Breast Symptoms among Women Enrolled in a Health Maintenance Organization: Frequency, Evaluation, and Outcome

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Background: Few data exist about visits to primary care clinicians for breast symptoms in the United States.

Objective: To determine how often women present with breast symptoms, how these symptoms are evaluated, and how often cancer is diagnosed.

Design: Retrospective cohort study.

Setting: Staff-model division of a large health maintenance organization (HMO) in New England.

Patients: 2400 women who were 40 to 69 years of age as of 1 July 1983 and were continuously enrolled in the HMO until 30 June 1995.

Measurements: Information on all breast-related encounters from 1 July 1983 to 30 June 1993 was abstracted. Type of symptom, clinicians' findings and recommendations, and all subsequent evaluations were recorded. Cases of cancer diagnosed subsequent to the symptom were determined.

Results: Sixteen percent of the HMO population presented with a breast symptom during the 10-year period, for a rate of 22.8 presentations per 1000 person-years. Women younger than 50 years of age presented nearly twice as often as older women ($P = 0.001$). Women with breast symptoms had lower rates of screening than other women before presenting but higher rates of screening afterward ($P < 0.001$). Symptoms were evaluated beyond the initial visit in 66% of patients, and invasive procedures were performed in 27% of patients. Cancer was found in 6.2% of patients and 4.5% of episodes; rates of cancer detection varied significantly by type of symptom but not by patient age.

Conclusions: Breast symptoms among women 40 to 70 years of age were common in this primary care practice. Evaluation beyond initial examinations was frequent, and invasive procedures were performed for 27% of patients. Cancer was diagnosed in more than 4% of episodes, indicating that follow-up of breast symptoms is important in primary care practices.

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Little is known about breast symptoms that women bring to primary care clinicians in the United States. Data from the United Kingdom suggest that breast symptoms are common in primary care practices; one study reported 18 visits per 1000 person-years (1). In the United States, the frequency of particular breast symptoms, the evaluations performed to investigate these symptoms, and, most important, the clinical outcomes of these symptoms are unknown.

This lack of knowledge comes at a time of increasing awareness of breast problems. Women in the United States have high levels of concern about breast cancer (2), and breast cancer has become the most common reason for medical malpractice suits (3). Most medical malpractice awards involve women who presented with a breast symptom but received a delayed diagnosis of breast cancer (3–5).

We studied women who presented with breast symptoms to primary care clinicians in a large health maintenance organization (HMO) in the northeastern United States. We wanted to determine 1) how often women present with breast symptoms to primary care providers, 2) how these symptoms are evaluated, and 3) how often symptoms lead to a diagnosis of breast cancer.

Methods

This retrospective cohort study was performed at Harvard Pilgrim Health Care, a large HMO in New England. Approval was granted by the human studies committee of Harvard Pilgrim Health Care.

The study design and selection of patients have been described elsewhere (6). Female HMO members with automated medical records (7) were eligible. We selected a cohort of 2400 women who were continuously enrolled in the HMO from 1 July 1983 through 30 June 1995. Women 40 to 69 years of age as of 1 July 1983 were sampled in a random, age-stratified manner to include 1200 women in the age group 40 to 49 years, 600 women in the age group 50 to 59 years, and 600 women in the age group 60 to 69 years. Women were ineligible if they had insurance coverage in addition to that of the HMO during the study period ($n = 1$), had breast cancer before 1 July 1983 ($n = 4$), or had reduction mam-

moplasty or prophylactic mastectomy before or during the study period ($n = 11$).

Data Collection

Information on all breast-related encounters between 1 July 1983 and 30 June 1993 was collected from a computerized medical record (7). Trained research assistants extracted the data. In more than 5% of charts blindly double-reviewed for quality assessment, the rate of inconsistencies found was less than 1% (6). The reason for each visit was determined to be screening (unrelated to any previously recognized breast abnormality or symptom) or diagnostic (to investigate an abnormality noted by the patient, by the clinician at an earlier examination, or on previous mammography). This study reports on diagnostic visits related to patient symptoms.

Patient symptoms were classified as follows: 1) mass (a single lump or nodule); 2) pain (a report of pain or tenderness in either breast or bilaterally); 3) skin or nipple change (including nipple discharge); 4) multiple lumps or nodules (often described by patients as "lumpiness" and by clinicians as "fibrocystic" or "diffuse cystic change"); or 5) other symptoms (such as increasing size of breast). Physical examination findings were recorded by using the same five categories. More than one symptom or finding could be documented.

Clinicians' diagnostic interpretations were classified as normal, abnormal-benign, indeterminate, or suspicious for cancer. An examination was classified as normal if the word *normal* was used to describe the breasts, even if the word *fibrocystic* was also used. Abnormal-benign examinations were defined as those that documented fibrocystic changes or other diffuse or lateralized findings but used the word *benign* in summary and advised no further follow-up. Findings were considered indeterminate if the description (using such words as *firm* or *fixed*) or the recommendation for follow-up (such as "refer to surgeon") connoted concern; findings were considered suspicious if the clinician stated suspicion of or direct concern for cancer. We documented clinicians' recommendations for further evaluation and all subsequent diagnostic procedures and visits related to the breast symptom.

Breast cancer outcomes were determined for all women from 1 July 1983 to 30 June 1994 to ensure adequate time for follow-up of all breast-symptom episodes. To determine outcomes, we reviewed the computerized medical records and the HMO's tumor registry for diagnoses of breast cancer. Study patients were censored at the time of breast cancer diagnosis.

We assigned a CPT (current procedural and technical) code (8) to all diagnostic visits, provider services, and procedures (a full description of CPT codes is published elsewhere [6]) and used the national Medicare fee schedule to estimate the charges incurred (9). Demographic data were extracted from the medical record. Household income was estimated by matching the woman's home address as of 1 December 1995 with U.S. Census data (10).

Statistical Analysis

All analyses were performed by using SAS software (SAS Institute, Inc., Cary, North Carolina) (11). The Student *t*-test, analysis of variance, and multivariate regression were used for continuous data, and the chi-square test was used for comparisons of categorical data. We used the Mantel–Haenszel chi-square statistic with one degree of freedom for tests for trend. Exact 95% CIs were calculated by using the binomial distribution.

Our unit of analysis is sometimes the patient and sometimes a breast-symptom episode. We defined a breast-symptom episode as the initial patient visit and all subsequent related visits and evaluations; a woman could have more than one episode during the 10-year study. We defined a new episode as beginning with a breast-symptom visit more than 6 months after the end of any previous episode. We considered a breast-symptom visit within 6 months of a previous episode to be the beginning of a new episode when the symptom was in the contralateral breast. Rates of breast symptom episodes per decade of age were calculated by dividing the number of episodes by the total person-time contributed by women in that decade. Person-time began on 1 July 1983 and ended at the date of censoring or 30 June 1993, the study's end.

All tests of significance on comparisons by episode (including proportion of episodes resulting in cancer) and likelihood ratios for individual symptoms were calculated to account for multiple episodes per woman by using a subset of the data that included one randomly selected episode per woman. Because no inflation of variance was found, we report *P* values from the tests that assumed independent observations.

Results

Study Sample

The study sample was 75% white, 11% African-American, 2% Asian, and 1% Hispanic; ethnicity was not documented for 11% of patients. A family history of breast cancer was noted for 18% of patients. Median household income was estimated to be $47 940 (range, $13 230 to $161 710).

Table 1. Breast Symptoms According to Patient Age and Type of Symptom

Age Group	Rate of Episodes			Specific Symptom*					
	Total Episodes	Observation Time	Rate per 1000 person-years	Pain	Mass	Skin or Nipple Change	Lumpiness	Other	Total
	n	*person-years*	*n*	← *n (%)* →					
40–49 y	223	6960	32.0	72 (36)	111 (56)	20 (10)	20 (10)	3 (2)	200 (100)
50–59 y	188	7957	23.6	79 (51)	53 (34)	26 (17)	12 (8)	3 (2)	155 (100)
60–69 y	87	6273	13.9	45 (58)	26 (33)	13 (17)	3 (4)	1 (1)	78 (100)
70–79 y	41	2424	16.9	25 (68)	6 (16)	8 (22)	3 (8)	0 (0)	37 (100)
Total	539	23 614	22.8†	221 (47)‡	196 (42)‡	67 (14)§	38 (8)	7 (1)	470 (100)

* Categories are nonexclusive. In 59 episodes (13%), 2 symptoms were recorded; in 69 episodes, no specific symptom was documented. Episodes with no symptom are excluded from percentages.
† $P = 0.001$ for comparison of rates per age group.
‡ $P = 0.001$ for trend.
§ $P = 0.027$ for trend.

Frequency and Type of Breast Symptoms

Over the 10-year period, 372 women (16%) presented with breast symptoms in 539 separate episodes. Although most women had only 1 breast-symptom episode, 56 women (15%) presented twice and 35 women (9%) had 3 or more episodes. No significant trend in the annual rate of episodes was seen over the study period.

We found 22.8 breast-symptom episodes per 1000 person-years of observation (**Table 1**). Women younger than 50 years of age presented at twice the rate of older women. Rates did not differ by ethnic group. Women with a family history of breast cancer were more likely to present with breast symptoms than those without a family history (22% compared with 14%; $P = 0.001$).

Fifty-five percent of women with breast-symptom episodes had a screening clinical breast examination within the previous 2 years, and 48% had screening mammography in that time. However, women with breast symptoms were less likely than those with no breast-symptom episodes to have participated in regular screening before presenting. Women with breast symptoms also had fewer screening clinical breast examinations (0.36 per person-year compared with 0.44 per person-year; $P < 0.001$) and fewer screening mammograms (0.22 mammograms per person-year compared with 0.37 per person-year; $P < 0.001$). These findings persisted after adjustment for age. Previous breast self-examination instruction was documented much less frequently for women with breast-symptom episodes than for women without breast-symptom episodes (31% compared with 64%; $P = 0.001$).

The most common symptom was pain, followed by mass, skin or nipple change, lumpiness, and other symptoms (**Table 1**). Two symptoms were noted in 59 episodes (13%); the most frequent combinations were pain and mass (31 episodes [7%]) and pain and skin or nipple changes (14 episodes [3%]). In 69 episodes, no specific symptom was documented. Symptoms varied by age: Mass was the most common symptom among women in their 40s, and pain was the most common symptom among women in all other age groups. Reports of pain were unilateral in 91% of episodes and bilateral in 9% of episodes.

Clinician Findings and Recommendations

A total of 188 clinicians initially evaluated the breast symptoms. Physicians evaluated 77% of episodes, and midlevel clinicians (nurses, nurse practitioners, and physician assistants) evaluated 23% of episodes. Most initial visits were to internal medicine departments (71%); the remainder were to departments of surgery (24%) and obstetrics and gynecology (5%).

On physical examination, the clinicians found mass in 184 episodes (34%), skin changes or nipple discharge in 43 episodes (8%), fibrocystic changes in 112 episodes (21%), and other findings in 32 episodes (6%). More than one finding was documented in 45 episodes, and no specific findings were documented in 214 episodes (40%). Of the 196 episodes in which a patient reported a mass, the clinician confirmed the mass in 160 (82%). Of the 343 episodes in which mass was not one of the patient's symptoms, the clinician documented a mass in 24 (7%).

Clinicians interpreted physical findings as normal in 33% of episodes, abnormal-benign in 27%, indeterminate in 35%, and suspicious for cancer in 6%. Internal medicine clinicians assessed findings as indeterminate or suspicious more often (47%) than did obstetricians and gynecologists (36%) or surgeons (24%) ($P = 0.001$).

Clinicians recommended further evaluation for 391 breast-symptom episodes (73%). Recommendations included consultation with a surgeon (38%); return for repeated physical examination (23%); and diagnostic studies, such as mammography (30%), ultrasonography (1%), fine-needle aspiration

Table 2. Diagnostic Evaluations of Breast Symptoms

Evaluation	Breast-Symptom Episodes*	Total Evaluations	Cost†
	n (%)	*n*	*$*
Initial visit	539 (100)	539	76 064
Follow-up appointment			
Primary care	78 (14)	87	12 277
Surgical consultation	213 (40)	361	50 944
Imaging			
Diagnostic mammography	209 (39)	222	17 742
Ultrasonography	20 (4)	20	1368
Biopsy			
Fine-needle aspiration	99 (18)	108	14 152
Core	3 (1)	3	1357
Open (with wire guidance)	8 (1)	8	7573
Open (without wire guidance)	45 (8)	46	39 770
Total	–	–	221 248

* An episode encompasses all investigations for a given symptom and could include multiple evaluations of each type.

† Assigned to evaluations according to 1995 Medicare fee schedule: $141.12 per office visit, $79.92 per mammography, $68.40 per ultrasonography, $131.04 for fine-needle aspiration, $452.40 for core biopsy, $946.64 for open biopsy with wire guidance, and $864.56 for open biopsy without wire guidance.

(8%), or biopsy (4%). Clinicians did not recommend further evaluation for 148 episodes (27%).

Evaluations were performed for 357 episodes (66%): 317 for which specific recommendations were documented (317 of 391 [81%]) and 40 for which no follow-up recommendations were documented (40 of 148 [27%]). The most common evaluations were repeated examination and imaging studies (**Table 2**), but invasive procedures (fine-needle aspiration or biopsy) were done for 146 episodes (27%) (132 episodes with one procedure and 14 with more than one procedure). The total cost of investigating breast symptoms was $221 248, or $410 per symptom and $9619 per case of cancer diagnosed.

Breast symptoms were associated with increased subsequent screening behavior. Compared with women who never presented with a symptom, women with symptoms had more subsequent screening mammograms (0.45 mammograms per person-year compared with 0.37 mammograms per person-year; $P < 0.001$) and more subsequent screening clinical breast examinations (0.52 per person-year compared with 0.44 per person-year; $P < 0.001$).

Outcomes of Breast Cancer

Breast cancer was diagnosed in 23 of the 372 women who presented with breast symptoms (6.2%); 21 had invasive disease (6 with stage 1 disease, 14 with stage 2 disease, and 1 with stage 3 disease), and 2 had ductal carcinoma in situ. The median time to diagnosis from the last breast-symptom episode was 36 days (range, 1 to 155 days). Age was not significantly associated with the likelihood of cancer: Cancer was diagnosed in 11 women (6.4%) who presented with symptoms while in their 40s, 6 women (4.4%) who presented with symptoms while in their 50s, 3 women (4.4%) who presented with symptoms while in their 60s, and 3 women (8.3%) who presented with symptoms while in their 70s. Among women who received a diagnosis of cancer, clinicians found mass in 22 (96%), skin findings in 2 (9%), fibrocystic changes in 3 (13%), and other findings in 2 (9%).

Cancer was diagnosed in 22 of 216 episodes (10%) initially assessed as indeterminate or suspicious and in 2 of 316 episodes (1%) initially assessed as normal or abnormal-benign. The number of episodes leading to a cancer diagnosis ($n = 24$) exceeds the number of women with cancer ($n = 23$) because one woman had two separate breast-symptom episodes before cancer was diagnosed. She did not receive recommended follow-up after her initial presentation and returned 8 months later. Cancer was diagnosed within 90 days of her second visit.

The 23 women with breast cancer and symptoms had higher tumor stages at diagnosis than 58 women whose breast cancer was detected by screening mammography during the study period ($P = 0.02$) (**Table 3**). Among women with invasive cancer, those with symptoms had larger tumors (>5 cm) (19% compared with 4%; $P = 0.015$) and were more likely to have lymph node involvement (40% compared with 14%; $P = 0.02$). No tumors had distant metastases. Stage and tumor size were similar in women who presented with symptoms and seven women with cancer detected by screening clinical breast examinations.

Cancer was diagnosed in 4.5% of all breast-symptom episodes. The likelihood of breast cancer varied by symptom (**Table 4**). A report of mass was associated with a 10.7% chance of breast cancer and a likelihood ratio of 65, whereas a report of pain

Table 3. Characteristics of Breast Cancer According to Method of Detection

Characteristic	Method of Detection		
	Breast Symptom	Screening Clinical Breast Examination	Screening Mammography
	← *n* →		
Cancer cases	23	7	58
Stage			
0	2	0	13
1	6	2	32
2	14	3	10
3	1	2	3
Size of tumor (invasive cancer only)			
<2 cm	9	3	35
2–5 cm	8	1	8
>5 cm	4	3	2
Nodal status (invasive cancer only)*			
0	12	4	37
1–4	7	2	4
≥5	1	1	2

* Not determined for all cases of invasive cancer.

Table 4. Diagnosis of Breast Cancer According to Symptom

Variable	Symptom*					Any Symptom
	Pain	Mass	Skin or Nipple Change	Lumpiness	Other	
Episodes, *n*	221	196	67	38	7	539
Episodes that led to a diagnosis of cancer, *n*	4†	21	2	1	0	24
Episodes that led to a diagnosis of cancer (95% CI), %	1.8 (−0.7 to 4.3)	10.7 (4.6 to 16.9)	3.0 (−2.8 to 8.8)	2.6 (−4.6 to 9.8)	0	4.5 (2.0 to 6.9)
Likelihood ratio‡	10	65	16	14	–	24

* Categories are nonexclusive.
† Mass was associated with pain (by patient symptom or physician finding) in 3 patients; no mass was found in 1 patient.
‡ Calculated by dividing the proportion of women who received a diagnosis of cancer after presenting with a symptom by the proportion of women who did not receive a diagnosis of cancer after presenting with that symptom. The denominator is the number of times a given symptom did not result in a diagnosis of cancer among all eligible 6-month periods contributed by study patients. The numerator is the number of times a woman with a given symptom received a diagnosis of cancer divided by all women who received a diagnosis of cancer. For each likelihood ratio, the 95% CI excluded 1.

led to a diagnosis of cancer in 1.8% of episodes, with a likelihood ratio of 10. The distribution of cases of cancer diagnosed in women with different combinations of symptoms (**Table 5**) shows that a mass accompanying any other symptom increased the risk for cancer. At the same time, each symptom alone was associated with a significantly higher risk for cancer than is present in the population at large.

Discussion

We found that 16% of women 40 to 70 years of age presented to primary care clinicians with breast symptoms over a 10-year period, for a rate of 22.8 episodes per 1000 person-years. Clinicians evaluated 66% of breast symptoms with follow-up after the initial clinical examination; 27% of episodes led to a fine-needle aspiration or biopsy. Breast cancer was diagnosed in 6.2% of women and 4.5% of episodes. Although younger women presented more frequently with breast symptoms, cancer rates did not vary significantly by age group. The cost of evaluating breast symptoms per case of cancer was approximately $10 000.

Three studies from the United Kingdom describe breast symptoms in general practice settings. Roberts and colleagues (12) found that women made breast-related visits at a rate of 18 per 1000 person-years, a rate slightly lower than the rate in our study. A public health education campaign did not increase the visit rate. In contrast, Bywaters (13) found that publicity about breast cancer in the United Kingdom sharply increased the number of breast-symptom visits made by women with normal examinations; no visit rates were reported. Nichols and coworkers (14) found that 32% of breast-symptom visits to general practices were made by women younger than 35 years of age; however, this study did not report visit rates. Pain was the most common symptom in two studies (12, 14), and lump was most common in one (13). In a surgical clinic, breast symptoms made up 18% of new surgical referrals and 23% of all patients seen (1).

In our study, 4.3% of breast-symptom episodes led to a diagnosis of breast cancer. This is lower than rates reported in the literature, which range from 5% to 23% (1, 13, 15–20). Most of these studies (1, 16–20) were conducted in referral populations, where higher rates would be expected. The only study in a primary care setting to follow patients to diagnosis found a rate of subsequent cancer diagnosis of 10% (13). Our cancer rate may be lower because of the frequent use of screening mammography in our setting, which may have depleted the pool of cancer cases available in which symptoms could develop. Women in the United States may also have a lower threshold for bringing breast symptoms to the attention of their health care providers.

Mass was the symptom most often associated with breast cancer; this confirms findings from other studies (16, 17). However, breast cancer was diagnosed after each type of specified symptom, includ-

Table 5. Breast Cancer Diagnosis According to Combinations of Symptoms*

Variable	Pain	Mass	Skin or Nipple Change	Lumpiness
Pain				
Total episodes, *n*	**169**	31	14	7
Episodes resulting in a cancer diagnosis, *n (%)*	**2 (1.2)**	2 (6.5)	0 (0)	0
Mass				
Total episodes, *n*		**159**	1	5
Episodes resulting in a cancer diagnosis, *n (%)*		**17 (10.7)**	1 (100)	1 (20)
Skin or nipple change				
Total episodes, *n*			**51**	1
Episodes resulting in a cancer diagnosis, *n (%)*			**1 (2.0)**	0
Lumpiness				
Total episodes, *n*				**25**
Episodes resulting in a cancer diagnosis, *n (%)*				**1 (4.0)**

* Boldface type indicates numbers of episodes and cancer diagnoses involving only one symptom.

ing pain. In two other studies (21, 22), pain was the presenting symptom in 10% of cancer cases. In our study, 2 of 23 women (8.7%) who eventually received a diagnosis of cancer presented with pain as the only symptom. The size of the likelihood ratios in **Table 4** indicates that each symptom corresponds to a large increase (ratio > 10) in the probability of breast cancer (23).

We were surprised that breast cancer rates did not vary by age. A Finnish series (15) of 1000 symptomatic women found little variation in the cancer rate between the ages of 40 to 69 years (9% to 15%). In contrast, Sterns (16) found that cancer rates increased with age among symptomatic women: Cancer was diagnosed in 0.5% of women younger than 41 years of age, 6% of women between 41 and 55 years of age, and 22% of women older than 55 years of age. These studies and ours suggest that breast symptoms in women older than 40 years of age should be taken seriously regardless of the age of the patient and that the age-related prior probabilities for breast cancer among asymptomatic women do not apply to women older than 40 years of age who have breast symptoms.

Clinicians in our study recommended evaluations beyond the initial examination in 73% of episodes (n = 391); follow-up for 27% of episodes involved an invasive procedure (fine-needle aspiration or biopsy). The cost associated with the evaluations was modest, and the cost of approximately $10 000 for each case of cancer found was less than the estimated cost for detecting breast cancer through screening (approximately $15 000) (24).

Breast cancer screening has received increasing attention in the past 20 years (25). Expert groups have recommended routine screening since the mid-1980s (26, 27), but clinical practice has lagged behind (28, 29). Screening has increased significantly in recent years (28, 30, 31); one study reported that mammography rates doubled between 1987 and 1992 (30). Women in our study frequently used screening mammography since 1983, the beginning of our study period; our findings, therefore, may be generalizable to current cohorts with high rates of mammography use. Diagnostic practices have also changed in that core-needle biopsy has assumed a larger role (32–34). A change in preferred procedure from open biopsies to core biopsies would decrease the cost associated with breast evaluations.

Like the Breast Cancer Detection Demonstration Project (35), and in contrast to another series (36), we found marked differences in the stage and size of symptomatic breast cancer compared with breast cancer discovered by screening. However, the descriptive data in **Table 3** must be interpreted with caution because the small number of cancer cases diagnosed in this study limits our ability to draw conclusions.

Some authors suggest that the increasing attention to breast cancer screening, including breast self-examination, may in turn generate increased anxiety and lead to increased primary care visits (16, 37). Our findings do not support these concerns. We saw no trend in visit rates over the decade and found that women who presented with breast symptoms were less, not more, likely to have received previous breast cancer screening and instruction in breast self-examination.

One reason for the growing importance of breast symptoms is that most breast cancer–related malpractice awards involve women who present with breast symptoms (4, 5). This fact, as well as our finding that more than 4% of breast-symptom episodes led to a breast cancer diagnosis, suggests that an important way to improve patient care and to protect against malpractice suits is to follow patients' breast symptoms until they are resolved satisfactorily. Clinicians should remember that a negative result on an imaging test in the face of continued unexplained symptoms does not rule out cancer (38).

Our study has several strengths. Use of a population-based, retrospective cohort permitted us to study breast symptoms in a large primary care practice over a 10-year period. The automated record system allowed us to capture all subsequent evaluations, and we had longitudinal linkage of patient information to document outcomes of breast cancer.

Patients enrolled in HMOs use screening more frequently (39) and receive care more often overall than patients enrolled in fee-for-service plans (40). Fee-for-service settings may have lower visit rates and higher rates of breast cancer for symptomatic women. Although our HMO included patients from both urban and suburban settings, the socioeconomic status of the study sample may distinguish it from other primary care populations. More women in our study (18%) had a family history of breast cancer than did women in other population-based studies (6.8% of women in the Nurses' Health Study [41] and 17.9% of controls in a case–control study [42]). This may have influenced our results because we found that women with a family history of breast cancer were more likely to present with a breast symptom.

Because we had no data on women younger than 40 years of age (in whom breast symptoms are common), we cannot generalize our results to this population (13–15, 43). Because our study was based on record review, we could not determine whether women discovered problems during breast self-examination or incidentally. We required women to be continuously enrolled in the HMO for 12

years and thus may have underestimated cancer rates among women with breast symptoms if some died of breast cancer during the study period. Because clinicians did not use a standard taxonomy to describe their examination findings nor a standard metric to convey level of concern, we had to infer their meaning from such terms as *benign* or *normal*. Mammography readings also were not standardized until the introduction of the Breast Imaging Reporting and Data System (44–46). Perhaps clinical examiners should also develop a standardized system to classify their findings on breast examinations.

Breast symptoms are a common and clinically important problem in primary care practices and result in substantial breast cancer detection. Our data support the vigorous evaluation of any woman older than 40 years of age who presents in a primary care setting with symptoms referable to the breast.

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