Recommendation for and Receipt of Cancer Screenings Among Medicaid Recipients 50 Years and Older

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Background: Persons of low socioeconomic status, including those with Medicaid coverage, are more likely to be diagnosed with cancer at an advanced stage, but little is known about cancer screening practices among Medicaid recipients. Our objective was to identify cancer screening rates among older Medicaid recipients seen in a primary care setting, and to identify patient and physician characteristics associated with screening.

Methods: We used a stratified cluster sampling design to select a representative sample of 1951 North Carolina Medicaid recipients 50 years and older. Medical records were reviewed in the office of the primary care provider. Principal outcomes were the documentation of physician recommendations for and patient receipt of screening examinations for colorectal, breast, and cervical cancer.

Results: Documentation that colorectal, breast, and cervical cancer screening was recommended by the primary care provider was found for only 52.7%, 60.4%, and 51.5% of eligible patients, respectively. Documented rates of adequate screening were 28.2% for colorectal cancer, 31.7% for mammography within 2 years, and 31.6% for Papanicolaou test within 3 years. When medical record and claims data were combined, approximately half of eligible patients had evidence of screening. Length of the patient-physician relationship and African American race were positively associated with screening.

Conclusions: Cancer screening rates among older Medicaid recipients fall far short of national objectives. Lack of a screening recommendation by the physician, rather than patient refusal of recommended tests, accounted for most instances of screening delinquency. Efforts to increase cancer screening rates among Medicaid recipients must address patient, physician, and organizational barriers to the routine identification and delivery of preventive services.

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ord review in primary care physicians’ offices to examine whether Medicaid recipients 50 years and older were receiving recommendations to undergo cancer screening tests, to determine rates of screening, and to identify patient, physician, and health care system characteristics associated with screening. Screening practices examined were those recommended by the US Preventive Services Task Force,10 an independent, expert advisory panel convened by the US Public Health Service to review evidence on clinical preventive services and to recommend only those for which scientific investigation clearly demonstrates effectiveness. For patients 50 years and older, the US Preventive Services Task Force currently recommends Papanicolaou tests for cervical cancer screening; mammography for breast cancer screening; and fecal occult blood testing, sigmoidoscopy, double-contrast barium enema, or colonoscopy for colorectal cancer screening.10

We reviewed the primary care medical records of a sample of North Carolina Medicaid recipients 50 years and older. We used a stratified cluster probability sampling design to generate estimated cancer screening rates for the North Carolina Medicaid population while allowing for comparisons by system of care.

SYSTEMS OF CARE

During the study period, North Carolina had 3 managed care programs for Medicaid recipients in addition to a traditional fee-for-service (FFS) program. The first, Community Care of North Carolina/Carolina ACCESS (CA-I), is a basic primary care case management program, in which primary care providers (PCPs) are contracted to provide preventive and sick care as well as coordinate specialty care for recipients for a monthly management fee. The second, Community Care of North Carolina/Carolina ACCESS II (CA-II), is a community-based managed care program that expanded the CA-I concept to incorporate community-driven case management and disease management initiatives. Third, a small number of Medicaid recipients were enrolled in a risk-based, capitated program with a health maintenance organization (HMO) in a single county.

SAMPLING STRATEGY

Medicaid administrative data were used to identify the population of recipients 50 years and older who were enrolled with Medicaid for at least 11 months in 2004. Patients enrolled within a managed care program (CA-I, CA-II, or HMO) for at least 11 months were classified as having that system of care. All others were classified as having FFS care.

Primary care providers were randomly selected to contribute clusters of eligible patients within 4 strata: CA-I, CA-II, HMO, and FFS. Primary care providers seeing patients in the CA-I and CA-II systems were oversampled and PCPs for all eligible HMO patients were included to allow for statistical testing by system of care. For HMO, CA-I, and CA-II patients, PCPs were identified according to administrative assignment. For FFS patients, the PCP was identified by looking at professional services claims submitted during 2004 by physicians of the following specialties: general or family medicine, internal medicine, and obstetrics/gynecology. For patients who had office visits with more than 1 qualifying health care provider (12.8% of FFS patients), the provider who had submitted the most claims (or the one submitting the most recent claim in the case of a tie) was identified as the PCP. In Medicaid administrative data, “provider” may refer to a single physician or a larger practice organization. Providers with fewer than 5 eligible patients were excluded.

Michigan Peer Review Organization, the state-contracted external quality review organization, developed the abstraction tool in cooperation with the North Carolina Division of Medical Assistance. Q Mark Inc (Englewood, Colorado) built the electronic abstraction tool and provided trained nurses for the medical record data abstractions. Between March 29 and August 31, 2006, data were abstracted from 2010 medical records: 681 from 18 CA-I providers, 616 from 17 CA-II providers, 87 from 17 HMO PCPs, and 626 from 7 FFS providers. In 59 cases, the medical record indicated that the patient had been treated at the PCP’s practice for fewer than 6 months. These patients were excluded from the analysis to ensure that PCPs had a reasonable opportunity to address preventive care. This resulted in a final study sample of 1931 patients.

DEFINITIONS

All patients without a history of colon cancer were considered eligible for colon cancer screening. Adequate screening was defined as: (1) colonoscopy within 10 years, (2) fecal occult blood testing within 1 year, (3) flexible sigmoidoscopy within 5 years, or (4) double-contrast barium enema within 5 years. Women without a history of bilateral mastectomy were considered eligible for breast cancer screening. Women aged 50 to 64 years without a history of hysterectomy were considered eligible for cervical cancer screening. Any notation of PCP advice or referral to undergo the screening test was counted as evidence of recommendation. Screening tests were considered to have been performed if the test report or any notation of test results was found in the medical record.

Patient race was defined as self-reported race in Medicaid enrollment data, unless identified differently in the medical record. Length of time with current PCP practice was calculated based on the earliest and most recent service dates documented in the medical record. The PCP specialty was determined by the self-identification of the billing practice as recorded in Medicaid administrative data; this information was not available for HMO PCPs. The PCPs located in a county with a population density of more than 200 persons per square mile, according to US Census 2000 data, were classified as urban. We were unable to determine urban vs rural designation for 1 out-of-state PCP who contributed 12 patients.

DATA ANALYSIS

Data were analyzed using SAS statistical software, version 9.1 (SAS Institute, Cary, North Carolina). Weights were applied to reflect the unequal chance of being selected for patients in the different strata. The weighted percentages represent an estimate of cancer prevention parameters in the North Carolina Medicaid population and thus cannot be calculated directly from the numbers in the tables. For significance testing, the Rao-Scott $\chi^2$ test or a modified Rao-Scott $\chi^2$ test was used if the cluster design correction value was positive or negative, respectively. Patient and PCP characteristics found to be associated with screening in bivariate analysis ($P<.20$) were further examined with multivariate logistic regression.

This study was performed as a quality improvement activity of the Division of Medical Assistance, North Carolina Department of Health and Human Services, and was exempted from review by the University of North Carolina Office of Human Research Ethics.
RESULTS

Demographic characteristics of the 1951 patients and their PCPs are shown in Table 1. The sample population was predominantly female (73.0%), aged 50 to 64 years (47.2%), white (57.2%), and in the FFS group (67.3%). Sex, age group, race, and system of care distributions in this sample were similar to that seen in North Carolina Medicaid enrollment files. Most patients were established with their PCPs for 5 or more years (53.8%), were seen in a rural location (54.1%), and were seen by family medicine/general practice (44.3%) or internal medicine (43.1%) physicians. Of patients sampled, 73.9% had both Medicaid and Medicare coverage.

COLON CANCER SCREENING

Table 2 shows the percentage of eligible patients for whom each cancer screening was recommended by the PCP as well as the percentage for whom screening tests were subsequently obtained, as documented in the medical record. Excluding 52 patients with a previous diagnosis of colon cancer, 52.7% of eligible patients had a documented recommendation for screening. Only 28.2% were adequately screened by any method. Of 544 patients screened, 442 (81.2%) underwent colonoscopy.

Patient age, system of care, sex, race, PCP specialty, and urban/rural setting were not significantly associated with screening in bivariate analysis (Table 3). Length of time the patient had been established with their PCP was positively associated with screening (15.8% if from 0.5 to <2 years; 26.1% if from 2 to <5 years; 32.7% if ≥5 years; P < .001). Controlling for age and race, the odds of screening remained higher for patients with established time with their PCP from 2 to less than 5 years (odds ratio, 1.77; 95% confidence interval, 1.10-2.85) and 5 years or longer (2.52; 1.46-4.37).

BREAST CANCER

Breast cancer screening analyses excluded 26 women who had undergone bilateral mastectomy. Among eligible women, 60.4% had a documented recommendation for mammography, but only 31.7% had documented receipt of a mammogram within 2 years (Table 2). Clinical breast examination was less frequent: 13.9% of women received a clinical breast examination within the past year.
and only 6.2% of women received both a clinical breast examination and a mammogram in the past year.

System of care, PCP specialty, and urban/rural setting were not significantly associated with breast cancer screening (Table 4). Women 75 years and older were less likely than women in younger age groups to have undergone mammography within the past 2 years (23.6% vs 36.2% among 65- to 74-year-olds and 35.8% among 50- to 64-year-olds; P=.02). African American women were more likely to have been screened (38.7%) than white women (28.9%) and women of other races/ethnicities (20.0%) (P=.009). Greater length of time with a PCP was positively associated with mammography screening (36.3% if ≥5 years; 28.7% if from 2 to <5 years; 19.8% if from 0.5 to <2 years; P=.008). These associations persisted in multivariate analysis: odds of screening were greater for 50- to 64-year-olds (odds ratio, 1.95; 95% confidence interval, 1.55-2.46) and 65- to 74-year-olds (1.88; 1.19-2.97) compared with those 75 years and older; for African American women compared with white women (1.51; 1.02-2.23); and for patients established with their PCP for 5 years or longer compared with those with their PCP for less than 2 years (2.40; 1.33-4.34).

Almost half of women aged 50 to 64 years had a hysterectomy performed before the study period. Of the 465 remaining eligible patients, 51.5% had documentation of a Papanicolaou test (hereinafter referred to as Pap test) recommendation by their PCP, and only 31.6% had documentation of a Pap test performed within the past 3 years (Table 2).

As shown in Table 5, African American women were more likely to have been screened (39.6%) than white women (25.5%) and women of other races/ethnicities (27.2%) (P=.04). A pattern of greater likelihood of screening with longer length of time with the current PCP was observed but did not achieve statistical significance.

CLAIMS ANALYSIS

To investigate the completeness of screening documentation in the medical record, we analyzed study patients’ Medicaid administrative data for procedure claims related to cancer screening. An additional 16.6% of eligible patients had a claim for at least 1 colorectal cancer
screening procedure, including 5.1% for fecal occult blood testing, 2.2% for flexible sigmoidoscopy, 3.3% for double-contrast barium enema, and 14.7% for colonoscopy (colonoscopy claims submitted before 1998 were not available for analysis). An additional 18.2% of eligible patients had a mammography claim within 2 years, and an additional 20.6% had a Pap test claim within 3 years. Combining medical record documentation and Medicaid claims data, evidence of adequate screening was found for 45.3% of eligible patients for colorectal cancer, 50.5% for breast cancer, and 49.5% for cervical cancer (unweighted percentages).

COMMENT

Despite widespread endorsement of US Preventive Services Task Force cancer screening guidelines, little more than half of eligible North Carolina Medicaid recipients 50 years and older received a documented recommendation to undergo cancer screening from their PCPs. Even fewer had medical record documentation of adequate screening: only 28.2%, 31.7%, and 31.6% were screened for colorectal cancer, 50.5% for breast cancer, and 49.5% for cervical cancer (unweighted percentages). Evidence of screening for each cancer. These rates are substantially lower than screening rates in the general population, despite the study population’s access to primary care and full coverage of cancer screening services under Medicaid.

This study differs from most published reports of cancer screening rates in that data were primarily abstracted from the PCPs’ medical records rather than by patient self-report or from health plan administrative data. Cancer screening rates reported by survey respondents are known to exceed rates determined by claims-based and medical record audit data. Medical record review eliminates the social desirability and recall bias inherent in survey data and provides information unavailable in administrative claims data, but may also fail to identify all tests performed. A limitation of our study is that only 1 medical record was reviewed per patient, and the accuracy of medical record data relied on the completeness, quality, and readability of documentation. When screening tests are obtained by a physician other than the identified PCP, when consulting physicians do not relay information back to the PCP, and when counseling or tests are performed but not documented in the medical record, rates estimated from medical record review will underestimate true screening rates. As has been
previously described,20 we found that administrative data captured a greater proportion of patients receiving services for screening procedures that generate claims for reimbursement than did review of the medical record alone.

This study provides unique insight into patient and PCP characteristics associated with cancer screening and suggests clear opportunities to improve early cancer detection. We are unaware of any previously published studies that have specifically examined the recommendation and receipt of cancer screening services among older Medicaid recipients, although the interpretation of our findings can be informed by a growing body of literature examining relationships between cancer screening and socioeconomic status, access to care, and disability.

Most Medicaid recipients aged 50 to 64 years are disabled, owing to physical disability, chronic disease, severe mental illness, or developmental disability. Previous studies have shown that adult women with disabilities report lower rates of Pap test and mammography screening21-28 and lower rates of physician counseling regarding these screenings24 compared with women without disabilities. Screening rates are particularly low among women with mobility limitations,29 which may result from the difficulties of the actual screening procedure for these women.30 Other plausible explanations for lower rates of screening recommendations include physician assumptions that women with disabilities are not sexually active and are therefore at low risk of cervical cancer31; clinical estimation of shorter life expectancy, which may reduce the likelihood of benefit from cancer screening32; or communication difficulties and feelings of discomfort on the part of the physician when treating people with disabilities.33 People with disabilities, particularly the developmentally disabled and mentally ill, may also experience greater fear and anxiety about cancer screening than the general population.21,34 Perception of patient reluctance to undergo screening tests, whether real or imagined, may bias PCPs away from routinely recommending them. For patients with multiple health care providers, perception that “someone else” is responsible for preventive services may also be a barrier.

In contrast to breast and cervical cancer screening, previous studies21,24,35 have shown similar or higher colorectal cancer screening rates among disabled individuals. Among patients who were adequately screened in our study, 4 of 5 had had a colonoscopy within the last 10 years, indicating that alternative screening options (such as fecal occult blood testing) have not been effectively used in this population. Despite the higher cost and lesser availability of colonoscopy, the 10-year interval covered by this screening option increased its impact on screening rates in the population over time. It has been estimated that only 38% of all colonoscopies are performed for the purpose of cancer screening in asymptomatic individuals.36 We did not attempt to distinguish between

| Table 5. Patient and PCP Characteristics Associated With Cervical Cancer Screeninga |
|---------------------------------|----------------|----------------|----------------|
| Characteristic                  | No. of Patients Who Received a Papanicolaou Test Within 3 y | Total No. of Patients | Weighted % of Patients Screenedb (95% CI) | P Value |
| Total                           | 134            | 465            | 31.6 (24.5-38.8) | NA          |
| System of care                  |                |                |                 |             |
| Fee-for-service                 | 20             | 56             | 35.7 (23.6-47.8) |             |
| HMO                             | 9              | 45             | 20.0 (5.1-34.9) | .56         |
| CA-I                            | 50             | 177            | 28.2 (15.8-40.7) |             |
| CA-II                           | 55             | 187            | 29.4 (21.6-37.2) |             |
| Patient race                    |                |                |                 |             |
| White                           | 49             | 198            | 25.5 (19.7-31.2) |             |
| African American/black          | 68             | 294            | 39.6 (27.8-51.5) | .04         |
| Other or unreported             | 17             | 63             | 27.2 (10.3-44.1) |             |
| PCP specialtyc                  |                |                |                 |             |
| Internal medicine               | 28             | 99             | 35.6 (22.3-48.9) |             |
| General/family practice         | 37             | 145            | 26.0 (16.4-35.6) |             |
| Federally Qualified Health Clinic | 37          | 89             | 38.8 (27.7-49.9) | .30         |
| Other specialty                 | 23             | 87             | 29.3 (15.1-43.5) |             |
| Time with current PCP, y        |                |                |                 |             |
| 0.5 to <2                       | 12             | 69             | 18.1 (0.0-37.2) | .34         |
| 2 to <5                         | 46             | 163            | 31.2 (23.7-38.7) |             |
| 5 or more                       | 76             | 233            | 35.6 (27.3-43.8) |             |
| Geographical location by provider countyd | | | | |
| Urban                           | 66             | 229            | 34.8 (24.3-45.3) | .27         |
| Rural                           | 67             | 234            | 28.7 (21.1-36.3) |             |

Abbreviations: CA-I and II, Community Care of North Carolina/ACCESS and ACCESS II; CI, confidence interval; HMO, health maintenance organization; NA, not applicable; PCP, primary care provider.

a Among female Medicaid recipients aged 50 to 64 years without a previous hysterectomy.
b The weighted percentages represent an estimate of cancer prevention parameters in the North Carolina Medicaid population and thus cannot be calculated directly from the numbers in the table.
c PCP specialty was not available for 9 HMO patients.
d Urban/rural designation was undetermined for 1 patient.
colonoscopies performed for screening and those for diagnostic purposes.

Unexpectedly, African Americans in our sample experienced the highest rates of mammography and Pap test screening. This finding contrasts with extensive documentation of racial disparities in cancer mortality and stage at detection and with national population survey data showing similar breast and cervical cancer screening rates among African American and white women. Medicaid eligibility criteria inherently narrow the socioeconomic variances found in the general population; thus, racial differences in cancer screening may be unmasked within this low-income population. Further research is needed to explore the mechanisms by which patient race may be associated with PCP recommendation for cancer screening and with patient adherence to screening recommendations. The implication that relationships between race and cancer screening may differ by socioeconomic class or payer status also warrants further examination.

Several previous studies have documented lower rates of cancer screening among persons of lower socioeconomic status. Although all Medicaid recipients live under low income and assets thresholds, Medicaid eligibility eliminates a critical barrier to care by providing full-coverage benefits for the preventive services examined. Patients sampled also had an identified source of care and had been seen at least once in a PCP’s office, factors that have been shown to increase the likelihood of receiving preventive services. Our findings of low cancer screening rates despite removal of these barriers indicate the powerful influence of nonfinancial factors that could not be fully examined in this study, which may include lack of knowledge about the benefits of cancer screening, misperception of personal risk of cancer, poor patient-physician communication, cultural influences on attitudes toward cancer and acceptability of screening tests, and nonfinancial barriers to accessing health services, such as proximity and physical accessibility of mammography and endoscopy facilities.

Notably, however, for each type of cancer screening evaluated, the lack of any documented recommendation for screening was a more prevalent problem than the failure of patients to follow through on such recommendations. Similarly, in a recent survey of older Americans, the most common reasons given for not having had a colorectal cancer screening were not knowing it was needed and the physician not recommending it. These findings highlight the need for improvements in delivery of preventive services to other Medicaid recipients. We observed consistently poor screening rates across systems of care (FFS, managed care, and primary care case management models), suggesting that efforts under managed care to improve chronic disease management may not, by themselves, lead to improvements in preventive care. Screening was also consistently poor across all primary care specialties and geographic settings. Only the length of time with which the patient had been seen within the same practice was significantly associated with better screening: patients who had been established with their PCP for 5 years or longer were twice as likely to be screened as those who had been with their PCP fewer than 2 years. This finding underscores the value of a stable medical home in achieving national objectives for receipt of preventive services.

Improvements in cancer screening rates, however, will clearly require a more systematic approach to the identification, counseling, and referral of patients eligible for screening. Time demands on PCPs present a major obstacle to improving cancer screening rates: it is estimated that a physician with a typical patient panel would have to devote 7.4 hours per working day to preventive services alone to comply with current recommendations. For older Medicaid recipients with complex physical and mental health needs, preventive services may easily fall by the wayside. Among strategies to increase use of cancer screening services, those that involve organizational changes in staffing and clinic procedures (such as the use of planned care visits or dedicated nonphysician staff) have proven most effective. Further research is needed to determine how best to facilitate consistent delivery of recommended clinical preventive services in practice, with attention to patient registries, practice organization and information systems, and redesign of the clinical encounter with team-based approaches to care. Medicaid agencies and other payers might also explore the effectiveness of service reimbursement outside of the traditional physician-patient encounter and payment mechanisms that reward quality of preventive care. Prevention care management, using administrative data to identify and reach out to patients in need of preventive services, shows additional promise for increasing cancer screening rates in the Medicaid population.

A large proportion of Medicaid recipients 50 years and older did not receive cancer screening services in accordance with well-established national guidelines. African American women and patients established with their PCP for longer periods were more likely to receive recommended screenings. Among patients who did not undergo screening, most were not counseled by their PCP to do so. Future efforts to improve cancer screening rates among Medicaid recipients should address systemic barriers to the universal incorporation of clinical preventive services into primary care practice.

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