Women’s primary care providers and breast cancer screening: Who’s following the guidelines?

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Objective: Screening mammography for woman ages 50 to 69 years has resulted in early breast cancer detection and reduced mortality rates. However, the providers who are responsible for women’s preventive health care differ in breast cancer screening guideline adherence. We compared screening practices across provider specialty and training degree types.

Study design: Using a retrospective cohort design, we examined 472 patient records that represented 16 million preventive health care visits among women ages 50 to 69 years from the 2000 National Ambulatory Medical Care Survey. We calculated relative risk ratios for breast examination and mammography during preventive visits across provider specialty and training types.

Results: Among specialists, gynecologists are more likely than internists or general/family practitioners to follow breast cancer screening guidelines. Across training degree types, mid-level providers are more likely than medical doctors or osteopaths to adhere to guidelines.

Conclusion: Regardless of specialty type or training degree, women’s health care providers should adhere to breast cancer screening guidelines during preventive care visits.

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Although screening mammography for women ages 40 to 49 years remains controversial,1-5 the value of annual-biannual screening mammography for women aged 50 to 69 years is widely accepted6-8; for that group, high-quality screening mammography has reduced dramatically the cancer mortality rates.9,10

Several studies have found patient-specific factors such as race,9,11,12 income level,13 smoking history,14 insurance status,15 and previous mammography experience14 to be associated with mammography compliance. Provider practice during preventive visits has been shown...
to influence mammography compliance as well. Breast examinations during routine annual preventative maintenance visits are a strong predictor of mammography prescription, and physician recommendation during office visits is critical in overcoming factors that are associated with patient noncompliance with mammography. Although the stated agreement with the recommendations of the American Cancer Society is variable historically and suboptimal among providers and specialty area were associated with a variation in breast cancer screening practices. More recently, Desnick et al surveyed primary care specialists in Washington state and concluded that provider characteristics that included male gender and family practice specialty predicted for a lower likelihood of breast examination. Finison et al found that specialty provider type influences mammography prescription for female Medicare beneficiaries aged ≥65 years. Likewise, Van Harrison et al found that, among primary care providers who were practicing in Michigan, gynecologists had the highest compliance rates for mammography prescription to patients aged ≥68 years and that, although only 43% of women over age 65 years underwent mammography during the 5-year period between 1993 and 1997, having seen a gynecologist was more likely to result in mammography for this group. Finally, Pham et al found that Medicare beneficiaries generally received suboptimal preventive screening care, but that female primary care providers and providers in group practice settings were more likely to follow breast cancer screening guidelines. Although these findings suggest a lack of conformity in breast cancer screening practices among providers before guideline recommendations in limited geographic areas and/or for controversial subsets of women, less is known about current national provider screening practices for women who are most likely to benefit.

Therefore, we wanted to determine whether breast examination and mammography prescribing practices for women in the least controversial group (aged 50-69 years) differed when comparing the specialty (family or general practitioner, internist, and gynecologist) and provider training degree (doctor of medicine or osteopathy, nurse practitioner, or physician assistant) of a woman’s preventive care provider. To determine which provider types are most likely to comply with current breast cancer screening guidelines, we examined preventive care visits from the 2000 National Ambulatory Medical Care Survey (NAMCS), which is a national probability sample survey of all ambulatory provider visits that was conducted by the National Center for Health Statistics, Center for Disease Control and Prevention, for women aged 50 to 69 years.

**Material and methods**

The NAMCS is an annually administered national probability sample survey in which, during a randomly assigned week-long reporting period, participating office-based physicians supply data on each patient visit. Collected data include patient demographics, patient symptoms, physician diagnoses, services provided, provider specialty, and practice type. The data are weighted to estimate ambulatory medical care services in the United States. From the 2000 NAMCS, we obtained 3922 records that represented approximately 124 million ambulatory care visits to women between ages 50 and 69 years. Because we hypothesized that the most breast cancer screening procedures would have occurred during preventive health visits, we focused our analysis on the 472 records that represented 16.9 million “non-illness” visits by excluding all visits for chronic, acute, and pre- or postsurgical care from the “major reason for the visit” field. From the provider specialty field, we focused our analysis on 303 records that represented 12.2 million visits from 3 women’s primary care disciplines: family or general practice, internal medicine, and gynecology. From provider training-type field, we identified 4 possible provider types: medical doctor, doctor of osteopathy, physician assistant, or nurse practitioner. Because of small numbers, we combined the physician assistants and nurse practitioners into 1 group (mid-level providers).

We conducted analyses using the “svy” commands of STATA statistical software (version 8.0; Stata Corporation, College Station, TX), which are designed for multistage weighted probability surveys such as NAMCS. We first determined the proportion of breast examinations that were performed and mammography procedures that were prescribed by the primary care specialists who were identified during preventive health visits. Using STATA-generated standard errors for proportions from weighted clustered data, we calculated relative risk ratios and applied the delta theorem to calculate 95% CIs that compare breast screening rates across primary specialty groups (family/general practice, internal medicine, gynecology) and provider training types (medical doctor, doctors of osteopathy, mid-level providers). Because we were interested in discerning whether providers who were self-identified as primary care providers were more likely to perform these routine preventive breast cancer screening procedures, we also calculated the proportion of providers who were examined and who claimed responsibility as primary care provider by cross-tabulating provider types with the “primary care provider” field.
Breast cancer screening practices also varied by provider training degree. Medical doctors provided approximately 88% of preventive health visits for women aged 50 to 69 years, although doctors of osteopathy and mid-level practitioners provided 6% of preventive visits each. Across all primary care specialties, mid-level providers were much more likely than medical doctors and doctors of osteopathy to perform breast examination (relative risk, 0.55 for medical doctors \(P < .00001\); relative risk, 0.63 for doctors of osteopathy \(P = .0001\)) and more likely to prescribe mammography (relative risk, 0.45 for medical doctors \(P = .0001\); relative risk, 0.31 for doctors of osteopathy \(P = .02\); Table II). Differences between medical doctors and doctors of osteopathy in performing breast examination or prescribing mammography were not statistically significant. Across training types, 74% of mid-level providers were self-identified primary care providers, compared with only 15% of gynecologists (chi-square test, \(P < .001\), for internists and family practitioners compared with gynecologists but not significant for internists vs family practitioners).

Comment

In a national sample of preventive health care visits for women aged 50 to 69 years, we found evidence that medical specialty and training degree are associated with substantial differences in the rate of breast cancer screening guideline adherence. Family practitioners and internists performed breast cancer screening by using breast examination in less than one half of the preventive health care visits and by using mammography referral in approximately 20% of preventive health care visits. Gynecologists’ rate of 53% mammography prescription may
represent full adherence to US Preventive Service Task Force and National Cancer Institute recommendations for at least biennial mammograms. Although gynecologists and mid-level practitioners provided commendable breast examination screening in preventive care visits whether or not they were the designated primary care provider, it was concerning to note that, overall, very few such visits were provided by these providers.

There are limitations to this study. First, although the NAMCS database represents a national sample, our analysis was limited to relatively few applicable records (303 preventive care visits for women ages 50-69 years who were seen by the preventive care providers whose data were examined). However, the sound NAMCS survey methods should ensure generalizability of these findings. Second, although we attempted to limit our analysis to preventive health visits by eliminating visits for chronic care, acute care, pre- or postsurgical care, visits may have been coded incorrectly. However, we found that breast screening was much more likely in visits that were coded as preventive, and it is unlikely that miscoding would affect one provider group more than another. Third, we were unable to determine whether “gatekeeper status” influenced mammography prescription differentially among primary care providers, as previously suggested.

Fourth, the NAMCS database does not specify provider gender, a factor that may explain partially the differences that we found. Others have noted physician male gender and embarrassment as barriers to breast cancer screening practices and that female primary care physicians, who may be more attuned to appropriate screening practices in women, are more likely to perform breast and pelvic examinations than their male counterparts. Women constitute 38% of the gynecology workforce, although only 30% of internal medicine and 29% of family/general practice physicians are female; among mid-level providers, 59% of physician’s assistants and 95% of nurse practitioners are female. If provider gender does explain some of our findings, they should serve to remind providers across disciplines to adhere to suggested breast screening guidelines, particularly if they are male. Finally, the NAMCS dataset does not allow for the identification of multiple visits by the same patients; therefore, some patients may have had multiple preventive care providers or may have seen 1 provider for multiple preventive visits per year. To the degree that this happens, annual rates of screening may be underestimated for all providers in this analysis. However, preventive health care visits need not occur multiple times yearly, and efficient providers will likely perform all screening and preventive health examinations in the context of an annual visit.

It is possible that internists and family practitioners defer to gynecologists for female-specific screening. If so, to require the enlistment of multiple preventive care providers or to require multiple preventive care visits when one would do may place an unnecessary burden on women and our health care system. Women’s preventive care providers of all types and training should be prepared and willing to provide recommended breast cancer screening, and specialty associations should act to improve the compliance of their associated workforce with those recommendations.

Women may rely on their primary care providers to provide adequate breast cancer screening, especially those who lack a supplemental gynecologist provider. Our findings suggest that most preventive health care visits by nongynecologist primary care providers do not result in adequate breast cancer screening. Because provider examinations and recommendations on preventive breast care are important predictors of compliance with mammography, our findings suggest that specialty-directed provider interventions may be an effective mechanism to improve adherence to guidelines. Alternatively, women who want to improve their likelihood of obtaining guideline-compliant care might preferentially obtain preventive care from gynecologists or mid-level providers. Regardless of training or specialty type, all preventive care providers should be alerted to adhere to medical guidelines in breast cancer screening. Our findings suggest that gynecologists and mid-level practitioners could serve

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<th>Table II: Breast cancer screening by provider type during preventive care visits across provider training types</th>
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<td>Provider training (no. of visits)</td>
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<td>Mid-level providers (0.83M)</td>
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<td>Medical doctors (15.2M)</td>
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<td>Doctors of osteopathy (0.82M)</td>
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The proportion of visits that were associated with breast examination and mammography was calculated by cross-tabulating survey-weighted patient visit data for each procedure within preventive care visits by provider training type.

* Calculated with STATA software-generated proportions standard errors across provider training type for preventive visits; the delta theorem was applied to calculate 95% CIs.

† P ≤ .001.

‡ P ≤ .02.
as process of care benchmarks in preventive care breast examination for their colleagues who provide primary care services for women.

References


