

## BRIEF REPORT

## Self-Referral for Screening Mammography

Lisa Gale Suter, MD, Joann G. Elmore, MD, MPH

**Patients can obtain screening mammograms without a physician's referral, leading to potential problems in clinical care. Because of the complexity of self-referral and the limitations of prior studies, we examined this phenomenon in a representative sample of mammography facilities. A questionnaire was given to all women obtaining mammograms at nine Connecticut mammography facilities during a 2-week period. Facilities included mobile sites, urban fixed sites, and rural fixed sites. Responses were categorized according to whether or not the woman had seen a primary care provider within the last year and whether or not she had received a recommendation to obtain a mammogram. The response rate was 62% (732 of 1,189), and the mean age of respondents was 58 years (range, 30–100 years). Self-referred women, defined as those without a recent visit to a primary care clinician and without a clinician's recommendation for a mammogram, constituted 6% of respondents. Self-referred women were significantly more likely to use mobile facilities (78% vs 33%,  $p < .01$ ) and be under 50 years of age (44% vs 28%,  $p = .02$ ) compared with provider-referred women who had recently seen their provider. We conclude that younger women are obtaining screening mammograms without clear evidence of having seen their primary care provider in the previous year or having received a referral from their provider. Self-referral is especially common at mobile mammography facilities. Further study is needed to assess the clinical impact of self-referral on mass screening programs.**

**KEY WORDS:** mammography; self-referral; mobile screening facilities.

J GEN INTERN MED 1998;13:710–713.

Current Food and Drug Administration (FDA) mammography facility accreditation does not require that a woman present a formal physician's referral, or even a referring physician's name, to obtain a screening mammo-

gram.<sup>1</sup> Women can thus refer themselves for mammograms, which may lead to clinical problems. For example, self-referred women may be falsely reassured by a "normal" mammogram reading and hesitate or delay in contacting a physician if they subsequently notice a breast lump.<sup>2</sup> This is important as up to 30% of women with breast cancer have no evidence of mammographic abnormalities.<sup>3</sup> Conversely, women with abnormalities noted on mammograms are often anxious about their workup, and some do not comply with follow-up recommendations.<sup>4</sup> Primary care providers, who can decrease anxiety caused by abnormal mammogram results and improve compliance with follow-up recommendations,<sup>5,6</sup> may not be available to help the self-referred woman.

Performing mammography in mobile facilities (i.e., mobile vans) has been advocated as one method of increasing breast cancer screening rates in the community, especially among underserved groups.<sup>7</sup> Mobile facilities often encourage self-referred women to obtain screening. A recent survey found that 42% of mobile facilities accept self-referred women.<sup>8</sup> These facilities provide screening at reduced cost and with more convenient appointment times and locations than fixed-site facilities.<sup>7</sup> Trained technicians supervise screening, as radiologists are usually not present. Films are read within a few days, and the women are contacted by either mail or telephone if they need further evaluation. The fact that compliance with follow-up recommendations at mobile facilities has been shown to be lower than that at fixed sites is a concern.<sup>9</sup>

Unfortunately, the phenomenon of self-referral for screening mammography is poorly understood. Previous studies have not defined self-referral by whether the woman is seen regularly by a primary care clinician; rather, most studies have used limited definitions of self-referral.<sup>10–12</sup> These studies have also examined data from before 1990 or data from a single facility. We sought to examine the phenomenon of self-referral for screening mammograms. Our study hypotheses were that women self-refer for screening mammograms in the general community and that self-referral is more common at mobile facilities than at fixed sites.

### METHODS

A self-report questionnaire was distributed to consecutive women obtaining mammograms at nine mammography facilities during a 2-week study period in September

---

Received from Yale University School of Medicine, New Haven, Conn. (LGS), and Departments of Internal Medicine and Epidemiology, University of Washington School of Medicine, Seattle (JGE).

This work partially fulfills the graduation requirements for the medical degree at Yale University School of Medicine (LGS) and was presented, in part, at the national meeting of the Society of General Internal Medicine, 1997.

Address correspondence and reprint requests to Dr. Elmore: Department of Medicine, University of Washington School of Medicine, 1959 NE Pacific St., Rm. BB527E, Box 356429, Seattle, WA 98195-6429.

1995. All FDA-accredited mammography facilities in Connecticut with a minimum volume of 50 mammograms per week were eligible; nine facilities were selected in a stratified, random manner from the following categories: *mobile facilities* ( $n = 3$ ), which are equipped to provide mammograms on-site, often using mobile vans; *rural fixed-site facilities* ( $n = 3$ ), which are located in an area with 40% or greater rural population by 1990 U.S. National Census standards<sup>13</sup>, and *urban fixed-site facilities* ( $n = 3$ ), which are located in an area with less than 40% rural population.<sup>13</sup>

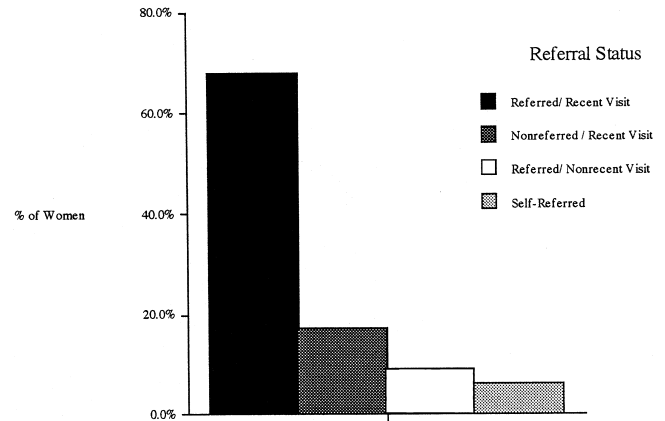
The questionnaire was developed by interviewing women visiting the Yale–New Haven Hospital Mammography Unit, Primary Care Center, and Comprehensive Cancer Center Mobile Mammography Van ( $n = 93$ ). The final 1-page survey (available on request) included 11 multiple-choice questions assessing age, reason for obtaining the mammogram, referral status, reason for choosing the mammography facility, insurance coverage, and out-of-pocket cost for the mammogram. Women were asked to complete the stamped, preaddressed survey at home and to return completed surveys via mail.

Screening mammograms were defined by a woman's self-report of the mammogram as "routine screening," while diagnostic mammograms were those obtained as follow-up to a prior breast abnormality or cancer, or those obtained for unknown reasons. Bivariate analyses were performed with two-tailed  $\chi^2$  probability testing, with statistical significance defined as  $p < .05$ , using SAS version 6.12 (SAS Institute, Cary, N.C., 1996).

Referral status was divided into four categories: (1) *referred/recent visit*, the woman reported referral by her primary care provider to have the mammogram, and she had seen the provider in the last year; (2) *nonreferred/recent visit*, the woman reported no referral from her primary care provider for a mammogram, but she had seen the provider in the last year; (3) *referred/nonrecent visit*, the woman reported a referral for the mammogram, but there was no visit with a provider in the last year; and (4) *self-referred*, the woman reported neither a referral for this mammogram nor a visit with a provider in the last year.

## RESULTS

A total of 1,189 surveys were distributed, and 732 (62%) completed responses were received. Response rates at facilities ranged from 26% to 83%. Of the 732 respondents, 646 (88%) had screening mammograms, and these are the focus of subsequent analysis. Respondents' mean age was 58 years (range, 30–100 years), 7% were under 40 years of age, and 23% were between 40 and 49 years of age. Mean age did not differ significantly by facility type. The majority of women (84%) reported some insurance coverage for their mammogram, while 8% reported no coverage, and 8% were uncertain. The referral status of the women receiving screening mammograms is shown in Figure 1, with 6% of women meeting our definition of self-referral.



**FIGURE 1.** Referral status (see Methods section for definitions) of 646 women receiving screening mammograms at nine mammography facilities in Connecticut during a 2-week period.

Self-referred women were more likely to use mobile mammography facilities, while referred/recent visit women were more likely to have used a fixed urban facility (Table 1). The percentages of respondents that were self-referred, by facility type, were 11.1% mobile vans, 3.2% rural fixed site, and 2.1% urban fixed site. Women without a provider's referral were more likely than their peers with a referral for mammography to be under the age of 40, regardless of when they had last seen their primary care provider (12% nonreferral/recent visit and 12% self-referred vs 5% referred/recent visit and 2% referred/nonrecent visit,  $p = .02$ ). There was no statistically significant difference between the four referral types with regards to reported insurance coverage for mammography. Self-referred women, however, were more likely than the other groups to pay nothing out of pocket for their mammogram (94% vs 75%, 84%, and 57%,  $p = .02$ ).

## DISCUSSION

This is the first study that we are aware of to examine self-referral for mammography in the broader clinical context of the primary care provider's active role in supervising and recommending the entire process of health care screening. Six percent of women met our strict definition of self-referral. These women were more likely to attend mobile facilities and be under the age of 50 than their peers with provider contact or referral. This self-referred population places responsibility on the radiologist, who de facto assumes the role of primary care provider, even at mobile facilities where a radiologist is frequently not on-site,<sup>14</sup> and where compliance with follow-up recommendations has been shown to be lower than at fixed sites.<sup>9</sup> These results suggest that more than 2 million U.S. women may be self-referring each year for mammograms without the supervision of a primary health care provider.

We did not gather information on the level of reassurance self-referred women gained following a "normal"

Table 1. Characteristics of Women Obtaining Screening Mammograms According to Referral Status\*

Characteristic	Number of Women (%)				p Value
	Referred/ Recent Visit	Nonreferred/ Recent Visit	Referred/ Nonrecent Visit	Self-Referred	
Facility type					
Mobile van	142 (33)	70 (67)	43 (72)	32 (78)	<.01
Rural fixed	128 (30)	16 (15)	8 (13)	5 (12)	
Urban fixed	162 (37)	19 (18)	9 (15)	4 (10)	
Age, years					
<40	23 (5)	13 (12)	1 (2)	5 (12)	.02
40–49	99 (23)	20 (19)	18 (30)	13 (32)	
≥50	310 (72)	72 (69)	41 (68)	23 (56)	
Insurance coverage for mammogram					
No	31 (7)	6 (6)	7 (12)	6 (15)	.45 <sup>†</sup>
Yes	356 (84)	88 (87)	47 (78)	32 (80)	
Unknown	38 (9)	7 (7)	6 (10)	2 (5)	
Out-of-pocket cost for mammogram					
No cost	225 (75)	68 (84)	25 (57)	34 (94)	.02 <sup>†</sup>
\$1–\$19	12 (4)	1 (1)	3 (7)	0 (0)	
\$20–\$99	49 (16)	8 (10)	13 (29)	2 (6)	
≥\$100	15 (5)	4 (5)	3 (7)	0 (0)	

\*Number of women who responded to the relevant survey questions out of a total of 646 surveys.

<sup>†</sup>Because the number of data points is limited,  $\chi^2$  may not be a valid test.

mammogram result, and therefore we cannot estimate the likelihood of potential diagnostic delays secondary to false reassurance. We also did not verify self-reported responses or assess breast cancer outcome by cross-examining medical records. Clearly, these are valuable areas for future research.

Reporting bias and misclassification are possible in any self-report questionnaire. The number and types of facilities involved in this study, including mobile vans and rural and urban fixed-site facilities, and the large sample size increase the generalizability of the findings and offset some of the potential reporting bias. The survey, by design, was kept short; thus it does not include questions on income or socioeconomic status. However, the survey does examine insurance coverage and out-of-pocket costs for mammography, which are perhaps more relevant indicators of financial status and its impact on screening behavior.

Steps have already been taken by radiologists to provide a safety net for self-referred women by implementing computerized record-keeping systems to minimize losses to follow-up and by developing physician-referral guidelines for women with abnormal findings.<sup>7,15</sup> Furthermore, mammography facilities are also now required to inform women of their results in “language easily understood by a lay person.”<sup>1</sup> Primary care clinicians should be aware of the phenomenon of self-referral for mammography and of the potential associated benefits as well as risks.

the Yale Cancer Center Etta S. Chidsey Award in Cancer Research and the Yale University School of Medicine Summer Research Grant. Dr. Elmore is funded by the Robert Wood Johnson Foundation Generalist Faculty Award.

## REFERENCES

1. Department of Health and Human Services FDA. 21 CFR Part 900 mammography facilities—requirements for accrediting bodies and quality standards and certification requirements: interim rules. Fed Reg. 1993;58:67557–72.
2. Feldman W. How serious are the adverse effects of screening? J Gen Intern Med. 1990;5(suppl):S50–3.
3. Joensuu H, Asola R, Holli K, Kumulainen E, Nikkanen V, Parvinen LM. Delayed diagnosis and large size of breast cancer after a false negative mammogram. Eur J Cancer. 1994;30A(9):1299–302.
4. Johnson M, Hislop T, Kan L, Coldman A, Lai A. Compliance with the screening mammography program of British Columbia: will she return? Can J Public Health. 1996;87(3):176–80.
5. Lerman C, Ross E, Boyce A, et al. Impact of mailing psychoeducational materials to women with abnormal mammograms. Am J Public Health. 1992;82:729–30.
6. Fine M, Rimer B, Watts M. Women's responses to the mammography experience. J Am Board Fam Pract. 1993;6:546–55.
7. Brown M, Finton L. US screening mammography services with mobile units: results from the National Survey of Mammography Facilities. Radiology. 1995;195:529–32.
8. DeBruhl N, Bassett L, Jessop N, Mason A. Mobile mammography: results of a national survey. Radiology. 1996;201:433–7.
9. Pisano E, Yankaskas B, Ghate S, Plankey M, Morgan J. Patient compliance in mobile screening mammography. Acad Radiol. 1995;2:1067–72.
10. Reynolds H, Jackson V. Self-referred mammography patients: analysis of patient's characteristics. AJR. 1991;157:481–4.
11. Hobbs P, Smith A, George W, Sellwood T. Acceptors and rejectors

The authors are grateful for the cooperation of the participating mammography facilities and for the financial support of

- of an invitation to undergo breast screening compared with those who referred themselves. *J Epidemiol Community Health*. 1980; 34:19-22.
12. Rubin E, Frank M, Stanley R, Bernreuter W, Han S. Patient-initiated mobile mammography: analysis of the patients and problems. *South Med J*. 1990;83(2):178-84.
13. Bureau of the Census. 1990 Census of Population: General Population Characteristics: Connecticut, Vol. 1-8. Washington, DC: US Department of Commerce ESA; 1992.
14. Spratt J, Spratt S. Legal perspectives on mammography and self-referral. *Cancer*. 1992;69(2):599-600.
15. Monsees B, Destouet JM, Evens RG. The self-referred mammography patient: a new responsibility for radiologists. *Radiology*. 1988; 166:69-70.



## REFLECTIONS

### Thoughts in Medical School

Numb pantomime of landscape, in which  
surgical steel traces  
taut skin, stretched  
over anesthetized muscle,  
over spongy and compact bone,  
I will submit as your apprentice.

As I relearn the body—  
a neuron cascade,  
ganglion running into ganglion  
through the fibers  
of the sympathetic nerves.  
I can explain why  
the mouth goes dry  
when you are nervous.

But don't let me forget  
how to feel!  
Like when he first  
reached for my hand,  
and our arms swung  
lightly locked  
just at the fingertips.

And help me  
to suture these two faces together—  
the one that takes air in  
filtered through  
a blue mesh mask,  
and the one that gasps  
on air, and holds  
its breath when crying.

beginning with a line from Maggie Anderson

LORA COLLIER  
*Oklahoma City, Okla.*