

Gender Of Physicians And Patients And Preventive Care For Community-Based Older Adults

Barbara A. Majeroni, MD, Jurgis Karuza, PhD, Cassandra Wade, MS, Melissa McCreadie, and Evan Calkins, MD

Background: This study was undertaken to determine whether the gender of patients and physicians is a significant factor in deciding which older adults are offered preventive care.

Methods: A survey of medical records of ambulatory patients older than 60 years was performed in the practices of 210 physicians. Documentation of influenza vaccine, rectal examination, fecal occult blood test, Papanicolaou smear, pelvic examination, breast examination, mammogram, and pneumococcal vaccine was recorded, and rates of compliance were evaluated by sex of patient and physician.

Results: The medical records of 3327 patients were surveyed. Men were given influenza and pneumococcal vaccines more frequently than women. Among physicians, women physicians were more likely to give influenza vaccine ($P = 0.003$) and to check for fecal occult blood ($P < 0.001$). No significant difference was found between men and women physicians in the frequency of doing Papanicolaou smears, breast examinations, rectal examinations, and mammograms.

Conclusions: While a difference in practice patterns was found between men and women physicians, most of the variance in compliance with preventive care guidelines was unexplained by the gender of physicians and patients. Matching of physician and patient by sex did not predict improved preventive care, indicating that other factors are involved in the failure to provide adequate primary preventive care to the ambulatory elderly. (J Am Board Fam Pract 1993; 6:359-65.)

Despite widespread agreement on the value of screening and preventive care measures,¹⁻³ studies have repeatedly revealed underutilization of preventive measures, such as influenza and pneumococcal vaccines in elderly patients,^{4,5} and screening tests, such as rectal examinations, fecal occult blood testing, Papanicolaou smears, breast examinations, and mammography.^{6,7}

The physician's recommendation is a powerful determinant of patient behavior regarding preventive care.⁸⁻¹⁰ Other determinants could include gender and the attitude of the patient

toward medical care. Although men have higher mortality rates than women,¹¹ rates of health services utilization are higher among women,¹²⁻¹⁵ and the use of preventive services by women has increased during the last decade.¹⁶ Middle-aged and older women might be more knowledgeable than their male peers in terms of perceived health care.¹⁷ Does this knowledge and the level of comfort with using the health care system contribute, along with biological factors, to the longer life span of women?

The most important variable in whether women participate in preventive care is the recommendation of their physicians.¹⁸⁻²¹ Women physicians have scheduled more preventive care visits than their male counterparts have done, and they have integrated more preventive care measures and screening into their practices, especially breast cancer detection and Papanicolaou smears.^{22,23} In a study of 3rd-year residents, women physicians had higher rates than men physicians of offering pelvic examinations and Papanicolaou smears to women between the ages of 50 and 70 years, but this difference was not significant for women older than 70 years. Men

Submitted, revised, 24 February 1993.

From the Department of Family Medicine (BAM, EC), the Western New York Geriatric Education Center (JK, CW), and Department of Medicine (EC), State University of New York at Buffalo School of Medicine and Biomedical Sciences; and the State University College at Buffalo (JK, MM), Buffalo, NY. Address reprint requests to Barbara A. Majeroni, MD, Department of Family Medicine, School of Medicine and Biomedical Sciences, State University of New York at Buffalo, 462 Grider Street, Buffalo, NY 14215.

Funded in part by the Bureau of Health Professions and Agency for Health Care Policy and Research Contract on Dissemination of Medical Technologies Using Geriatric Education Centers.

residents were more likely than women residents to offer rectal examinations to men patients older than 70 years.²⁴

Women in health professions differ from men in their communication styles^{25,26} and are more likely to value psychosocial factors in patient care and to educate and counsel patients about health problems.²⁷ Whether these trends lead to more patients receiving preventive care is not clear. Matching physician and patient by sex has been suggested as a means of enhancing communication between patient and physician.^{28,29}

While most patients are interested in health screening, older adults could be less likely to request screening.³⁰

The purpose of our study was to determine (1) whether there are more men or more women older than 60 years seen in a physician's office who are offered preventive care, including influenza and pneumococcal vaccines, and screening tests, such as rectal examination and fecal occult blood testing; (2) whether more men or more women physicians are likely to include primary prevention and screening in their practice patterns with older patients; and (3) whether the matching of patient and physician by sex facilitates the offering of preventive care.

Methods

Data were gathered in and around Buffalo, NY, in 1991. Practice groups and solo physicians were recruited to participate in a study of ways to improve compliance with influenza vaccine recommendations. The analysis of gender was done on data gathered before any intervention in the influenza vaccine study. Of 210 physicians who agreed to participate, 56 (26.7 percent) were women and 154 (73.3 percent) men. Physicians represented a wide range of primary care settings, including a staff model health maintenance organization, a large community-based private practice, a university primary care clinic, two hospital-based clinics, two community-based family medicine teaching sites (one urban and one suburban), a Veterans Administration center outpatient department, a community health center, and 15 rural private practitioners.

A table of random numbers was used to select charts from each physician's file of active patients who were more than 60 years old. Active patients were defined as those who had been to the

physician's office in the past year. In the case of those physicians who had fewer than 40 patients in this category, all charts were reviewed. Charts of patients who had not been seen in the past year were excluded from analysis. The resulting sample consisted of 3327 patient records. The average number of charts reviewed was nine for residents and 25 for attending physicians, who had larger patient panels.

Physician utilization of preventive care procedures was determined by chart reviews using standardized forms. Information was gathered from progress notes, laboratory and radiology reports about influenza and pneumococcal vaccines, rectal examinations, fecal occult blood tests, and cholesterol screening for all patients, and about Papanicolaou smears, mammograms, and breast and pelvic examinations for women. In those charts that had problem lists or diagnoses listed in the progress notes, reviewers recorded the presence of a diagnosis of diabetes, congestive heart failure, chronic obstructive pulmonary disease, cancer, or arthritis.

Trained chart reviewers examined physician practice patterns during the preceding 2 years for documentation of screening and preventive care. For mammograms they reviewed the preceding 3 years. For pneumococcal vaccine they determined whether there was documentation that it had ever been given. Scores were yes or no for each procedure. The reliability of the chart reviewers was validated by independent review of 10 percent of the charts at each site. The interrater reliability was greater than 98 percent in all cases. Preliminary analysis did not indicate interactions between the predictor variables of interest and sites. Thus for the purposes of this analysis, patients were aggregated from all sites. To test whether the sex of physicians and patients had any effect on the primary care prevention patterns, a multiple regression analysis was performed on a primary prevention index (sum of whether the recommended screening for rectal examinations, fecal occult blood tests, and influenza and pneumococcal vaccines were performed for each patient) with patient age, patient gender, and physician gender as the predictors.

For interventions that were not sex specific, chi-square analyses were used to compare men and women patients for each intervention and then to compare the patients of men and women

physicians for each intervention. Statistical significance was based on the Pearson product coefficient. The groups were then evaluated by dyad, combining the gender of patients and the gender of physicians to determine whether concordance of gender between physician and patient affected practice patterns.

A multiple regression analysis was performed on data from women patients to determine whether the gender of physician and age of patient affected delivery of breast and pelvic examinations, mammograms, and Papanicolaou smears. Multiple regression analysis was also performed on the influenza vaccine rate with age of patient, gender of patient, and gender of physician as the predictors.

Results

Of the 3329 patients whose charts were reviewed, 1368 (41 percent) were men, and 1959 (59 percent) women (2 were not recorded). Ages ranged from 60 to 102 years; the mean was 74.88 years and the standard deviation was 6.53 years. Mean age of the men was 74.26 years and of the women, 75.31 years. There was little difference in age between those patients who saw men physicians (mean age 74.8 years) and those who saw women physicians (mean age 74.9 years). Seventy-six percent of the patients had race or ethnicity described in the chart. Of these, 59.4 percent were white, 16.6 percent African-American, 0.2 percent Asian, 0.2 percent Hispanic, and 0.3 percent Native-American.

All 210 physicians whose charts were reviewed described themselves as primary care physicians. There were 102 residents, 44 in family practice and 58 in internal medicine. Fifty-five percent of

the attending physicians were in family practice, and 45 percent were in internal medicine. Sex distribution of residents was 69 percent men and 31 percent women. Of attending physicians, 78 percent were men and 22 percent women. Patients of men physicians were 45.5 percent men and 54.5 percent women. Patients of women physicians were 27.2 percent men and 72.8 percent women ($P < 0.0001$).

The percentages of all patients who received interventions are listed in Table 1. Men were more likely than women to have received influenza vaccine ($P < 0.001$) and pneumococcal vaccine ($P = 0.005$). This difference persisted regardless of sex of the physician. There was no difference between the two groups in frequency of rectal examination, but more women than men had fecal occult blood tests ($P < 0.001$) and cholesterol screening ($P < 0.001$).

The percentage of women patients who were given Papanicolaou smears, breast examinations, and mammograms did not differ significantly between patients of men physicians and those of women physicians (Table 2).

Women physicians gave influenza vaccine to 49.2 percent of eligible patients compared with 43.2 percent for men physicians ($P = 0.003$). This difference persisted regardless of the sex of the patient (Figure 1). There was no significant difference by sex in whether a physician offered pneumococcal vaccine or rectal examinations, but women physicians were more likely to perform fecal occult blood testing ($P < 0.001$). Cholesterol screening was more likely to be done for women patients by both men and women physicians, although the difference was greater in the case of women physicians (Figure 2). Concordance by sex

Table 1. Patients (n = 3327) Receiving Preventive Care and Screening Interventions, by Sex of Patient.

Intervention	Percent of Total	Men No. (%)	Women No. (%)	P Value*
Influenza vaccine	44.7	677 (49.5)	809 (41.2)	< 0.001
Pneumococcal vaccine	27.2	407 (29.8)	497 (25.4)	0.005
Rectal examination	47.9	672 (49.1)	922 (47.1)	NS
Fecal occult blood test	26.2	311 (22.7)	561 (28.6)	< 0.001
Cholesterol	56.7	645 (47.1)	1241 (63.3)	< 0.001
Breast examination	54.4	—	1060 (54.4)	
Mammogram	43.0	—	889 (43.0)	
Papanicolaou smear	39.7	—	765 (39.7)	

*NS means not statistically significant. Note: statistical significance based on chi-square analysis and Pearson product coefficient.

Table 2. Percentage of Eligible Women Patients Receiving Cancer Screening Interventions, by Sex of Physician.

Intervention	Patients of Women Physicians	Patients of Men Physicians	P Value*
Rectal examination	49.1	47.6	NS
Fecal occult blood test	33.5	18.2	< 0.001
Papanicolaou smear	41.2	38.2	NS
Breast examination	55.2	53.7	NS
Mammogram	43.8	46.2	NS

*NS means no statistically significant difference. Note: statistical significance based on chi-square analysis and Pearson product coefficient.

of physician and patient did not significantly affect care.

Recorded diagnoses included diabetes for 13.2 percent of patients, congestive heart failure for 5.9 percent, chronic obstructive pulmonary disease for 6.7 percent, cancer for 7.4 percent, and arthritis for 13.1 percent. These numbers could be low because many charts did not have diagnoses clearly listed. Concurrent diagnoses did not affect the likelihood of receiving preventive care, with the following exceptions: women with a diagnosis of cancer were more likely to have had a mammogram ($P < 0.001$); patients with chronic obstructive pulmonary disease were more likely to receive influenza vaccine ($P = 0.015$).

Multiple regression analysis using a general prevention score, based on the sum of compliance with recommendations for rectal examination, fecal occult blood testing, influenza vaccine, and pneumococcal vaccine, showed no effect of patient age on delivery of the items studied. Sex of the physician was significant, but the low correlation coefficient ($R^2 = 0.007$) indicates that sex of physician accounted for a very small portion of the difference between the patients who received preventive care and those who did not.

Discussion

We looked at ambulatory older adults across a variety of practice set-

tings. These patients have a regular source of medical care, a population that has been reported to be more adherent to preventive care guidelines than the population in general.³¹ Despite reports of increasing rates nationwide of influenza vaccine³² and mammograms,^{33,34} the general levels of preventive care delivery by this varied group of physicians fell short of guideline recommendations for preventive care, as has been reported in other physician populations.³⁵

This comparison of the delivery of preventive care and screening to men and women patients found differences similar to those reported by Lubben,³⁶ in a study of sex-specific differences in the health practices of the elderly poor. While there were differences, neither men nor women were consistently favored in this population.

Women physicians were well represented in this study, and the variations in practice patterns between men and women physicians were much smaller than expected based on previous reports.^{24,37,38} Women physicians surpassed men physicians in administering influenza vaccine and performing fecal occult blood screening, but there was no significant difference between men

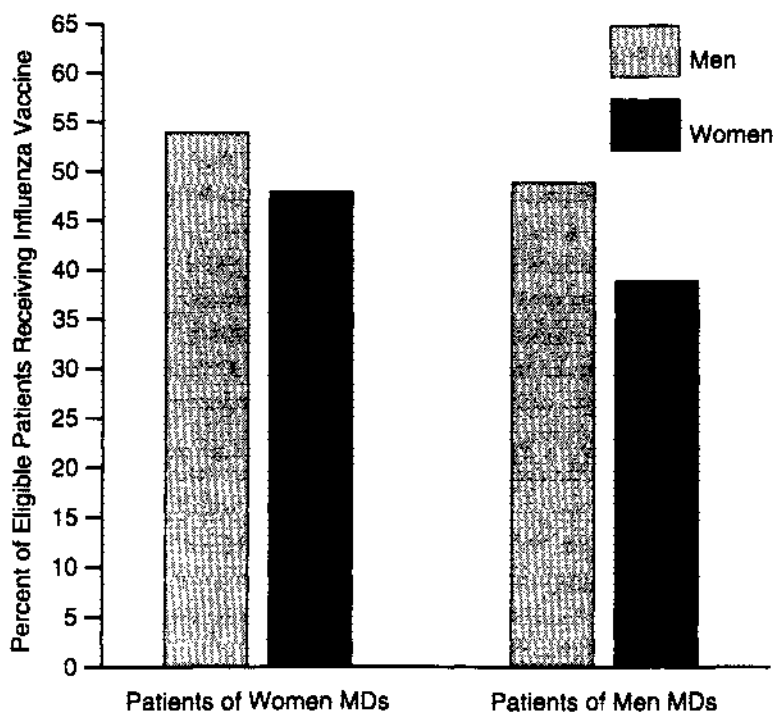


Figure 1. Men were more likely than women to receive influenza vaccine, regardless of the gender of the physician ($P < 0.001$). Women physicians were more likely than men physicians to give influenza vaccine to their patients ($P = 0.003$).

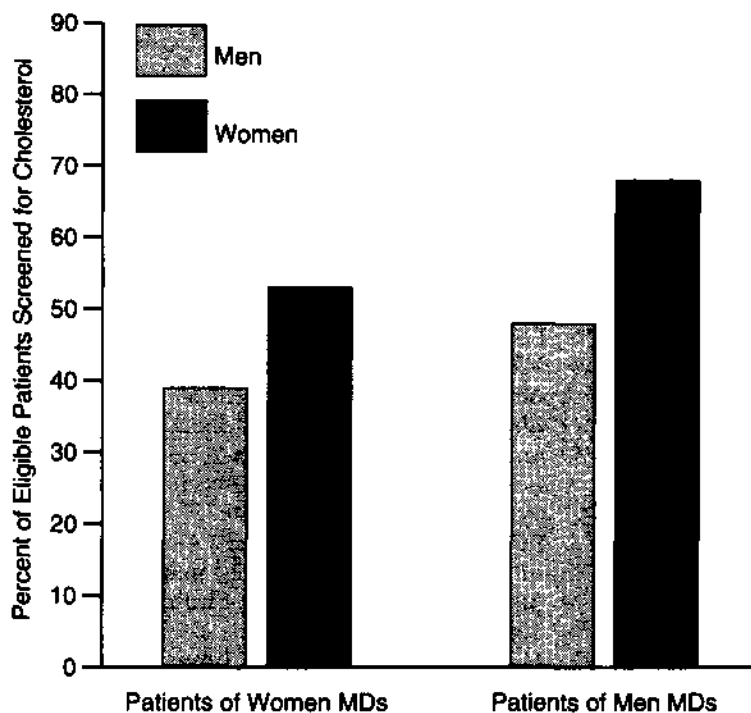


Figure 2. Women had documentation of cholesterol screening more frequently than men ($P < 0.001$). Men physicians were more likely than women physicians to order cholesterol screening for patients of either sex.

and women physicians in the percentage of older women screened with Papanicolaou smears, breast examinations, and mammograms. This absence of a sex difference is similar to findings reported for compliance with mammography guidelines.³⁹ As the population of women physicians increases, differences attributed to sex roles could prove to have been an artifact of selection during a time when it was more difficult for women to enter medical school. The difference in screening for occult blood in the stool is unexplained and could result from lack of uniform guidelines regarding the value of this test.⁴⁰ The benefit of cholesterol screening in the elderly has also been questioned, but it is unclear why uncertainty regarding the benefit of a screening test would affect the behavior of groups differently by sex.

While the inclusion of a variety of practice settings was intended to give us a broad sampling of patients and physicians, some bias was introduced by combining sites. The Veterans Administration Hospital Outpatient Clinic serves mostly men, which explains the high proportion of men in our study — more than would be expected

based on census data for this age group. That the same clinic also had a higher rate of influenza vaccine (64 percent) than the other sites (which averaged 40 percent) might explain part of the variance in the rate of influenza vaccine by sex of patient.

The physicians were intentionally chosen to represent a wide variety of practice settings, including teaching sites, private practices, a health maintenance organization, and outpatient clinics. Because this sample was not random, these results would not be generalizable to other populations of physicians. When collecting data on cancer screening, no attempt was made to determine whether the patients had indications for a screening procedure. In a more detailed study, for example, women who had had hysterectomies for benign conditions might have been excluded from the group eligible for Papanicolaou smears.⁴¹ If this exclusion had been done, the compliance would have appeared higher.

Our analysis indicated that sex of the physician was not a major factor in determining the delivery of preventive care and screening. Concordance or discordance between patient and physician by sex did not significantly affect practice patterns.

Other authors have reported attempts to influence practice patterns with various interventions.⁴²⁻⁴⁵ No formal protocols or reminder procedures were in place at the time of this study. These interventions are not without cost⁴⁶ and are unlikely to be incorporated into a physician's practice unless he or she is motivated toward providing preventive care. Further research is needed to define factors involved in determining which physicians have that motivation and why. Differences and interactions based on the sex of physician or patient do not explain the difference.

References

1. Schwartz JS, Lewis CE, Clancy C, Kinosian MS, Radany MH, Koplan JP. Internists' practices in

- health promotion and disease prevention. A survey. *Ann Intern Med* 1991; 114:46-53.
2. Kessler LG, Sondik EJ. Achieving a public health impact from cancer-control research. *Semin Oncol* 1990; 4:495-503.
 3. Beers MH, Fink A, Beck JC. Screening recommendations for the elderly. *Am J Public Health* 1991; 81:1131-40.
 4. McKinney WP, Barnas GP. Influenza immunization in the elderly: knowledge and attitudes do not explain physician behavior. *Am J Public Health* 1989; 79:1422-4.
 5. Fedson DS. Influenza and pneumococcal immunization in medical clinics, 1971-1983. *J Infect Dis* 1984; 149:817-8.
 6. Lefkowitz A, Snow DA, Cadigan DA. Preventive care in a Veterans Administration continuity clinic. *J Community Health* 1990; 15:7-18.
 7. Gordillo C. Breast cancer screening guidelines agreed on by AMA, other medically related organizations. *JAMA* 1989; 262:1155.
 8. Cummings KM, Jette AM, Brock BM, Haefner DP. Psychosocial determinants of immunization behavior in a swine influenza campaign. *Med Care* 1979; 17:639-49.
 9. Zapka JG, Stoddard AM, Costanza ME, Greene HL. Breast cancer screening by mammography: utilization and associated factors. *Am J Public Health* 1989; 79:1499-502.
 10. Costanza ME, D'Orsi CJ, Greene HL, Gaw VP, Karellas A, Zapka JG. Feasibility of universal screening mammography. Lessons from a community intervention. *Arch Intern Med* 1991; 151:1851-6.
 11. Markides KS. Risk factors, gender, and health. *Generations* 1990; 14:17-21.
 12. Lewis CE, Lewis MA. The potential impact of sexual equality on health. *N Engl J Med* 1977; 297:863-9.
 13. Nathanson CA. Illness and the feminine role: a theoretical review. *Soc Sci Med* 1975; 9:57-62.
 14. Gender disparities in clinical decision making. Council on Ethical and Judicial Affairs, American Medical Association. *JAMA* 1991; 266:559-62.
 15. Nathanson C. Sex, illness, and medical care. A review of data, theory, and method. *Soc Sci Med* 1977; 11:13-25.
 16. Makuc DM, Freid VM, Kleinman JC. National trends in the use of preventive health care by women. *Am J Public Health* 1989; 79:21-6.
 17. Kerschner PA, Tiberi DM. Health and older women: a look at the knowledge base. *J Gerontol Nurs* 1978; 4:11-5.
 18. Lerman C, Rimer B, Trock B, Balshem A, Engstrom PF. Factors associated with repeat adherence to breast cancer screening. *Prev Med* 1990; 19: 279-90.
 19. Fox SA, Stein JA. The effect of physician-patient communication on mammography utilization by different ethnic groups. *Med Care* 1991; 29:1065-82.
 20. Fox SA, Murata PJ, Stein JA. The impact of physician compliance on screening mammography for older women. *Arch Intern Med* 1991; 151:50-6.
 21. Screening mammography: a missed clinical opportunity? Results of the NCI Breast Cancer Screening Consortium and National Health Interview Survey Studies. *JAMA* 1990; 264:54-8.
 22. Battista RN, Williams JL, MacFarlane LA. Determinants of preventive practices in fee-for-service primary care. *Am J Prev Med* 1990; 6:6-11.
 23. Osborn EH, Bird JA, McPhee SJ, Rodnick JE, Fordham D. Cancer screening by primary care physicians. Can we explain the difference? *J Fam Pract* 1991; 32:465-71.
 24. Levy S, Dowling P, Boulton L, Monroe A, McQuade W. The effect of physician and patient gender on preventive medicine practices in patients older than fifty. *Fam Med* 1992; 24:58-61.
 25. Arnold RM, Martin SC, Park RM. Taking care of patients — does it matter whether the physician is a woman? *West J Med* 1988; 149:729-33.
 26. Roter D, Lipkin M, Korsgaard A. Sex differences in patients' and physicians' communication during primary care medical visits. *Med Care* 1991; 29: 1083-93.
 27. Maheux B, Dufort F, Beland F, Jaques A, Levesque A. Female medical practitioners. More preventive and patient oriented? *Med Care* 1990; 28:87-92.
 28. Root MJ. Communication barriers between older women and physicians. *Public Health Rep* 1987; 102:152-5.
 29. Weisman CS. Communication between women and their health care providers. Research findings and unanswered questions. *Public Health Rep* 1987; 102(Suppl):S147-51.
 30. Williamson PS, Driscoll CE, Dvorak LD, Garber KA, Shank JC. Health screening examinations: the patient's perspective. *J Fam Pract* 1988; 27: 187-92.
 31. Zapka JG, Stoddard A, Maul L, Costanza ME. Interval adherence to mammography screening guidelines. *Med Care* 1991; 29:697-707.
 32. Centers for Disease Control. Influenza vaccination coverage levels in selected sites, United States, 1989. *MMWR* 1990; 39:159-67.
 33. *Idem*. Trends in screening mammography for women 50 years of age and older — behavioral risk factor surveillance system, 1987. *MMWR* 1989; 38:137-40.
 34. *Idem*. State-to-state variation in screening mammograms for women 50 years of age and older — behavioral risk factor surveillance system, 1987. *MMWR* 1989; 38:157-60.
 35. McPhee SJ, Bird JA. Implementation of cancer prevention guidelines in clinical practice. *J Gen Intern Med* 1990; 5(Suppl):S116-22.
 36. Lubben JE, Weiler PG, Chi I. Gender and ethnic differences in the health practices of the elderly poor. *J Clin Epidemiol* 1989; 42:725-33.
 37. Maheux B, Pineault R, Lambert J, Beland F, Berthiaume M. Factors influencing physicians' preventive practices. *Am J Prev Med* 1989; 5:201-6.
 38. Hall JA, Palmer RH, Orav EJ, Hargraves JL, Wright EA, Louis TA. Performance quality, gender, and professional role. A study of physicians and non-

- physicians in 16 ambulatory care practices. *Med Care* 1990; 28:489-501.
39. Costanza ME, Stoddard AM, Zapka JG, Gaw VP, Barth R. Physician compliance with mammography guidelines: barriers and enhancers. *J Am Board Fam Pract* 1992; 5:143-52.
 40. Eisner MS, Lewis JH. Diagnostic yield of a positive fecal occult blood test found on digital rectal examination. Does the finger count? *Arch Intern Med* 1991; 151:2180-4.
 41. Mandelblatt J. Papanicolaou testing following hysterectomy. *JAMA* 1991; 266:1289.
 42. Turner BJ, Day SC, Borenstein B. A controlled trial to improve delivery of preventive care: physician or patient reminders? *J Gen Intern Med* 1989; 4:403-9.
 43. Nichol KL, Korn JE, Margolis KL, Poland GA, Petzel RA, Lofgren RP. Achieving the national health objective for influenza immunization: success of an institution-wide vaccination program. *Am J Med* 1990; 89:156-60.
 44. McPhee SJ, Bird JA, Jenkins CN, Fordham D. Promoting cancer screening. A randomized, controlled trial of three interventions. *Arch Intern Med* 1989; 149:1866-72.
 45. Nattinger AB, Panzer RJ, Janus J. Improving the utilization of screening mammography in primary care practices. *Arch Intern Med* 1989; 149:2087-92.
 46. Bird JA, McPhee SJ, Jenkins C, Fordham D. Three strategies to promote cancer screening. How feasible is wide-scale implementation? *Med Care* 1990; 28:1005-12.