

Access and Barriers to Mammography in New England Community Health Centers

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BACKGROUND. Historically, screening measures for poor patients have been underemployed. As a result, diagnosis of breast cancer is more likely made at later stages in underserved and minority populations. Regular care in community health centers (CHCs) can mitigate this screening inequity. The purpose of this study was to determine the barriers to and frequency of breast cancer screening in New England CHC women, and to compare our findings with the *Healthy People 2000* goal of screening 60% of women aged 50 years and older with mammography every 2 years.

METHODS. A consecutive series survey of 3176 women aged 40 years and older was performed between April 1 and August 31, 1995, at 32 CHCs in six states.

RESULTS. Completed questionnaires were returned on 2943 patients, including 200 African-American, 2222 white, 370 Hispanic, and 56 Asian women; 932 (32%) were aged 40 to 49 years, and 2011 (68%) were aged 50 and older. Within the preceding 2 years, 2072 (70%) had had a breast examination by a provider. Eighty-seven percent reported that mammography was recommended. More women aged 50 years and older (55%) had had mammography during the last 2 years than women in the 40- to 49-year-old group (45%) ($P < .004$). The most common reason for not having a mammogram was that the patient thought "the test was not important"; expense and lack of insurance was second. Hispanics had the lowest rates of mammography.

CONCLUSIONS. Progress is being made toward *Healthy People 2000* goals in New England CHC women. Despite low income status, 55% of women aged ≥ 50 years had had mammograms within the past 2 years. Once cost is removed as the greatest barrier, improving patient acceptance promises the largest increase in the use of mammography screening.

KEY WORDS. Mammography; minority groups; community health centers; preventive health services; support, US Gov't, PHS; United States Agency for Health Care Policy and Research. (*J Fam Pract* 1997; 45:243-249)

Approximately 1 of 8 women in the United States will develop breast cancer in her lifetime,¹ a prevalence that led to an estimated 46,000 deaths in 1995.² Mortality from breast cancer is strongly influenced by stage of detection, and increases with age. Early diagnosis improves the chance of survival significantly. When the cancer is localized, 93% of those diagnosed reach the 5-year survival mark.³ Of the three most common methods of early detection, ie, clinical breast examination, mammog-

raphy, and breast self-examination, mammography is the most effective, yet compliance rates for screening mammography are historically low.³

Previous research shows conflicting evidence on the degree of compliance with mammography between age and racial/ethnic subgroups. Although one investigator detected no significant differences in mammography use by age in women cared for in a community health center (CHC),⁴ racial/ethnic differences have been studied with worrisome results. Three recent national studies have shown a 5% to 10% discrepancy in mammography rates between African-American and white women, and an even greater disparity detected for Hispanic women.⁵ Breast cancer in African-American and Hispanic⁶ women has been diagnosed at a considerably later stage than in white women, resulting in lower sur-

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vival rates.^{7,8} Socioeconomic status has been implicated as a factor in mammography utilization,^{7,9} and minority status may be a surrogate marker for poverty. Cost, patient education, and access have been found to be barriers to mammography screening. Past studies have shown that a physician's recommendation is the strongest incentive for mammography and cost the greatest deterrent factor,^{10,11} particularly among lower income groups.^{7,9,12}

Our study sought to answer the following questions about breast cancer screening in New England CHCs: (1) Are women 40 years of age and older receiving breast examinations? (2) Are health center providers recommending mammography for women aged 40 years and older? (3) Are women aged 40 years and older obtaining mammograms? (4) What are the barriers to mammography access? and (5) Are there racial/ethnic differences in utilization of mammography services in the New England CHC population? Last, we compared our mammography utilization with the *Healthy People 2000* goals to measure progress in breast cancer screening in New England CHCs.

METHODS

This study of mammography access and barriers was performed by the New England Community Health Centers Association (NECHCA) Clinical Research Network. NECHCA is a regional primary care association, bringing together 5 state associations serving a population of nearly 2 million at 150 sites. Under the supervision of a research advisory committee composed of CHC medical directors, it continued a 1994 pilot project that investigated provider recommendation and mammography rates and feasibility of CHCs as sites for practice-based research. Routine internal review board approval was obtained where necessary.

SUBJECTS

Sampling for this study was accomplished in two steps: (1) selection of study sites (participating CHCs), and (2) invitations to participate to all women aged 40 years and over who visited the participating CHC during the study period. Women who refused or were too ill to participate were tracked by recording demographic information from the patient's record onto data collection sheets (used for participants and nonparticipants) and marking the

reason for nonparticipation.

Step 1: After the results of the 1994 pilot project had been distributed to NECHCA sites, all CHCs in the NECHCA system were invited to participate in a more extensive study. The CHCs were solicited through a direct mailing and personal call to their medical directors. Thirty-three health centers agreed to participate; one dropped out.

Step 2: The participating CHCs were asked to collect data for at least 1 month from all women patients aged 40 years and over who visited their centers for routine and acute care visits. Because of staffing shortages and other difficulties with resources inherent in CHCs, the months when site participation was possible varied. We permitted the individual CHC to determine the dates of participation (between April 1 and August 31, 1995) according to its ability to allocate resources to the project. At each site, consecutive patients were sampled over an average of 7 weeks.

SURVEY INSTRUMENT

A breast cancer screening questionnaire was field tested at five community health centers and revised. The questionnaire was administered orally by a medical assistant, nurse, or medical provider at the time of a routine or sick visit. Persons who did not speak English were interviewed in their native language when possible. Data were obtained anonymously. Data were tabulated using Epi Info software (Epi Info Version 6, USD Incorporated, Stone Mountain, Ga). Differences between groups were evaluated with the chi-square test.

RESULTS

SAMPLE CHARACTERISTICS

A total of 3176 questionnaires were collected from 32 health centers. Participating study sites were located in urban (n=15), rural (n=12), and suburban (n=5) areas with representation from each of the six New England states.

Demographic characteristics of the study sample are found in Table 1. Subjects were a consecutive series of patients from each of the participating CHCs. Of the collected questionnaires, 151 were returned as "not able to be completed": in 64 cases the clinic was too busy; 39 patients refused to participate; 36 patients were "too sick" to answer the questionnaire; and another 13 persons could not par-

TABLE 1

Demographic Characteristics of Study Participants (N=2943)

Characteristic	Respondents, No. (%)
Age	
40-49	932 (32)
50+	2011 (68)
Race/ethnicity*	
African-American	200 (7)
White	2222 (76)
Hispanic	370 (13)
Asian	56 (2)
Other	27 (1)

*Of the 2943 respondents, 68 did not answer the question concerning race/ethnicity. The percentages therefore are based on a total of 2875 responses.

NOTE: The questionnaire was given in a language other than English with the following frequency: Spanish 330 times, Vietnamese 23, Creole 14, Cantonese 13, Portuguese 9, French 4 times, and once each in American sign language and Cambodian (translated on-site by native-speaking medical assistants).

ticipate because of the lack of a translator. Thus, the participation rate of all female patients aged 40 years and older who attended the health center clinics during the data collection period was 95%. An additional 82 questionnaires were returned without date of birth and were therefore not included in the calculations.

We acknowledge that a small percentage of error is possible as a result of a few centers' reporting that some patients were overlooked during times of staffing shortages; it is also possible that refusals were omitted at the seven centers that reported 100% participation. To address the possibility that an unequal length of sampling time might have introduced a bias into our data, we performed an analysis of the top one third of sites (as determined by length of time data were collected during the 5-month study period) compared with the lowest one third of the sites. When these groups were compared (using chi-square determinations), no significant differences were found for the following variables: race/ethnicity, age, breast examination in the past 2 years, provider recommendation for mammog-

raphy, or having a mammogram during the preceding 2 years.

There were no associations between race/ethnicity and refusals. Translation problems (n=13) were found only with Asian and Hispanic patients. The questionnaire was administered in languages other than English 395 times. Thirty-four percent of the questionnaires were completed by a medical assistant, 26% by a registered nurse, 24% by a licensed practical nurse. Eight percent were administered by providers, ie, nurse practitioners, physicians, and physician assistants; community health workers, patient educators, and medical students participated in data collection as well. It took an average of 5 minutes to administer the questionnaire.

Frequency of breast examination, provider recommendation, and mammograms. Of the 2943 respondents recorded, 107 reported never having had a breast examination by a medical professional, and 264 could not remember their last examination; 2072 (70%) reported having had one within the last 2 years. Date of the last breast examination did not vary by age (Table 2).

Two thousand five hundred sixty (87%) of the respondents reported that their health care provider had recommended a mammogram. Of these, 1729 (67%) said they had complied. Of the 383 respondents who had not had a mammogram recommended, 183 (48%) indicated they would like to have one done.

Of the total of all respondents, 1512 (51%) reported having a mammogram within the last 2 years, and 1959 (66%) indicated that they had had one at some time earlier. Additional tests had been recommended for 271 (14%) of those 1959 women because of mam-

TABLE 2

Most Recent Breast Examination, by Age

	Aged 40-49 Years (n=932) No. (%)	Aged ≥50 Years (n=2011) No. (%)	Total
Last breast examination*			
Within past 2 years	665 (71)	1407 (70)	2072
>2 years	154 (17)	276 (14)	430
Lifetime prevalence	819 (88)	1683 (84)	2502

*107 persons never had a breast examination, 264 could not remember their last examination date.

mogram results. Seventeen (6%) of those for whom further testing was recommended reported that they did not follow up.

As indicated in Table 3, the date of the most recent mammogram did vary by age; 45% of the women between the ages of 40 and 49 reported having had one within the last 2 years, as compared with 55% of those aged 50 years and older ($P < .004$). Of the 508 women reporting a history of breast cancer in a first-degree relative, the 2-year mammography rate was 59% compared with 51% of the entire study group ($P < .01$). We did not find a significant difference between the various racial/ethnic groups in the 2-year mammography rate of women who reported a first-degree relative with breast cancer.

Barriers to mammography. Of survey respondents, 470 indicated that they either did not wish to have a mammogram or did not have one done after it was recommended to them. Of these 470, 454

women provided one or more reasons for not having a mammogram, as indicated in Table 4. The most frequently cited reasons were "not important" (35%) and "too expensive, or no insurance" (23%).

Utilization of mammography by racial/ethnic grouping. In comparing racial/ethnic groups for utilization of mammography services in the NECHCA network, the following was noted: Of the 200 African-American women sampled, 130 (65%) had had a mammogram at some time, and 107 (54%) had one during the previous 2 years; of the 2222 white women studied, 1522 (68%) had had a mammogram at some time, 1151 (52%) within 2 years; and of the 370 Hispanic patients, 206 (56%) had had a mammogram at some time, 173 (47%) within 2 years. No significant difference was found for frequency of mammography by racial/ethnic groups or when the 40-to-49 and 50-and-over age subgroups within each racial/ethnic group were compared.

TABLE 3

Most Recent Mammogram, by Racial/Ethnic Group and Age

Racial/Ethnic Group and Age	No. (%) of Women Who Ever Had a Mammogram	No. (%) of Women Who Had a Mammogram in:	
		<2 years	> 2 years
African American, n = 200			
Total	130 (65)*	107 (54)	23 (12)
40-49 (n=81)	52 (64)†	43 (53)	9 (11)
>50 (n=119)	78 (66)‡	64 (54)	14 (12)
White, n=2222			
Total	1522 (68)*	1151 (52)	371 (17)
40-49 (n=625)	396 (63)†	275 (44)	121 (19)
>50 (n=1597)	1126 (71)‡	876 (55)	250 (16)
Hispanic, n=370			
Total	206 (56)*	173 (47)	33 (9)
40-49 (n=159)	81 (51)†	66 (42)	15 (9)
>50 (n=211)	125 (59)‡	107 (51)	18 (9)
All groups, n=2943			
Total	1959 (66)	1512 (51)	447 (15)
40-49 (n=932)	570 (61)	415 (45)‡	155 (17)
>50 (n=2011)	1389 (69)	1097 (55)‡	292 (15)

*Percentage of ethnic group.

†Percentage of age group within ethnic group.

‡The difference between mammography rates of women aged 40 to 49 years vs women aged >50 years is significant at $P < .004$ level.

DISCUSSION

This study attempted to delineate the prevalence of breast cancer screening and assess barriers to mammography in New England community health centers. To obtain a large sample in a system new to research and with limited resources, we chose to use a short questionnaire administered by health center clinic staffs. Previous studies¹³⁻¹⁵ indicate good reliability of self-reports for mammography (including CHC women).

Two factors that would positively influence the rate of mammography at participating centers were investigated, revealing the following: (1) no participating site received funding for mammography from the Breast and Cervical Health Program of the Centers for Disease Control at or before the time of the study; and (2) primary care by gynecologists was no more or less available at participating sites. Thus, the bias of different specialists' use of mammography

is unlikely.

Because of time constraints at the clinical sites, we did not determine income or insurance status of our subjects. Our assumption was that their financial status was representative of health center patients as described below.

Demographic comparisons. CHCs have provided primary and preventive health care services to underserved populations for nearly 30 years. The country's 822 health centers serve approximately 9 million people whose demographic characteristics vary greatly from those of the general population. In particular, 42.7% of all CHC patients are considered uninsured, compared with 13.4% of the general public.¹⁶ Nearly 43% are recipients of public insurance, roughly twice that of the US population (23.4%).¹⁶ In addition, over 60% of health center patients are members of minority groups, 2.5 times that of the American population (24%).¹⁶

The socioeconomic status of New England CHC patients and those in other regions is similar, but the ethnic characteristics of New England CHC patients and our sample population vary from those of the typical CHC clientele. National CHC demographics show 29% African-American, 38% white, and 28% Hispanic patients.¹⁶ The New England US Public Health Service Region 1 proportions are: 15% African-American, 48% white, and 29% Hispanic (user data form, US Bureau of Primary Health Care Region 1). Our sample consisting of 7% African-American, 76% white, and 13% Hispanic women differs from these proportions because of the ethnic composition of participating centers. Hispanic and African-American patients are underrepresented in our sample because of self-selection by the participating study sites. Thus, while the ethnic proportions in our series are closer to those in New England CHCs than the national CHC ethnic distribution, the predominance of white subjects in this New England sample makes generalization of our findings to other ethnic CHC groups problematic.

Comparison with national guidelines. The US Preventive Services Task Force recommends mammography screening for women under the age of 50 only when a family history of breast cancer exists, or if indicated by patient preference; otherwise annual or biannual screening begins at age 50 years and concludes at age 69.¹⁷ The American Academy of Family Physicians concurs.¹⁸ The American Cancer Society,

TABLE 4

Reasons Given by 454 Women for Not Having a Mammogram

Reason Provided*	No. (%)
Not important†	161 (35)
Too expensive, or no insurance	106 (23)
It hurts	38 (8)
Fear of what test might show	31 (7)
Transportation problems	24 (5)
Heard they are dangerous	20 (4)
Hours for appointment are inconvenient	19 (4)
Too busy, no time	7 (2)
Too old	10 (2)
No translator at site	2 (>1)
Child care problems	4 (>1)
Other‡	96 (18)

*Women gave one or more reasons.

†Includes: Don't need it, 17; don't want it, 21.

‡Includes: Will schedule, 21; no reason, 15; forgot, procrastinated, 9; not recommended, 8; moved/moving, 7; ill, 6; appointment not made for me, 6; family, work, personal problems, 6; feel fine/asymptomatic, 3; not effective, don't trust, 3; want information from physicians 3; wouldn't treat if problem found, 2; physical examination enough, 2; embarrassed, 2; mixed single other responses, 3.

NOTE: Five additional patients were ineligible for mammography, having had a bilateral mastectomy prior to the survey.

American College of Radiology, American Medical Association, and American College of Obstetricians and Gynecologists recommend screening with mammography every 1 to 2 years and annual clinical breast examinations beginning at the age of 40, and annual mammography and clinical breast examination beginning at age 50.¹⁷ No upper age limits are specified.

The *Healthy People 2000* goal is that, by year 2000, 60% of women aged 50 years and older receive a mammogram every 2 years.¹⁹ It is estimated that breast cancer death rates could be reduced 30% with regular screening among women in this age group.¹⁹⁻²² Yet in 1987, only 25% of such women had had a mammogram and clinical breast examination within the preceding 2 years.¹⁹ The 1990 National Health Interview Survey of Health Promotion and Disease Prevention (NHIS) sampled 9000 women between the ages of 40 and 75 years:²³ 51% of those women whose usual source of care was a health center or emergency department had had a mammogram at some time. Of the entire group, 58% had ever had a mammogram, and 50% reported having a mammogram within the past 2 years. The increasing

secular trend continues in the CHC and US populations.^{24,25} The 1992 NHIS showed that 67% of US women had had a mammogram at some time.²⁶ Our group's mammography rate compares favorably with earlier reports of US (all races, ethnicities, and socioeconomic strata) and health center patients. However, because our sample consists of clinic visitors rather than all registered patients, we may be overestimating the mammography rate of the CHC population in general. Nevertheless, visiting patients of CHCs compare favorably with the above groups.

Utilization by age and race/ethnicity. Contrary to previous reports in which older women were less likely than younger women to have mammography, in our study of CHC patients, 44% of patients between the ages of 40 and 49 years and 55% of those aged 50 years and older had had mammography during the preceding 2 years (Table 2). The finding that Hispanic patients had the lowest rates of mammography (Table 3) is consistent with previous reports.^{5,27} English language skills or preference is the dimension of acculturation most strongly associated with mammography screening for Hispanic women in the United States²⁸; 330 of 370 Hispanic women in our study were interviewed in Spanish, indicating that only a minority had acquired this feature of acculturation. Providing translator services alone is not enough to maximize screening.

Our finding that, by percentage, African Americans were the ethnic group with the greatest frequency of recent mammography may represent a hopeful note. The size of African-American and Hispanic samples, 200 and 370 patients, respectively, prevents drawing conclusions until further measures of breast cancer screening in the CHC population can be made.

Barriers to mammography and suggested remedies. Obstacles were determined from the responses of the women who did not have or did not wish to have a mammogram. Cognitive reasons, ie, the perception that mammography was not important, was something to be feared, and was suspected of having associated risks, led the list of barriers. In our economically disadvantaged population, where a majority of patients have mammography costs covered by insurance, health care decisions are influenced by an educational deficit. Expense and lack of insurance is not the most prevalent barrier to mammography. Rather, thinking the test is not important (including "don't need it" and "don't want it") is the most com-

mon reason for declining a mammogram. Lane and Burg,⁴ in an earlier study of mammography in Suffolk County (NY) health centers, reported similarly that patients' perception that a mammogram "was not necessary" was the most common reason for not having one. A significant portion of health center patients have not yet accepted the necessity of screening mammography. This finding has implications for populations other than those of CHCs. As increasing numbers of patients move into managed care health insurance, cost, the greatest historical barrier, will be superseded by acceptance of mammography. Thus, managed care providers will have the greatest impact on screening mammography rates by making the benefits clear to their patients.

The first step in removing barriers to mammography, therefore, is to increase provider recommendation to 100% of eligible women by utilizing every available contact. In our study, 67% of the women to whom providers recommended the procedure had it done. Additionally, providing the opportunity for age-selected women to have a mammogram without physician referral needs serious consideration. We found that 48% of women who did not have mammography recommended to them reported that they would like to have one done.

Access, including cost, nevertheless remains the second most prevalent barrier to universal mammography in CHCs. Despite Medicaid and Medicare insurance coverage of screening mammograms for poor persons and women over 65, not all patients are insured, and even a co-payment may discourage mammography utilization.²⁹ Universal insurance coverage of screening would mitigate this problem, and providing mammography at a reduced rate and making free health care services available and known to patients without insurance should help. Other access barriers, such as transportation problems, inconvenient hours, child care problems, and the need for a translator, continue to be present, but are reported less than one third as frequently as "not important."

This study in New England CHCs reveals progress toward *Healthy People 2000* screening goals. In this population the perception that mammography is not important has replaced cost as the greatest barrier. Thus, while provider recommendation and access issues continue to require attention, increasing patient acceptance through education promises the greatest improvement in screening mammography rates.

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