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Adjuvant Hormonal Therapy Use Among Women with Ductal Carcinoma *In Situ*

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Abstract

Objective: In the absence of consistent guidelines for the use of adjuvant hormonal therapy (HT) in treating ductal carcinoma in situ (DCIS), our purpose was to explore a variety of factors associated with discussion, use, and discontinuation of this therapy for DCIS, including patient, tumor, and treatment-related characteristics and physician-patient communication factors.

Methods: We identified women from eight California Cancer Registry regions diagnosed with DCIS from 2002 through 2005, aged ≥18 years, of Latina or non-Latina white race/ethnicity. A total of 744 women were interviewed an average of 24 months postdiagnosis about whether they had (1) discussed with a physician, (2) used, and (3) discontinued adjuvant HT.

Results: Although 83% of women discussed adjuvant HT with a physician, 47% used adjuvant HT, and 23% of users reported discontinuation by a median of 11 months. In multivariable adjusted analyses, Latina Spanish speakers were less likely than white women to discuss therapy (odds ratio [OR] 0.36, 95% confidence interval [CI] 0.18-0.69) and more likely to discontinue therapy (OR 2.67, 95% CI 1.05-6.81). Seeing an oncologist for follow-up care was associated with discussion (OR 5.10, 95% CI 3.14-8.28) and use of therapy (OR 4.20, 95% CI 2.05-8.61). Similarly, physician recommendation that treatment was necessary vs. optional was positively associated with use (OR 11.2, 95% CI 6.50-19.4) and inversely associated with discontinuation (OR 0.38, 95% CI 0.19-0.73).

Conclusions: Physician recommendation is an important factor associated with use and discontinuation of adjuvant HT for DCIS. Differences in discussion and discontinuation of therapy according to patient characteristics, particularly ethnicity/language, suggest challenges to physician-patient communication about adjuvant HT across a language barrier.

Introduction

The incidence of ductal carcinoma in situ (DCIS) in the United States has increased over the past 30 years, corresponding to improved mammography screening rates and technology and enhanced awareness of potential breast cancer risk among women.[1–4] Although rarely diagnosed before 1980,[3] DCIS now accounts for approximately 25% of breast cancers diagnosed.[5] DCIS has an excellent prognosis; with current therapies, the 10-year breast cancer-specific survival rate for DCIS exceeds 95%.[6] Treatment patterns for DCIS have also shifted over time. DCIS was historically treated with radical mastectomy, but since the 1990s, there has been a shift toward treatment of DCIS with breast conserving surgery (BCS), followed by radiation therapy.[3,7] BCS followed by radiation has been associated with a higher rate of local recurrence compared to mastectomy, although a survival advantage has never been demonstrated with greater extent of surgery.[8]

The role of adjuvant hormonal therapy (HT) for control of DCIS continues to be debated. Although hormone receptor-positive invasive breast tumors are effectively treated with adjuvant HTs, such as tamoxifen,[9,10] there is currently a lack of agreement among breast cancer specialists about the appropriateness of using adjuvant HTs to control DCIS in the adjuvant setting.[11] During the 1990s, the National Surgical

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Adjuvant Breast and Bowel Project (NSABP) B-24 trial showed that after primary treatment with BCS and radiation, 5 years of tamoxifen reduced the absolute occurrence of ipsilateral and contralateral breast cancer events among women with DCIS by 3.3% and 1.4%, respectively, although no survival benefit was demonstrated.[12] The National Comprehensive Cancer Network (NCCN) guidelines recommend consideration of adjuvant HT for women undergoing BCS for DCIS. [13] However, there is concern that for some women, the side effects of use may outweigh the potential benefits.[1,11,14–17] As a result, there is a lack of consistency in both the recommendations for and uptake of tamoxifen use in the setting of DCIS.[1,18,19] The NSABP B35 trial is currently underway to compare the effectiveness of anastrazole (an aromatase inhibitor) to that of tamoxifen in postmenopausal women with hormone receptor-positive DCIS.[11,20]

Previous research into factors associated with use of adjuvant HT has focused on women with invasive breast cancer, where its use has been more consistently recommended as standard of care. Race/ethnicity, age, socioeconomic characteristics, tumor characteristics, and seeing an oncologist for follow-up care have been associated with use.[21–23] Given the lack of consensus about the use of adjuvant HT among DCIS patients, physician discussion and subsequent recommendations are likely to influence use of HT,[24,25] and it is important to understand factors associated with the discussion of these treatments. Language barriers are likely to further affect treatment decisions. As tamoxifen users are at increased risk of developing endometrial cancer, uterine sarcoma,[14] endometrial hyperplasia, uterine polyps, ovarian cysts,[15] thromboembolic events,[16] and retinopathy,[17] women must be counseled regarding both the risks and benefits of adjuvant HT in order to make a well-informed decision about its use. Communication barriers may prevent patients from engaging in complex treatment discussions.

For invasive breast cancer, continuation of adjuvant HT for a course of 5 years is recommended to receive maximum benefit.[9] A review of the literature on tamoxifen adherence for invasive disease suggests that patients' perceptions of risk, adverse events experienced from taking the medication(s), patient age, low socioeconomic status (SES) regardless of health insurance status, poor patient-provider communication, costs of medications, and psychologic issues may be associated with adherence.[26,27] In light of inconsistent recommendations for the use of adjuvant HT use in treating DCIS, it is also of interest to understand factors associated with adherence among those women with DCIS who elect to use adjuvant HT for control of their disease. Little is known about factors affecting adherence in this setting.

The purpose of our analysis was to better understand the patient characteristics, tumor and treatment-related characteristics, and physician-patient communication factors associated with (1) physician discussion of adjuvant HT with DCIS patients, (2) use of adjuvant HT, and (3) discontinuation of adjuvant HT among users.

Materials and Methods

Study population

All Latina women and a random sample of non-Latina white women aged ≥18 years when diagnosed with DCIS between 2002 and 2005 were identified from eight regions of the California Cancer Registry (CCR), including the Greater San Francisco Bay Area (Regions 1 and 8), Los Angeles County (Region 9); Sacramento Region (Region 3), Central Region (Region 2), Tri-Counties (Region 4), San Diego/Imperial Region (Region 7), and Inland Empire Region that includes San Bernardino and Riverside Counties (Region 5).

Data sampling

Study recruitment took place between January 2005 and September 2006. All Latina women within each region and county were sampled. Given the large number of non-Latina white women (hereafter referred to as white), these women were selected based on frequency matching to Latina patients with respect to age within 5-year increments, diagnosis period within 6-month intervals, and county of diagnosis.

Data collection

Telephone interviews were conducted by trained project staff. Before the interviews, physicians of prospective participants were sent a letter to ensure that there were no objections to inviting patients to participate in the study. To participate, women had to be ≥18 years, self-identify as Latina or non-Latina white, and have a diagnosis of DCIS but no prior history of breast cancer. Interviewers obtained verbal consent from eligible women who were willing to participate. Telephone interviews were conducted in English or Spanish, according to the participant's preference, and participants received $20 for completing the interview.

CCR clinical data from hospital-based sources were merged with the survey data for all participants. All the CCRs in the study were part of the Surveillance, Epidemiology, and End Results (SEER) reporting system. The University of California, San Francisco, Committee on Human Research approved all procedures.

Outcome variables

The main outcome variables of interest included self-reported (1) discussion of adjuvant HT with physician, (2) use of adjuvant HT, and (3) discontinuation of adjuvant HT among ever users.

Discussion of adjuvant HT with physician. Women were asked to indicate, for each of four adjuvant HTs of interest (tamoxifen, anastrazole, letrozole, and raloxifene), if their physician had discussed the treatment with them. Information was combined into a summary measure, and women reporting that they had discussed any of the treatments with their physician were classified as those who had ever discussed compared to women who did not indicate discussing any of the treatments.

Use of adjuvant HT. Women were asked to report if they had ever taken any of the four adjuvant HTs after surgery for DCIS. A summary measure was created; women reporting use of any of the adjuvant HT were considered ever users compared to those who did not indicate using any of the treatments.

Discontinuation of adjuvant HT. Women who reported use of adjuvant HT were asked to report if they had ever

stopped taking any of the four adjuvant HTs. Early decisions to discontinue use were captured; on average, women in the cohort were surveyed 23.8 months after diagnosis of DCIS. A summary measure was created; women reporting discontinuation of any of the four treatments were considered to have discontinued use.

Patient characteristics

Women were classified as white or Latina based on self-reported race/ethnicity. Latinas were further classified by their language of interview as English speaking or Spanish speaking. Other indicators included age , marital status, highest year of school completed, time between diagnosis and interview (in months) to control for potential recall bias, insurance status, and CCR region (Table 1).

Participants who reported having a mother, sister, daughter, grandmother, or aunt with a history of breast cancer were considered to have a family history of breast cancer. Any participant with a history of blood clots, stroke, or uterine cancer was considered to have a contraindication to using adjuvant HT. Women were also asked to report their health status, and those indicating that they were in poor health were combined with those who had a contraindication to create a summary indicator of contraindications and/or poor health.

Tumor and treatment-related characteristics

Other indicators included estrogen receptor (ER) and progesterone receptor (PR) status and histology grade, based on information compiled by the CCR. Self-reported primary treatment for DCIS was recorded (mastectomy, BCS and radiation, or BCS alone), and women were asked to indicate whether they saw an oncologist for follow-up care during the first year after their diagnosis.

Treatment decision-making behaviors and communication with physician

Women were asked to evaluate who made most of the treatment decisions with respect to their DCIS. For each of the four HTs of interest, women who had discussed any type of adjuvant HT with their physician were asked to indicate whether their physician had recommended use of the treatment (Did your physician say the treatment was: necessary, optional, or unnecessary?). Responses across the four types of adjuvant HT were combined to create a summary indicator for recommendation of any HT. Necessary included those reporting that at least one of the treatments was recommended as necessary; optional included those reporting that at least one of the treatments was recommended as optional but none of the treatments were recommended as necessary; unnecessary included those reporting that none of the treatments were recommended as either necessary or optional.

Statistical analysis

Descriptive statistics were used to illustrate the characteristics of the total sample. Multivariable logistic regression models were fit, adjusting for geographic region, time between diagnosis and interview, patient, tumor and treatment-related characteristics, and physician-patient communication factors, to identify factors independently associated with

Table 1. Sample Characteristics ($n=744$) Among Women with Ductal Carcinoma In Situ

Patient characteristics	*Total* n *(%)*[a]
Ethnicity language group	
Non-Latina white	395 (53.1)
Latina English speakers	156 (21.0)
Latina Spanish speakers	193 (25.9)
Age	
<55	357 (48.0)
55–64	213 (28.6)
≥65	174 (23.4)
Time from diagnosis (months), mean±SD	23.8±7.9
Geographic region	
San Francisco Bay area	205 (27.5)
Sacramento/Central California	151 (20.3)
San Diego	60 (8.1)
Los Angeles	228 (30.7)
Riverside/San Bernardino	100 (13.4)
Relationship status single	226 (30.6)
Education level	
Less than high school	145 (19.7)
High school or vocational school	161 (21.9)
College or higher	429 (58.4)
Health insurance	
Private insurance	365 (50.3)
Kaiser HMO	163 (22.5)
Government/public Insurance	164 (22.6)
No Insurance	33 (4.6)
Contraindications/poor health status	74 (10.0)
Family history of breast cancer	270 (36.3)
Tumor and treatment-related characteristics	
ER/PR status	
ER+ or PR+	193 (25.9)
ER− and PR−	40 (5.4)
Status not reported	511 (68.7)
Histology grade	
Grade 1 or 2, well or moderately differentiated	288 (38.7)
Grade 3, poorly differentiated	310 (41.6)
Unknown	147 (19.7)
Primary DCIS treatment	
Mastectomy	239 (32.3)
Breast conserving surgery with radiation	390 (52.6)
Breast conserving surgery alone	112 (15.1)
Treatment decision-making behaviors and communication with physician	
Treatment decision making	
Physician made most decisions	137 (18.6)
Both physician and patient decided together	449 (61.1)
Patient made most decisions	149 (20.3)
Saw oncologist for care after diagnosis	570 (76.6)
Physician discussed adjuvant hormonal therapy	617 (82.9)
Physician's recommendation about adjuvant hormonal therapy	
Necessary part of treatment	271 (37.4)
Optional part of treatment	222 (30.6)
Unnecessary/ not discussed	232 (32.0)
Ever used adjuvant hormonal therapy	346 (47.0)
Discontinued use of adjuvant hormonal therapy (among ever users)	78 (23.0)

[a]Percents based on nonmissing values.

DCIS, ductal carcinoma in situ; ER, estrogen receptor; HMO, health maintenance organization; PR, progesterone receptor; SD, standard deviation.

three outcome measures: discussion of adjuvant HT with physician, use of adjuvant HT, and discontinuation of adjuvant HT among users.

Results

Response rate

A total of 1404 women were mailed the study invitation letter. After making exclusions based on ineligibility, physician refusal, and incorrect contact information, interviewers attempted to contact the remaining 1231 women. Of these, 319 women refused, and an additional 167 did not respond within survey protocol. The survey was completed by 745 participants. There was a 61% completion rate (completed interviews/sent letters minus ineligible, unreachable, and physicians' objections). White women had a higher completion rate than Latinas (67% and 55%, respectively).

Sample characteristics

The final sample for analysis included 744 women with complete information on use of adjuvant HT. On average, women completed the interview 24 months after diagnosis, and the mean age for the entire sample was 56.5 years. The sample is described in further detail in Table 1.

Of the total sample, 617 (83%) reported discussing adjuvant HT with their physician, and 346 women in the sample (47%) reported ever using adjuvant HT. Among ever users, 77% reported tamoxifen use exclusively, 10% reported anastrazole use exclusively, 2% reported letrozole use exclusively, 1% reported raloxifene use exclusively, and the remaining 10% reported the use of more than one type of adjuvant HT. Also among ever users, 78 women (23%) reported discontinuing adjuvant HT during the course of treatment. Among those reporting discontinuation of HT, the median duration of use was 11 months (interquartile range [IQR] 4–18 months). The most frequently reported reasons for discontinuation were the experience of side effects (69%) and recommendation by a physician to stop using the therapy for medical reasons (45%).

Multivariable analysis

Discussion of adjuvant HT with physician. Compared to white women, Latina Spanish speakers were significantly less likely to have discussed adjuvant HT with their physician (odds ratio [OR] 0.36, 95% confidence interval [CI] 0.18-0.69) as were women with ER− /PR− tumors compared to those with ER+ or PR+ tumors (OR 0.20, 95% CI 0.07-0.54) (Table 2). Compared to women who received mastectomy, women reporting use of BCS and radiation as primary treatment were significantly more likely to report having discussed adjuvant HT with their physician (OR 2.66, 95% CI 1.57-4.52). Similarly, women who saw an oncologist for follow-up care were more likely to have discussed the use of adjuvant HT with their physician (OR 5.10, 95% CI 3.14-8.28).

Use of adjuvant HT. Women who saw an oncologist for follow-up care were more likely to use adjuvant HT than those who did not see an oncologist (OR 4.20, 95% CI 2.05-9.28.61). Compared to women whose physicians told them that adjuvant HT was optional, women whose physicians told them that this treatment was necessary were also significantly more likely to use this type of treatment (OR 11.2, 95% CI 6.50-19.4), and women whose physicians told them the treatment was unnecessary or did not discuss the treatment with them were significantly less likely to have used the treatment (OR 0.03, 95% CI 0.01-0.09).

Discontinuation of adjuvant HT among ever users. Spanish-speaking Latina women were more likely to discontinue adjuvant HT than white women (OR 2.67, 95% CI 1.05-6.81), and women with less than a high school education were less likely to discontinue therapy compared to those with a college education or beyond (OR 0.32, 95% CI 0.11-0.94). Those with a family history of breast cancer in a first-degree relative were more likely to discontinue therapy compared to those with no family history (OR 1.88, 95% CI 1.03-3.44), as were women who received BCS alone compared to mastectomy (OR 3.68, 95% CI 1.23-11.0). In addition, compared to women whose physicians told them that adjuvant HT was optional, women whose physicians told them that this treatment was necessary were significantly less likely discontinue treatment (OR 0.38, 95% CI 0.19-0.73).

Discussion

NCCN guidelines recommend consideration of adjuvant HT for women undergoing BCS for DCIS. However, wide practice variation in recommendations for use and uptake of these therapies for DCIS suggests that communication with physicians can exert a strong influence on whether or not patients use these medications.[1,13,18,19] This study identified several patient, tumor, treatment, and physician-patient communication-related factors associated with the discussion, use, and discontinuation of adjuvant HT in a demographically and ethnically diverse sample of women.

In multivariable analysis, Latina Spanish-speaking women were less likely than white women to discuss adjuvant HT with their physicians, in contrast to research by Nakhlis et al.,[18] which found no differences according to race/ethnicity in the proportion of women who were offered tamoxifen for treatment of in situ or early stage breast cancer by their physicians. Prior research indicates that Latina women in particular perceive the physician-patient relationship as important and may rely heavily on physicians to make treatment decisions.[28,29] As a result, the lower likelihood of discussing adjuvant HT with a physician observed for Latina Spanish speakers may have important implications for treatment initiation and adherence within this group. Although there were no significant differences in the use of adjuvant HT according to ethnicity/language in our sample, Latina Spanish speakers in our sample who did report use of adjuvant HT were more likely than white women to discontinue use.

The lack of a significant ethnic difference we found in use of adjuvant HT is in contrast to research by Bickell et al.,[21] which found that among women with invasive breast cancer, racial/ethnic minority women (Hispanic and African American women combined) were less likely than white women to use adjuvant therapy (hormonal or chemotherapy) for breast cancer treatment. However, the combined analysis of use of adjuvant HT or chemotherapy, rather than looking at outcomes of HT and chemotherapy separately, may account for

Table 2. Logistic Regression: Odds of Discussing, Using, and Discontinuing Adjuvant Hormonal Treatment Among Women with Ductal Carcinoma In Situ

	Discussion of adjuvant hormonal treatment with physician OR[a] *(95% CI)* n=*713*	*Use of adjuvant hormonal treatment* OR[a] *(95% CI)* n=*695*	*Discontinuation of adjuvant hormonal treatment (among ever users)* OR[a] (95% CI) n=*326*
Patient characteristics			
Ethnicity language group (whites=Ref)	Ref	Ref	Ref
Latina English speakers	0.82 (0.42-1.60)	0.99 (0.54-1.80)	1.55 (0.70-3.42)
Latina Spanish speakers	0.36 (0.18-0.69)**	1.80 (0.79-4.09)	2.67 (1.05-6.81)*
Age (<55=Ref)	Ref	Ref	Ref
55–64	1.30 (0.74-2.29)	1.13 (0.65-1.96)	1.07 (0.53-2.15)
≥65	0.92 (0.51-1.64)	1.72 (0.86-3.45)	0.44 (0.19-1.01)
Education level (college or higher=Ref)	Ref	Ref	Ref
High school or vocational school	0.71 (0.39-1.30)	0.78 (0.42-1.42)	1.10 (0.51-2.39)
Less than high school	0.72 (0.35-1.46)	1.06 (0.42-2.71)	0.32 (0.11-0.94)*
Health insurance (private insurance=Ref)	Ref	Ref	Ref
Kaiser HMO	0.73 (0.40-1.32)	0.67 (0.36-1.23)	0.52 (0.21-1.26)
Government/public Insurance	0.61 (0.33-1.15)	1.08 (0.51-2.28)	1.43 (0.61-3.35)
No insurance	1.05 (0.35-3.15)	0.40 (0.13-1.19)	2.30 (0.61-8.64)
Contraindications or poor health status (no contraindications=Ref)	0.61 (0.30-1.27)	1.00 (0.42-2.37)	1.50 (0.59-3.85)
Family history of breast cancer (no family history=Ref)	0.91 (0.56-1.50)	1.28 (0.78-2.11)	1.88 (1.03-3.44)*
Tumor and treatment-related characteristics			
ER/PR status (ER+ or PR+=Ref)	Ref	Ref	Ref
ER− and PR−	0.20 (0.07-0.54)**	0.50 (0.15-1.67)	0.41 (0.04-4.04)
Status not reported	0.55 (0.30-1.01)	1.05 (0.60-1.85)	0.95 (0.47-1.93)
Histology grade (Grade 1 or 2, well or moderately differentiated=Ref)	Ref	Ref	Ref
Grade 3, poorly differentiated	0.81 (0.48-1.35)	0.94 (0.54-1.64)	0.97 (0.49-1.94)
Missing grade	1.02 (0.51-2.04)	0.96 (0.49-1.85)	0.63 (0.28-1.46)
Primary DCIS treatment (mastectomy=Ref)	Ref	Ref	Ref
BCS+radiation	2.66 (1.57-4.52)***	1.34 (0.77-2.31)	1.11 (0.54-2.27)
BCS alone	0.73 (0.36-1.46)	0.63 (0.29-1.39)	3.68 (1.23-11.0)*
Treatment decision-making behaviors and communication with physician			
Treatment decision making (physician made most decisions=Ref)	Ref	Ref	Ref
Both physician and patient decided together	0.92 (0.50-1.69)	0.68 (0.35-1.32)	0.52 (0.25-1.09)
Patient made most decisions	0.76 (0.36-1.58)	0.61 (0.28-1.36)	0.88 (0.35-2.24)
Saw oncologist for care after diagnosis (did not see oncologist=Ref)	5.10 (3.14-8.28)***	4.20 (2.05-8.61)***	0.62 (0.21-1.83)
Physician's recommendation to use adjuvant hormonal therapy (optional=Ref)		Ref	Ref
Necessary	NA	11.2 (6.50-19.4)***	0.38 (0.19-0.73)**
Unnecessary/not discussed		0.03 (0.01-0.09)***	2.45 (0.33-18.0)

[a]Also adjusted for geographic region and time since diagnosis (in months): *$p<0.05$; **$p<0.01$; ***$p<0.001$.
BCS, breast conserving surgery; CI, confidence interval; NA, not available; OR, odds ratio; Ref, reference.

this difference, and primary language was not accounted for. Additionally, factors associated with use for DCIS may differ from factors associated with use for invasive disease.

The higher likelihood of discontinuing adjuvant HT among Latina Spanish speakers may reflect poorer understanding upfront of the potential side effects or complications associated with treatment or the optimal length of time for which the therapy should be taken. Prior research suggests that breast cancer physicians simplify their discussion of treatment risks and benefits when communicating with patients of limited English proficiency.[30] Thus, unanticipated side effects may be one reason for discontinuation of HT. Latina English speakers were equally likely to discuss, use, and discontinue adjuvant HT as white women, supporting the notion that there is heterogeneity among Latina women and that differences by primary language in this ethnic group should be considered.

Other patient demographic characteristics, including education level, were not associated with either discussing or using adjuvant therapy. However, women with less than a high school education were less likely than women with a college education or beyond to discontinue use of adjuvant HT. This finding is inconsistent with prior research among women with invasive disease indicating that women of low

SES are more likely to discontinue treatment.[26] In addition, women in our sample with a family history of breast cancer were more likely to discontinue use of adjuvant HT, also inconsistent with prior literature demonstrating that higher perceived risk among breast cancer patients is positively associated with adherence for women with invasive disease.[26] Further research is needed to explore these relationships and adherence to adjuvant HT for DCIS.

Women treated with BCS, including radiation, were more likely to discuss adjuvant HT with their physician. This finding is consistent with the fact that tamoxifen has been demonstrated to benefit women whose primary treatment included BCS and radiation.[12] In contrast, women in our sample who were treated with BCS alone were more likely to discontinue use of adjuvant HT, a finding that may identify a subset of women who opt for a less conservative treatment course overall (e.g., no radiation and discontinuation of adjuvant HT).

Seeing an oncologist for follow-up care was also strongly associated with both discussion of and use of adjuvant HT, consistent with prior research among women with invasive disease that found that referral to an oncologist was positively associated with adjuvant therapy use.[21] This underscores the important role that physician specialty plays in use of adjuvant HT. Although we do not know from our data whether women took adjuvant HT as a result of seeing an oncologist or saw an oncologist as a result of taking adjuvant HT, the former scenario is more likely. We could not determine why some patients were referred to see a medical oncologist, although overall, 77% reported an oncology visit for DCIS.

Finally, the importance of physician recommendation in the use of adjuvant HT for DCIS is illustrated in our findings. The high proportion of women in our study who reported discussing adjuvant HT with their physician (>80%) suggests that despite the lack of agreement among physicians on its usefulness, adjuvant HT is being discussed with this group of women. The smaller percentage of women, roughly half of the sample, who reported actually using this type of treatment, suggests that other factors, such as the strength of the recommendation, may play a role in the decision to use adjuvant HT. Women in our sample who indicated that adjuvant HT was not recommended by their physician (i.e., was unnecessary) or was not discussed were far less likely to use adjuvant HT than those who were told it was optional. Similarly, women who were told that the treatment was necessary were far more likely to use and far less likely to discontinue use compared to women who were told that the treatment was optional. Results can be compared to findings from one study demonstrating a high correlation between physician recommendation and the decision to use tamoxifen, although the analysis was conducted among women at high risk for breast cancer, not among those who had already developed disease.[31] Results are also consistent with findings from women with invasive breast cancer, indicating that physician recommendation is positively associated with adherence to adjuvant HT.[26,27]

Physician recommendation may be one of the most influential factors driving use of adjuvant HT. As we noted earlier, in light of the demonstrated benefit of tamoxifen among women whose primary treatment included BCS and radiation,[12] we might expect women who were initially treated with BCS followed by radiation to be more likely to both discuss and use adjuvant HT than women treated with mastectomy or BCS without radiation. Although this group of women was more likely to discuss adjuvant HT than were women treated with mastectomy, these women were not more likely to use adjuvant HT in our multivariable adjusted analysis. This finding underscores the importance of physician recommendation in that despite the presence of prior treatment characteristics to guide the use of adjuvant HT, physician recommendation appeared to have the strongest influence on use of treatment.

Our study has several limitations. The sample included women with ER−/PR− tumors who may not be expected to benefit from adjuvant HT, as well as women with tumors of unknown hormone receptor status, although we controlled for hormone receptor status in the analysis. Of note, data from the NASBP B24 trial demonstrated a reduction in risk of ipsilateral and contralateral breast cancer events among hormone receptor-negative DCIS tumors, albeit a smaller reduction in risk than was demonstrated for hormone receptor-positive tumors.[1,32,33] It is plausible that in our sample, some physicians of women with ER-/PR- disease may have recommended adjuvant HT for their patients in order to prevent future breast cancer-related events. Additionally, although ER/PR status was not reported for all patients in CCR/SEER records, the treating physicians for some of these women may have known the tumor status and treated their patients accordingly.

Although our study relied on self-reported use of adjuvant HT, which was collected retrospectively, several validation studies have documented that self-reported use of adjuvant HT obtained from breast cancer survivors can be considered a valid proxy for treatment information contained in medical records.[34–36] Further, although women in the sample were diagnosed over a range of years and those women diagnosed in earlier years had a greater opportunity to have discontinued use by the time they were interviewed, our analysis was adjusted for time between diagnosis and interview to control for this source of bias.

Conclusions

Our study of women living in California diagnosed with DCIS from 2002 to 2005 identified several patient, tumor, and treatment characteristics and physician-patient communication factors associated with the discussion, use, and discontinuation of adjuvant HT in this setting. Results from our study support the notion that physician recommendation (e.g., whether adjuvant HT is recommended and how this treatment option is communicated to patients) is one of the most important factors associated with treatment use and adherence. Differences in discussion and adherence according to patient characteristics, particularly ethnicity/language, indicate that there may be challenges with physician-patient communication about the risks and benefits of adjuvant HT across a language barrier.

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Disclosure Statement

The authors have no financial conflicts of interest to declare.

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