

Primary Care: Is There Enough Time for Prevention?

Kimberly S. H. Yarnall, MD, Kathryn I. Pollak, PhD, Truls Østbye, MD, PhD, Katrina M. Krause, MA, and J. Lloyd Michener, MD

Despite evidence of the effectiveness of preventive services and the development of published national guidelines,^{1,2} actual rates of delivery of preventive health care services remain low.³ In a recent study of family practices in Michigan, completion of all relevant cancer screening tests, including breast, cervical, colorectal, and prostate cancer screening, was achieved for only 3% of women and 5% of men aged 50 and older.⁴ Nationwide, rates of preventive services delivery are also low, with 77% of women having had a Papanicolaou test in the past 3 years and only 56% of women aged 50 years and older having had a breast examination and mammogram in the preceding 1 to 2 years. Only 30% of adults aged 50 years and older have undergone fecal occult blood testing within the previous 2 years, and only 33% have ever received proctosigmoidoscopy.⁵

Several studies have investigated why preventive services delivery rates are low. The most common barriers identified are lack of time during the office visit, inadequate insurance reimbursement, patient refusal to discuss or comply with recommendations, and lack of physician expertise in counseling techniques.^{6–10} Consistent with the finding that time is a salient barrier, Zyzanski and colleagues have shown that high-volume physicians perform fewer preventive services.¹¹ Although a recent study showed that time spent in office visits has increased slightly in the past decade,¹² physicians continue to claim that not having enough time is a barrier to performing preventive services.^{13–15}

Most patients require more than 1 or 2 preventive services each year. In a study of patients in a family practice waiting room, an average of 25 services were due at the time of the visit for each patient, according to recommendations of the US Preventive Services Task Force (USPSTF).¹⁶ Furthermore, the number of recommended preventive services is increasing as new tests are developed and research shows the value of preventive care for chronic diseases. Some

Objectives. We sought to determine the amount of time required for a primary care physician to provide recommended preventive services to an average patient panel.

Methods. We used published and estimated times per service to determine the physician time required to provide all services recommended by the US Preventive Services Task Force (USPSTF), at the recommended frequency, to a patient panel of 2500 with an age and sex distribution similar to that of the US population.

Results. To fully satisfy the USPSTF recommendations, 1773 hours of a physician's annual time, or 7.4 hours per working day, is needed for the provision of preventive services.

Conclusions. Time constraints limit the ability of physicians to comply with preventive services recommendations. (*Am J Public Health.* 2003;93:635–641)

national agencies (e.g., the American Cancer Society) have created their own guidelines, increasing the number of screening tests to be considered. Given competing financial demands to see a greater number of patients while providing increasing levels of preventive services, it is worth examining whether providing the recommended preventive services for the patients in a practice can be reasonably accomplished.

Delivery of preventive services obviously consumes physician time, but no study has estimated how much time is required to provide each service or, more importantly, the time needed to deliver these services to all patients in a practice. In this study we examined the following questions: To fully achieve current recommendations for the provision of preventive services, how much time would be required for a practicing physician to provide the recommended services to all patients? What percentage of the physician's available work hours would need to be spent delivering these services?

METHODS

To calculate the total time necessary to provide preventive services to a population, we considered 4 elements: (1) a list of recommended services, (2) the frequency of performing each service, (3) the number of people requiring each service, and (4) the time required to administer each service. The product of these 4 factors was compared with

the annual clinical time available to primary care physicians.

List of Services

The list of services used in our study was derived from the 1996 USPSTF *Guide to Clinical Preventive Services*.¹ This guideline defines the target population for each service by age and sex and in most cases provides the frequency with which the service should be delivered. The USPSTF provides ratings for each service examined, based on the burden of suffering from the target condition and the potential effectiveness of the preventive intervention. The official recommendations include only those services ranked "A" and "B," which together are "recommended as part of the periodic health examination of the asymptomatic individual."^{1(plvii)} The authors note that these recommendations are not intended to be exhaustive.^{1(pbx)} Even services ranked "C"—for which there is a lack of clear evidence to recommend for or against routine provision—are not always contraindicated: "Individual clinical decisions should be made on a case-by-case basis."^{1(pliii)}

In the interest of keeping our estimates conservative, we included only those services listed in the official recommendations (the A and B services). Among these, only outpatient services were included, and in situations where recommendations overlapped (e.g., folic acid supplementation is recommended for both the general female popula-

tion and for pregnant women), the preventive health service was included for 1 group only.

The USPSTF identifies several high-risk groups that require additional screening and counseling beyond the recommendations for the general population. There are similar recommendations for different high-risk groups that likely overlap (i.e., the rapid plasma reagin and venereal disease reference laboratory tests, HIV screening, and hepatitis A and B vaccines are recommended for both high-risk sexual behavior and intravenous injection of drugs). We included such services in calculations for only 1 of the overlapping populations. Also, high-risk groups with services totaling 5 minutes or less annually were dropped from the analyses.

Frequency of Performing Services

We annualized the frequency of performing a preventive service based on the most conservative USPSTF recommendations, if available, or usual outpatient practice. For example, Papanicolaou tests are recommended every 1 to 3 years, so the annual frequency of service for the eligible population was set to 0.33 (i.e., every 3 years). Likewise, mammography in women aged 50 to 69 years is recommended every 1 to 2 years; the annual frequency was set to 0.5 to reflect the more conservative 2-year interval. In practice, patients usually have several visits in a given year, and the services are assumed to be delivered at any opportune time, during either acute care or health maintenance visits.

Eligible Populations

We set the average panel size for primary care physicians to 2500 patients, a panel size goal reported in the literature.¹⁷ The USPSTF provides preventive recommendations for the age groups birth to 10 years, 11 to 24 years, 25 to 64 years, and 65 years and older, as well as for pregnant women and high-risk individuals. We used US Census Bureau figures¹⁸ to model a panel with an age and sex distribution similar to that of the US population, including children (Table 1). To estimate the number of pregnant women in this panel, we used data from the *National Vital Statistics Reports* (84 births per year per 1000 women aged 15–24 years, 97 births per year per 1000 women aged 25–34 years, and 21 births per 1000 women aged 35–44 years).¹⁹ We estimated the number of individuals in high-risk groups from the 1999 *Statistical Abstract of the United States*¹⁸ or from estimates of the prevalence of high-risk behaviors from the Centers for Disease Control and Prevention.²⁰

Time Required Per Service

We assumed an ideal practice, in which the needed preventive services were immediately obvious to the physician and did not include time to review the medical record to discern the patient's needs. The time calculated is that needed to deliver the brief advice or service to a patient “during a typical clinical encounter with a primary care provider”¹ and does not include time that assistants spend providing preventive care. For example, we did not include in the calculations the time re-

quired for a nurse to take vital signs or deliver immunizations.

We based the time required for a primary care physician to deliver each preventive service on published literature whenever possible. We set these literature-based requirements conservatively, based on the shortest times reported for primary care clinicians. The literature sources included recommendations from government agencies, review articles, and published time–motion studies of trained physicians. For example, the *Treating Tobacco Use and Dependence* clinical guideline recommends at least 3 minutes for tobacco cessation counseling.²¹ A clinical breast examination is reported to require 3 minutes per breast.²² Numerous studies indicate that 5 minutes of physician counseling for problem drinkers is effective and that effects are not enhanced by spending additional time.^{23–27}

Studies were not consistent for colon cancer screening with flexible sigmoidoscopy; the time reported for family physicians (17 minutes)^{28–31} conflicted with reports from studies of gastroenterologists (5–6 minutes).^{32–34} We chose to follow the family medicine reports, because our study evaluates the time required by primary care physicians and not subspecialists, who are likely to be more efficient in performing a procedure that relates to their particular field.

If we could not find a source indicating the time requirement for a service, we took the time estimate from similar services for which time requirements were known. For a few procedures for which no similar service could be found, we agreed upon a conservative minimum estimate established from our own clinical experience. For instance, counseling for general injury prevention (e.g., bike helmet use, fall prevention in the elderly) was deemed similar to counseling on seat belt use (1.5 minutes).³⁵ In another example, counseling on more complex behavior changes, such as dietary fat and cholesterol reduction, was set to 8.2 minutes, the average time required during 1 study for completing a brief but effective patient-centered nutrition counseling intervention delivered by a physician.³⁶ Time requirements for folate or calcium intake counseling, however, were not reported in the literature. Although folate and calcium intake are dietary recommendations, we con-

TABLE 1—Number of Patients in the Representative Practice, by Age and Sex: US Population Statistics¹⁸

Patient Age Group	Female	Male	Total
0–10 y	174	182	356
11–24 y	257	269	526
25–34 y	175	173	348
35–44 y	207	204	411
45–54 y	168	160	328
55–64 y	112	102	214
≥ 65 y	186	131	317
Total	1279	1221	2500

cluded that counseling for single behavioral changes (such as increasing folate intake or wearing a seat belt) requires less time than does counseling for complex behavioral changes (reducing fat and cholesterol). Therefore, counseling for changes in folate and calcium intake were grouped with counseling for general injury prevention and were assigned the more conservative time value of 1.5 minutes each rather than 8.2 minutes each. A third example involves contraceptive counseling and sexually transmitted disease (STD) counseling, which are similar to tobacco cessation counseling in that they require identifying those at risk and counseling them on the avoidance of high-risk behaviors. Therefore, contraceptive counseling and STD counseling were assigned the same time requirements as smoking cessation counseling (3 minutes).

We found no time estimates for immunizations in the literature, so we assigned immunizations a time of 0.5 minutes (30 seconds) to account for time discussing indications with patients or parents, assessing risk factors, deciding whether the injection was appropriate, and writing the order. We assigned blood tests and other ordered tests (e.g., fecal occult blood test, mammogram) a time of 1 minute to review the patient's risk status with the patient, order the test, interpret the results, and notify the patient of the results. Similarly, we assigned cultures (e.g., the chlamydia screen) a time of 1 minute. Health checks usually performed by the nurse and reviewed by the physician (e.g., height, weight, and blood pressure) were allotted 0.25 minutes (15 seconds) for a physician to review the information.

Calculating Time Spent in Preventive Service Delivery

To calculate the amount of time needed to provide preventive health services, we multiplied the time requirement per service by the annual frequency of the service, the number of eligible patients in each age/sex category of the preventive service recommendation (Table 1), and the proportion of those people who were eligible for the service. We then summed the times required for the different age and sex groups ($a=1, \dots, m$) and summed the different services ($s=1, \dots, n$). In general,

the total time required for the total patient population for 1 year can be expressed

$$1) \quad \sum_{s=1}^n \sum_{a=1}^m (t \cdot f \cdot n \cdot p),$$

where $\sum_{s=1}^n$ = the sum of services 1 to n , $\sum_{a=1}^m$ = the sum of age/sex groups 1 to m for a specific service; and where t is the time required to deliver the service, f is the annual frequency of delivery of the service, n is the number of individuals in the age/sex group, and p is the proportion of patients in the age/sex group who are due for the service. The time required per service and the annual frequency per service, as well as the study calculations of total service time requirements for adults and children in all eligible age/sex groups, are reported in Tables 2 and 3.

Physician Hours Available for Patient Care

We determined available physician hours with data from the American Association of Family Physicians.³⁷ According to that organization, primary care physicians spend an average of 42.9 hours per week in patient-related service and work an average of 47.9 weeks per year. The result is a total of 2055 work hours per physician per year devoted to patient care.

RESULTS

The distribution of patients in each age/sex category for the model practice is shown in Table 1. Tables 2 and 3 list the recommended preventive services by type and by USPSTF rating. Columns 3, 4, and 5 show the annualized frequency of service, the required number of minutes to deliver the service, and the number of physician hours per year required to deliver the service to eligible patients in the model practice. Approximately 1000 physician hours were needed to provide the recommended preventive services for the adults in the patient panel (Table 2). Based on the 2055 annual hours of physician time available and assuming a 5-day work week (48 weeks/year), a physician would need to spend 4.4 hours of every working day providing preventive services to his or her 1618 adult patients. Table 3 displays the results for the

882 children in the model practice, who require 534 hours of physician time (2.2 hours/day) for preventive services. The requirements of pregnant women and high-risk groups (additional tables, not shown) contribute an additional 173 hours per year. In all, an annual total of 1773 hours, or 7.4 hours of every working day, is required for the provision of all recommended preventive services to a practice of 2500 patients with age and sex distributions based on the US population (Table 4).

Table 4 also shows the annual time requirements for each patient group by the rank of the USPSTF recommendations. The A services include Papanicolaou test, mammogram, and tobacco cessation counseling; the total time requirement for A services for the practice is more than 2 hours per day (525 hours/year). The B services include cholesterol screening, colon cancer screening, dietary counseling, and STD counseling and add 5.2 hours per day spent on preventive care.

DISCUSSION

Our study demonstrates that it is not feasible for physicians to deliver all of the services recommended by the USPSTF to a representative panel of patients. Changing the practice demographics to only adult or only pediatric patients does little to change this conclusion, because the time requirements for each are similar. Children in this study require roughly 0.61 hours per year per child to deliver preventive services, and adults require 0.66 hours per year per adult. Decreasing the panel size is not a very practical or realistic solution; a 50% reduction in panel size is needed to reduce the time requirement to approximately 4 hours a day.

Many theories have been offered to explain why physicians do not offer preventive services to their patients, and these range from lack of reimbursement to patient refusal and lack of time.^{6–10} It appears from our study that the large number of screening recommendations for each patient, coupled with the large numbers of patients in a practice, is likely a major reason for the failure to provide these services. The addition of even small interventions that require little physician time adds significantly to physician workload when

TABLE 2—Time Requirements for Each USPSTF Recommendation for Adults Aged 25 Years and Older in Representative Practice

Rank	Preventive Service	Annual Frequency	Minutes Per Service	Hours Per Year
Screening				
A	Blood pressure	1.00	0.25	6.7
A	Papanicolaou test ^{50,a}	0.33	3.00	14.0
A	Mammogram ^b	0.50	1.00	2.4
A	Clinical breast exam ^{22,b}	1.00	6.00	29.0
B	Height and weight check	1.00	0.25	6.7
B	Total blood cholesterol ^c	1.00	1.00	12.0
B	Fecal occult blood test ^d	1.00	1.00	12.0
B	Sigmoidoscopy ^{28-31,d}	0.25	17.00	49.0
B	Assess for problem drinking ^{51,52}	1.00	0.50	13.0
B	Rubella serology ^e	0.10	1.00	0.8
B	Vision screening ^f	1.00	1.00	5.3
B	Assess for hearing impairment ^f	1.00	1.00	5.3
Counseling				
A	Tobacco cessation ^{21,g}	1.00	3.00	19.0
A	Regular physical activity ^{54,h}	1.00	4.00	108.0
A	Lap/shoulder belt ³⁵	1.00	1.50	40.0
A	Motorcycle/bike/ATV helmet ^h	1.00	1.50	40.0
B	Problem drinking ^{23-27,i}	1.00	5.00	14.0
B	Driving while intoxicated ^h	1.00	3.00	81.0
B	Limit fat and cholesterol/diet ^{36,56}	1.00	8.20	221.0
B	Adequate calcium intake ^a	1.00	1.50	21.0
B	STD prevention ^h	1.00	3.00	81.0
B	Contraception ^l	1.00	3.00	62.0
B	Smoke detector ^h	1.00	1.50	40.0
B	Safe storage/removal of firearms ^h	1.00	1.50	40.0
B	Visits to dental care provider ^h	1.00	1.50	40.0
B	Floss, brush daily ^h	1.00	1.50	40.0
B	Fall prevention ^{f,h}	1.00	1.50	7.9
B	Hot water heater set < 120–130°F ^h	1.00	1.50	7.9
Immunizations				
A	Td booster	0.10	0.50	1.3
B	Rubella ^e	0.10	0.50	0.4
B	Pneumococcal vaccine ^f	1.00	0.50	2.6
B	Influenza ^f	1.00	0.50	2.6
Chemoprophylaxis				
B	Multivitamin with folic acid ^e	1.00	1.50	12
B	Discuss hormone prophylaxis ^k	1.00	4.00	25
Total hours required per year				1067
Total hours required per working day				4.4

Note. ATV = all-terrain vehicle; STD = sexually transmitted disease; Td = tetanus and diphtheria toxoids; USPSTF = US Preventive Services Task Force.

^aWomen only.

^bWomen aged 50 to 69 years.

^cMen aged 35 to 65 and women aged 45 to 65 years.

^dMen and women aged 50 years and older.

^eWomen of childbearing age.

^fMen and women aged 65 years and older.

^gCurrent smokers only.⁵³

^hThe ability of clinician counseling to influence this behavior is unproven.

ⁱProblem drinkers only.⁵⁵

^jAll men, and women of childbearing age.

^kPeri- and postmenopausal women.

these interventions are administered to large numbers of eligible patients. Any screening test added to the current guidelines should be viewed not only in terms of the amount of time required to deliver the service to an individual, but also the amount of physician manpower needed to administer the service to a population. In all likelihood, any new screening test a patient receives from a physician will be performed at the expense of some other currently provided service.

Few studies have examined the actual time that physicians spend providing preventive services. Wender¹⁰ estimated that every aspect of counseling and screening could be accomplished in 20 to 30 minutes, and that most aspects of screening required no more than 5 to 10 minutes of the doctor's time. However, actual studies measuring the time spent on cancer screening in primary care offices found that, on average, physicians spent 28.7 minutes per patient just for a cancer checkup, excluding Papanicolaou tests.³⁸ Many physicians follow the recommendation to use acute- and chronic-care visits to administer preventive care; Stange and colleagues³⁹ found that preventive services were offered in approximately one-third of the visits to a primary care physician's office for chronic and acute illness, increasing the length of those visits by 2.7 minutes. In another study, audiotapes of patient visits for chronic diseases showed that 53% of the visits included prevention activities that required about 4.5 minutes per encounter.⁴⁰ Rafferty studied service delivery in primary care clinics for indigent patients and found that clinicians spent 11% of their time on prevention (about 7 minutes per patient per year). Half of this time was spent screening for breast and cervical cancer.⁴¹

These studies underscore the dilemma of finding time for prevention in primary care. Physicians have a responsibility to provide care for ongoing and immediate medical problems, but because they must balance this responsibility with that of prevention in the limited amount of time they have with patients, they are not meeting goals for preventive service provision. If they do take the time to provide preventive services, encounters are lengthened significantly and at the expense of other services.

TABLE 3—Time Requirements for Each USPSTF Recommendation for Children Aged 0 to 24 Years in Representative Practice

Rank	Preventive Service	Annual Frequency	Minutes Per Service	Hours Per Year
Screening				
A	Papanicolaou test ^{50,a}	0.33	3.00	2.1
B	Vision screen ^b	0.10	1.00	0.6
B	Chlamydia screen ^c	1.00	1.00	0.6
B	Rubella serology ^d	0.10	1.00	0.4
B	Assess for problem drinking ^{51,52,e}	1.00	0.50	4.4
B	Blood pressure	1.00	0.25	3.7
B	Height and weight	1.00	0.25	3.7
Counseling				
A	Avoid tobacco/passive smoking ^{21,f}	1.00	3.00	44
A	Regular physical activity ^{54,f}	1.00	4.00	59
A	Child safety car seat ^b	0.40	1.50	3.6
A	Lap/shoulder belt ³⁵	1.00	1.50	22
A	Motorcycle/bike/ATV helmet ^f	1.00	1.50	22
A	Hot water heater set < 120–130°F ^b	1.00	1.50	8.9
B	Smoke detector ^f	1.00	1.50	22
B	Window/stair guards, pool fence ^b	1.00	1.50	8.9
B	Drug/toxicant/firearm/match safety ^b	1.00	1.50	8.9
B	Safe storage/removal of firearms ^{e,f}	1.00	1.50	13
B	Syrup of ipecac/poison control ^b	1.00	1.50	8.9
B	CPR training for parents/caretakers ^b	1.00	1.50	8.9
B	Breastfeeding/iron-enriched food ^b	0.05	1.50	0.4
B	Baby bottle tooth decay ^{b,f}	0.05	1.50	0.4
B	Avoid underage drinking/drug use ^{e,f}	1.00	3.00	26.3
B	Driving, etc., while intoxicated ^{e,f}	1.00	3.00	26
B	Contraception ^e	1.00	3.00	26
B	STD prevention ^{e,f}	1.00	3.00	26
B	Limit fat and cholesterol/diet ^{36,56}	1.00	8.20	121
B	Adequate calcium intake ^g	1.00	1.50	6
B	Visits to dental care provider ^f	1.00	1.50	22
B	Floss, brush daily ^f	1.00	1.50	22
Immunizations				
A	DTP series ^b	0.50	0.50	1.5
A	Poliovirus (OPV/IPV) ^b	0.40	0.50	1.2
A	MMR ^b	0.20	0.50	0.6
A	Hib conjugate ^b	0.40	0.50	1.2
A	Hepatitis B ^b	0.40	0.50	1.2
A	Varicella ^b	0.40	0.50	1.2
A	Td booster ^e	0.08	0.50	0.4
A	Hepatitis B booster ^e	0.08	0.50	0.4
B	Varicella booster ^e	0.08	0.50	0.4
B	Rubella ^d	0.08	0.50	0.2
Chemoprophylaxis				
B	Folic acid ^g	1.00	1.50	3
Total hours required per year				534
Total hours required per working day				2.2

Continued

It is worth noting that the preventive services that primary care physicians deliver most often are the A recommendations. In our study, these services required approximately 2 hours per day, or about 25% of allotted patient care time. In light of the 11% of allotted patient care time that Rafferty found physicians spending on prevention, evidently even the A service recommendations are not being achieved. However, it does appear that physicians focus on these services, owing to time restraints, the efficacy of the screening tests, and patient interest. The decision may also be linked to insurance coverage, in that services not covered may be provided less often. Providing the B services raises the time requirements to encompass almost all available time spent in patient care; not surprisingly, national reports show poor compliance with these recommendations.⁵ Physicians are being forced to make choices about preventive services on a case-by-case basis, implicitly weighing the clinical efficacy of the service and the other medical needs of the patient. In this dynamic process, a patient's current medical problems usually take precedence over screening and counseling.

Our study was limited by our inability to find direct measures of the time needed to perform some procedures or to counsel a patient for certain conditions. Although we were able to find time estimates for most screening tests and the major counseling issues, often these times were not direct measures of the time needed, but expert opinion or national recommendations.

This study used the most conservative set of service recommendations—namely, those from the USPSTF. In establishing the time needed to complete a task, we consistently used minimum estimates for primary care physicians from the literature. Despite this conservative approach, the amount of time required is overwhelming; it is clear that primary care physicians cannot achieve preventive services goals unassisted. Even if we have overestimated the time requirements by as much as 50%, the final conclusion is unchanged; it is unreasonable to expect that primary care physicians could dedicate 4 hours of each day to prevention activities.

Innovative interventions designed to raise the rate of preventive service delivery, such

TABLE 3—Continued

Note. ATV = all-terrain vehicle; CPR = cardiopulmonary resuscitation; DTP = diphtheria-tetanus-pertussis vaccine; MMR = measles-mumps-rubella vaccine; STD = sexually transmitted disease; Td = tetanus and diphtheria toxoids; USPSTF = US Preventive Services Task Force.

^aFemales if sexually active (defined, as suggested in guidelines, as “if sexual history is unreliable”; age 18 years or older).

^bAge 0 to 10 years only.

^cFemales if sexually active (as defined above) and aged 20 years and older.

^dFemales aged 12 years and younger.

^eAged 11 to 24 years only.

^fThe ability of clinician counseling to influence this behavior is unproven.

^gFemales aged 11 to 24 years.

TABLE 4—Summary of Annual and Daily Time Requirements by Patient Group and USPSTF Rank of Service Recommendation

Patient Group	Hours Required by Rank of Service Recommendation		Total Hours Required Per Year	Total Hours Required Per Day
	A	B		
Adults aged 25 years and older (n = 1618)	262	805	1067	4.4
Children aged 0 to 24 years (n = 882)	169	365	534	2.2
Pregnant women aged 15 to 44 years (n = 36)	10	11	21	0.1
High-risk groups	85	67	152	0.6
Total hours required per year	525	1248	1773	...
Total hours required per day	2.2	5.2	...	7.4

Note. USPSTF = US Preventive Services Task Force.

as the Put Prevention Into Practice program, have had little or no impact in controlled trials,^{42–44} and there are still no clear solutions to the problem.⁴⁵ One reason may be that the underlying issue of available time is not much affected by current approaches. Alternatively, recommended services could be restricted to the time available. Maciosek, Coffield, and colleagues⁴⁶ recently devised a method for prioritizing preventive services and used the same method to prioritize preventive services on a 10-point scale.⁴⁷ We calculated that it would take only 1 hour per day to provide the services that received the highest priority scores (7 through 10) in their study.⁴⁷ Similarly, as we note in Table 4, providing only the A services would require about 2.2 hours per day. However, providing only these services excludes a large number of other services that have also been recommended and shown to be efficacious.

Choosing the best available services is a laudable goal in light of the time pressures faced by physicians. It would be preferable, however, to pursue solutions that do not require clinicians to abandon applicable and ef-

fective services. Alternatives that extend beyond the current model of face-to-face patient care, such as group visits with physicians and nurses, use of health educators or dietitians for counseling, and various forms of patient education through telephone or print or electronic media, should be explored further.

It has also been suggested that physicians and nonphysician clinicians should work together, providing illness care and wellness care, respectively.⁴⁸ This is perhaps the most promising model currently available, especially because the number of nurse practitioners and physician assistants is expected to increase.⁴⁹ This form of practice will require new relationships among physicians, nurse practitioners, and physician assistants that build on their complementary strengths. Delivery of services through other health care professionals or new media will require changes in the current method of reimbursement for preventive services, as well as further research to develop strategies for organizing such delivery.

Currently recommended preventive services for the US population require an unrea-

sonable amount of physician time. The magnitude of the problem is likely to increase as new genetic tests become available. Our current system of preventive care delivery—provided by physicians seeing patients for acute visits and for periodic preventive health evaluations—no longer meets national needs. New methods of preventive care delivery are required, as well as a clearer focus on which services can be best provided, and by whom. ■

About the Authors

All of the authors are with the Department of Community and Family Medicine, Duke University Medical Center, Durham, NC. Kimberly S.H. Yarnall and Kathryn I. Pollak are also with the Cancer Prevention, Detection, and Control Program, Duke University Medical Center.

Requests for reprints should be sent to Kimberly S.H. Yarnall, MD, Box 3886, Duke University Medical Center, Durham, NC 27710 (e-mail: yarna001@mc.duke.edu).

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Contributors

K.S.H. Yarnall directed the study and wrote the article. K.I. Pollak and T. Østbye directed the study design and data analysis, and contributed to the writing and revision of the article. K.M. Krause collected and organized the data, and contributed to the writing and revision of the article. J.L. Michener provided the original concept, and contributed to the writing and revision of the article.

Human Participant Protection

No protocol approval was needed for this study, as there were no human participants.

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