

POPULATIONS AT RISK

Preventive Care of Older Urban American Indians and Alaska Natives in Primary Care

Dedra Buchwald, MD, Richard Furman, MA, Suzanne Ashton, BA, Spero Manson, PhD

Little is known about prevention among elderly or urban American Indian/Alaska Native (AI/AN) populations. We reviewed the medical records of 550 older urban AI/AN primary care patients to evaluate how frequently preventive measures were received. Adherence to guidelines was examined by a culturally appropriate (≥ 50 years) and standard age threshold (≥ 65 years), and by performance of preventive measures at any time ("ever") and in the past year. Lifetime performance was inadequate for the many measures, including mammograms (56%), fecal occult blood testing (37%), audiometry (33%), visual acuity testing (50%), smoking cessation counseling (50%), and pneumococcal (22%) and influenza (49%) vaccinations. Performance of the measures was less frequent in the prior year, but did not differ by age threshold. Predictors of adherence included female gender, having insurance, and having more health problems and medications. Nonadherence infrequently resulted from patients' failure to comply with recommendations. We conclude that use of most preventive services among elderly urban AI/ANs is suboptimal and should be improved.

KEY WORDS: American Indian; Native American; preventive services; older adults; adherence.

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The elderly, who may benefit most, often do not receive preventive services.^{1,2} Older American Indians and Alaska Natives (AI/ANs) typically have low income and educational levels, placing them at high risk for not receiving preventive services.³⁻⁵ Since the leading causes of death for older AI/ANs are heart disease, malignancies, injuries, and cerebrovascular disease, adherence to screening guidelines is of utmost importance. Yet, previous investigations of AIs were based on self-report, included only 1 or 2 preventive practices, and did not focus on older or urban populations.⁶ We therefore reviewed the medical records of 550 AI/AN elders seen in an urban primary care setting to evaluate the frequency recommended preventive

procedures were received and to examine the factors associated with nonadherence.

METHODS

This study was conducted at the Seattle Indian Health Board which provides health care to King County AI/ANs. Patients represent approximately 250 tribes. Approximately 50% are unemployed; 80% have incomes below the "poverty line"; and 58% have no health insurance. A computerized information system was used to identify all AI/ANs who were at least aged 50 years seen between June 1994 and June 1995.

In AI/AN culture, "elder" status is not solely a function of chronological age and is conferred earlier than in the majority culture. For AI/ANs, impairments associated with aging may occur 20 years earlier than in the general population,⁷ and lower age eligibility criteria exist for some federal programs. Therefore, we used 2 definitions of "elderhood": at least aged 50 years and at least aged 65 years. Preventive interventions relevant to AI/ANs were selected by 3 geriatricians and 2 general internists. Sixteen of the interventions were recommended by national organizations, and 2 were clinically based (incontinence, dementia screening).

An abstractor, supervised by a general internist, reviewed charts. Study forms were developed, pilot tested, modified, then reviewed for discrepancies between the abstractor and internist. Because training was an iterative process, interrater reliability tests were not applied. General information was collected on demographics, current smoking, alcohol/substance use, provider-documented medical and psychological problems, and current medications.

Data were recorded for mammograms, clinical breast examinations (CBEs), Pap smears, pelvic examinations, thyroid tests, fecal occult blood testing (FOBT), audiometry, ocular pressure testing, PPD placement, visual acuity testing, smoking cessation counseling, and pneumococcal and influenza vaccine administration. We determined whether cholesterol tests had been completed every 5 years, blood pressure was checked yearly for the last 5 years, and if falls, incontinence, and dementia had been assessed. For services performed off-site, we recorded

Received from the Department of Medicine, University of Washington, Seattle, Wash (DB, RF, SA); and the Department of Psychiatry, University of Colorado Health Sciences Center, Denver Colo (SM).

Address correspondence to Dr. Buchwald: Harborview Medical Center, 325 9th Ave., Box 359780, Seattle WA 98104 (e-mail: dedra@u.washington.edu).

whether a test had been ordered and performed, and, for FOBT, if cards had been given out and returned.

Group differences were examined with χ^2 and *t* tests. Univariate models for mammography, CBEs, Pap smears, and FOBT excluded patients with breast, cervical, and colorectal malignancies. Multiple regressions determined predictors of adherence to preventive services, with the total number of procedures as the dependent variable and adjusting for the lower number recommended for men (lifetime *n* = 13; annual *n* = 6) compared with women (lifetime *n* = 18; annual *n* = 9). Univariate logistic regression models examined compliance with individual annual

screening interventions. For all regressions, independent variables included age, gender, marital status, employment, insurance type, current alcohol/substance use/smoking, number of medical and psychological problems, and current medications.

RESULTS

Charts were abstracted for all 550 AI/ANs (100%) who were at least aged 50 years and made at least 1 visit to the clinic. The patients' mean age was 60.6 years. Women comprised 61% of the 550 AI/ANs, and 28% of all patients

Table 1. Screening Measures Recommended by National Organizations³¹

Disease/Condition	Procedure	Sources
Breast cancer		
Females aged 50–59 years	Mammography annually	USPTF, ACP, CTF, ACS, ACOG, AAFP
Females aged ≥60 years	Mammography every 2 years	USPTF, ACP, CTF, ACS, ACOG, AAFP
All females	Annual breast examination	USPTF, ACP, CTF, ACS, ACOG, AAFP
Cervical cancer		
Sexually active females aged 19–70 years	Pap smear every 3 years after 2 normal	HEDIS, USPSTF, ACP, CTF, ACS, ACOG, AAFP
Ovarian/vaginal cancer	Pelvic examination annually	ACS, ACOG, AAFP
Colorectal cancer	Fecal occult blood annually	USPSTF, ACP, ACS, ACOG
Aged ≥50 years		
High cholesterol	Serum cholesterol every 5 years	HEDIS, USPSTF, ACP, AAFP, Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults
Aged 18–65 years		
Hypertension	Blood pressure every visit; ≤every 2 years if diastolic <85 and systolic <140; annual if diastolic 85–89 and systolic 140–159	USPSTF, ACP, CTF, Joint Committee on the Detection, Evaluation, and Treatment of High Blood Pressure, ACP, AAFP
All ages		
Pneumococcal pneumonia	Pneumovax every 5 years	USPSTF, ACP, CDC, AAFP
Aged ≥65 years and high risk*		
Influenza	Vaccinate annually	USPSTF, ACP, CTF, ACOG, AAFP, CDC Immunization Practices Committee
Ages ≥65 years and high risk*		
Tuberculosis	PPD once	USPSTF, CDC, CTF, AAFP [†]
Any age		
Smoking	Cessation counseling annually	USPSTF, ACP, CTF, ACOG, AAFP
All ages		
Thyroid disease	Thyroid function tests once, then at clinical discretion	USPSTF, CTF, AAFP [‡]
Females aged ≥60 years		
Hearing impairment	Hearing test at least once, then screening frequency at clinical discretion	AAFP, Institute of Medicine
Aged ≥65 years		
Visual impairment	Vision test at least once, then screening frequency at clinical discretion	USPSTF, CTF, AAFP, American Academy of Ophthalmology
Aged ≥65 years		
Glaucoma	At least once, then screening frequency at clinical discretion	USPSTF, CTF [§] , American Academy of Ophthalmology
Aged ≥65 years		
Falls	Query about falls annually	USPSTF, AAFP
Dementia	Screen for dementia	
Incontinence	Query about incontinence annually	

* Cardiovascular/lung disease, diabetes, alcoholism, immunocompromise, renal failure, HIV, cancer.

[†] All recommendations for high risk group defined as low income, underserved aged 25 to 64 years, Native American aged ≥65 years.

[‡] USPSTF and CTF in women with at least 1 symptom; AAFP periodically in older women.

[§] "Prudent" recommendation.

^{||} Periodic inquiries into functional status.

USPSTF indicates U.S. Preventive Services Task Force; ACP, American College of Physicians; CTF, Canadian Task Force on the Periodic Health Examination; ACS, American Cancer Society; ACOG, American College of Obstetrics and Gynecology; HEDIS, National Committee for Quality Assurance, Health Plan Employer Data and Information Set; AAFP, American Academy of Family Physicians; CDC, Centers for Disease Control and Prevention.

were married; 45% had a high school education or less; 43% were employed; and 49% received Medicare/Medicaid. A minority were alcohol users (26%), substance abusers (3%), or smokers (36%); 492 (89%) and 299 (54%) patients had medical and psychological problems, respectively.

Our guidelines are shown in Table 1. Table 2 summarizes the frequency screening was performed "ever" and during the past year. Except for vaccinations and FOBT, application of culturally appropriate age thresholds did not yield lower adherence rates. For both age groups, screening was less often performed during the prior year.

Female gender ($P \leq .001$), insurance status (Medicare, $P \leq .05$; Medicaid, $P \leq .01$), and more medical ($P \leq .01$) and psychological ($P \leq .001$) problems predicted lifetime screening for both age groups. Female gender ($P \leq .001$), insurance (Medicare, $P \leq .01$), current smoking ($P \leq .05$), more psychological problems ($P \leq .001$), and more medications ($P \leq .001$) predicted receipt of annual procedures. For individual annual measures among patients who were aged at least 50 years, the following were demonstrated: (1) male gender predicted counseling among smokers ($P \leq .01$); (2) number of medications ($P \leq .001$) and having insurance (Medicare, $P \leq .01$; private, $P \leq .05$; self-insured, $P \leq .01$) predicted influenza vaccine; (3) being single predicted fall prevention ($P \leq .01$); (4) drug use predicted dementia screening ($P \leq .05$); and (5) younger age ($P \leq .01$) and insurance coverage (Medicaid, $P \leq .01$; self-insured, $P \leq .05$) predicted pelvic examinations. For patients aged at least 65 years, alcohol use predicted FOBT ($P \leq .01$), and more psychological problems predicted pelvic examinations ($P \leq .05$).

Abnormal results were common: 8% and 0.5% of women had a mammogram reported as abnormal or consistent with cancer, respectively; 5% had an abnormal CBE; 1% had dysplasia/metaplasia on Pap smear; and 5% had an abnormal pelvic examination. Among all patients, 9% had a positive FOBT; 80% had abnormal hearing; 21% had increased ocular pressure; and 21% had a PPD of 10 mm or more. No ocular pressure and only 17% mammography appointments were missed; FOBT cards were not returned by 13% of patients.

DISCUSSION

This study, which is the first to focus on the preventive care received by older urban AI/ANs, found that the performance of recommended screening varied widely. For most measures, lifetime performance was suboptimal including those targeting women (mammograms, 56%), cardiovascular and malignant diseases (FOBT, 37%; smoking cessation counseling, 50%), infectious diseases (pneumococcal vaccination, 22%), vision and hearing (ocular pressure, 43%; audiometry, 33%), and common problems of older adults (falls, 8%; dementia 3%). Performance was lower in the past year for all measures but did not differ by age, suggesting providers were cognizant of the cultural definition of elders. By comparison, in the only comprehensive screening study among older adults, Pap smears had been received by 17%, mammography by 56%, and pneumococcal and influenza vaccinations by 57% and 32%, respectively.²

Table 2. Adherence to Recommended Screening Procedures, N (%)

Procedure	Aged ≥ 50 y		Aged ≥ 65 y	
	Ever n = 550	Last Year n = 550	Ever n = 157	Last Year n = 157
Mammography	188 (56)*	54 (33) [†]	60 (58) [‡]	25 (24)
Clinical breast examination	245 (73)*	101 (30)*	79 (76) [‡]	27 (26)
Pap smear	237 (71)*	106 (32)*	69 (66) [‡]	34 (33)
Pelvic examination	234 (70)*	79 (24)*	76 (73) [‡]	17 (16)
Thyroid function tests	171 (51)*	60 (18)*	58 (45) [‡]	10 (8)
Cholesterol determination	457 (83)	315 (57)	140 (89)	101 (64)
Blood pressure determination	539 (98)	517 (94)	157 (99)	151 (96)
Fecal occult blood	204 (37)	32 (6)	72 (46)	6 (4)
Audiometry	182 (33)	39 (7)	59 (37)	11 (7)
Visual acuity	275 (50)	13 (2)	90 (57)	0 (0)
Ocular pressure	238 (43)	3 (1)	81 (51)	0 (0)
Smoking cessation counseling [§]	98 (50)	37 (19)	23 (53)	9 (21)
Pneumococcal vaccination	119 (22)	27 (5)	51 (32)	9 (6)
Influenza vaccination	270 (49)	163 (30)	114 (72)	60 (38)
PPD	117 (21)	11 (2)	34 (22)	0 (0)
Fall prevention	42 (8)	14 (3)	15 (9)	4 (3)
Dementia	16 (3)	4 (1)	5 (3)	2 (1)
Incontinence	24 (4)	11 (2)	9 (6)	2 (1)

* Among all women, n = 333.

[†] Among women aged 50 to 59 years, n = 164.

[‡] Among all women aged ≥ 65 years, n = 103.

[§] Among smokers only, n = 197.

Implementation of preventive measures among AI/ANs is important since the life expectancy of AI/ANs is 8 years less than non-Indians⁸ and their 5-year cancer survival is among the worst of any U.S. racial/ethnic group. Moreover, incidence and mortality of breast cancer is rising among AI/ANs,⁹⁻¹¹ and the high incidence of cervical cancer and poor survival⁹ has led the Indian Health Service (IHS) to recommend annual Pap smears for all women. Alaska Native women also have the highest incidence and mortality rate of any racial/ethnic group for colorectal cancer,¹¹ although rates vary by tribe and gender.¹⁰ Given these statistics, the lack of information on preventive care for older AI/ANs is surprising.

Directly comparing our results to previous investigations is difficult since none have focused on older urban AI/ANs, and substantial variation in screening rates has been observed. For example, among women across IHS service areas, from 35% to 78% have had mammography, 28% to 70% have had an annual CBE, and 26% to 69% have had a Pap smear in the past year.¹² Others reported that during the past year, 45% of eligible AI/AN women had a CBE,¹³ but only approximately 10% had received a Pap smear.^{14,15} The only comprehensive study of AIs, conducted in a rural setting, found self-reported rates for blood pressure checks (>70%), cholesterol tests (41%), pneumonia vaccinations (31%), or ever having a Pap smear (88%), CBE (80%), or mammogram (76%) generally similar to the chart-documented rates reported here.¹⁶ Of interest, among older rural AIs, mammography has been associated with availability,¹³ age, knowledge of the procedure, belief that mammography detects breast cancer, and use of the native language¹⁶ — factors we were unable to assess.

Finally, although cardiovascular and pulmonary diseases are among the leading causes of death for older AI/ANs,^{17,18} data on screening for cardiovascular risk factors or smoking cessation are limited. In this regard, elevated blood pressure ($\leq 38\%$ ¹⁹) and cholesterol levels ($\leq 32\%$ ¹⁹⁻²¹), as well as smoking (36%²²) are common among AI/ANs. Urban AIs have the highest,^{20,23} and older adults the lowest, smoking rates.²⁴ Additionally, mortality is considerably higher for pneumonia, influenza, and tuberculosis (approximately 9 times) among AI/AN elders compared to their non-Native counterparts.¹⁷ These striking figures, in conjunction with our findings of low rates of smoking cessation counseling, administration of vaccinations, and screening for tuberculosis, highlight the need for greater efforts to reduce cardiopulmonary morbidity and mortality among AIs.

This study is limited by the method used to document adherence. Chart reviews may be subject to biases of incomplete information and retrospective case ascertainment. They are also inadequate to fully examine patient-based factors related to adherence. Additionally, since these data were collected in an urban practice, our results may not generalize to reservation-based communities. This drawback is attenuated by the fact that approximately 60% of AI/ANs live significant portions of their lives in cities.

Increasing age, lack of income, education, or health insurance, and assumptions that tests are indicated only when problems exist, have been associated with inadequate screening.^{3,16,18,25,26} Although Native women most often failed mammography appointments in one study,²⁷ when providers ordered studies, our patients typically complied. Tribal health care organizations should educate providers and patients about prevention, particularly since only a third of state public health agencies have cancer prevention/control programs targeting AI/ANs.²⁸ Fortunately, screening can be improved when programs are designed for AI/ANs, input from communities, providers, and state health organizations is solicited,^{9,29} and lay health advisors and community health aides are trained.^{27,30} Lastly, our finding that many older, urban AI/ANs received inadequate preventive care underscores the need to develop culturally relevant educational materials.

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REFERENCES

- Nystrom L, Rutqvist LE, Wall S, et al. Breast cancer screening with mammography: overview of Swedish randomized trials. *Lancet*. 1993;3421:973-8.
- Anderson PA, Fortinsky R, Bowman K, Miller DG, Landefeld CS. Do older patients remember preventive care? *J Gen Intern Med*. 1995;(April suppl):97. Abstract.
- Moormeier J. Breast cancer in black women. *Ann Intern Med*. 1996;124:897-905.
- Hayward R, Shapiro M, Freeman A, et al. Who gets screened for cervical and breast cancer? Results from a new national survey. *Arch Intern Med*. 1988;148:1177-81.
- Woolhandler S, Himmelstein DU. Reverse targeting of preventive care due to lack of health insurance. *JAMA*. 1988;259:2872-4.
- Burhansstipanov L, Dresser C. Native American Monograph No. 1: Documentation of the Cancer Research Needs of American Indians and Alaska Natives. Washington, DC: NCI; 1994. NIH publication 94-3603.
- NICOA. Annual Report. Albuquerque, NM: National Indian Council on Aging; 1981.
- Kramer BJ. Urban American Indian aging. *J Cross-Cultural Gerontol*. 1991;6:205-17.
- Hampton JW. Cancer prevention and control in American Indians/Alaska Natives. *Am Indian Culture Res J*. 1992;16:41-50.
- O'Brien M. Urban Indian Health Comparative Analysis Report. St. Paul, Minn: American Indian Health Care Association; 1992.
- Valway S, ed. Cancer Mortality Among Native Americans in the United States: Regional Differences in Indian Health, 1984-88; Trends over Time, 1968-1987. Rockville, Md: USDHHS, Public Health Service, Indian Health Service; 1991.
- Giroux J, Welty TK, Oliver FK, Kaur JS, Leonardson G, Cobb N. Low national breast and cervical cancer-screening rates in American Indian and Alaska Native women with diabetes. *J Am Board Fam Pract*. 2000;13:239-45.

13. Giuliano A, Papenfuss M, deZapian JD, Tilousi S, Nuvayestewa L. Breast cancer screening among southwest American Indian women living on-reservation. *Prev Med.* 1998;27:135-43.
14. Gordon PR, Campos-Outcalt D, Steele L, Gonzales C. Mammography and Pap smear screening of Yaqui Indian women. *Public Health Rep.* 1994;109:99-103.
15. Kottke TE, Trapp MA. Implementing nurse-based systems to provide American Indian women with breast and cervical cancer screening. *Mayo Clin Proc.* 1998;73:815-23.
16. Gilliland FD, Mahler R, Hunt C, Davis SM. Preventive health care among rural American Indians in New Mexico. *Prev Med.* 1999;28:194-202.
17. USDHHS. Regional Differences in Indian Health. Rockville, Md: Indian Health Service, Office of Planning, Evaluation, and Legislation; 1995.
18. Davis T, Arnold C, Jackson R, Glass J, Sentell T, Stewart A. Knowledge and attitudes about screening mammography. *J Gen Intern Med.* 1995;(April suppl):99. Abstract.
19. Welty TK, Lee ET, Yeh J, et al. Cardiovascular disease risk factors among American Indians. The Strong Heart Study. *Am J Epidemiol.* 1995;142:269-87.
20. Gillum RF, Gillum BS, Smith N. Cardiovascular risk factors among urban American Indians: blood pressure, serum lipids, smoking, diabetes, health knowledge, and behavior. *Am Heart J.* 1984; 107:765-76.
21. Ellis JL, Campos-Outcalt D. Cardiovascular disease risk factors in Native Americans: a literature review. *Am J Prev Med.* 1994; 10:295-307.
22. Cigarette smoking among adults — United States, 1995. *MMWR Morb Mortal Wkly Rep.* 1998;46:1217-20.
23. Lando HA, Johnson KM, Graham-Tomasi RP, McGovern PG, Solberg L. Urban Indians' smoking patterns and interest in quitting. *Public Health Rep.* 1992;107:340-4.
24. McIntyre L, Shah CP. Prevalence of hypertension, obesity and smoking in three Indian communities in northwestern Ontario. *CMAJ.* 1986;134:345-9.
25. Samet JM, Key CR, Hunt WC, Goodwin JS. Survival of American Indian and Hispanic cancer patients in New Mexico and Arizona, 1969-82. *J Natl Cancer Inst.* 1987;79:457-563.
26. Hubbell FA, Mishra SI, Chavez LR, Valdez RB. Cultural beliefs about breast and cervical cancer among Latinas and Anglo women. *J Gen Intern Med.* 1995;(April suppl):121. Abstract.
27. Margolis KL, Lurie N, McGovern PG, Tyrrell M, Slater JS. Increasing breast and cervical cancer screening in low-income women. *J Gen Intern Med.* 1998;13:15-21.
28. Michalek AM, Mahoney MC. Provision of cancer control services to Native Americans by state health departments. *J Cancer Educ.* 1994;9:145-7.
29. Hampton JW. New model for cancer screening in American Indian women. *Mayo Clin Proc.* 1998;73:916.
30. Sox CH, Dietrich AJ, Goldman DC, Provost EM. Improved access to women's health services for Alaska natives through community health aide training. *J Community Health.* 1999;24:313-23.
31. Hayward SA, Steinberg EP, Ford DE, Roizen MF, Roach KW. Preventive care guidelines: 1991. *Ann Intern Med.* 1991;114: 758-83.



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