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Self-Reported Changes in Providers' Hormone Therapy Prescribing and Counseling Practices After the Women's Health Initiative

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Abstract

Background: Prescribing and counseling practices in hormone therapy (HT) since publication of the Women's Health Initiative (WHI) trials have changed. Our objective was to compare changes by practice field and region.
Methods: Between December 2005 and May 2006, we mailed surveys to 938 practitioners from two large integrated health systems in the Northeastern and Northwestern United States. We received 736 responses and excluded 144 who do not prescribe/counsel about HT, leaving 592. Data included prescriber characteristics, knowledge about HT trials, and self-reported HT counseling and prescribing changes. We compared provider characteristics and HT counseling and prescribing by region and practice field (obstetrician/gynecology [OB/GYN] or primary care).
Results: Respondents included 79 OB/GYNs and 513 primary care providers. OB/GYNs were more likely, than primary care providers to consider themselves experts regarding the Heart and Estrogen/progestin Replacement Study (HERS) and WHI trials (30.4% vs. 8.2%, $p < 0.001$). The majority (87%) were cautious about HT use, especially primary care providers ($p < 0.01$ compared to OB/GYNs). Respondents reported prescribing less oral unopposed estrogen (64%) and combination estrogen/progestin (81%) post-WHI. OB/GYNs were less likely to report decreases in oral unopposed estrogen use ($p = 0.006$). Use of lower-dose and transdermal products (low-dose estrogen, vaginal estrogen, estradiol vaginal ring) increased, especially by OB/GYNs.
Conclusions: Our study highlights numerous HT prescribing and counseling differences between primary care and OB/GYN providers. Reasons for these differences are unknown but may be related to self-reported WHI/HERS knowledge. HT formulations used in the WHI trials are being replaced by low-dose and alternate formulations. Studies to support this practice are needed.

Introduction

Hormone therapy (HT) was originally prescribed to treat menopausal symptoms and later to prevent chronic diseases associated with aging.[1] In 1998, results from the Heart and Estrogen/progestin Replacement Study (HERS), a secondary prevention trial in women with an average age of 67 years at baseline, demonstrated that estrogen plus progestin provided no cardiovascular benefit in older women with coronary disease.[2] In 2002, the Women's Health Initiative (WHI) trial of estrogen plus progestin, a primary prevention trial in women aged 50–79 (mean age at randomization, 63), was stopped early because of increased risk of breast cancer and because the risks of combination estrogen/progestin therapy outweighed the prevention benefits.[3] Results of the WHI estrogen only trial, published 2 years later, further demonstrated that the risk of estrogen treatment outweighed the benefits in women with a prior hysterectomy. Unlike combination therapy, no increased risk for breast cancer, stroke, or coronary heart disease (CHD) was seen in the unopposed estrogen trial.[4]

After release of these studies, various organizations recommended against the use of HT for disease prevention and encouraged practitioners to limit treatment to short-term,

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small doses for symptomatic treatment of menopausal symptoms in women aged <60 years.[5–8] HT use subsequently declined.[9,10] Studies suggest that obstetrician/gynecologists (OB/GYNs) are skeptical about the WHI results and continue to prescribe HT for many women.[9,11–13] The few studies that compared attitudes about HT in OB/GYNs and other providers post-WHI report that non-OB/GYN practitioners are less permissive about HT prescribing and cite more contraindications to HT use than do OB/GYN practitioners.[11,14] These studies do not include information on providers' self-reported HT prescribing and counseling or on specific HT products, as a result of the WHI. We undertook the present study to gain an understanding of providers' self-reported changes in HT prescribing and counseling post-WHI, including general use and use of specific HT products, and to examine if differences exist between primary care providers and OB/GYNs or between providers practicing in healthcare systems in different regions of the United States.

The objectives of our study were to describe the self-reported impact of the WHI and other HT trials on providers' HT prescribing patterns and counseling approaches and to evaluate differences by practice field and regional practice site.

Materials and Methods

We conducted this study at Group Health (GH) and Harvard Vanguard Medical Associates (HVMA). Group Health is an integrated health plan in Washington State, with approximately 560,000 enrollees, including more than 88,000 women aged 50–80 years. Harvard Vanguard Medical Associates is a large group practice consisting of 14 health centers in the Boston Metropolitan area that provides care to 300,000 patients insured by the region's major health plans as well as Medicaid and Medicare. The institutional review boards at GH and HVMA approved the study. We included all physicians, physician's assistants, nurse practitioners, and nurse midwives practicing in primary care and women's health settings (obstetrics/gynecology) from these health plans. Eligibility included having prescribing privileges, having at least 50 visits by women aged 45–80 years in the prior year, and having prescribed HT or provided HT counseling in the prior year. Physicians practicing exclusively at emergency or urgent care facilities were excluded.

We mailed a cover letter describing the study with the surveys and a $25 preincentive between December 2005 and May 2006 to 938 providers who met the eligibility criteria. Nonrespondents received three reminder postcards, another copy of the survey with the third reminder, and an e-mail message with a link to an abbreviated online version of the survey. We received 736 responses and excluded 144 practitioners who indicated they never prescribe HT and never counsel women about HT use. Thus, 592 respondents remained for analysis, giving a response rate of 75% (592 of 938 −144).

We obtained information on prescriber characteristics, including gender, practice type (physician, nurse practitioner, physician assistant, midwife), self-identified field of practice (OB/GYN or primary care), years in practice, years at practice site, and full-time or part-time work status. We considered OB/GYNs to be providers who practice in obstetrics/gynecology and primary care to be providers who practice in family medicine or internal medicine. Providers were asked to rate their knowledge of the HERS and WHI studies on a scale of 1 (limited or very little knowledge) to 7 (expert level knowledge).

To assess the impact of the WHI and other HT trials on HT counseling, providers were asked to rate their agreement with various statements related to HT counseling from strongly agree (1) to strongly disagree (5). To assess the impact of the WHI and other emerging hormone data on HT prescribing patterns, providers were asked to choose a response that best indicated how their prescribing has changed with regard to various hormone therapies: use more, no change, use less, don't use (never used).

Analysis

We compared characteristics of providers by practice site (GH or HVMA) and practice field (OB/GYN or primary care) using chi-square tests and two-tailed t tests. We compared self-reported impact of the WHI and other HT trials on HT counseling by practice site and practice field using two-tailed t tests. Ratings of strongly agree (1) or agree (2) were combined to indicate agreement with the survey statement. We compared self-reported impact of the WHI and other HT trials on HT prescribing by practice site and practice field with chi-square tests. A 2-sided p value <0.05 was considered statistically significant for all comparisons. Data were analyzed using STATA IC 10.0 (StataCorp LP).

Results

The majority of respondents were primary care physicians (Table 1). Of the 513 primary care providers, 328 (63.3%) were in family practice and 185 (30.2%) were in internal medicine. Those practicing in obstetrics/gynecology were more likely than primary care physicians to be female (74.4% vs. 48.7%, $p < 0.001$) and to be working full-time (62.5% vs. 49.3%, $p = 0.04$). HVMA providers were more likely to be female OB/GYNs and to have been in practice longer. Overall, the mean knowledge rating of the HERS and WHI was 4.49 out of 7, with 468 (79.1%) considering themselves to have average knowledge of these studies. Only 66 respondents (11.2%) considered themselves experts with regard to HERS/WHI study results. OB/GYNs were more likely than primary care providers to state they have expert level knowledge (30.4% vs. 8.2%, $p < 0.001$). Beliefs that the WHI findings are irrelevant for younger women with hot flashes and that the balance of HT benefits still outweighs the risks were more prominent among OB/GYNs than among primary care providers. Whereas 32 (41.0%) OB/GYNs believed that the findings of WHI are irrelevant for younger women with hot flashes, only 98 (20.2%) primary care providers agreed with this statement ($p < 0.001$). A greater proportion of OB/GYNs (37.2%) than primary care physicians (19.2%) also agreed that the balance of HT benefits still outweighs the risks ($p < 0.001$).

Impact on hormone therapy counseling

The vast majority of respondents made changes to their HT counseling approaches because of the WHI (Table 2). Only 20 respondents (3.4%) made no changes. A total of 493 (87.4%) respondents indicated they are very cautious about HT, and this caution was reflected in their counseling approaches. The

Table 1. Characteristics of Survey Respondents by Practice Site and Practice Field

Characteristic	Total[a] n = 592	Practice site: HVMA n = 141	Practice site: GH n = 451	p value	Practice type: Primary care n = 513	Practice type: OB/GYN n = 79	p value
Gender							
Female, *n* (%)	306 (52.1)	93 (66.9)	213 (47.5)	<0.001	248 (48.7)	58 (74.4)	<0.001
Provider type							
Physician, *n* (%)	483 (81.6)	114 (80.9)	369 (81.8)	0.80	423 (82.5)	60 (75.9)	0.17
Other (nurse, physician assistant, midwife), *n* (%)	109 (18.4)	27 (19.2)	82 (18.2)		90 (17.5)	19 (24.1)	
Practice type							
Primary care	513 (86.7)	110 (78.0)	403 (89.4)	0.001	—	—	—
OB/GYN	79 (13.3)	31 (22.0)	48 (10.6)		—	—	—
Years in practice, mean (SD)	18.8 (9.2)	19.1 (9.3)	18.7 (9.2)	0.68	18.7 (9.3)	19.4 (8.7)	0.55
Years at practice site, mean (SD)	13.1 (8.4)	14.4 (9.0)	12.5 (8.2)	0.03	13.0 (8.4)	13.1 (8.6)	0.95
Working full-time, *n* (%)	257 (51.2)	62 (47.7)	195 (52.4)	0.35	212 (49.3)	45 (62.5)	0.04
Knowledge of WHI/HERS							
Mean (SD) rating	4.5 (1.0)	4.5 (1.0)	4.5 (1.0)	0.84	4.4 (1.0)	5.1 (0.9)	<0.001
Beliefs about WHI and HT, *n* (%)							
"I believe the WHI findings are irrelevant for younger women with hot flashes"	130 (23.1)	28 (21.7)	102 (23.5)	0.67	98 (20.2)	32 (41.0)	<0.001
"I believe that the balance of HT benefits still outweighs the risks"	126 (21.6)	22 (15.8)	104 (23.4)	0.06	97 (19.2)	29 (37.2)	<0.001

[a]Missing observations: gender ($n = 5$); years in practice ($n = 31$); years at practice site ($n = 87$); working full-time ($n = 90$); knowledge of WHI/HERS ($n = 34$); I believe the WHI findings are irrelevant for younger women with hot flashes ($n = 29$); I believe that the balance of HT benefits still outweighs the risks ($n = 8$).

GH, Group Health; HERS, Heart and Estrogen/Progestin Replacement Study; HVMA, Harvard Vanguard Medical Associates; OB/GYN, obstetrician/gynecologist; SD, standard deviation; WHI, Women's Health Initiative; HT, hormone therapy.

majority of respondents were less likely to recommend HT for menopause symptoms or for disease prevention. Numerous HT counseling differences were observed between OB/GYNs and primary care providers. Whereas 59.0% of OB/GYNs continue to recommend HT for many women, only 22.9% of primary care providers do so ($p < 0.001$). Conversely, primary care providers were more likely to continue to be very cautious about HT use compared with OB/GYNs ($p < 0.001$). OB/GYNs were more likely to change their counseling approach based on whether a women can take estrogen alone or must also use progestogen ($p = 0.01$). Although only 28.2% of OB/GYNs say they recommend an estrogen patch more

Table 2. Impact of Women's Health Initiative on Hormone Therapy Counseling by Practice Site and Practice Field

Survey question	Total n (%)	Practice site[a]: HVMA n (%)	Practice site[a]: GH n (%)	p value	Practice type[b]: Primary care n (%)	Practice type[b]: OB/GYN n (%)	p value
General HT counseling and recommendations							
No changes in approach to HT counseling	20 (3.4)	7 (5.0)	13 (2.9)	0.23	18 (3.6)	2 (2.5)	0.64
Continue to recommend HT to many women	157 (27.9)	25 (19.4)	132 (30.5)	0.01	111 (22.9)	46 (59.0)	<0.001
Continue to be very cautious about HT	492 (87.4)	115 (89.2)	377 (86.9)	0.49	435 (89.5)	57 (74.0)	<0.001
Counsel women who can take estrogen alone differently than women who must also use progestogen	293 (52.2)	60 (46.5)	233 (53.9)	0.14	242 (50.1)	51 (65.4)	0.01
"I more often recommend an estrogen patch"	80 (14.2)	24 (18.5)	56 (13.0)	0.12	58 (12.0)	22 (28.2)	<0.001
"I start with a lower dose than I used to"	421 (74.7)	101 (77.7)	320 (73.7)	0.36	358 (73.7)	63 (80.8)	0.18
Disease-specific HT counseling: Less likely to recommend HT for:							
Menopause symptoms	488 (83.3)	120 (86.3)	368 (82.3)	0.27	434 (85.6)	54 (68.4)	<0.001
Menopause symptoms in women with coronary heart disease	497 (88.3)	119 (91.5)	378 (87.3)	0.19	435 (89.7)	62 (79.5)	0.009
Primary prevention of heart disease	533 (94.7)	126 (96.9)	407 (94.0)	0.19	461 (95.1)	72 (92.3)	0.32
Osteoporosis/fracture prevention	410 (72.7)	109 (83.9)	301 (69.4)	0.001	359 (73.9)	51 (65.4)	0.12

[a]The number of HVMA respondents ranged from 129 to 139; GH from 432 to 447.

[b]The number of primary care respondents ranged from 483 to 507; OB/GYNs from 77 to 79.

often, significantly fewer primary care providers recommend this HT option (12.0%, $p < 0.001$). A greater proportion of primary care providers indicated they are less likely to recommend HT for menopause symptoms in general ($p < 0.001$) and for menopause symptoms in women with CHD ($p = 0.009$).

We found little regional difference in HT counseling. Providers at HVMA were less likely than those at GH to recommend HT in general (19.4% vs. 30.5%, $p = 0.01$) but were more likely to recommend HT specifically for osteoporosis or fracture prevention (83.9% vs. 69.4%, $p = 0.001$).

Impact of WHI on hormone therapy prescribing

The WHI prompted changes in estrogen and progestin product prescribing (Table 3). The majority of prescribers stated they were using less oral estrogen and more transdermal products because of the WHI results. A total of 362 (64.4%) were using less unopposed estrogen in women without a uterus, and 457 (81.5%) were using less combination estrogen plus progestin in women with a uterus. These results varied by practice type ($p = 0.006$) (Table 3) but not by site (Table 4).

Overall, providers were less likely to prescribe oral estrogens, and at least 30% of respondents reported increasing their use of low-dose estrogen (51.5% using more), vaginal estrogen in general (44.9% using more), and particularly estradiol vaginal ring (Estring, Pfizer) among the OB/GYNs (68.8% using more). Respondents reported decreasing their use of medroxyprogesterone acetate (MPA) (34.9% using less) and sequential progestogen (32.5% using less). We found numerous differences in the impact of the WHI on HT prescribing when comparing OB/GYNs and primary care providers (Table 3). OB/GYNS were less apt to change prescribing of estrogen to women without a uterus compared with primary care providers. In addition, a greater proportion of OB/GYNs reported increased use of low-dose and transdermal estrogens. They were also more likely to use a progestogen other than MPA and to prescribe long-cycle progestogen.

Primary care providers reported they are not using a wide array of HT products (Table 3). At least 50% of primary care provider respondents indicated they do not use ultra low-dose estrogen patch (79.3% not using), transdermal progestogens (69.2% not using), long-cycle progestogen (62.0% not using), or testosterone cream (52.3% not using). In contrast, only two products were not being used by >50% of OB/GYNs: ultra low-dose estrogen patches (67.5% not using) and transdermal progestogens (56.6% not using).

Providers at HVMA were more likely to report using vaginal estrogen, transdermal estrogen, Estring (61.4% vs. 25.2% at GH), and the ultra low-dose estrogen patch. (Table 4) A greater proportion of providers at GH reported using oral testosterone with estrogen, MPA, and testosterone cream.

Discussion

Our study results indicate that providers have made major changes in their HT counseling and prescribing post-WHI. Overall, providers have become cautious about HT use. They reported being less likely to recommend HT for menopausal symptoms and for disease prevention and a subsequent decrease in prescribing of standard dose oral estrogen as a result of WHI findings.

Numerous differences were evident when comparing OB/GYNs and primary care providers. OB/GYN respondents were less cautious about HT use than their primary care counterparts. Even though the majority of prescribers ad-

Table 3. Impact of Women's Health Initiative on Hormone Therapy Prescribing by Practice Field, Reported as Percentages

	Primary care[a]				*OB/GYN*[a]			
	Use more	*No change*	*Use less*	*Don't use*	*Use more*	*No change*	*Use less*	*Don't use*
Estrogens								
Oral unopposed estrogen in women who have had a hysterectomy***	0.6	30.5	67.0	1.9	0.0	50.7	48.1	1.3
Combination oral estrogen plus progestin in women with a uterus	1.0	15.3	81.4	2.3	0.0	18.2	81.8	0.0
Low-dose estrogen products***	49.2	19.5	29.1	2.3	66.2	22.1	11.7	0.0
Vaginal estrogen	43.6	40.5	11.4	4.6	53.3	37.7	6.5	2.6
Transdermal estrogen products***	14.7	36.1	27.0	22.2	29.9	46.8	13.0	10.4
Estring***	27.7	21.7	8.7	41.8	68.8	20.8	1.3	9.1
Oral testosterone with estrogen***	3.7	34.4	19.3	42.5	3.9	57.1	22.1	16.9
Bioidentical estrogen or progestogen***	10.5	27.5	15.5	46.5	18.2	41.6	7.8	32.5
Ultra low-dose estrogen patch***	3.7	12.2	4.8	79.3	16.9	15.6	0.0	67.5
Progestogens								
Medroxyprogesterone acetate	1.2	46.8	35.6	16.4	1.3	60.5	30.3	7.9
Other oral progestogens***	4.6	39.1	26.6	29.7	18.4	64.5	7.9	9.2
Sequential progestogen (e.g., 10–14 days per month)**	1.9	34.5	33.5	30.2	5.3	48.7	26.3	19.7
Continuous progestogen (e.g., daily)***	2.5	35.3	30.6	31.6	4.0	71.1	13.2	11.8
Long-cycle progestogen (e.g., 2 weeks to two times/year)***	3.1	18.1	16.8	62.0	13.0	33.8	6.5	46.8
Transdermal progestogens***	2.1	18.6	10.1	69.2	10.5	31.6	1.3	56.6
Other								
Testosterone cream for decreased libido***	7.6	35.3	4.8	52.3	11.8	60.5	5.3	22.4

[a]The number of primary care respondents ranged from 481 to 485; OB/GYNs from 76 to 77.
**Statistically significant difference between primary care and OB/GYN, $p < 0.05$.
***Statistically significant difference between primary care and OB/GYN, $p \leq 0.01$.

Table 4. Impact of Women's Health Initiative on Hormone Therapy Prescribing by Practice Site, Reported as Percentages

	HVMA[a]				GH[a]			
	Use more	*No change*	*Use less*	*Don't use*	*Use more*	*No change*	*Use less*	*Don't use*
Estrogens								
Oral unopposed estrogen in women who have had a hysterectomy	0.8	31.3	66.4	1.6	0.5	33.9	63.8	1.8
Combination oral estrogen plus progestin in women with a uterus	0.8	13.3	84.4	1.6	0.9	16.4	80.6	2.1
Low-dose estrogen products	48.0	18.9	31.5	1.6	52.6	20.1	25.2	2.1
Vaginal estrogen***	56.3	29.7	12.5	1.6	41.6	43.2	10.2	5.1
Transdermal estrogen products***	22.8	26.8	30.7	19.7	15.1	40.7	23.4	20.8
Estring***	61.4	13.4	8.7	16.5	25.2	24.0	7.4	43.4
Oral testosterone with estrogen***	2.3	27.3	15.6	54.7	4.2	40.6	20.9	34.3
Bioidentical estrogen or progestogen	8.6	23.4	16.4	51.6	12.5	31.2	13.9	42.5
Ultra low-dose estrogen patch***	11.8	12.6	3.9	71.7	3.7	12.7	4.2	79.5
Progestogens								
Medroxyprogesterone acetate***	0.8	36.2	32.3	30.7	1.4	52.3	35.7	10.7
Other oral progestogen***	7.1	31.0	16.7	45.2	6.3	45.9	26.2	21.6
Sequential progestogen (e.g., 10–14 days per month)**	3.2	27.2	31.2	38.4	2.1	39.1	32.9	25.9
Continuous progestogen (e.g., daily)**	1.6	31.8	27.8	38.9	3.0	42.7	28.3	26.0
Long-cycle progestogen (e.g., 2 weeks to two times a year)***	10.2	17.3	13.4	59.1	2.8	21.1	16.0	60.2
Transdermal progestogen	3.2	17.5	4.0	75.4	3.2	21.3	10.4	65.1
Other								
Testosterone cream for decreased libido**	6.3	29.1	3.9	60.6	8.8	41.6	5.1	44.6

[a]The number of HVMA respondents ranged from 125 to128; GH from 431 to 434.
**Statistically significant difference between GH and HVMA, $p < 0.05$.
***Statistically significant difference between GH and HVMA, $p \leq 0.01$

mitted to exercising caution about HT, almost 60% of OB/GYNs continue to recommend HT for many women, most specifically for menopausal symptoms, compared with only 23% of primary care providers. These results are in line with other studies that report higher HT prescribing in OB/GYNs compared with primary care providers and more caution toward HT prescribing in non-OB/GYN prescribers post-WHI.[9,11,14–16]

Our findings may be partially explained by the differences between OB/GYN and primary care training and patient characteristics. OB/GYNs receive greater women's health training and are, thus, likely more comfortable prescribing HT.[14] Women with hysterectomies or with menopausal symptoms are more likely to visit an OB/GYN.[17] OB/GYNs may be sought out by women with more severe menopausal symptoms, receive referrals from primary providers to treat women who have not responded to first-line pharmacotherapy and are in need of specialized treatment, or see patients seeking a second opinion after being denied HT by their primary care provider.

Skepticism about the WHI results may also help explain persistent HT prescribing post-WHI. Although we did not specifically ask providers if they agree with the conclusions drawn from the WHI results, we did find some degree of skepticism about the trials in OB/GYN respondents. Approximately 40% of OB/GYN providers believe the WHI results are irrelevant for younger women with menopausal symptoms, and 37% believe that the benefits of HT still outweigh the risks. Others have reported a similar level of skepticism about the WHI results. Specifically, a series of surveys sent to Fellows from the American College of Obstetricians and Gynecologists (ACOG) found that over half of respondents reported that their HT-prescribing practices were unlikely to change as a result of the WHI, and almost half did not find the WHI results convincing.[12,13,18,19] Physicians who were confident in their ability to interpret scientific literature about HT and those with more advanced knowledge of the WHI study were less convinced of the study findings.[12,18] We found that OB/GYN providers both rated themselves more knowledgeable than primary care providers did and were more likely to consider themselves experts about the WHI results.

The WHI trials demonstrated differences in the risks and benefits of estrogen-alone and estrogen plus progestin therapy. OB/GYN providers in our study seemed to understand these differences and apply this knowledge to their practice, consistent with their self-reported knowledge of the trials. Only half of primary care providers in our study stated they change their counseling approach based on whether women can take unopposed estrogen or are advised to also take progestin because they have a uterus, suggesting the need for education of providers in this area.

A variety of products is available as replacements to normal-dose oral estrogen for the treatment of menopausal vasomotor symptoms. The term alternative HT has been used to describe herbal or botanical products,[13] nonconventional HT,[20,21] and HT other than conjugated estrogen/MPA.[11] We searched for other studies published from 2002 to 2010 comparing HT use between OB/GYN and primary care providers (Pubmed, February 2010). Ours is the first study, to the best of our knowledge, to include an extensive list of HT treatment options, including normal dose, oral HT, and alternate HT products, when making comparisons between the two practice types. Results suggest that providers, particularly OB/GYNs and providers at HVMA, are considering alternatives to the oral 0.625 mg conjugated equine estrogen and

2.5 mg MPA used in the WHI. Whereas all providers appear to be recommending low-dose estrogen and vaginal estrogen, OB/GYNs have also increased their use of transdermal estrogens, particularly Estring. A shift in acceptance and use of alternate HT is supported by other studies. A study using health maintenance organization claims data in Detroit, Michigan, found that HT formulations used in the WHI trials were less likely to be used after the trial was stopped, whereas use of vaginal estrogen creams increased.[20] Similarly, surveys of gynecologists in Lebanon and Belgium found that physicians were switching to HT regimens other than conjugated equine estrogen/MPA.[21,22] The survey of Fellows of ACOG found that respondents had a neutral to positive opinion about undefined alternative HT therapies, with only 7% considering them harmful.[12] In a follow-up survey approximately a year later, the opinions about alternative therapies were even more positive, with only 4% believing them to be potentially harmful.[13]

Although no clear guidelines exist to direct providers to the safest products for women with vasomotor symptoms, current recommendations suggest using the lowest effective dose for the shortest period of time.[8,23] The role of transdermal and vaginal estrogen products is less clear. Transdermal formulations avoid first-pass hepatic metabolism, possibly altering their safety and efficacy profile compared with oral formulations. For example, transdermal estrogens may have a less beneficial effect on lipid profiles than oral estrogen,[24,25] and may not carry the same risk for venous thromboembolism as oral estrogens.[24] The use of ultra low-dose vaginal estradiol was shown to relieve urogenital symptoms without the endometrial hyperplasia observed with the use of higher-dose unopposed oral estrogens.[26]

Estring and other transdermal and vaginal estrogens are FDA approved, but many products are not. The term "bioidentical hormone therapy" is often used to describe non-FDA approved products that are custom produced by compounding pharmacies based on an individual patient's hormonal salivary profile. These products are being used without evidence to support their efficacy or safety. Over half of prescribers acknowledged prescribing bioidentical estrogen or progestogen. It should be noted, however, that our study did not differentiate between bioidentical hormone products made in compounding pharmacies vs. FDA-approved products considered bioidentical by many providers (transdermal and oral estradiol and micronized progesterone).

The practice site differences observed in our study may reflect regional variations in HT prescribing or differences in formularies between HVMA and GH. Only 19% of HVMA providers stated they continue to recommend HT for many women, significantly fewer than those at GH agreeing with this statement. Because a greater proportion of providers at HVMA were OB/GYNs, this result seems counterintuitive. However, HT use is less common in the Northeastern United States.[15,27–29] The majority of HVMA providers were women, which might be expected to influence practice site differences, although provider gender was not related to HT prescribing frequency in a previous study.[15] Differences in Estring use between GH and HVMA are striking; >60% of providers at HVMA had increased their Estring use compared with only 25% of GH providers. Although geographic variation in prescribing may explain this finding, provider field of practice and formulary restrictions cannot be excluded. Estring was a nonformulary product at GH in 2005–2006.

Limitations of our study should be noted. Our results are based on self-reported prescribing and counseling changes post-WHI. These self-reported changes may differ from actual prescribing practices. We report pooled results. Our findings, as reported here, did not answer the question: If a given provider prescribed less oral HT, did that prescriber then increase transdermal use?

Conclusions

The majority of providers made changes in their HT counseling and prescribing post-WHI, and differences are apparent when comparing specialties and region. Compared with primary care physicians, OB/GYNs were more likely to recommend HT, more likely to believe that the WHI findings are irrelevant for younger women, and more likely to prescribe such alternatives as low-dose, vaginal, and transdermal estrogens. These differences might be explained by OB/GYNs' self-reported expert level knowledge about the trials.

We found that OB/GYN providers continue to recommend HT for many women. HT formulations used in the WHI trials are being used less, replaced by low-dose estrogen and other alternate HT in the absence of evidence-based support from large clinical trials. The safety and efficacy of these alternative products warrant further research.

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Disclosure Statement

No competing financial interests exist

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