Meeting the Need for Women's Health Training in Gastroenterology: Creation of a Women's Digestive Disorders Program at Brown University

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Abstract

Background: Despite training requirements, knowledge and self-efficacy in women's health issues remain inadequate in many fields. In gastroenterology, nearly 60% of patients are women, and many disorders are more common in women. Adequate training in gastrointestinal (GI) women's health is, therefore, critical for gastroenterologists.

Objectives: (1) To create a core faculty in GI women's health, (2) to develop a GI women's health curriculum, (3) to provide didactic education and clinical experiences in GI women's health, (4) to produce self-efficacy in the evaluation and management of GI women's health issues, and (5) to develop academic gastroenterologists focused on GI women's health.

Methods: We assembled a multidisciplinary group of GI women's health experts dedicated to training and mentoring GI fellows. We also held focus groups to determine the unmet needs in the management of the GI health of female patients in our community. Results from this needs assessment formed the foci of our program. In 2002, we introduced a 2-month rotation in GI women's health. Then, in 2005, we introduced a 3-year women's health pathway for trainees committed to academic careers.

Results: Between 2002 and 2008, 13 fellows who participated in the rotation have graduated from the Brown GI fellowship program, and 1 has completed the track. Satisfaction with the program is high. Postgraduation survey results show that >80% of graduates who participated in the rotation feel prepared to evaluate and treat GI disorders in pregnancy, and nearly 65% feel prepared to address general GI women's health issues. All respondents report the GI women's health rotation provided training that was otherwise not addressed during fellowship.

Conclusions: A training experience in GI women's health can be created using local resources and expertise. Gastroenterologists with this training feel prepared to evaluate and manage the spectrum of women's health issues encountered in practice.

Introduction

GENDER MEDICINE ENTERED A NEW era with the publication of the 2001 report on sex differences in health and illness by the Institute of Medicine (IOM).¹ This spotlight on gender medicine prompted many institutions to create focused women's health residency and fellowship tracks² and many certification groups to issue mandatory training guidelines in women's health.^{3,4} Unfortunately, however, studies examining whether knowledge and self-efficacy in women's health among medical trainees have

improved over the past decade suggest that training remains inadequate and knowledge and confidence remain low.⁵

In gastroenterology, knowledge and confidence in the evaluation and treatment of women's health issues are critical. Female sex and gender influence gastrointestinal (GI) tract physiology,⁶ perception of visceral pain,⁷ and health-seeking behavior.⁸ In addition, the epidemiology and natural history of many GI and liver diseases vary by gender. Common GI diseases that are more prevalent in women include biliary disease,⁹ irritable bowel syndrome (IBS),¹⁰ and autoimmune

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diseases of the liver (e.g., autoimmune hepatitis, primary biliary cirrhosis).¹¹ These differences likely account for the higher number of visits women make to gastroenterologists each year compared with men.¹²

Gender differences also pervade into the arena of colorectal cancer (CRC) screening. Women are screened at lower rates for CRC than are men, although they are at equal risk for disease.¹³ They are also more likely to have incomplete colonoscopies.¹⁴ Gender influences GI pharmacokinetics, as some medications used to treat GI disorders display different distributions and half-lives in women vs. men.¹⁵ Finally, pregnancy poses a unique challenge, as it is a high-risk period for the development and exacerbation of several common GI disorders, such as gastroesophageal reflux disease¹⁶ and constipation.¹⁷

To address training in gender differences and women's health issues in gastroenterology, the Gastroenterology Leadership Council (GLC), which codifies the educational guidelines for training physicians in gastroenterology, began mandating training in women's health issues in digestive diseases in the Gastroenterology Core Curriculum (GCC) in 2003.¹⁸ The GCC stipulates that fellows must gain understanding in general women's health issues, in the specific digestive diseases that are more prevalent in women, and in pregnancy and childbearing issues (Fig. 1). Whereas these guidelines constitute a step in the right direction toward improving women's health training, they provide little guidance for implementation.

At Brown University, we set out to create a concentrated and meaningful program in GI women's health in 1996 even before the inclusion of women's health issues in the GCC. Our goals were as follows:

- To unite experts in women's health from across our institution and create a core faculty in women's health that is committed to collaboration for teaching and research purposes
- To develop a curriculum in GI women's health that addresses the spectrum of women's health issues and improves the health of female patients
- To provide didactic education and clinical experiences in women's health in gastroenterology that is based on consultations that gastroenterologists receive from primary care physicians and other subspecialists
- To produce self-efficacy in all graduating fellows in the evaluation and management of the spectrum of women's health issues encountered in general gastroenterology practice
- To develop academic gastroenterologists with specific interest and expertise in women's health who will become leaders of this emerging field

In this article, we describe our nearly 15-year process of creating such a program and provide preliminary results from our experience.

Materials and Methods

The training setting

The main site for our GI women's health rotation is Women and Infants Hospital in Providence, Rhode Island. Women and Infants is one of the nation's leading specialty hospitals for women and newborns. The primary teaching affiliate of

the Alpert Medical School of Brown University for obstetrics, gynecology, and newborn pediatrics, Women and Infants is the tenth largest obstetrical service in the country. More than 9700 deliveries take place in the hospital per year.

In 2003, Brown University and Women and Infants were named a National Center of Excellence in Women's Health by the U.S. Department of Health and Human Services. The Center for Women's Gastrointestinal Services is the teaching site for the GI women's health rotation and fellowship track. It is a section within the Department of Medicine at Women and Infants. Yearly, the Center handles 5000 outpatient visits and receives 400 inpatient consultation requests. The Center also supports a women's-only endoscopy unit, in which 2700 endoscopic procedures are performed per year. The Center has a large volume of referrals and consultation requests for GI disorders in pregnancy. Over a 3-year period, the Center received 370 outpatient consultation requests for pregnant women.

Creating the program

Uniting faculty. A multidisciplinary approach to women's health has been proposed as the best way to focus on women as whole people and transcend arbitrary professional boundaries.^{19–21} Our goal, therefore, was to unite faculty with experience in managing GI disorders in women from across our diverse medical school departments with faculty within our own gastroenterology division.

We held multidisciplinary meetings with faculty leaders from obstetrics and gynecology, maternal/fetal medicine, obstetric medicine, urogynecology, gynecologic oncology, colorectal surgery, and behavioral medicine to confirm support for the program and achieve buy-in. Our multidisciplinary meetings yielded positive responses, with most faculty members voicing enthusiasm for an integrative approach to GI women's healthcare. These meetings led to new consultations to the Center for Women's Gastrointestinal Services and to the creation of new multidisciplinary teams for the management of pelvic floor disorders, GI and pelvic malignancies, and high-risk pregnancies with medical problems. In particular, Consultations for GI disorders in pregnancy increased. Agreement for non-GI faculty participation was also obtained for training our fellows in anorectal manometry and pelvic floor disorders.

Developing the curriculum. Before publication of the GCC guidelines for women's health training, there was limited consensus on what constituted women's health in gastroenterology. In 1996, we undertook an assessment to determine the unmet needs for the management of the GI health of women in our community. One of the program's developers conducted informal interviews with local family practitioners, internists, obstetrician/gynecologists, and obstetrics/gynecology subspecialists from July to December 1996 to determine these needs.

We asked providers: (1) Do you see women with GI problems? (2) For which GI problems are you most likely to seek consultation? (3) Are there barriers to obtaining such consultation? Meetings were arranged by telephone and held in the practitioners' offices.

Focus group with these key stakeholders revealed the need for expert care in four core topics of GI women's health. Based

General topics:

- Normal GI tract physiology in women
 - The effect of ovarian hormones on GI tract physiology
- Oncology
 - Colon cancer:
 - Barriers to colorectal cancer screening in women
 - Risk of gynecologic malignancies in women with hereditary colon cancer syndromes (e.g. HNPCC)
 - GI complications of gynecologic malignancies
- Endoscopy
 - Colonoscopy in women vs. men: technical issues
- Pelvic floor disorders
 - Pelvic prolapse
 - Fecal incontinence
 - Obstructive defecation
- Non-GI causes of abdominal pain in women
 - Endometriosis
 - Ectopic pregnancy
 - Ovarian torsion
 - Psychological distress/history of abuse
- Eating disorders
- Female fertility compromise secondary to GI disorders
 - Celiac disease
 - Inflammatory bowel disease (IBD)
 - Chronic liver disease
- GI disorders more common in women
 - Irritable bowel syndrome
 - Gallstone disease
 - Autoimmune diseases (e.g. autoimmune hepatitis, primary biliary cirrhosis)

Pregnancy topics:

- Physiologic changes to the GI tract during pregnancy
- GI medication use in pregnancy
 - Safety considerations
 - Compliance issues
- Endoscopy in pregnancy
 - Safety considerations
 - Technical issues
- Pregnancy-unique GI and liver diseases: recognition and treatment
 - Hyperemesis gravidarum
 - Cholestasis of pregnancy
- Chronic GI disorders management during pregnancy
 - Inflammatory bowel disease
 - Irritable bowel syndrome
 - Gastroesophageal reflux disease
 - Chronic liver disease

FIG. 1. Topics in gastrointestinal (GI) women's health. HNPCC, hereditary non-polyposis colorectal cancer.

on this assessment, we committed to recruiting physicians and midlevel providers with interest, experience, or expertise in these four areas. We also created a women's-only endoscopy unit and created dedicated clinics with these topics at their core to facilitate timely consultation. The four foci were:

- GI women's health oncology focus to address GI complications from pelvic malignancies, barriers to CRC screening in women, and genetic counseling for women with a familial risk of colon cancer.
- Gender issues in endoscopy focus to address female patients' preference for gender concordance with their endoscopist, gender differences in the tolerance of endoscopic procedures, and the consequences of a physical or sexual abuse history on the endoscopy experience.
- Pelvic floor disorders focus to address the need for multidisciplinary collaboration in the management of female fecal incontinence, obstructive defecation, diarrhea, and other anorectal diseases.
- Gastrointestinal disorders in pregnancy to address the need for safe and effective management of new GI disorders that arise in pregnancy and for existing conditions that may be exacerbated by pregnancy.

Providing didactic teaching and clinical experiences in women's health

Two-month rotation. We began an elective rotation in GI women's health in 1998. This was transitioned to a mandatory 2-month rotation in 2003. In addition, in 2008, we created an ongoing weekly experience in a GI women's health clinic in which fellows could elect to participate. This longitudinal experience resulted from interest voiced by the fellows to continue to follow patients, specifically pregnant patients, beyond the standard 2-month rotation.

The rotation in GI women's health and pregnancy disorders incorporates inpatient and ambulatory experiences, didactic conferences, and required reading. A sample 1-week schedule from our rotation is shown in Figure 2. Fellows

perform inpatient consultations daily for obstetrics and gynecology, gynecologic oncology, maternal fetal medicine, reproductive endocrinology, urogynecology, the Women's Primary Care Center (WPCC), and the obstetric medicine services at Women and Infants Hospital. Many of these consultations are for pregnant women, although inpatient consultations are also sought for nonpregnant women for such reasons as GI bleeding, biliary obstruction, and unexplained abdominal pain.

Fellows also provide outpatient care to pregnant women in a dedicated GI pregnancy clinic. This is a weekly clinic based at the Center for Women's Gastrointestinal Services for women with preexisting or *de novo* GI disorders in pregnancy. The majority of patients in this clinic are referred by obstetricians and gynecologists; however, some are referred by internists or other providers.

The rotation also includes endoscopic training in female patients. Colonoscopy, in particular, is more difficult in women after hysterectomy or after previous pelvic surgeries. In addition, colonic redundancy²² in women leads to lower colonoscopy completion rates in women compared with men. During our GI women's health rotation, fellows work in our women's-only endoscopy unit to enhance their procedural skills in female patients. They also gain understanding of the barriers to CRC screening in women (such as desire for gender concordance with the endoscopist, history of abuse, and failure of primary care physicians to refer women for CRC screening), that are key feature of the women's health training component of the GCC.

In addition to experiences in inpatient and outpatient gastroenterology, GI fellows work with other providers of women's health during the rotation. Fellows rotate with the urogynecology and colorectal surgery services to learn a multidisciplinary approach to the evaluation and management of pelvic floor disorders. They also may work with the clinical nutrition service and with obstetric medicine, a consultative team led by internists for the medical care of pregnant women.

	Monday	Tuesday	Wednesday	Thursday	Friday
AM	GI Women's Health Tumor Board	General GI Women's Health Clinic	Endoscopy/Anorectal Manometry lab	Grand Rounds	Journal Club or Case Conference
	General GI Clinic			GI Pregnancy Clinic	Pathology Conference
PM	Urogynecology Clinic	Obstetric Medicine Conference	Daily Rounds	Daily rounds	Daily rounds
	Daily Rounds	Pelvic Floor Disorder Center Meeting			
		Daily Rounds			

FIG. 2. Sample 1-week schedule.

Weekly conferences and a comprehensive printed syllabus on GI women's health issues comprise the didactic portion of the rotation. The syllabus includes primary research articles, meta-analyses, and review articles on a range of women's health topics. We are also in the process of developing a computer-based simulation to facilitate understanding of general and disease-specific women's health issues in gastroenterology to enhance the didactic portion of our curriculum.

Three-year pathway. To address the paucity of women's health experts in gastroenterology, we expanded our program in 2005 and created a women's health pathway within our 3-year accredited fellowship program in gastroenterology. We offer a position in this pathway once every 3 years to physicians committed to developing an academic career in women's gastroenterological health. Fellows in this pathway have a weekly outpatient experience (i.e., longitudinal clinic) in a GI woman's health clinic at the Center for Women's Gastrointestinal Services that spans their 3 years of training and spend 4 months on the inpatient GI consultation service at Women and Infants. The longitudinal clinical experience at the Center is done in lieu of a longitudinal GI clinical experience at the Providence Veterans Administration Hospital.

Producing self-efficacy in evaluation and management of women's health issues

During the rotation and the subsequent continuity clinic experience, fellows have the opportunity to evaluate and treat a range of GI women's health issues in a variety of settings. This direct, hands-on learning is designed to promote self-efficacy in women's health issues in ways that traditional passive learning in the form of lectures and reading cannot. In addition, the rotation allows fellows to serve as consultants for obstetrics and gynecology providers, an experience that is not duplicated in most of their other rotations.

Developing academic gastroenterologists focused on women's health

To enhance skills in clinical research, fellows in the GI women's health pathway take part in an educational program through the Department of Obstetrics and Gynecology aimed at providing trainees with information on pathobiology, research design, statistical methods, conduct of research, scientific publishing, and grant writing. Concomitant with participation in this program, they develop a research project focused on a particular topic in GI women's health. They work on this project with a faculty mentor during postgraduate years (PGY) 5 and 6, with the goal of presentation of their findings in a national meeting or in a peer-reviewed journal.

Results

Between 2003 and 2008, 13 fellows (10 male, 3 female) who participated in the rotation graduated from the Brown GI fellowship program. Feedback from our fellows underscores the importance of this rotation in their overall training. For many of them, this is their first experience since medical school evaluating and treating pregnant women.

Fellows consistently express a high level of satisfaction with the GI women's health program through end-of-rotation

evaluations. These evaluations were obtained as part of the standard evaluation process of our fellowship program and are composed primarily of qualitative data. Such comments as "Wonderful rotation. Learned a great deal and feel fortunate to have had the experience" and "[This rotation was a] high-yield experience" are representative of the fellows' remarks.

We recently completed a survey of graduates of the Brown GI fellowship program from the past 10 years to determine their preparedness to evaluate and manage GI disorders in pregnancy and other GI women's health issues. Graduates were sent the link to a web survey (www.surveymonkey.com) by e-mail. Graduates for whom valid e-mail addresses could not be located were contacted by telephone or mail and asked to fax their survey results. Graduates were asked to rate their level of self-efficacy in general GI women's health issues and GI pregnancy issues using a 5-point Likert scale (from 1, strongly disagree, to 5, strongly agree). Fellows who had participated in the rotation were also asked to rate its usefulness in their day-to-day practice. All fellows were asked to rate the appropriateness of the amount of training in GI women's health issues they received using a 3-point Likert scale (from 1, too much, to 3, too little).

Of 26 graduates, 11 responded, for a response rate of 42.3% (Table 1). All but 1 respondent had participated in the GI women's health rotation. Over 80% (9 of 11) of graduates strongly agreed/agreed that they felt prepared to manage GI disorders in pregnancy, and nearly 64% (7 of 11) reported self-efficacy in the management of general GI disorders in women. Of the graduates who participated in the rotation, 60% (6 of 10) strongly agreed/agreed that they used knowledge and skills gained during the rotation in their day-to-day practice. These graduates all strongly agreed/agreed (10 of 10) that skills and knowledge gained during the rotation were not otherwise addressed in the curriculum.

GI women's health pathway

Since 2005, one fellow has completed the GI women's health pathway and one fellow is currently in training. Our graduate is on faculty at an academic medical center and the recipient of a Building Interdisciplinary Research Careers in Women's Health (BIRCWH) K12 career development award from the National Institute of Child and Human Development.

Discussion

We share our experience to inform other GI fellowship programs about how we were able to create a GI women's health program that meets and exceeds the GCC training guidelines in women's health. The GCC specifies that every program must provide its fellows with comprehensive training in women's health; however, it provides little guidance on how to meet this goal. In addition to absence of an implementation plan, lack of exposure to appropriate patient populations (e.g., pregnant patients), deficits in knowledge at the faculty level,²³ and poor multidisciplinary collaboration²⁴ all create barriers to meeting training goals. By making cross-department alliances, we were able to expand our consultative services to include a greater number of women's health issues and to enlist non-GI faculty in the training of our fellows. Both these initiatives enhanced our fellows' education.

TABLE 1. BROWN GASTROINTESTINAL FELLOWSHIP GRADUATES SURVEY RESPONSES (N = 11)

<i>Survey item</i>	<i>Response</i>	<i>Response count (%)</i>
Practice type	1 Academic	3 (27.3)
	2 Private practice	8 (72.7)
	3 Military or Veteran's hospital	0
	4 Retired/no longer practicing	0
	5 Other	0
Participated in GI women's health rotation	1 Yes	10 (90.9)
	2 No	1 (9.1)
After completing fellowship, I felt prepared to evaluate and treat GI disorders in pregnancy	1 Strongly agree	3 (27.3)
	2 Agree	6 (54.5)
	3 Neither agree nor disagree	0
	4 Disagree	1 (9.1)
	5 Strongly disagree	1 (9.1)
After completing fellowship I felt prepared to address or evaluate and treat nonpregnancy-related GI disorders in women (e.g., colorectal cancer screening barriers, pelvic floor disorders)	1 Strongly agree	2 (18.2)
	2 Agree	5 (45.5)
	3 Neither agree nor disagree	2 (18.2)
	4 Disagree	2 (18.2)
	5 Strongly disagree	0
I use the knowledge and skills gained during the GI women's health rotation in my day-to-day practice	1 Strongly agree	2 (18.2)
	2 Agree	4 (36.4)
	3 Neither agree nor disagree	1 (9.1)
	4 Disagree	2 (27.3)
	5 Strongly disagree	1 (9.1)
	6 N/A	1 (9.1)
The women's health rotation provided clinical and didactic training that was not otherwise addressed in the GI fellowship	1 Strongly agree	5 (45.5)
	2 Agree	5 (45.5)
	3 Neither agree nor disagree	0
	4 Disagree	0
	5 Strongly disagree	0
	6 N/A	1
The training I received in GI women's health during fellowship was...	1 Too much	0
	2 Just right	7 (63.6)
	3 Too little	4 (36.4)

GI, gastrointestinal; N/A, not applicable.

Although elements of this curriculum may be available at other institutions, to our knowledge, ours is the only dedicated rotation and track in GI women's health that is offered in a U.S. gastroenterology fellowship program. The experience we have created ensures that our trainees are exposed to the spectrum of inpatient and outpatient issues that comprise GI women's health.

Immediate feedback from fellows who have completed the rotation demonstrates their acceptance and enthusiasm for the program. In addition, survey responses from graduates of our program demonstrate the usefulness of the rotation in their practice and their resulting self-efficacy in GI women's health issues. To more objectively assess knowledge gained, we are considering creating an end-of-rotation Observed Structured Clinical Evaluation (OSCE) in GI women's health.

With regard to our GI women's health pathway, we have trained only a small number of fellows to date. Therefore, we can only draw limited conclusions about its effectiveness and impact. However, we believe our pathway meets the vision for the future of training in gastroenterology and can serve as a model for other fellowship programs. Specifically, it addresses the need described by the American Gastroenterological Association (AGA) to train gastroenterologists who have received more extensive education and training in defined areas of gastroenterology practice.²⁵ Comparable to specialized training in advanced endoscopy or inflammatory

bowel disease, our pathway in GI women's health is poised to produce content experts and leaders from within the pool of physicians training in gastroenterology.

Future directions for our program include expanding services for biofeedback and pain management to benefit women with chronic functional pain syndromes, pelvic floor dysfunction, and IBS. We also plan to obtain official recognition of our GI women's health pathway by the Accreditation Council for Graduate Medical Education.

Conclusions

At Brown University, we have been successful in creating a rotation and longitudinal experience in GI women's health using local resources and expertise. Our program was initially developed based on the gender-specific GI healthcare needs of patients in our community and now encompasses the GCC's training requirements in women's health.

Our program has been well-received by our trainees, and follow-up survey responses from our graduates show that their training experience prepared them to manage the spectrum of women's health seen in practice. We have also created a pathway in GI women's health that is poised to create new leaders in this field.

We recommend that other fellowship programs carefully evaluate their curricula to determine how well they are

meeting the training guidelines in women's health and, if they are not, how they can improve. Our trainees and, ultimately, our patients are relying on us.

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Disclosure Statement

The authors have no conflicts of interest to report.

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