups in our primary outcome measure; we found no difference in recall between the two counseling methods.

Immediately postcounseling, the use of a mnemonic aid did increase patient satisfaction. At 2 months the group that learned the mnemonic had improved quality of life when compared to standardized counseling. These secondary findings are consistent with others that have documented that patient satisfaction with physician counseling improves adherence to treatment (25) and disease outcomes (26). We believe this is why the small but significant change in satisfaction with the clinical encounter matters.

The average cost annually for patients with fecal incontinence is \$4110 representing both direct medical and nonmedical costs such as lost productivity (27). While our study did not evaluate cost, mnemonic counseling could potentially reduce the number of physician visits and cost burden of fecal incontinence by enabling patients to more effectively manage their disease. In turn, this might decrease expensive physician visits and use of incontinence pads. Improved quality of life with conservative measures may have further downstream cost-savings among patients as they may not need expensive and invasive therapies such as sacral neuromodulation or sphincteroplasty.

Previous attempts to improve patient understanding and adherence to therapeutic regimens have included prolonged patient provider interactions (28), audiovisual aids (29), use of physician extenders in the outpatient and inpatient setting (30), community health workers (31) or even physician financial incentives (32). “Teach back” or “repeat back”, is endorsed by U.S. Department of Health and Human Services (33), but has not been widely incorporated into clinical care. Tools to improve patient retention and understanding of diagnostic and treatment options are needed. In this study, though mnemonic subjects accrued greater benefit in certain quality of life parameters, the mnemonic RELIEF did not improve patient recall of treatment options at 2 months. Mnemonics may still represent a useful tool to improve patient knowledge.

Weaknesses of this study include that it was limited to patients already seeking care for pelvic floor disorders and may not be as applicable to a less severely affected population and short follow-up. It is likely that recall is also linked to patient improvement; therefore if a

patient improved after attempting only one to two items recommended by the physician then they may not see any reason to remember what else was discussed. Additionally the item recall count was not prioritized in any specific way, and it is possible that patients weighted certain items as more important to remember based on the handouts and the way the physician described the intervention. In addition, our standardized counseling was scripted and may be more extensive and comprehensive than standard counseling off protocol, which would have made it harder to see differences between our study groups. Lastly, these data represent the short term effect of the intervention and longer term studies are needed to evaluate the durability of the response.

Strengths of this study include that both arms received the same information and that only the format of presentation, with or without a mnemonic, was different. Therefore, standardization of both arms allowed us to singularly evaluate the mnemonic. Additionally our study loss to follow at 2 months was low (10%). This study also used validated questionnaires to measure outcomes and researchers masked to randomization collected the post counseling data. Furthermore the development of the mnemonic was patient-centered as patient input from focus groups was used to create it; this is key. Other work has shown “patients can contribute to improving chronic disease health care and research if mechanisms are in place to enable their experiences to be used” (37). Weinland et al also found that for functional bowel disorders, treatment responders versus non-responders had a “sense of control over the condition, and improvement in maladaptive cognition”(38). Our qualitative work demonstrated similar themes and allowed for incorporation of these themes into the mnemonic through the specific words “live” and “effort”.

The mnemonic RELIEF may be a useful tool not only for patients but also for providers. Raising physician awareness of fecal incontinence and the options for first line treatment is essential to easing patient burden and embarrassment from this condition. Helping patients remember what was said during counseling is essential to equipping and empowering patients to manage their fecal incontinence symptoms.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

## Acknowledgments

Supported by a pilot grant from the Clinical and Translational Science Center at the University of New Mexico. Supported by the National Center for Research Resources and the National Center for Advancing Translational Sciences through grant number UL1- TR000041.

Rebecca G Rogers is DSMB chair for American Medical Systems TRANSFORM trial and receives royalties from UpToDate and McGraw Hill. In addition, Dr. Rogers is the PI for a grant from NICHD U10HD069025. Yuko M Komesu has an NIH award; NIH PA-10-067 Study Dates: 9/1/2012-6/30/2017.

## References

1. Brunner F, Gyimesi A, Kissling R, Bachmann LM. Disease-related knowledge of patients with chronic regional pain syndrome. *J Rehabil Med.* 2010; 42(5):458–62. [PubMed: 20544157]

2. Barr RG, Celli BR, Mannino DM, Petty T, Rennard SI, Scirba FC, et al. Comorbidities, patient knowledge, and disease management in a national sample of patients with COPD. *Am J Med.* 2009; 122(4):348–55. [PubMed: 19332230]
3. Aggarwal VR, Javidi H, Joughin A, Crawford FI, Sharif MO. Patients' knowledge of risk factors for dental disease. A pilot service evaluation in a general dental practice. *Prim Dent Care.* 2010; 17(4): 173–7. [PubMed: 20887671]
4. Hernandez P, Balter M, Bourbeau J, Hodder R. *Respir Med.* Living with chronic obstructive pulmonary disease: a survey of patients' knowledge and attitudes. *Respir Med.* 2009; 103(7):1004–12. [PubMed: 19269150]
8. Abrams, P.; Cardozo, L.; Khoury, S.; Wein, A. *Incontinence.* 2nd. Paris: International Consultation on IncontinenceHealth Publications, Ltd; 2001-2002.
9. Boreham M, Richter H, Kenton K, Nager C, Gregory WT, Aronson MP, et al. Anal incontinence in women presenting for gynecologic care: prevalence, risk factors and impact upon quality of life. *Am J Of Ob and Gyn.* 2005; 192(5)
10. Perry S, Shaw C, McGrother C, Matthew RJ, Assassa RP, Dallosso H. Prevalence of faecal incontinence in adults aged 40 years or more living in the community. *Gut.* 2002; 50:480–484. [PubMed: 11889066]
11. Johanson JF, Lafferty J. Epidemiology of fecal incontinence: the silent affliction. *Am J Gastroenterol.* 1996; 91:33–36. [PubMed: 8561140]
12. Whitehead WE, Wald A, Norton NJ. Treatment options for fecal incontinence. *Dis Colon Rectum.* 2001; 44(1):131–42. discussion 142-4. [PubMed: 11805574]
13. Rigel DS, Russak J, Friedman R. The evolution of melanoma diagnosis: 25 years beyond the ABCDs. *CA Cancer J Clin.* 2010; 60(5):301–16. [PubMed: 20671054]
14. Mayfield D, McLeod G, Hall P. The CAGE questionnaire: validation of a new alcoholism screening instrument. *Am J Psychiatry.* 1974; 131(10):1121–31. [PubMed: 4416585]
15. Bruno CB, Ip E, Shah B, Linn WD. A mnemonic for pharmacy students to use in pharmacotherapy assessment. *Am J Pharm Educ.* 2012; 76(1):16. [PubMed: 22412215]
16. Liaw SY, Rethans JJ, Scherpbier A, Piyanee KY. Rescuing A Patient In Deteriorating Situations (RAPIDS): A simulation-based educational program on recognizing, responding and reporting of physiological signs of deterioration. *Resuscitation.* 2011; 82(9):1224–30. [PubMed: 21664026]
17. Cichowski SB, Dunivan GC, Rogers RG, Komesu YM. Patients' experience compared with physicians' recommendations for treating fecal incontinence: a qualitative approach. *Int Urogynecol J.* 2014; 25(7):935–40. [PubMed: 24573357]
18. Bump RC, Mattiasson A, Bø K, Brubaker LP, DeLancey JO, Klarskov P, et al. The standardization of terminology of female pelvic organ prolapse and pelvic floor dysfunction. *Am J Obstet Gynecol.* 1996; 175(1):10–7. [PubMed: 8694033]
19. Bieber C, Müller KG, Nicolai J, Hartmann M, Eich W. How does your doctor talk with you? Preliminary validation of a brief patient self-report questionnaire on the quality of physician-patient interaction. *J Clin Psychol Med Settings.* 2010; 17(2):125–36. [PubMed: 20217195]
20. Bug GJ, Kiff ES, Hosker G. A new condition-specific health-related quality of life questionnaire for the assessment of women with anal incontinence. *BJOG.* 2001; 108:1057–67. [PubMed: 11702838]
21. Kwon S, Visco AG, Fitzgerald MP, Ye W, Whitehead WE. Validity and Reliability of the Modified Manchester Health Questionnaire in Assessing Patients With Fecal Incontinence. *Dis Colon Rectum.* 2005; 48(2):323. [PubMed: 15616750]
22. Hampstead BM, Sathain K, Phillips PA, Amaraneni A, Delaune WR, Stringer AY. Mnemonic strategy training improves memory for object location associations in both healthy elderly and patients with amnesic mild cognitive impairment: A randomized, single-blind study. *Neuro.* 2012; 26(3):385–99.
25. Anstiss T. Motivational interviewing in primary care. *J Clin Psychol Med Settings.* 2009; 16(1): 87–93. [PubMed: 19253016]
26. Stewart M, Brown JB, Donner A, McWhinney IR, Oates J, Weston WW, et al. The impact of patient-centered care on outcomes. *J Fam Pract.* 2000; 49(9):796–804. [PubMed: 11032203]



27. Xu X, Menees SB, Zochowski MK, Fenner DE. Economic cost of fecal incontinence. *Dis Colon Rectum*. 2012; 55(5):586–98. [PubMed: 22513438]
28. White M, Garbez R, Carroll M, Brinker E, Howie-Esquivel J. Is “Teach-Back” Associated With Knowledge Retention and Hospital Readmission in Hospitalized Heart Failure Patients? *J Cardiovasc Nurs*. 2013; 28(2):137–46. [PubMed: 22580624]
29. Adams MT, Chen B, Makowski R, Bevans S, Boseley M. Multimedia approach to preoperative adenotonsillectomy counseling. *Otolaryngol Head Neck Surg*. 2012; 146(3):461–6. [PubMed: 22166961]
30. Ohman-Strickland PA, Orzano AJ, Hudson SV, Solberg LI, DiCiccio-Bloom B, O'Malley D, et al. Quality of diabetes care in family medicine practices: influence of nurse-practitioners and physician's assistants. *Ann Fam Med*. 2008; 6(1):14–22. [PubMed: 18195310]
31. Herman AA. Community health workers and integrated primary health care teams in the 21st century. *J Ambul Care Manage*. 2011; 34(4):354–61. [PubMed: 21914991]
32. Bishop TF, Federman AD, Ross JS. Association between physician quality improvement incentives and ambulatory quality measures. *Am J Manag Care*. 2012; 18(4):e126–34. [PubMed: 22554038]
33. The Teach-Back Method - NC Health Literacy. Available at: [www.nchealthliteracy.org/toolkit/tool5.pdf](http://www.nchealthliteracy.org/toolkit/tool5.pdf). Retrieved December 23, 2014
37. Morrow E, Cotterell P, Robert G, Grocott P, Ross F. Mechanisms can help to use patients' experiences of chronic disease in research and practice: an interpretive synthesis. *J Clin Epidemiol*. 2013; 66(8):856–64. [PubMed: 23810025]
38. Weinland SR, Morris CB, Dalton C, Hu Y, Whitehead WE, Toner BB, et al. Cognitive factors affect treatment response to medical and psychological treatments in functional bowel disorders. *Am J Gastroenterol*. 2010; 105(6):1397–406. [PubMed: 20087332]

**Box 1**

**RELIEF Mnemonic**

R=Routine Lifestyle and Routine Bowel Habits

E=Exercise

L=Live

I=Imodium

E=Effort

F= Fiber and Food Diary

**TABLE 1**  
**Baseline Demographics**

Characteristic	Standard (N=47) N(%)	Mnemonic (N=43) N(%)	Statistical test used:
Age years (median [Q1, Q3])	57 [49,67]	59 [54,66]	Wilcoxon
<b>*BMI kg/m<sup>2</sup> (median [Q1, Q3])</b>	<b>31 [27,39]</b>	<b>27 [23,33]</b>	<b>Wilcoxon</b>
Education			Fishers
High school or less	14 (30)	9 (21)	
Ethnicity			Fishers
Non-Hispanic White	25 (53)	26 (61)	
Hispanic	16 (34)	13 (30)	
Other	6 (13)	4 (9)	
Depression	14 (30)	14 (33)	Fishers
Anxiety	6 (13)	9 (21)	Fishers
Memory Impairment	2 (4)	4 (9)	Fishers
Pelvic Muscle Strength <b>**</b> (median [Q1, Q3])	2[1,3]	2 [1,3]	Wilcoxon
Anal Squeeze Tone <b>**</b> (median [Q1, Q3])	2[2,3]	3 [2,4]	Wilcoxon
Dove Tail Present	19 (40)	14 (33)	Fishers
Hemorrhoids Present	5 (14)	6 (15)	Fishers
Pelvic Organ Prolapse Stage 2	33 (70)	32 (74)	Fishers
Urinary Incontinence	93.3	86.2	t-test
Constipation	4 (9)	10 (23)	Fishers
Irritable Bowel Syndrome	5 (11)	4 (9)	Fishers
Other Memory Aids Used During Counseling Pictures	8 (17)	7 (16)	Fishers
Flip Chart	9 (19)	5 (12)	
Teach back	14 (30)	21 (49)	
Days to 2 month follow-up (median [Q1, Q3])	70[56,82]	78[56,90]	Wilcoxon

\* **Bold** face type indicates significant (p<0.05) difference.

\*\* Score out of 5 point Oxford grading scale

Table 2

## Outcome Measures

Outcome Measure	Standard	Immediately post-counseling 2 Months		Mnemonic	Standard vs Mnemonic Between Group Comparison	
	N=47	N=41	N=40	N=43	P value	Baseline 2 Months
* QQPPI (mean, 95% CI)	62.2 [59.1, 65.3]			66.4, [64.3, 68.4]	<b>0.03</b>	<b>Not applicable</b>
MHQ(Median[Q1, Q3])						Wilcoxon Rank sum
Incontinence Impact	50 [50,75]	50 [25,75]	50 [50,75]	75 [50,75]	0.09	0.56
Role Limitations	25 [0,50]	25 [0,50]	20 [6,50]	38 [13,50]	0.06	<b>0.008</b>
Physical Limitation	25 [0,50]	50 [0,75]	50 [0,50]	50 [0,75]	0.17	<b>0.04</b>
Social Limitation	8 [0,50]	17 [0,33]	17 [0,46]	17 [0,50]	0.56	0.40
Personal Relationships	0 [0,50]	0 [0,50]	0 [0,50]	0 [0,50]	0.36	0.18
Emotions	29 [0,58]	33 [8,67]	29 [17,54]	42 [17,67]	0.13	<b>0.03</b>
Sleep	0 [0,38]	25 [0,38]	13 [0,50]	25 [0,63]	0.053	<b>0.045</b>
Severity	45 [25,65]	50 [30,76]	45 [25,65]	50 [35,65]	0.14	0.1
Overall Score	29 [16,43]	27 [16,52]	31 [17,56]	40 [24,52]	0.14	<b>0.02</b>
FISI (mean, 95% CI)	34.1 [31.0, 37.1]	27.2 [24.0, 30.5]	28.0 [23.6, 32.3]	32.4 [28.8, 36.0]	0.47	0.2 t-test
Treatment recall (mean 95% CI)	1.7, [1.4, 2.1]	1.8, [1.4, 2.1]	2.3 [1.7, 2.8]	3.4 [2.8, 4.1]	<b>&lt;0.01</b>	0.08 t-test

\* **Bold** face type indicates significant (p<0.05) difference.

**Table 3**  
**Item Analysis of Treatments Recalled at Baseline and 2 months (Fisher's Exact)**

Item	Standard recall immediately post-counseling n=47 n(%)	Standard % recall at 2 months n=41 n(%)	Mnemonic recall at immediately post-counseling n=43 n(%)	Mnemonic % recall at 2 months n=40 n(%)	p value Immediately post-counseling	p value 2-month
Routine bowel habits	7 (15)	4 (10)	19 (44)	10 (25)	0.002	0.08
Routine lifestyle	3 (6)	4 (10)	14 (33)	7 (18)	0.002	0.28
Exercise	24 (51)	27 (66)	33 (77)	21 (53)	0.02	0.27
Live	0 (0)	0 (0)	15 (35)	4 (10)	<0.001	0.06
Imodium	8 (17)	8 (20)	22 (51)	15 (38)	<0.001	0.09
Effort	0 (0)	0 (0)	7 (16)	1 (3)	0.004	0.5
Fiber	32 (68)	28 (68)	29 (67)	31 (78)	0.95	0.45
Food Diary	7 (15)	1 (2)	9 (21)	1 (3)	0.45	0.97