Patient and Visit Characteristics Associated with Opportunistic Preventive Services Delivery

Susan A. Flocke, PhD; Kurt C. Stange, MD, PhD; and Meredith A. Goodwin, MS
Cleveland, Ohio

BACKGROUND. This study's purpose was to identify patient and visit characteristics associated with the use of illness visits as opportunities for the delivery of preventive services and to determine if time is allocated differently during illness visits that make use of these opportunities.

METHODS. Research nurses directly observed the delivery of preventive services during consecutive patient visits on 2 separate days in the offices of 138 family physicians. Data on patient eligibility for preventive services were collected by medical record review. Time use during patient visits was categorized using the Davis Observation Code (DOC). Patient characteristics, visit characteristics, and time use were compared during illness visits in which at least one service recommended by the US Preventive Services Task Force was delivered to eligible patients, compared with illness visits during which no recommended preventive services were delivered.

RESULTS. Preventive services were delivered during 32% of 3547 illness visits. Adults, overweight patients, those who smoke or drink alcohol, new patients, and patients with fewer visits in the past year were more likely to receive preventive services. Patient request was also associated with increased delivery of preventive services. The presence of another family member, visits for an acute illness, and the prescription of a drug were associated with a decreased likelihood of a patient's receiving preventive services. When preventive services were delivered during illness visits, less time was spent on chatting, procedures, and physical examination, and more time was spent on history-taking.

CONCLUSIONS. Family physicians take greater advantage of opportunities for the delivery of preventive services during the illness visits of high-risk patients. The results of our study suggest strategies that could be used to expand the opportunistic delivery of preventive services to other patients and types of visits.

KEY WORDS. Preventive health services; patient satisfaction; office visits; physicians, family. *(J Fam Pract 1998; 47:202-208)*

Approximately half of all deaths occurring in the US are attributable to behavioral factors, such as tobacco and alcohol use, diet and exercise habits, motor vehicle accidents, and risky sexual activity. These deaths are potentially preventable by changes in personal health practices.[1] In addition, preventive screening services and immunizations have substantial potential to diminish morbidity and mortality.[2] However, despite the acknowledgment of both patients[1,3-7] and physicians[1,7-10] that preventive services are important, the actual delivery rate is low.[8,11-14]

To increase the number of patients who are up to date on recommended preventive services, the US Preventive Services Task Force (USPSTF)[2] and the Canadian Task Force on the Periodic Health Examination[15] recommend the use of illness visits as opportunities for providing such services. The delivery of clinical preventive services to patients during illness visits may be one way to provide them to patients who do not visit a physician regularly, especially those patients with limited access to care. Although the potential barrier of competing time demands is a clearly demonstrated reality,[16-19] preventive services interventions do occur during approximately one third of illness visits in community practice.[16] Patient satisfaction does not appear to be a barrier to opportunistic preventive services delivery, even though the delivery of these services is associated with longer visits.

Despite the importance of preventive services, investigation of factors associated with the delivery of such services during illness visits has been limited. Studies of "missed opportunities" for childhood immunizations[20-25] and some selected screening services[26,28] have been primarily descriptive. A few studies have investigated a limited number of patient and visit characteristics, such as age,[23,28] reason for visit,[28] and insurance status.[23] This literature is focused on specific services to patients in a relatively narrow age range, however, so it is difficult to generalize the findings to the broad spectrum of patients and services in family practice.

One purpose of our study was to determine which

Submitted, revised, March 21, 1998.
From the Department of Family Medicine (S.A.F., K.C.S., M.A.G.), the Department of Sociology (K.C.S.), and the Department of Epidemiology & Biostatistics (K.C.S., M.A.G.) at Case Western Reserve University, and the Ireland Cancer Center at Case Western Reserve University and University Hospitals of Cleveland (K.C.S., S.A.F.). Requests for reprints should be addressed to Susan Flocke, PhD, Department of Family Medicine, 11001 Cedar Rd, Suite 306, Cleveland, OH 44106. E-mail: saf6@po.cwru.edu

© 1998 Appleton & Lange/ISSN 0094-3509

TABLE 1

Association of Patient Characteristics with the Delivery of Preventive Services During Illness Visits

	No Preventive Services Delivered (n=2394)	At Least One Preventive Service Delivered (n=1153)	P
Age (y), %			
≤17	24.1	10.5	<.001
18 - 39	23.3	27.4	
40 - 64	30.5	37.9	
≥65	22.1	24.2	
Sex, %			
Male	39.9	37.4	NS
Female	60.1	62.6	
Race, %			
White	89.4	87.1	.050
Nonwhite	10.6	12.9	
Education (18 and older), %			
High school or less	60.9	53.3	NS
Greater than high school	39.1	46.7	
Insurance, %			
Medicare	24.6	27.0	NS
Medicaid	6.8	7.6	
Fee for service	20.6	18.5	
Managed care	36.8	35.2	
Other	11.2	11.6	
Patient status, %			
New patient	4.5	12.5	<.001
Established patient	95.5	87.5	
Mean health status (1=poor, 5=excellent)	3.7	3.6	.035
Mean duration of relationship, y	5.6	5.6	NS
Mean no. of visits to practice last year	4.7	4.0	<.001
Mean body mass index*	26.2 (n=716)	27.9 (n=315)	.001
Smoking status,%*			
Current smoker	13.8 (n=1698)	20.8 (n=823)	<.001
Drinking status,%*			
Drinker	29.3 (n=950)	36.2 (n=393)	.015

* Measured in round 2 of data collection only, not considered in multivariable models because of loss of sample size.

patient and visit characteristics are associated with the delivery of preventive services during illness visits. Such knowledge may lead to a better understanding of the factors that impede or facilitate interventions, and may guide the development of strategies to increase the use of illness visits as opportunities to deliver needed preventive services. A second purpose of the study was to determine if and how time was allocated differently during illness visits in which preventive services were delivered, compared with illness visits without such services. Understanding the association of the delivery of preventive services and time use during illness visits could indicate ways to circumvent the major barrier to preventive services delivery during illness visits: time.

METHODS

Our study was part of the larger Direct Observation of Primary Care (DOPC) study, which examined the content of 4454 outpatient visits to 138 family physicians in northeast Ohio. The methods of the DOPC study have been described in detail elsewhere.[29,30] Briefly, research nurses directly observed consecutive patient visits to participating physicians for 2 days scheduled 4 to 5 months apart. Patients were informed about the study in the waiting room before meeting with their physician, and were enrolled if they gave verbal consent. The study was described as an examination of the content of family practice, and no specific hypotheses were shared with the physicians or the patients.

Data collection methods for this study included (1) direct observation of the patient visit, using a checklist of delivery of specific services and a modified version[30] of the Davis Observation Code (DOC),[31] (2) a patient exit questionnaire, and (3) medical record review.

Three steps were followed to assess whether patients received USPSTF-recommended preventive services during the visit. First, patient eligibility for specific preventive services was determined from medical record review, using an algorithm based on the USPSTF age- and sex-specific recommendations. Patients whose medical record indicated that they had not received a particular service within the appropriate time frame recommended for their age and sex were considered eligible for that service during the observed encounter. We determined by direct observation whether an individual received each service for which he or she was eligible. A dichotomous variable was created to indicate whether patients received any preventive service for which they

were or were not eligible during the observed outpatient visit. Height, weight, and blood pressure measurements were excluded from the summary indicator, since these were commonly performed by medical assistants or nurses previous to most physician visits.

Patient characteristics, including age, sex, duration of relationship with the physician, and the number of visits to the practice in the last year, were noted during review of the medical record. Patients were classified as "new" if it was their first visit to the practice or if they had not been seen during the previous 3 years.[32] Patients' education level and health status, measured with a modified version[29] of the Medical Outcomes Study (MOS) 6-item General Health Survey measure,[32] were ascertained by the patient questionnaire. Patients' race (white vs nonwhite) was determined by observation during the encounter. Data on body mass index and the use of tobacco and alcohol were ascertained starting with the second data collection visit to each physician, so are available for only half the sample.

The type of visit was classified using the National Ambulatory Medical Care Survey (NAMCS) typology,[33] and determined by direct observation. Additional variables determined by direct observation included: whether another family member was present, whether the patient requested behavior change assistance or another type of preventive service (ie, screening or immunization), whether a referral was made, and whether drugs were prescribed. The use of preventive services flow sheets was determined by medical record review.

TABLE 2

Visit Characteristics Associated with the Delivery of Preventive Services During Illness Visits

	No Preventive Services Delivered (n=2394)	At Least One Preventive Service Delivered (n=1153)	P
Reason for visit, %			
Acute care	74.3	65.5	<.001
Chronic illness	25.7	34.5	
Another family member present, % yes	35.7	22.7	<.001
Patient requests behavior change help,* % yes	1.7 (n=1325)	3.5 (n=550)	.016
Patient requests prevention,* % yes	2.3 (n=1325)	5.3 (n=550)	<.001
Drug(s) prescribed, % yes	69.9	64.5	.002
Referral made, % yes	9.3	11.3	NS
Use of a prevention flow sheet, % yes	18.4	20.0	NS

* Measured in round 2 of data collection only, not considered in multivariable models because of loss of sample size.

Analysis

Patient visits for reasons other than acute or chronic illness were excluded. Illness visits during which preventive services were delivered were compared with illness visits without preventive services, using the *t* test for continuous variables and the chi-square test for categorical variables. Logistic regression was used to evaluate the independent contribution of univariately significant patient and visit characteristics associated with the delivery of preventive services during these visits. Finally, the association of the 20 DOC time-use variables with opportunities for delivering preventive services was evaluated using analysis of covariance, with the patient and visit characteristics that were significant in the logistic regression ($P \leq .01$) as the covariates. The sample size of 3547 provides 90% power to detect .15 of a standard deviation difference in the group means, using a *t* test with a .01 two-sided significance level.[34] The alpha value was set at .01 because of the multiple planned comparisons.

RESULTS

The characteristics of participating physicians and patients have been described in detail elsewhere[29,30]; they are largely similar to the physician characteristics of members of the American Academy of Family Physicians and to the patient characteristics reported in the NAMCS.[29] The physician sample slightly overrepresents female physicians and residency graduates.[30]

Of the 4994 patients presenting for care by their family physicians during the 2 observation days, 4454 (89%) agreed to have their visits observed. Medical records were available for review for 4432 visits (99.5%). We excluded from consideration 831 patients who were seen for well care, prenatal care, or administration, and an additional 54 patients for whom data was missing on the DOC or the age variable was missing from the medical record. The final sample size for the study was 3547. The mean age of this final sample was 36 years; 62% were female, 91% were white, and 42% of adults had some education beyond high school. All 3547 patients presenting for illness visits were eligible for at least one preventive service.

The delivery of at least one preventive service recommended by the USPSTF (excluding blood pressure,

TABLE 3

Patient and Visit Characteristics Independently Associated with the Delivery of Preventive Services During Illness Visits

Characteristic	Odds Ratio	(95% CI)	*P*
Age in years			
≤17	1.00		
18-39	2.01	(1.50, 2.69)	<.001
40-64	2.33	(1.74, 3.13)	<.001
≥65	2.10	(1.56, 2.82)	<.001
No. of visits in last year	0.91	(0.89, 0.94)	<.001
Reason for visit			
Acute problem	1.00		
Chronic illness	1.56	(1.32, 1.84)	<.001
Patient status			
Established	1.00		
New	2.51	(1.87, 3.35)	<.001
Drug(s) prescribed			
No	1.00		
Yes	0.76	(0.65, 0.89)	<.001
Another family member present			
No	1.00		
Yes	0.84	(0.68, 1.04)	0.111

CI denotes confidence interval.

weight, and height measurements) was observed during 32% of illness visits.[16] Differences in patient characteristics between those who received preventive services and those who did not are depicted in Table 1. Patients older than 18 years, those who had fewer visits to the practice in the last year, and new patients were more likely to receive at least one preventive service during the visit. Physicians were more likely to deliver preventive services to patients who were overweight, or who smoked or drank alcohol. There were no significant associations between preventive services delivery and a patient's sex, education level, type of insurance, or the duration of the patient-physician relationship.

A number of visit characteristics were associated with the opportunistic delivery of preventive services (Table 2). Visits for chronic illness were more likely to include preventive services than visits for acute illness. When a family member was present or when drugs were prescribed, the rate of delivery was lower. When a patient was observed to request some preventive service the delivery was almost twice as likely, although only half of those who requested preventive services received one for which they were eligible. There was no association between the delivery of preventive services and referrals or the use of a prevention flow sheet.

Each of the significant ($P \leq .01$) patient and visit characteristics were entered into a multivariable logistic model to determine which were independently associated with the outcome. As presented in Table 3, patient age, the number of visits in the past year, the reason for visit, whether the patient was new or established, and whether drugs were prescribed remained significantly associated with the delivery of preventive services. Because data were available on only half the sample for the at-risk characteristics (ie, whether patients were overweight, smokers, or drinkers), each was evaluated in a separate multivariable model with the patient and visit characteristics. Tobacco use remained significantly associated with preventive services delivery in the multivariable model, but alcohol use and being overweight did not.

Table 4 shows that during illness visits that included delivery of a preventive service, a smaller proportion of the visit was spent on conducting the physical examination, planning treatment, and chatting, and a significantly greater proportion of the visit was spent on history-taking, gathering family information, and counseling. A greater proportion of these visits was spent on topics recommended by the USPSTF, including health education, health promotion, and discussions of exercise, smoking, nutrition, and substance abuse. These findings indicate that time use is structured differently during illness visits in which opportunistic preventive services delivery occurs, even when controlling for significant patient and visit characteristics.

DISCUSSION

The study findings illustrate that (1) patient and visit characteristics may hinder or facilitate the delivery of preventive services during illness visits; (2) physicians seem to target opportunistic preventive service delivery toward those patients who may need intervention the most; and (3) time use is structured somewhat differently in illness visits that include preventive services.

PATIENT AND VISIT CHARACTERISTICS

Our findings, like others,[23,25,28,35] show that most illness visits by young patients represent missed opportunities for intervention. Previous research has indicated that children who receive more medical services also receive more preventive services.[36] In our sample, children and adolescents were only half as likely to receive opportunistic preventive services as adults, even after controlling for other visit characteristics, including the number of visits in the past year.

New patients were 2.5 times more likely than established patients to receive preventive services during an illness visit. Multiple competing demands during established patient visits, such as follow-up of previous problems, may

account for some of this difference. Other researchers[37] also found that prevention was more likely to be addressed in new-patient visits. They suggest that new-patient protocols, which include questions regarding family history and tobacco use, may have prompted the physician's discussion of specific questions during the new-patient visit.

Patient activation,[38,39] or increased patient involvement in care, has been previously recommended as a method to increase health outcomes,[40] but has rarely been studied.[41] Our data indicate that patients who requested preventive services were more likely to receive a recommended preventive service during the illness visit. This finding suggests that interventions to increase patient requests for appropriate services could result in increased delivery of those services. The use of patient-held mini-records[42] may be one way to encourage patients to request prevention during the office visit and to focus patient requests on indicated services.

TABLE 4

Differences in Time Use During Illness Visits in Which Preventive Services Are Delivered

Time Use Category	No Preventive Services Delivered (n=2394)	At Least One Preventive Service Delivered (n=1153)	P
History-taking*	55.9	58.7	<.001
Planning treatment	34.5	32.4	<001
Physical examination	22.6	20.7	.004
Feedback on evaluation results	14.1	14.1	NS
Family information	9.2	10.4	.003
Chatting	7.7	6.9	.016
Structuring the interaction	7.5	7.2	NS
Patient questions	7.0	7.2	NS
Procedures	2.6	1.9	.056
Compliance assessment	1.4	1.4	NS
Assessing patient's health knowledge	1.2	1.3	NS
Negotiation	1.1	1.1	NS
Counseling	1.1	1.9	<.001
Health education	19.3	20.4	.045
Preventive services	1.5	3.3	<.001
Nutrition advice	1.1	3.	<.001
Exercise advice	0.8	3.0	<.001
Health promotion	0.7	1.9	<.001
Smoking behavior assessment or advice	0.6	2.6	<.001
Substance use assessment or advice	0.0	0.9	<.001

Note: Time use during illness visits adjusted for patient age, number of visits in past year, reason for visit, new or established patient, another family member present, and drugs prescribed.

* Values represent the mean proportion of total time spent engaged in the activity.

Targeted Preventive Services

Visits for chronic illness were more likely to be used to perform recommended preventive services than were visits for acute illness, perhaps because chronic illnesses provide more "teachable moments"[43] for linking the illness to prevention. For example, previous reports have shown that smokers seen for chronic illness visits with tobacco-related problems are twice as likely to receive tobacco cessation advice as smokers seen for a chronic problem not related to tobacco use.[44,45]

Two groups of patients in this study were considered to be at risk: (1) patients with behavioral risk factors of smoking, alcohol use, or obesity, and (2) patients who do not frequently see a physician and for whom an illness visit may be the only opportunity to receive preventive services. Patients with poor access tend to have inadequate preventive services delivery[48,49] and thus are at highest risk for many preventable causes of premature disease and disability.[2] Our data suggest that physicians are more likely to use illness visits to offer preventive services to these at-risk patients. This may be a result of physician attitudes[46] and attributed importance[47] associated with addressing these specific risk factors.

In this sample, patients who had fewer visits in the past year were more likely to receive recommended preventive services during their illness visits. It appears that physicians are taking advantage of their more limited opportunities with patients who make fewer visits.

Use of Time

Time is frequently cited as a major barrier to preventive services,[18,19,50] and illness visits during which preventive ser-

vices were delivered have been shown to be approximately 2 minutes longer than other visits.[16] However, our findings indicate that addressing prevention during illness visits may not merely involve an additional 2 minutes tacked on to the end of the visit but also includes a modification of how time is allocated during the visit. A reduction in discretionary time spent on chatting, physical examination, and planning treatment may create the additional time needed to deliver important preventive services.

LIMITATIONS

Although the strength of this study is the use of direct observation, two study limitations do need to be addressed. Many patient and visit characteristics were evaluated; however, we acknowledge that additional important patient and visit characteristics may be associated with the delivery of preventive services. It is also possible that physician characteristics and organizational structures may be associated with opportunistic preventive interventions, and further investigation is warranted.

CONCLUSIONS

Through direct observation of a large number of visits, we found that physicans tend to use illness visits to deliver preventive services to certain types of high-risk patients. The expansion of this model of preventive services delivery to other situations, such as visits by children, adolescents, and established patients, may result in a substantial increase in patients who are up to date on recommended preventive services. Flexible modification of time use during some illness visits is one strategy that may allow the integration of preventive services into the agenda of the visit.

ACKNOWLEDGMENTS

This research was supported by a grant from the National Cancer Institute (1RO1 CA 60862) and by a Robert Wood Johnson Generalist Physician Faculty Scholars Award to Dr Stange. The authors are grateful to the physician members of the Research Association of Practicing Physicians (RAPP) and to the office staffs and patients, without whose participation this study would not have been possible. William R. Gillanders, MD, Robert B. Kelly, MD, and Stephen J. Zyzanski, PhD, provided helpful suggestions on earlier drafts of this manuscript.

REFERENCES

1. McGinnis JM, Foege W. Actual causes of death in the United States. JAMA 1993; 270:2207-12.
2. US Preventive Services Task Force. Guide to Clinical Preventive Services. Baltimore, Md: Williams & Wilkins, 1996.
3. Wechsler H, Levine S, Idelson RK, Schor EL, Caokley E. The physician's role in health promotion revisited — a survey of primary care practitioners. N Engl J Med 1996; 334:996-8.
4. Zyzanski SJ, Stange KC, Kelly RB, et al. Family physicians' disagreements with the US Preventive Services Task Force recommendations. J Fam Pract 1994; 39:140-7.
5. Stange KC, Kelly RB, Chao J, et al. Physician agreement with US Preventive Services Task Force recommendations. J Fam Pract 1991; 34:409-16.
6. Czaja R, McFall SL, Warnecke RB, Ford L, Kaluzny AD. Preferences of community physicians for cancer screening guidelines. Ann Intern Med 1994; 120:602-8.
7. Ward JE, Boyle K, Redman S, Sanson-Fisher RW. Increasing women's compliance with opportunistic cervical cancer screening: a randomized trial. Am J Prev Med 1991; 7:285-91.
8. Healthy People 2000: National Health Promotion and Disease Prevention Objectives. DHHS Publication No. (PHS) 91-50212. Washington, DC: US Government Printing Office, 1991.
9. Cogswell B, Eggert MS. People want doctors to give more preventive care. A qualitative study of health care consumers. Arch Fam Med 1993; 2:611-9.
10. Stanford JB, Solberg LI. Rural patients' interests in preventive medical care. J Am Board Fam Pract 1991; 4:11-8.
11. Anderson L, May DS. Has the use of cervical, breast, and colorectal cancer screening increased in the United States? Am J Public Health 1995; 85:840-2.
12. Centers for Disease Control. Physician and other health care professional counseling of smokers to quit — United States, 1991. MMWR 1991; 42:854-7.
13. Lewis CE. Disease prevention and health promotion practices of primary care physicians in the United States. Am J Prev Med 1988; 4(suppl):9-17.
14. Pommerenke FA, Weed DL. Physician compliance: improving skills in preventive medicine practices. Am Fam Physician 1991; 43:560-8.
15. Canadian Task Force on the Periodic Health Examination. The Periodic Health Examination 1984. A report of the Periodic Health Examination Task Force. Ottawa, Ontario: Health Services Directorate, Health Services and Promotion Branch, Department of National Health and Welfare, 1984.
16. Stange KC, Flocke SA, Goodwin MA. Opportunistic preventive service delivery: are time limitations and patient satisfaction barriers? J Fam Pract 1998; 46:419-24.
17. Kottke TE. Effecting health maintenance. Fam Pract Res J 1991; 11:129-31.
18. Jaén CR, Stange KC, Nutting PA. Competing demands of primary care: a model for the delivery of clinical preventive services. J Fam Pract 1994; 38:166-71.
19. Kottke TE, Brekke ML, Solberg LI. Making "time" for preventive services. Mayo Clin Proc 1993; 68:785-91.
20. Wood D, Pereyra M, Halfon N, Hamlin J, Grabowsky M. Vaccination levels in Los Angeles public health centers: the contribution of missed opportunities to vaccinate and other factors. Am J Public Health 1995; 85:850-3.
21. Brown J, Melinkovich P, Gitterman B, Ricketts S. Missed opportunities in preventive pediatric health care: immunizations or well-child care visits? Am J Dis Child 1993; 147.
22. Szilagyi PG, Rodewald LE. Missed opportunities for influenza vaccination among children with asthma. Pediatr Infect Dis J 1992; 11:705-8.
23. Szilagyi PG, Rodewald LE, Humiston SG, et al. Missed opportunities for childhood vaccinations in office practices and the effect on vaccination status. Pediatrics 1993; 91:1-7.
24. Ball TM, Serwint JR. Missed opportunites for vaccination and the delivery of preventive care. Arch Pediatr Adolesc Med 1996; 150:858-61.
25. Holt E, Guyer B, Hughart N, et al. The contribution of missed opportunities to childhood underimmunization in Baltimore. Pediatrics 1996; 97:474-80.
26. Fruchter RG, Boyce J, Hunt M. Missed opportunities for early diagnosis of cancer of the cervix. Am J Public Health 1980; 70:418-20.
27. Giles WH, Anda RF, Jones DH, Serdula MK, Merritt RK, DeStefano F. Recent trends in the identification and treatment of high blood cholesterol by physicians: progress and missed opportunities. JAMA 1993; 269:1133-8.
28. Fairbrother G, Friedman S, DuMont KA, Lobach KS. Markers for primary care: missed opportunities to immunize and screen for lead and tuberculosis by private physicians serving large numbers of inner-city Medicaid-eligible children. Pediatrics 1996; 97:785-90.

29. Stange KC, Zyzanski SJ, Smith T, et al. How valid are medical records and patient questionnaires for physician profiling and health services research? A comparison with direct observation of patient visits. Med Care 1998; 36:851-67.
30. Stange KC, Zyzanski SJ, Jaén CR, et al. Illuminating the 'black box': a description of 4454 patient visits to 138 family physicians. J Fam Pract 1998; 46:377-89.
31. Callahan EJ, Bertakis KD. Development and validation of the Davis Observation Code. Fam Med 1991; 23:19-24.
32. Ware JE, Nelson E, Sherbourne C, Stewart A. Preliminary Tests of the 6-Item General Health Survey: a patient application. In: Ware ASJ, ed. Measuring functioning and well-being. Durham, NC: Duke University Press, 1992:291-307.
33. Schappert SM. National Ambulatory Medical Care Survey: 1994 Summary. Advance data from vital and health statistics, No. 253. Hyattsville, Md: National Center for Health Statistics, 1996.
34. Elashoff JD. nQuery Advisor Version 2.0 User's Guide. Los Angeles, Calif: Dixon Associates, 1997.
35. Szilagyi PG, Rodewald LE, Humiston SG, et al. Reducing missed opportunities for immunizations: easier said than done. Arch Pediatr Adolesc Med 1996; 150:1193-200.
36. Benson P, Gabriel A, Katz H, Steinwachs D, Hankin J, Starfield B. Preventive care and overall use of services: are they related? Am J Dis Child 1984; 138:74-8.
37. Bertakis KD, Callahan EJ. A comparison of initial and established patient encounters using the Davis Observation Code. Fam Med 1992; 24:307-11.
38. Lipkin M. Patient education and counseling in the context of modern patient-physician-family communication. Patient Educ Counseling 1996; 27:5-11.
39. Frederikson LG, Bull PE. Evaluation of a patient education leaflet designed to improve communication in medical consultations. Patient Educ Counseling 1995; 25:51-7.
40. Greenfield S, Kaplan S, Ware JE. Expanding patient involvement in care. Effects on patient outcomes. Ann Intern Med 1985; 102:520-8.
41. Sander RW, Holloway RL, Eliason BC, Marbella AM, Murphy B, Yuen S. Patient-initiated prevention discussions. Two interventions to stimulate patients to initiate prevention discussions. J Fam Pract 1996; 43:468-74.
42. Dickey LL, Petitti D. A patient-held minirecord to promote adult preventive care. J Fam Pract 1992; 34:457-63.
43. Stange KC, Kelly RB, Smith CK, Frank S. Preventive medicine in primary care: moving from theory to practice. Postgrad Med 1991; 90:125-8.
44. Jaén CR, Stange KC, Tumiel L, Nutting PA. Missed opportunities for prevention: smoking cessation counseling and the competing demands of practice. J Fam Pract 1997; 45:348-54.
45. Jaén CR, Crabtree BF, Zyzanski SJ, Stange KC. Smoking status ascertainment and cessation counseling. J Fam Pract 1998; 46:425-428.
46. Scott CS, Neighbor WE, Brock DM. Physicians' attitudes toward preventive care services: a seven-year prospective cohort study. Am J Prev Med 1992; 8:241-8.
47. Sobal J, Valente CM, Herbert L. Muncie J, Levine DM, Deforge BR. Physicians' beliefs about the importance of 25 health promoting behaviors. Am J Public Health 1985; 75:1427-8.
48. Healthy People 2000: midcourse review. Washington, DC: US Government Printing Office, 1995.
49. Himmelstein S, Woolhandler DU. Reverse targeting of preventive care due to lack of health insurance. JAMA 1988; 259:2872-4.
50. Wender R. Cancer screening and prevention in primary care. Cancer 1993; 72:1093-9.