Published in final edited form as:

J Immigr Minor Health. 2014 June ; 16(3): 401–408. doi:10.1007/s10903-012-9771-7.

How do Breast Imaging Centers Communicate Results to Women with Limited English Proficiency and Other Barriers to Care?

Erin N. Marcus,

Division of General Internal Medicine and Sylvester Comprehensive Cancer Center, University of Miami Miller School of Medicine, 1611 NW 12th Ave., Suite 356, Miami, FL 33101, USA

Tulay Koru-Sengul,

Department of Epidemiology and Public Health and Sylvester Comprehensive Cancer Center, University of Miami Miller School of Medicine, 1120 14th St., Miami, FL 33136, USA

Feng Miao,

Sylvester Comprehensive Cancer Center, University of Miami Miller School of Medicine, 1120 14th St., Miami, FL 33136, USA

Monica Yepes, and

Department of Radiology, Sylvester Comprehensive Cancer Center, University of Miami Miller School of Medicine, 1120 14th St., Miami, FL 33136, USA

Lee Sanders

Center for Health Policy, Outcomes and Prevention and Department of Pediatrics, Stanford University, University of Miami Miller School of Medicine, 117 Encina Commons, Stanford, CA 94305, USA

Erin N. Marcus: emarcus@med.miami.edu

Abstract

Research suggests that women with Limited English Proficiency (LEP) and ethnic minority women are at increased risk of being inadequately informed of their mammogram result. The purpose of this study is to explore breast imaging centers' communication practices and assess how these centers accommodate women with low literacy and LEP. A 35-question survey was distributed to a national association of more than 700 breast health centers. Descriptive analysis of the overall sample and Fisher's exact or Chi squared testing to distinguish differences between subgroups were performed. Respondents from 206 centers completed questionnaires. 29 % of respondents stated that more than a quarter of their patients were black, 27 % of respondents stated that more than a quarter of their patients were Hispanic/Latina, and 13 % of respondents stated that more than a quarter of their patients had LEP. Overall, 18 % of respondents reported they do not routinely telephone patients with results, 15 % do not have multilingual staff or translators available to answer questions, and 69 % send result letters in English only. Of note, 69 % use patient navigators. Centers reported systemic strengths and barriers to clear communication of mammography results. Our findings are consistent with past investigations identifying a general

need to improve the communication of breast imaging results and suggesting that result notification letters alone are inadequate in ensuring that every woman understands her personal results and follow-up plan.

Keywords

Cancer screening; Mammography; Breast imaging; Breast cancer; Limited English proficiency; Minority health; Cancer disparities

Background

Good communication is important to enhance women's understanding of their mammogram result [1] and to boost patient satisfaction [2–7]. Poor communication, on the other hand, increases the likelihood that a woman will fail to follow-up appropriately after an abnormal mammogram test [1, 8–12], which in turn may increase her risk of delayed diagnosis. Inadequate follow-up disproportionately affects low-income and ethnic minority women [13, 14], as well as women with Limited English Proficiency (LEP) [15].

The 1998 Mammography Quality Standards Reauthorization Act (MQSRA) requires that breast imaging centers clearly notify all patients of their results in writing within 30 days [16]. Despite this legislation, research suggests that many women do not accurately understand these written notifications [17, 18]. Women with LEP and those who first receive their result by letter instead of in person or by phone are less likely to understand their mammography results [18]. Women of black race and those of Hispanic/Latina ethnicity, when compared with non-Hispanic white women, are also at increased risk of being less adequately informed about their result [6, 19]. Furthermore, research suggests that mammography result notification letters are written at levels too difficult for many patients to understand [20, 21]. This is particularly concerning because more than 1 in 3 US adults has limited health literacy [22], with prevalence rates that are higher in poor and ethnic minority communities [22, 23].

Prompt and clear communication of mammogram results may help reduce these disparities. Clear communication is also associated with more timely follow-up [1], and patient navigators or case managers have been shown to enhance follow-up rates and understanding of mammography results, particularly among at-risk communities [15, 24–26]. Additionally, prompt communication is associated with greater patient satisfaction [2–5]. In surveys of patients undergoing diagnostic and screening mammography, a majority of women expressed a preference for being notified immediately of their results by the radiologist [5, 27]. Women who reported receiving their result within 2 weeks, having easy access to someone who could answer questions, having results explained clearly, and not feeling anxious were more likely to report being more satisfied with how their results were communicated [2, 6].

This study's overall objective was to explore variations in communication practices in a large sample of breast imaging centers. We were interested in examining centers' verbal, written, and electronic protocols for communicating results to patients, and their procedures

for contacting patients who do not follow-up after an abnormal screening exam. A secondary goal of this study was to assess how centers accommodate women with low literacy and LEP. Because low health literacy is disproportionately high among low-income, ethnic minority, and Limited English Proficiency population [22, 23], we hypothesized that centers serving significant populations of these patients would be more likely to engage in practices that facilitate communication and follow-up, such as providing a telephone number for patients to call with questions and employing patient navigators and multilingual staff.

Methods

We created a 35-question survey, incorporating questions from the Survey of Mammography Facilities in Connecticut [28] and the Health Literacy Environment of Hospitals and Health Centers Assessment Tool [29]. The Survey of Mammography Facilities in Connecticut was conducted in 1994, with the goal of assessing variability in quality of mammography services in relation to the racial composition of the patients served. It included modified questions from the National Cancer Institute's 1992 National Survey of Mammography Facilities as well as questions regarding centers' patient education practices and their tracking of patient follow-up. The Health Literacy Environment of Hospitals and Health Centers Assessment Tool's purpose is to assess the literacy demands that hospitals, clinics, and other health facilities make on patients. Reducing literacy barriers has been recognized as an important component of quality improvement by the Institute of Medicine and the U.S. Agency for Health Care Research and Quality (AHRQ). The tool is listed on the U.S. Department of Education's Education Resources Information Center website (<http://www.eric.ed.gov/PDFS/ED508596.pdf>), as well as the AHRQ Innovations Exchange web site (<http://innovations.ahrq.gov/content.aspx?id=2106>). It includes questions about clinical settings' ease of navigation, use of print communication, modes of oral communication, use of technology, and policies and protocols for communicating with patients. It is available online at: <http://www.hsph.harvard.edu/healthliteracy/files/healthliteracyenvironment.pdf>.

The survey specifically asked about the following communication practices: how frequently centers notify patients in writing at the time of their mammogram; how often they inform patients verbally (in addition to the legally mandated written notification); whether they use case managers or patient navigators, and if so, whether these navigators can speak other languages; whether they provide women with a phone number to call with questions; and whether they offer callers the option of speaking with an operator or help desk. To elucidate practices conducive (or detrimental) to communication with LEP women, we asked whether the centers only sent notification letters in English; whether they had multilingual staff available to answer questions; and whether they offer callers the option to hear information or speak to a person in a language other than English. We also asked whether centers routinely (or rarely) telephone all patients about their results (though this question did not distinguish between studies conducted for diagnostic versus screening purposes) and further stratified this question by diagnostic severity (i.e., an incomplete study versus a highly suspicious result). The survey also asked how centers contact patients who do not return for diagnostic follow up after an abnormal mammogram, based on the severity of specific initial results.

The University of Miami Institutional Review Board granted our study an exemption from full board review, because the survey was about center practices and did not involve human subjects or individual patient health information. Prior to its distribution, the questionnaire was sent for comment to radiologists and administrators from four breast imaging centers in the community and in an academic setting.

Participants and Data Collection

Our sampling frame included all members of the National Consortium of Breast Centers, Inc. (NCBC), a national, nonprofit association of physicians, nurses, administrators, radiology technologists, and others involved in breast care (<http://www.breastcare.org/>). The NCBC was selected because it is a large national organization, with a leadership that was receptive to participating in our study. The NCBC has more than 2,000 members, representing 740 organizations involved in breast care services. Of these 740 breast health centers, 694 perform mammography. The others focus on other aspects of breast cancer diagnosis and treatment, or are breast cancer advocacy groups. The NCBC's membership thus includes approximately 8 % of the approximately 8,700 mammography facilities in the US [30]. Of the NCBC centers that perform mammography, 688 (99 %) offer both screening and diagnostic services. The survey was distributed online via listserv three times, as well in person as on all 4 days of the Consortium's annual meeting in March 2010. We specifically requested that the survey be completed by the one person at the center with the most knowledge about how mammogram results are communicated. SurveyMonkey, a free online survey questionnaire tool, was used to distribute and manage the survey online (www.surveymonkey.com). Respondents were asked to list their job title and center name and address in the survey. Survey responses were reviewed to ensure that only one survey was included from each center. If more than one survey was received from a center, the study team included the respondent with a stated position at the center most likely to represent front-line knowledge of the mammography notification process; duplicate responses were excluded. We arbitrarily decided on the following hierarchy for selection in such cases: medical director > center administrator > nurse > radiologic technologist. We also asked at the beginning of the survey whether the center performed mammography; all of the respondents indicated that their centers did so.

Measures and Analysis

Either Fisher's exact or Chi squared tests for proportions were performed to test for possible associations between key characteristics and subgroups. SAS version 9.2 for Windows was used for statistical analysis. Type-I error rate for hypothesis testing procedures was set to 5 %.

We were specifically interested in evaluating associations between the use of different communication practices and each of the following center characteristics: a substantial LEP patient population; a substantial low-income patient population; a substantial black patient population; and a substantial Hispanic/Latina patient population. We asked each respondent to quantify the proportion of their patient population in different ethnic and socio-economic categories based on a quartile system. (For example, 25 % or less, 26–50 percent, 51–75 %, and greater than 75 percent). We defined "substantial" as 25 % or more of the center's

population. For example, we classified centers that responded that 25 % or more of their patients were LEP as having a “substantial” LEP population. If the respondent indicated that 25 % or more of the center’s patient population had Medicaid or no health insurance, then the center was considered as one that routinely served low-income women. We considered centers responding that 25 % or more of their patients were black to have a “substantial” black patient population, and centers responding that 25 % or more of their patients were Hispanic/Latina to have a “substantial” Hispanic/Latina population, and we conducted subgroup analyses to examine the responses of these specific centers.

Results

243 respondents from 228 mammography centers returned their questionnaires, yielding a response rate of 32.9 % (228/694). All respondents indicated that they were from centers that performed mammography. We excluded 15 respondents because they were from centers that submitted more than one response. Additionally, 22 centers (9.6 % = 22/228) were excluded from our final analysis dataset because their respondents answered fewer than 30 % of the survey questions. The analysis and the results included in our report thus include responses from 206 centers, or 30 % (206/694) of NCBC member centers.

Respondent and Center Characteristics

Table 1 shows the distribution of centers by respondent job category, regional and demographic characteristics. Administrators comprised 51.9 % (n = 107) of the respondents. The largest group of centers was in the East North Central region (n = 34, 16.5 %). Most centers were not academically affiliated (n = 183, 88.8 %). More than a quarter of centers reported serving a patient population that was 25 % black (59, 28.6 %). More than a quarter of centers reported serving a patient population that was >25 % Hispanic/Latina (56, 27.2 %). The majority of centers reported that fewer than 25 % of their patients had LEP (n = 180, 87.4 %). More than 4 out of 5 reported participating in programs designed to increase screening among low-income women, but only 1 out of 5 reported that 25 % or more of their patients had Medicaid or no health insurance (44, 21.4 %). Slightly less than half (n = 92, 44.7 %) of our sample reported performing more than 1,000 mammograms per month.

Communication Practices

Table 2 displays a summary of overall sample responses to questions regarding whether centers notify patients immediately, whether they inform patients verbally (in addition to the legally mandated written notification), whether they use patient navigators, whether they provide women with a phone number to call with questions, and whether they offer callers to option of speaking with an operator or help desk. Key findings were that more than 2 out of 3 reported sending result notification letters solely in English, and not in other languages. Approximately 1 in 5 indicated that they always inform patients of results verbally, at the time of the appointment, while more than 1 in 10 indicated that they rarely or never inform patients of results in such a way. Table 3 displays responses regarding how centers contact patients about results, based on diagnostic severity. The question did not distinguish between diagnostic versus screening results.

Table 4 displays respondents' answers to the survey's questions regarding what centers do when a woman with an abnormal mammogram does not return for her diagnostic follow-up study. Many respondents also noted in the comments that the centers also contact the patient's primary care physician or surgeon (n = 88) and/or send a certified letter to the patient (n = 44).

Accommodations for Limited English Proficiency Patients

A majority of respondents (n = 175, 85 %) indicated that their centers have multilingual staff or medical interpreters available to answer questions. A minority (n = 81, 39.3 %) indicated that their center telephone lines offer callers the option to speak to someone or hear information in a language other than English. A minority (n = 62, 30.1 %) indicated that their centers mail result notification letters to patients in other languages, in addition to English. Fewer than 1 in 5 respondents (n = 39, 18.9 %) indicated that their centers used navigators or case managers with fluency in languages other than English.

Subgroup Analyses

We performed subgroup analyses to explore differences in communication characteristics by the following center characteristics: income/payor mix (i.e., 25 % of population uninsured or publicly insured); language diversity (i.e., 25 % of population with LEP); racial/ethnic minority status (i.e., serving a patient population that was a quarter or more Black/African-American or serving a patient population that was a quarter or more Hispanic/Latina).

Subset of Centers with a "Substantial" Low-Income Population

There were 44 centers serving a population in which 25 % or more had Medicaid or no insurance. These centers were more likely than centers with lower proportions of Medicaid and uninsured patients to report offering callers the option of speaking with a person in a language other than English (57.5 vs. 37.9 %, $p = 0.036$), but did not differ significantly from other centers in their other communication practices (all $p > 0.05$). A higher proportion of these centers reported that they also send result notification letters in languages other than English, but our analysis of this variable did not reach statistical significance (43.2 vs. 27.6 %, $p = 0.0657$).

Subset of Centers with a "Substantial" Limited English Proficiency Population

There were 26 centers that reported serving a population in which more than 25 % or more of patients had LEP. These centers were more likely than centers serving a lower proportion of LEP patients to send letters in a variety of languages other than English (50 vs. 26.3 %, $p = 0.0136$). They were also more likely to offer callers the option of hearing information or speaking to a person in a language other than English (83.3 vs. 36.9 %, $p < 0.0001$), to have multilingual staff or interpreters available to answer questions (100 vs. 85.7 %, $p = 0.0484$) and to employ multilingual case managers or patient navigators (60.9 vs. 18 %, $p < 0.0001$).

Subset of Centers with a "Substantial" Black Population

There were 59 centers that reported that their patient populations were more than a quarter black. These centers were more likely than centers serving a smaller proportion of black

patients to report providing a telephone number for women to call with questions about their mammogram results (98.2 vs. 86.4 %, $p = 0.0122$). A higher percentage of these centers reported that they routinely use case managers or patient navigators, but our analysis of this variable did not reach statistical significance (82.1 vs. 68 %, $p = 0.0545$).

Subset of Centers with a “Substantial” Hispanic/Latina Population

There were 56 centers that reported that their patient populations were more than a quarter Hispanic/Latina. These centers were significantly more likely than centers serving a lower proportion of Hispanic/Latinas to report sending letters in other languages in addition to English (46.4 vs. 24.8 %, $p = 0.0048$) and to offer callers the option of hearing information or speaking to a person in a language other than English (74.5 vs. 28.3 %, $p < 0.0001$). Otherwise, these centers did not differ significantly from other centers in their communication practices.

Discussion and Contribution to the Literature

While most centers reported communication approaches that enhance women’s understanding of their results, a concerning but not inconsequential minority of respondents reported practices that may present barriers to adequate follow-up care. These findings are consistent with past investigations identifying a general need to improve the communication of breast imaging results and suggesting that result notification letters alone are inadequate in ensuring that every woman understands her personal results and follow-up plan [18, 20, 21].

Practices that enhance understanding among patients of all literacy levels are important, given that approximately 17 percent of the US adult population—and a third of adults 65 and older—have “below basic” health literacy, i.e., an extremely limited ability to understand health information and navigate the health system without assistance[22]. Even though most people with low health literacy are white and US born (because they comprise the largest proportion of the population), low health literacy disproportionately affects African Americans and other ethnic minorities [22, 23], as well as people with low incomes [22]. It is therefore especially important that centers serving low income and ethnic minority patients employ practices that have been identified as conducive to follow up and accessibility for patients with low literacy, such as using patient navigators or case managers, offering callers the option to speak with an operator who can direct them to the correct person, and making sure patients have the center’s telephone number [24, 29, 31, 32]. Our overall finding that about 7 out of 10 respondents reported using navigators or case managers is therefore promising [15, 24, 33–36]. It should be noted, however, that the qualifications and responsibilities of a “navigator” or “case manager” vary widely. We did not inquire as to the training of the person serving in this role (such as a nurse, social worker, or lay worker). Nor did we ask about the circumstances when the navigator or case manager intervenes in care (such as for all patients with abnormal results, patients with highly suspicious results, or patients with biopsies indicating cancer).

Despite the broad use of navigators, fewer than 6 out of 10 respondents overall indicated that their centers offer callers the option to speak with a person. Giving callers an “operator

option” has been identified as a practice that is key to enhancing accessibility for patients who have difficulty understanding an automated system, and affects patients’ initial impressions of healthcare facilities [29].

To the best of our knowledge, this is the first study to examine the relationship between a center’s system for communication and its service characteristics. This is an important area of inquiry, since past literature has found that African American women are less likely than white women to report their mammogram result correctly when asked [19], as are Hispanic/Latina and Asian women with Limited English Proficiency [15, 18]. These groups are also at increased risk of failing to follow up in a timely way after an abnormal mammogram [13, 15], and they are less likely to have a regular primary care provider [44–46] who could also serve as a source of communication of results. Past studies have identified verbal communication of results [12, 18] as improving understanding and follow up in black African-American as well as LEP Hispanic/Latina and Asian populations. Patient navigators have been found to improve follow up among black African-Americans [31, 32], and multilingual patient navigators have been identified as improving follow up in LEP women [15].

It is important to note that we used a high cut-off (25 %) to identify centers as serving “substantial” LEP populations. We suspect that many more of the centers surveyed provide care for LEP patients, since many US residents with LEP now live in communities that traditionally have not have had significant immigrant populations [36]. A body of literature indicates that patients with LEP are more likely to report worse care than those who speak adequate English [37–39]. It is therefore concerning that a minority of *all* respondents—approximately 4 out of 10—reported offering callers the option to hear information or speak to a person in a language other than English, and that more than 2 out of 3 respondents overall reported sending patients result notification letters in English only.

Even among the subset of respondents from centers with a substantial (i.e., 25 % or higher) proportion of LEP patients, nearly half responded that they do not send result notification letters in languages other than English. Nonetheless, we were encouraged to find that all of the centers in this subset reported that they had an interpreter available. These centers were generally more likely than others to report communication practices that have been identified as facilitating understanding by LEP patients, such as offering callers the option of communicating in a language other than English, sending letters in languages other than English, and employing patient navigators or case managers with fluency in other languages [15, 40].

In addition to suggesting that women who receive their screening mammogram result in person or over the telephone are more likely to comprehend their result correctly than those who are solely notified in writing [18], past literature indicates that a majority of women prefer to be notified of their mammogram result at the time of the test, regardless of whether it was ordered for screening [5] or for diagnostic purposes [3]. Current Food and Drug Administration (FDA) guidelines do not specifically require that centers communicate results verbally, and do not address how best to communicate results to non-English speaking and populations in which low health literacy is common. Instead, the FDA requires

that centers notify patients in writing in a timely way (within 30 days in most cases, and sooner in the case of abnormal results), have a system for referring patients who lack a health care provider for additional care, and track their efforts to notify patients [41, 42]. The regulations thus leave it to centers to decide if they need to go beyond written notification when communicating results. Our findings, combined with results from other studies on knowledge and understanding of mammogram results, suggest that these rules may be inadequate for ensuring effective understanding of results by black, Hispanic/Latina, and LEP patients.

Our survey had several limitations. Selection bias is quite likely, given our sampling frame, procedure, and low response rate. We do not have detailed information about the centers that did not respond to our survey. We compared our sample of respondents to the overall population of NCBC-affiliated breast imaging centers by testing the homogeneity of the response rate over nine US geographical regional divisions, however, and did not find any statistically significant differences ($p = 0.3343$) (Table 1). Social desirability bias may have led respondents to overstate the positive components of their communication practices. A framing bias may also skew responses, since our survey did not distinguish between how centers communicate screening versus diagnostic mammogram results. This may be an important confounder, because radiologists are more likely to talk to individual patients after a diagnostic but not after a screening mammogram [43]. Future surveys should incorporate questions distinguishing between the communication of screening versus diagnostic results.

Despite these limitations, our findings, in combination with those of other studies, indicate a need for guidelines to address ways of improving communication of results to women who may have difficulty understanding results that are presented in a written format. While it is true that individual breast imaging centers vary greatly in their patient demographics, future policy efforts need to raise breast imaging centers' awareness of the language and literacy barriers that many women face in understanding their results. Guidelines should acknowledge the growing number of women with LEP and the widespread presence of low health literacy, and should encourage all centers to adopt linguistically appropriate and literacy-friendly practices to convey results.

Acknowledgments

Dr. Marcus receives grant support from the American Cancer Society (ACS CCCDA-09-216-01) and the Ford Foundation (1095-0885). The authors thank the following individuals for sharing their expertise and their invaluable assistance with the study: Marsha Stevens, Dorothy Parker, and the UMiami/Sylvester Comprehensive Cancer Center Disparities and Community Outreach Core; Dr. Beth Jones; Dr. Bernard Roos; Dr. Ada Patricia Romilly; Ms. Margaret Roelans; Dr. Barbara Rabinowitz; and members of the National Consortium of Breast Centers, Inc.

References

1. Kaplan CP, Crane LA, Stewart S, Juarez-Reyes M. Factors affecting follow-up among low-income women with breast abnormalities. *J Women's Health*. 2004; 13:195–206.
2. Dolan NC, Feinglass J, Priyath A, Haviley C, Sorensen AV, Venta LA. Measuring satisfaction with mammography results reporting. *J Gen Intern Med*. 2001; 16:157–162. [PubMed: 11318910]

3. Levin K, Brauening PM, O'Malley M, Pisano E, Barrett E, Earp J. Communicating results of diagnostic mammography: what do patients think?*. Acad Radiol. 2000; 7:1069–1076. [PubMed: 11131051]
4. Moy BB. Barriers to repeat mammography: cultural perspectives of African-American, Asian, and Hispanic women. Psychooncology (Chichester, England). 2006; 15:623–634.
5. Raza S, Rosen MP, Chorny K, Mehta TS, Hulka CA, Baum JK. Patient expectations and costs of immediate reporting of screening mammography: talk isn't cheap. AJR Am J Roentgenol. 2001; 177:579–583. [PubMed: 11517050]
6. Zapka JG. Processes of care in cervical and breast cancer screening and follow-up—the importance of communication. Prev Med. 2004; 39:81–90. [PubMed: 15207989]
7. Zapka JG. Print information to inform decisions about mammography screening participation in 16 countries with population- based programs. Patient Educ Couns. 2006; 63:126–137. [PubMed: 16962910]
8. McCarthy BD, Yood MU, Janz NK, Boohaker EA, Ward RE, Johnson CC. Evaluation of factors potentially associated with inadequate follow-up of mammographic abnormalities. Cancer. 1996; 77:2070–2076. [PubMed: 8640672]
9. Mojica CM, Bastani R, Ponce NA, Boscardin WJ. Latinas with abnormal breast findings: patient predictors of timely diagnostic resolution. J Women's Health. 2007; 16:1468–1477.
10. Poon EG, Haas JS, Puopolo A, et al. Communication factors in the follow-up of abnormal mammograms. J Gen Intern Med. 2004; 19:316–323. [PubMed: 15061740]
11. Yabroff KR, Breen N, Vernon SW, Meissner HI, Freedman AN, Ballard-Barbash R. What factors are associated with diagnostic follow-up after abnormal mammograms? Findings from a US National Survey. Cancer Epidemiol Biomarkers Prev. 2004; 13:723–732. [PubMed: 15159302]
12. Kerner JF, Yedidia M, Padgett D, et al. Realizing the promise of breast cancer screening: clinical follow-up after abnormal screening among black women. Prevent Med. 2003; 37:92–101.
13. Jones B, Dailey A, Calvocoressi L, et al. Inadequate follow-up of abnormal screening mammograms: findings from the race differences in screening mammography process study (United States). Cancer Causes Control. 2005; 16:809–821. [PubMed: 16132791]
14. Press R, Carrasquillo O, Sciacca R, Giardina E. Racial/ethnic disparities in time to follow-up after an abnormal mammogram. J Women's Health. 2008; 17:923–930.
15. Karliner LLS, Ma L, Hofmann M, Kerlikowske K. Language barriers, location of care, and delays in follow-up of abnormal mammograms. Med Care. 2012; 50:171–178. [PubMed: 21993060]
16. [Accessed 28 Feb 2012] Mammography quality standards reauthorization act US 105th Congress; US public law. 1998. p. 105-248. Available at: <http://www.gpo.gov/fdsys/pkg/PLAW-105publ248/html/PLAW-105publ248.htm>
17. Priyanth A, Feinglass J, Dolan NC, Haviley C, Venta LA. Patient satisfaction with the communication of mammographic results before and after the mammography quality standards reauthorization act of 1998. Am J Radiol. 2002; 178:451–456.
18. Karliner LS, Kaplan CP, Juarbe T, Pasick R, Perez-Stable EJ. Poor patient comprehension of abnormal mammography results. J Gen Intern Med. 2005; 20:432–437. [PubMed: 15963167]
19. Jones BA, Reams K, Calvocoressi L, Dailey A, Kasl SV, Liston NM. Adequacy of communicating results from screening mammograms to african-american and white women. Am J Public Health. 2007; 97:531–538. [PubMed: 17267723]
20. Marcus EN, DelToro Y, Pereyra M, Romilly AP, Velasquez V, Yepes M, Sanders L. Mammography result notification letters: can most women understand them? JGIM. 2009; 24(Suppl 1):S119.
21. Marcus EN, Sanders L, Pereyra M, DelToro Y, Romilly AP, Yepes M, Webb Hooper M, Jones BA. Mammography result letters: are they easy to read and understand? J Women's Health. 2011; 20:545–551.
22. Kutner, M.; Greenberg, E.; Jin, Y.; Paulsen, C. Institute of Education Science, National Center for Education Statistics. NCES; 2006. The health literacy of America's Adults: Results From the 2003 National Assessment of Adult Literacy; p. 483 Available at: <http://nces.ed.gov/pubs2006/2006483.pdf> [Accessed Feb 28 2012]

23. Shea J, Beers B, McDonald V, Quistberg D, Ravenell K, Asch D. Assessing health literacy in African American and caucasian adults: disparities in rapid estimate of adult literacy in medicine (REALM) scores. *Fam Med.* 2004; 36:575–581. [PubMed: 15343419]
24. Battaglia TA, Roloff K, Posner MA, Freund KM. Improving follow-up to abnormal breast cancer screening in an urban population. *Cancer.* 2007; 109:359–367. [PubMed: 17123275]
25. Ell K, Vourlekis B, Lee PJ, Xie B. Patient navigation and case management following an abnormal mammogram: a randomized clinical trial. *Prev Med.* 2007; 44:26–33. [PubMed: 16962652]
26. Palmieri FM, Deperi ER, Mincey BA, Smith JA, Wen LK, Chewar DM, Abaya R, Colon-Otero G, Perez EA. Comprehensive diagnostic program for medically underserved women with abnormal breast screening evaluations in an urban population. *Mayo Clin Proceed.* 2009; 84:317–322.
27. Lown BA, Roy E, Gorman P, Sasson JP. Women's and residents' experiences of communication in the diagnostic mammography suite. *Patient Educ Couns.* 2009; 77:328–337. [PubMed: 19819097]
28. Jones BA, Culler CS, Kasl SV. Is variation in the quality of mammographic services race linked? *J Health Care Poor Underserved.* 2001; 12:113–126. [PubMed: 11217224]
29. Rudd RE, Anderson JE. The health literacy environment of hospitals and health centers. 2006 Available at: <http://www.hsph.harvard.edu/healthliteracy/files/healthliteracyenvironment.pdf>.
30. US Government Accountability Office Report to Congressional Requesters. [Accessed 28 Feb 2012] Mammography: current nationwide capacity is adequate, but access problems may exist in certain locations. 2006; GAO-06-724. Available at: <http://www.gao.gov/new.items/d06724.pdf>
31. Phillips C, Rothstein J, Beaver K, Sherman BJ, Freund KM, Battaglia TA. Patient navigation to increase mammography screening among inner city women. *J Gen Intern Med.* 2011; 6:123–129. [PubMed: 20931294]
32. Wells KJ, Battaglia TA, Dudley DJ, et al. Patient navigation: state of the art or is it science? *Cancer.* 2008; 113:1999–2010. [PubMed: 18780320]
33. Zapka J, Taplin SH, Anhang Price R, Cranos C, Yabroff R. Factors in quality care—the case of follow-up to abnormal cancer screening tests—problems in the steps and interfaces of care. *JNCI Cancer Spectr.* 2010; 40:58–71.
34. Barton M, Morley DS, Moore S, Allen D, Kleinman KP, Emmons KM, Fletcher SW. Decreasing women's anxieties after abnormal mammograms: a controlled trial. *J Natl Cancer Inst.* 2004; 96:529–538. [PubMed: 15069115]
35. Lobb R, Allen JD, Emmons KM, Ayanian JZ. Timely care after an abnormal mammogram among low-income women in a public breast cancer screening program. *Arch Intern Med.* 2010; 170:521–528. [PubMed: 20233801]
36. Masi C, Blackman D, Peek M. Interventions to enhance breast cancer screening, diagnosis, and treatment among racial and ethnic minority women. *Med Care Res Rev.* 2007; 64:195S–242S. [PubMed: 17881627]
37. Baker DW, Hayes R, Fortier JP. Interpreter use and satisfaction with interpersonal aspects of care for Spanish-speaking patients. *Med Care.* 1998; 36:1461–1470. [PubMed: 9794340]
38. Ngo-Metzger Q, Sorkin DH, Phillips RS, Greenfield S, Massagli MP, Clarridge B, Kaplan SH. Providing high-quality care for limited English proficient patients: the importance of language concordance and interpreter use. *J Gen Intern Med.* 2007; 22:324–330. [PubMed: 17957419]
39. Weech-Maldonado R, Morales LS, Elliott M, Spritzer K, Marshall G, Hays RD. Race/ethnicity, language, and patients' assessments of care in medicaid managed care. *Health Ser Res.* 2003; 38:789–808.
40. Karliner L, Kim S, Meltzer D, et al. Influence of language barriers on outcomes of hospital care for general medicine inpatients. *J Hosp Med.* 2010; 5:276–282. [PubMed: 20533573]
41. US Department of Health and Human Services, Food and Drug Administration. [Accessed 28 Feb 2012] MQSA final guidance documents for industry, MQSA Inspectors and FDA Staff. Available at: <http://www.fda.gov/Radiation-EmittingProducts/MammographyQualityStandardsActandProgram/Guidance/ucm127070.htm> Page last updated 11/23/2010
42. US Department of Health and Human Services, Food and Drug Administration. [Accessed 28 Feb 2012] Radiation-Emitting Products. Communication of Results to Patients. MQSA Guidance: Communication of Results to Patients. Policy guidance help system page Updated

12/1/2010; Available at <http://www.fda.gov/Radiation-EmittingProducts/MammographyQualityStandardsActandProgram/Guidance/PolicyGuidanceHelpSystem/ucm052093.htm>

43. Carney PA. An assessment of the likelihood, frequency, and content of verbal communication between radiologists and women receiving screening and diagnostic mammography. *Acad Radiol.* 2009; 16:1056–1063. [PubMed: 19442539]
44. Collins, KC.; Hughes, DL.; Doty, MM.; Ives, BL.; Edwards, JN.; Tenney, K. Report: diverse communities, common concerns: assessing health care quality for minority Americans. New York: Commonwealth Fund; 2002.
45. DeVoe JE, Fryer GE, Phillips R, Green L. Receipt of preventive care among adults: insurance status and usual source of care. *Am J Public Health.* 2003; 93:786–791. [PubMed: 12721145]
46. Mayberry RM, Mili F, Ofili E. Racial and ethnic differences in access to medical care. *Med Care.* 2000; 37:108–145.

Table 1

Characteristics of survey respondents (n = 206)

	n	%
Job position of the person answering the questionnaire		
Medical director	18	8.7
Administrator	107	51.9
Radiologic technologist/technician	29	14.1
Navigator	27	13.1
Nurse	11	5.3
Other/unknown	14	6.8
Region (by US census regional subdivision)		
New England	18	8.7
Middle Atlantic	21	10.2
East North Central	34	16.5
West North Central	22	10.7
South Atlantic	33	16.0
East South Central	14	6.8
West South Central	14	6.8
Mountain	13	6.3
Pacific	31	15.0
Unknown	6	2.9
Academic affiliation	23	11.2
Perform 1,000 or more mammograms monthly	92	44.7
25 % or more of patients with Medicaid or no insurance	44	21.4
Participate in programs targeting low-income women	164	79.6
25 % or more of patients have limited English proficiency	26	12.6
25 % or more of patients are black	59	28.6
25 % or more of patients are Hispanic/Latina	56	27.2

Table 2

Communication practices in the overall respondent sample (n = 206)

	Yes	% of n
Notify women in writing at the time of their mammogram		
All/most of the time	99	48.1
Some of the time	26	12.6
Rarely/never/unknown	55	26.7
Notify women verbally at the time of their mammogram (in addition to providing her with a written result within 30 days)		
All/most of the time	41	19.9
Some of the time	114	55.3
Rarely/never/unknown	23	11.2
Only send notification letters in English	142	68.9
Have multilingual staff available to answer questions	175	85.0
Offer callers the option to hear info or speak to a person in a language other than English	81	39.3
Provide a phone number to call with questions about results	179	86.9
Offer callers the option of speaking with a person	117	56.8
Routinely use case manager or patient navigators	142	68.9
Use patient navigators who can speak other languages	39	18.9

Table 3

Center communication practices for specific results (n = 206)

	Yes	% of n
Telephone all patients about their result (in addition to mailing a letter)	15	7.3
Do not routinely telephone any patients about results (in addition to mailing a letter)	38	18.4
Routinely telephone if		
BI-RADS 0 (incomplete, requiring additional imaging or prior images)	122	59.2
BI-RADS 1 (negative for cancer)	0	0
BI-RADS 2 (benign findings)	2	1.0
BI-RADS 3 (probably benign, recommend short-term (typically 6-month) follow-up)	26	12.6
BI-RADS 4 (suspicious, consider biopsy)	63	30.6
BI-RADS 5 (highly suggestive of malignancy, requires biopsy)	61	29.6
BI-RADS 6 (known biopsy-proven malignancy)	34	16.5
Do not know	3	1.5

Table 4

Centers' reported communication practices for patients who do not return for their follow-up appointment (n = 206)

	Call	%	Send additional letter	%	Contact in some other way	%	None of these	%
BI-RADS 0	155	75.2	162	78.6	83	40.3	4	1.9
BI-RADS 3	73	35.4	153	74.3	58	28.2	9	4.4
BI-RADS 4	124	60.2	143	69.4	103	50.0	2	1.0
BI-RADS 5	120	58.3	138	67.0	102	49.5	3	1.5

Please see Table 3 for definition of different BI-RADS categories