Family Physicians Expedite Diagnosis of Breast Disease in Urban Minority Women

Jeanne M. Ferrante, MD, Susan Rovi, PhD, Kasturi Das, MD, and Steve Kim, MD

Background: **The specialty of a patient's usual provider of care is associated with use of mammography and stage of breast cancer diagnosis. It is unknown if specialty of usual provider of care affects time from discovery of a breast screening abnormality to diagnostic resolution.**

Methods: **Retrospective chart review study of 546 women who had breast biopsies at an urban public university hospital from 2001 to 2005. Time from abnormal mammogram or clinical breast examination to pathology report was compared by specialty of usual provider of care, sociodemographic, and clinical factors. Multivariate logistic regression was conducted to assess predictors of having diagnostic interval greater than 60 days.**

Results: **The median diagnostic interval was 36 days (interquartile range 21 to 63). After controlling for age, race, insurance, specialty of usual provider of care, employment status, and palpable lump, decreased odds of having diagnostic delay (over 60 days) included having a family physician (odds ratio (OR) 0.242; 95% confidence interval (CI), 0.09 to 0.69), private health insurance (OR 0.360; 95% CI, 0.15 to 0.89), and cancer diagnosis (OR 0.324; 95% CI, 0.17 to 0.61).**

Conclusions: **To improve timely follow-up of minority urban women with breast abnormalities, promoting development of a relationship with a family physician may be an important public health intervention. (J Am Board Fam Med 2007;20:52–9.)**

Both African-American women and Hispanic women are diagnosed with breast cancer at later stages than white women.[1,2] Later stage of breast cancer at diagnosis is associated with lower use of mammography[3–5] and delays in diagnosis after discovery of a breast abnormality.[6] Besides advanced disease stage and poorer survival,[7] delay in timely follow-up after an abnormal result is associated with considerable anxiety and emotional distress.[8–11] In addition, delay in diagnosis of breast

cancer is the most common cause of malpractice lawsuits against physicians in the United States.[12]

Although there is much literature on factors associated with use of mammography, less is known about the interval between an abnormal screening examination and definitive diagnosis (diagnostic interval). In studies conducted in the United States over the past decade, factors found to be associated with shorter diagnostic intervals include white race,[13–16] age <50,[17] having private or managed care insurance,[18,19] ease of access to health care[20] and surgical evaluation,[21] more severe mammogram abnormality,[14,22] better communication at time of mammogram,[22] inclusion of specific follow-up recommendations in the mammogram report,[17,18] higher patient anxiety,[20] and patients with a malignant outcome.[21]

Although specialty of a patient's usual provider of care is associated with stage of breast cancer diagnosis and use of mammography, it is unknown if specialty of a patient's usual provider of care affects time from discovery of breast abnormality to diagnosis. Increased supply and use of primary care physicians result in earlier diagnosis for breast cancer,[23,24] and the likelihood of a patient receiving a mammogram is greater if she is assigned a primary care provider (as occurs in some HMO plans for

example) or her usual physician is a primary care provider.[25–27] One study of 184 Black women in New York found that specialty of primary care provider was not associated with timely diagnostic resolution of an abnormal breast screening examination, however the sample size in that study may not have been enough to detect differences.[22] In studies that did not find racial differences in the diagnostic interval after abnormal breast screening exams, all women had a primary care provider,[18,28] suggesting that having a primary care provider may eliminate the racial disparity in timely diagnosis after an abnormal breast screening examination.

The purpose of this study is to determine whether having a primary care provider and specialty of the primary care provider is associated with timeliness in diagnosis after discovery of breast abnormality in minority women. We hypothesize that women who have a family physician as the usual provider of care will have shorter diagnostic intervals.

Methods
Sample
This was a retrospective cross-sectional chart review study of all 723 patients who received breast biopsies at an urban university hospital from February 2001 to March 2005. This public hospital serves a predominantly low-income minority population with over 50% Black and 30% Hispanic patients. Forty percent of patients are uninsured, and 30% have Medicaid insurance. Patients were identified through a list of pathology reports of breast biopsies and confirmed with a list of breast biopsies performed from the primary breast surgeon of the hospital. Patients were excluded if they were male, did not have an outpatient chart, or if they were referred from outside the institution and did not have a documented date of abnormal mammogram report or initial clinical breast examination.

This study was reviewed and approved by the University of Medicine and Dentistry of New Jersey–New Jersey Medical School Institutional Review Board, which waived the requirement for informed consent of individual patients for this retrospective chart review study.

Instruments and Measures
The main outcome variables of interest were diagnostic interval and diagnostic delay. The diagnostic interval was defined as the time (in days) from abnormal mammogram to final pathology report. In women who did not have a mammogram report available but had an initial abnormal clinical examination (N = 34), the diagnostic interval was defined as the time (in days) from abnormal clinical examination to final pathology report. Diagnostic delay was defined as a diagnostic interval longer than 60 days. A 60-day delay may have little biologic consequence in terms of outcomes for breast cancer, but it may cause considerable anxiety and emotional distress. Furthermore, a diagnostic interval of 60 days has been used by other studies to determine delay,[11,14,17] and the CDC has set 60 days as the program standard for receiving a final diagnosis after an abnormal breast screening result.[29]

The main independent variable of interest was specialty of usual provider of care, defined as the type of doctor (primary care versus not primary care) to whom the patient had the most visits to in the year before the mammogram. If this was a primary care physician, then the specialty of primary care physician was also determined (family medicine, internal medicine, obstetrician-gynecologist). "Other" refers to patients whose usual provider of care was a specialist. "None" refers to patients who did not have a primary care physician or specialist as their usual provider of care (they were referred from our emergency department or through our free mammography screening program.) "Other" and "none" were combined in statistical analysis because we wanted to compare persons whose usual source of care is a primary care provider versus no primary care provider. For patients who were referred from outside the facility, the specialty of the primary care physician who referred the patient for breast evaluation was considered the usual provider of care.

Other predictor variables included age at biopsy, race/ethnicity (non-Hispanic white, non-Hispanic Black, Hispanic, other), insurance (uninsured, Medicaid, Medicare, private), smoking status (never, current, former), marital status (married, single, separated/divorced/widowed), employment (unemployed, employed/retired), personal history of breast cancer (yes, no), family history of breast cancer (yes, no), whether a clinician felt a lump (yes, no), whether the patient felt a lump (yes, no), and final pathology result (benign, cancer).

Procedures

Three chart abstractors were trained by the principal investigator to conduct chart reviews in a systematic fashion using the hospital's electronic medical record system. Data were abstracted from progress notes, registration, lab tests, and x-rays. Information abstracted from the charts included date of mammogram, date of initial clinical examination, date of breast clinic visit, and date of biopsy report. In addition, basic demographic data and other factors that might affect diagnostic interval were recorded (see variables above).

At the beginning of data collection, interrater reliability for chart abstractors was assessed for the major outcome and predictor variables by re-reviewing a sample of 28 charts from each abstractor and calculating the kappa statistic. Kappa statistics for main outcome and predictor variables ranged from $\kappa = 0.83$ to 1.0. Ongoing monitoring of data quality was accomplished via intrarater reliability; chart abstractors re-reviewed 10% of charts. Kappa statistics ranged from $\kappa = 0.82$ to 1.0. Any discrepancies were reviewed by the principal investigator and data were corrected.

Statistical Analysis

Descriptive statistics were used to describe the baseline characteristics of the study population and the diagnostic interval. Because the distribution of diagnostic intervals was skewed, we compared median diagnostic intervals among independent variables rather than means to give a more accurate picture of the true distributions, using the Kruskal-Wallis test to assess statistical significance. We also compared the percentages of women with diagnostic delay, using the χ^2 test for categorical variables and the Fisher's exact test for dichotomous variables. Multivariate analysis was done to determine significant independent predictors of time to diagnosis. Logistic regression was conducted to assess predictors of diagnostic delay. Variables included in the logistic regression model were those determined a priori (age, race, primary care provider) as well as those found to be significant in bivariate analysis (for diagnostic delay) at $P < .10$. To avoid collinearity problems, palpable lump by patient and palpable lump by clinician were not placed in the models at the same time. Analyses used two-sided P values with α set at .05. All the analyses were performed using version 12 of SPSS (Chicago, IL).

Results

Data were collected from 723 patient charts; 24.5% of charts were excluded for the following reasons: the patient was male (2.0%), the patient did not have an outpatient chart (8.3%), or if they were referred from outside the institution and did not have a documented date of abnormal mammogram or initial clinical breast examination (14.1%). This left an analytic sample of 546 patients.

Table 1 describes the characteristics of the women who had breast biopsies at the hospital. The mean age was 46 years (SD 14.9). The sample population included large percentages of Black (47.5%) and Hispanic (34.7%) patients, uninsured patients (42.1%), and patients lacking a primary care physician (38.8%). A total of 51% of the women felt a lump themselves, and 21% of the women were diagnosed with breast cancer. The median diagnostic interval was 36 days (range 0 to 360; interquartile range [25th percentile to 75th percentile] 21 to 63 days).

Table 2 shows the results of bivariate analysis comparing median diagnostic intervals and the proportion of women with a diagnostic interval over 60 days for all the independent variables. Significant predictors of a shorter median diagnostic interval included having private insurance ($P = .024$), having a family physician ($P = .009$), cancer diagnosis ($P < .001$), and having a lump felt by the patient ($P < .001$) or the physician ($P = .001$). Results were similar when comparing the proportion of women with a diagnostic interval greater than 60 days, except the variable, clinician felt lump, was no longer significant. There were no differences in diagnostic interval or diagnostic delay based on age or race/ethnicity.

Results from the multivariate analysis using logistic regression are shown in Table 3. After controlling for age, race, insurance, primary care physician, employment status, patient felt lump, and pathology report, factors associated with decreased odds of diagnostic delay were having a family physician, private insurance, and if the pathology was cancerous. In effect, the odds of a diagnosis within 60 days was 4.1 times greater if the primary care provider was a family physician, 2.8 times greater if the patient had private insurance, and 3.1 times greater if the diagnosis was cancer. Results were similar when clinician felt lump was in the model instead of patient felt lump. We also analyzed the

Table 1. Patient Characteristics (total N = 546)

Characteristics	N*	%
Age		
<40	169	31.0
40–49	168	30.8
50–64	150	27.5
≥65	59	10.8
Race/ethnicity		
Black	256	47.5
Hispanic	187	34.7
White	26	4.8
Other	70	13.0
Insurance		
Uninsured	228	42.1
Medicaid	160	29.5
Medicare	73	13.5
Private	81	14.9
Primary care physician		
FM	54	9.9
IM	174	31.9
OB-GYN	106	19.4
Other/none	212	38.8
Employment		
Employed†	143	27.7
Unemployed	373	72.3
Marital status		
Single	306	57.4
Married	97	18.2
Previously married‡	130	24.4
Smoking status		
Never	243	61.7
Current	103	26.1
Former	48	12.2
Personal history of breast cancer		
No	529	96.9
Yes	17	3.1
Family history of breast cancer		
No	405	76.6
Yes	124	23.4
Patient felt lump		
No	267	48.9
Yes	279	51.1
Clinician felt lump		
No	197	36.1
Yes	349	63.9
Pathology result		
Benign	430	78.8
Cancer	116	21.2

* The totals may not add up to 546 because of missing data.
† Includes full-time, part-time, and retired.
‡ Includes separated, divorced, and widowed.

data without the group with missing mammograms and the results were similar. There was no significant difference between the 2 groups in the median diagnostic interval (36 days vs. 36.5 days, $P = .54$) or percentage with diagnostic delay (27% vs. 32%, $P = .42$). Because the results did not differ, we included the group with missing mammograms to have greater sample size and statistical power.

Discussion

This study is the first to show differences in timely diagnosis of a breast abnormality by specialty of primary care provider. In the one other study that examined the association of specialty of usual provider to diagnostic resolution, provider type was not a significant factor. That study was conducted in underserved Black women from 3 cancer screening clinics in New York City, used 90 days as timely completion of follow-up, combined family medicine and internal medicine, and had some form of patient navigation system in place. In addition, the sample size of 184 patients may not have been enough to detect differences among the different provider types.[22]

The results of our study suggest that women receiving care at urban public hospitals can get timely diagnosis of a breast abnormality if they have a family physician as their usual provider of care. This may have a great public health impact given the fact that women receiving care at urban public hospitals are mostly minority race and ethnicity, and minority women have poorer outcomes from breast cancer than white women.[1,2,30] Although higher use of mammography has been associated with seeing an obstetrician-gynecologist, compared with other primary care providers,[27,31–33] screening will not be effective without adequate and timely follow-up studies for definitive diagnosis. In addition, only 15% of obstetrician-gynecologists consider themselves primary care providers, compared with 90% of family physicians,[31] so having a family physician for all urban minority women may be a more practical intervention to improve breast outcomes in this population.

We did not have a measure of the relationship with the family physician, so it is unclear what services in particular the family physician provides that promote timelier follow-up of patients. It may be that the physician-patient relationship that has been established through comprehensive and lon-

Table 2. Distribution of Diagnostic Intervals for Predictor Variables by Median Days and for a Percentage Greater Than 60 Days

| | Diagnostic Interval | | | |
Characteristics	Median days (interquartile range)	P Value*	Percentage of >60 days	P Value†
Age categories				
<40	31.0 (18–57)		23.6	
40–49	36.0 (22–64)	.501	25.5	.712
50–64	39.5 (17–66)		29.3	
≥65	35.0 (22–62)		25.9	
Race/ethnicity				
Black	35.0 (18–66)		28.5	
Hispanic	35.5 (22–57)	.797	21.7	.270
White	38.0 (10–72)		36.0	
Other	41.0 (23–62)		24.6	
Insurance				
Uninsured	38.0 (24–64)		26.8	
Medicaid	31.0 (16–78)	.002	31.2	.003
Medicare	36.0 (23–68)		30.6	
Private	27.0 (13–45)		9.2	
Primary care physician				
FM	23.0 (15–43)		10.0	
IM	35.0 (19–59)	.003	22.8	.014
OB-GYN	45.0 (22–72)		30.5	
Other/none	35.5 (22–69)		30.4	
Marital status				
Married	38.0 (23–59)		24.5	
Previously married‡	36.0 (23–63)	.673	26.9	.917
Single	35.0 (18–64)		25.8	
Employment status				
Employed§	36.0 (19–58)	.364	21.2	.063**
Unemployed	37.0 (21–65)		28.4	
Smoking status				
Current	35.0 (15–63)	.894	25.5	.643
Former	31.0 (21–56)		19.1	
Never	35.0 (19–57)		21.8	
Personal history of breast cancer				
No	36.0 (20–63)	.692	26.0	.578**
Yes	26.0(15–136)		26.7	
Family history of breast cancer				
No	36.0 (21–59)	.667	24.6	.118**
Yes	36.0 (17–67)		30.6	
Patient felt lump				
No	42.0 (26–66)	<.001	29.8	.030**
Yes	28.0 (14–56)		22.3	
Clinician felt lump				
No	42.5 (24–65)	.001	29.7	.091**
Yes	32.0 (16–58)		24.0	
Pathology result				
Benign	39.0 (24–66)	<.001	29.5	<.001**
Cancer	20.0 (7–44)		13.3	

* Using Kruskal-Wallis test for significance.
† Using χ^2 test for significance.
‡ Includes separated, divorced, and widowed.
§ Includes full-time, part-time, and retired.
** Using Fisher's exact test for significance.

Table 3. Multivariate Predictors of Delay to Diagnosis after an Abnormal Mammogram

Characteristic	OR (95% CI)*	P Value
Age†	1.00 (0.98–1.02)	.934
Race/ethnicity		
Hispanic	0.662 (0.40–1.10)	.112
White	1.129 (0.43–2.94)	.804
Other	0.740 (0.38–1.46)	.384
Black	1.0	
Insurance		
Medicaid	1.644 (0.96–2.77)	.062
Medicare	1.548 (0.75–3.21)	.240
Private	0.360 (0.15–0.89)	.027
Uninsured	1.0	
Primary care physician		
FM	0.242 (0.09–0.69)	.008
IM	0.635 (0.38–1.07)	.090
OB-GYN	0.871 (0.49–1.55)	.636
Other/none	1.0	
Employment status		
Employed	0.892 (0.53–1.51)	.669
Unemployed	1.0	
Patient felt lump		
Yes	0.681 (0.43–1.09)	.106
No	1.0	
Pathology result		
Benign	1.0	
Cancer	0.324 (0.17–0.61)	<.001

* ORs and 95% CI for diagnostic interval >60 days adjusted for age, race/ethnicity, insurance, primary care physician, employment status, patient felt lump, and pathology result using multivariate logistic regression.
† OR represents change in odds of diagnostic interval >60 days per year of increasing age.

gitudinal care of the patient allows family physicians to better coordinate and insure proper and timely use of specialty and ancillary services. An ongoing relationship with a family physician also leads to increased communication and trust. Trust in a regular primary care physician has been shown to be associated with increase use of mammography[34] and earlier stage at diagnosis of breast cancer.[35] Trust in one's family physician may also increase compliance with follow-up tests and procedures. Further studies are needed to clarify the family physician-patient relationship and how it benefits patients with breast abnormalities.

Women with private insurance had shorter time to resolution after an abnormal mammogram or clinical breast examination. This finding is similar to other studies that found women with managed care insurance or private insurance in addition to Medicare had shorter diagnostic intervals.[18,19] Women with private insurance may have fewer barriers and more resources than women without insurance and may be more assertive in getting timely diagnosis after an abnormal test result.

It is not surprising that women with a cancer diagnosis on final pathology report had shorter time to diagnosis, as was found in another study.[14] When a mammogram report or a clinical examination is strongly suggestive of malignancy, efforts are usually made to hasten the time to definitive diagnosis and treatment.

Our study has several limitations. First, the sample population consisted of mostly Black and Hispanic women who received medical care in an urban public hospital, so the study results may not be generalized to other populations or other health care settings. However, these findings may be broadly applied to Black and Hispanic women receiving care in urban public hospitals throughout the United States. Second, this was a chart review study, which is limited by lack of documentation of certain variables. For instance, we did not have information on income. However, insurance and employment status can be used as proxies for socioeconomic status. In addition, we did not measure other confounders such as language barriers or use of an interpreter. However, most of our non-English-speaking patients are Hispanic, and we did not find any difference in diagnostic interval based on ethnicity. Finally, because of the retrospective design of this study, we have no knowledge of patients who had an abnormal mammogram that required biopsy but went elsewhere for their care, or had no follow-up at all. We chose women with breast biopsies as our sampling frame, as we were more able to determine diagnostic interval in women who had a definitive diagnosis. For example, some women with abnormal mammograms may just have 6-month follow-ups and that would skew the diagnostic interval in those women. Other women may go elsewhere for their biopsy, and we don't have access to their biopsy reports. Further studies using a prospective design are needed to confirm these results.

In conclusion, in this population of mostly minority women receiving a breast biopsy at an urban public hospital, those who have a family physician, private insurance, or cancer diagnosis have shorter times to diagnosis after discovery of a breast abnor-

mality. This study adds to the growing literature about the importance of family physicians in improving health outcomes.[36] To improve timely follow-up of women with breast abnormalities at urban public hospitals, promoting development of a relationship with a family physician may be an important public health intervention.

References

1. Hunter CP. Epidemiology, stage at diagnosis, and tumor biology of breast carcinoma in multiracial and multiethnic populations. Cancer 2000;88(5 Suppl): 1193–202.
2. Pal N, Roetzheim R, Ferrante J, Gonzalez E. Demographic predictors of breast cancer stage at diagnosis. J Womens Cancer 2002;4:119–24.
3. Taplin SH, Ichikawa L, Yood MU, et al. Reason for late-stage breast cancer: absence of screening or detection, or breakdown in follow-up? J Natl Cancer Inst 2004;96:1518–27.
4. Gornick ME, Eggers PW, Riley GF. Associations of race, education, and patterns of preventive service use with stage of cancer at time of diagnosis. Health Serv Res 2004;39:1403–27.
5. Smith-Bindman R, Miglioretti DL, Lurie N, et al. Does utilization of screening mammography explain racial and ethnic differences in breast cancer? Ann Intern Med 2006;144:541–53.
6. Richards MA, Westcombe AM, Love SB, Littlejohns P, Ramirez AJ. Influence of delay on survival in patients with breast cancer: a systematic review. Lancet. 1999;353:1119–26.
7. Kothari A, Fentiman IS. Diagnostic delays in breast cancer and impact on survival. Int J Clin Pract 2003; 57:200–3.
8. Lerman C, Trock B, Riimer BK, et al. Psychological and behavioral implications of abnormal mammograms. Ann Intern Med 1991;114:657–61.
9. Ong G, Austoker J. Recalling women for further investigation of breast screening: women's experiences at the clinic and afterwards. J Public Health Med 1997;19:29–36.
10. Lebel S, Jakubovits G, Rosberger Z, et al. Waiting for a breast biopsy: psychosocial consequences and coping strategies. J Psychosom Res 2003;55:437–43.
11. Haas J, Kaplan C, McMillan A, Esserman LJ. Does timely assessment affect the anxiety associated with an abnormal mammogram result? J Womens Health Gend Based Med 2001;10:599–605.
12. Brenner RJ. Breast cancer evaluation: medical legal issues. Breast J 2004;10:6–9.
13. Chang SW, Kerlikowske K, Napoles-Springer A, et al. Racial differences in timeliness of follow-up after abnormal screening mammography. Cancer 1996; 78:1395–1402.
14. Caplan LS, May DS, Richardson LC. Time to diagnosis and treatment of breast cancer: results from the National Breast and Cervical Cancer Early Detection Program, 1991–1995. Am J Public Health 2000; 90:130–4.
15. Kaplan CP, Crane LA, Stewart S, Juarez-Reyes M. Factors affecting follow-up among low-income women with breast abnormalities. J Womens Health 2004;13:195–206.
16. Elmore JG, Nakano CY, Linden HM, et al. Racial inequities in the timing of breast cancer detection, diagnosis, and initiation of treatment. Med Care 2005;43:141–8.
17. Burack RC, Simon MS, Stano M, George J, Coombs J. Follow-up among women with an abnormal mammogram in an HMO: is it complete, timely, and efficient? Am J Manag Care 2000;6:1102–13.
18. Haas JS, Cook EF, Puopolo AL, Burstin HR, Brennan TA. Differences in the quality of care for women with an abnormal mammogram or breast complaint. J Gen Intern Med 2000;15:321–8.
19. Caplan LS, Helzlsouer KJ, Shapiro S, et al. System delay in breast cancer in whites and blacks. Am J Epidemiol 1995;142:804–12.
20. Arnsberger P, Fox P, Ryder P, et al. Timely follow-up among multicultural women with abnormal mammograms. Am J Health Behav 2006;30:51–61.
21. Wall P, Moore C, El-Tamer M, Reilly JJ. Diagnostic delay in breast disease: a system analysis of a public urban hospital. Arch Surg 1998;133:662–6.
22. Kerner JF, Yedidia M, Padgett D, et al. Realizing the promise of breast cancer screening: clinical follow-up after abnormal screening among Black women. Prev Med 2003;37:92.
23. Keating NL, Landrum MB, Ayanian JZ, Winer EP, Guadagnoli E. The association of ambulatory care with breast cancer stage at diagnosis among Medicare beneficiaries. J Gen Intern Med 2005;20:38–44.
24. Ferrante JM, Gonzalez EC, Pal N, Roetzheim RG. Effects of physician supply on early detection of breast cancer. J Am Board Fam Pract 2000;13:408–14.
25. McIsaac WJ, Fuller-Thomson E, Talbot Y. Does having regular care by a family physician improve preventive care? Can Fam Physician 2001;47:70–6.
26. Phillips KA, Haas JS, Liang SY, et al. Are gatekeeper requirements associated with cancer screening utilization? Health Serv Res 2004;39:153–78.
27. Haggstrom DA, Phillips KA, Liang SY, et al. Variation in screening mammography and Papanicolaou smear by primary care physician specialty and gatekeeper plan (United States). Cancer Causes Control 2004;15:883–92.
28. Schootman M, Myers-Geadelmann J, Fuortes L. Factors associated with adequacy of diagnostic workup after abnormal breast cancer screening results. J Am Board Fam Pract 2000;13:94–100.
29. Centers for Disease Control and Prevention. Annual

performance plan and report 2004. Atlanta, GA: Centers for Disease Control and Prevention, 2004.

30. Newman LA, Griffith KA, Jatoi I, et al. Meta-analysis of survival in African American and White American patients with breast cancer: ethnicity compared with socioeconomic status. J Clin Oncol 2006; 24:1342–9.

31. Wallace AE, MacKenzie TA, Weeks WB. Women's primary care providers and breast cancer screening: Who's following the guidelines? Am J Obstet Gynecol 2006;194:744.

32. Finison KS, Wellins CA, Wennberg DE, Lucas FL. Screening mammography rates by specialty of the usual care physician. Eff Clin Pract 1999;2:120–5.

33. Van Harrison R, Janz NK, Wolfe RA, et al. Five-year mammography rates and associated factors for older women. Cancer 2003;97:1147.

34. Parchman ML, Burge SK. The patient-physician relationship, primary care attributes, and preventive services. Fam Med 2004;36:22–7.

35. Mainous AG III, Kern D, Hainer B, et al. The relationship between continuity of care and trust with stage of cancer at diagnosis. Fam Med 2004;36: 35–9.

36. Graham R, Roberts RG, Ostergard DJ, et al. Family Practice in the United States. A status report. JAMA 2002;288:1097–101.