

Health Screening Examinations: The Patient's Perspective

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Periodic preventive screening programs will require patient cooperation if they are to be successful. To determine the level of patient interest on a broad scale, 1,788 adult patients were surveyed in 47 family physicians' offices over a state-wide area. Seventy percent said they had participated in a screening health checkup in the preceding two years. Nine percent of these patients reported discovering a previously unknown condition as a result of their recent screening examination. The majority of surveyed patients said they would agree to be screened or treated with the complete list of eight suggested procedures for men and ten procedures for women. Rates of patient acceptance of specific health maintenance recommendations ranged from a low of 54 percent for influenza immunization to a high of 91 percent for a blood pressure check. Listing typical costs did not alter the selection rates of patients with insurance coverage compared with those without it. The geriatric age group was the least willing to be screened. Seventy-two percent of patients indicated that they wanted to discuss at least one wellness topic with their physician. Overall, most patients are willing to participate in the concept of a periodic health maintenance examination as recommended to them by their physician.

At least three conditions are essential for periodic health screening examinations to be effective in their intended preventive function. First, the most cost-effective targeting of specific illnesses by risk group must be established by data-based research. Second, practicing physicians must be committed to the efficient delivery of the recommended screening procedures. Third, patients must be willing to submit to and pay for the screening process. Many of the currently recommended screening procedures, however, lack adequate data to determine whether they fulfill the six criteria described by Frame¹⁻⁴ as essential for inclusion in a selective screening program. More research is needed to support the first condition before scarce resources can be enthusiastically assigned to mass screening programs based on current recommendations. Several recent studies on the second condition have documented the failure of clinicians to follow the current screening guidelines.⁵⁻⁸ Efforts are being made to improve

this record.^{9,10} Studies indicate that willingness of asymptomatic patients to participate in screening, the third condition, is currently the most frequently met condition.^{6,11,12}

In a 1982-83 survey, 331 North Carolina outpatients responded to questions about screening by requesting more procedures than their physicians were providing and more than experts recommend. Ninety-one percent desired an "annual checkup" from their physician.⁶ More laboratory tests and procedures were requested by this group of patients than are recommended by the Canadian Task Force.¹³ Some physicians question whether cost will deter patients from seeking screening. In the original North Carolina study,⁶ patients were not informed of the cost of the screening tests and procedures they were selecting. A replication of that study by the same investigator in a new population in North Carolina included cost information on a randomly selected 50 percent of the 575 completed forms.¹¹ Patients who received cost data selected fewer of the 12 listed laboratory tests and procedures than patients who were blind to the costs. The difference was statistically significant for the five most expensive tests.

The study reported herein was undertaken to survey patient health maintenance opinion with a larger sample over a state-wide area in a different region of the United

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TABLE 1. NUMBERS OF RESPONDENTS AS CLASSIFIED BY AGE GROUP, SEX, AND METHOD OF PAYMENT

Age	Men			Women		
	Insured	Self-paying	Other*	Insured	Self-paying	Other*
Young adults	65	26	49	489	197	193
Middle-aged	95	23	31	213	99	58
Elderly	26	4	5	46	10	25

* The "other" category contains "don't know" and questions left blank

States. It was felt that Midwesterners being seen in private practice offices would not select expensive laboratory items at such a high rate as previously documented. Since cost factors seem to be important to patients, the selection rate data were collected by insurance or payment category. Another purpose of this study was to identify the benefits patients thought they received from screening examinations as a possible explanation for why they select so many items. The importance of social, political, and environmental issues to the patient's overall health status was also evaluated. Another important addition in this study was a brief health knowledge quiz. It was included to assess whether the respondents had enough basic information about health screening to intelligently select specific items.

METHODS

The study was designed and administered by the Iowa Academy of Family Physicians Committee on Research, which was composed of three academic and two private practice family physicians. All active members of the Iowa Academy of Family Physicians (729) were invited to participate in data collection. Ninety-four physicians volunteered (13 percent of the membership) by returning a postcard. Each volunteer physician was mailed a packet of 50 patient questionnaires and asked to distribute them to the next available 50 adult outpatients in their private offices. Data were collected from July to October 1985. Forty-seven offices (50 percent) failed to distribute or return the forms. A few offices completed fewer than the 50 forms in the prescribed manner by the October deadline, so only their completed forms were included in the analysis.

Subjects

A total of 1,788 completed patient forms were included in the analysis. They were returned from 47 outpatient offices, an average of 38 patients per office (range four to 50). Patients ranged in age from 18 to 86 years, with a mean of 39.8 years. Eighty percent of the respondents

TABLE 2. PATIENT PERCEIVED BENEFITS OF A HEALTH SCREENING EXAMINATION

Benefit	No. (%) [*]
Reassurance that no new problem was detected	1,098 (68)
Reassurance that a known problem was stable	441 (28)
Discovery of a previously unknown condition	144 (9)
An immunization update	57 (4)
Counseling regarding a personal or family stress	166 (10)
Health habit or lifestyle education	135 (8)
Suggested frequency for future checkups	130 (8)

* The total is more than 100% because some patients selected more than one option

were women. Most of the patients were presenting for acute care office visits at the time they completed the survey. Only 30 percent of the respondents indicated that they had at least one chronic illness. The respondents represented a well-educated group, with 91.5 percent at least high school graduates and 18.6 percent college graduates. Sixty-five percent of the sample were from rural counties, where 41 percent of the state's population resides (according to 1980 census data). Fifty-five percent of patients thought their insurance company or another third-party payer covered their laboratory tests. For the purpose of some analyses, respondents were grouped by category as summarized in Table 1: three age categories—young adults (18 to 39 years old), middle-aged adults (40 to 65 years old), and elderly adults (over age 65 years); and three method-of-payment categories—insured (for coverage by any third party), self-paying (if the patient would be responsible for the cost of laboratory testing), and other (if the method of payment was unknown).

Instrument

The one-page, two-sided self-report questionnaire used in the study was designed and pilot-tested by the authors.*

* Copies of this questionnaire are available from the authors upon request.

TABLE 3. MEAN PERCENTAGE OF SELECTED SCREENING AND PREVENTIVE ITEMS BY PATIENT'S AGE DÉCADE

Screening Item*	Age Decade (years)							Overall Item Mean
	<20 (n = 57)	20s (n = 530)	30s (n = 478)	40s (n = 240)	50s (n = 202)	60s (n = 169)	≥70 (n = 106)	
Radiology								
Chest x-ray examination	68	75	83	78	79	76	57	77
Mammogram**	81	81	84	84	78	68	42	79
Immunizations								
Tetanus	81	83	85	72	72	62	40	76
Influenza	75	59	56	54	49	41	36	54
Examinations								
Blood pressure	88	92	95	91	92	86	79	91
Sigmoidoscopy	53	60	69	70	69	62	42	64
Rectal examination	61	72	80	80	79	67	47	74
Laboratory								
Occult blood	65	78	83	81	80	73	52	77
Papanicolaou smear**	87	92	95	84	87	78	52	88
Cholesterol	68	72	80	78	77	76	48	74

* Chi-square by item across age decades significant at $P < .01$

** For women only

A rapid checkoff format and multiple choice questions were utilized. The following areas were covered: patients' current health checkup practices (by types of checkup and time since the most recent were performed); what they had learned or gained at the last checkup (options listed in Table 2); and a list of ten items consisting of both laboratory tests and screening or treatment procedures (options listed in Table 3). This list of tests and procedures was limited to the most commonly agreed upon recommendations.¹⁴ Ten patient education and counseling topics usually associated with wellness programs were listed. It has been suggested that environmental and political issues may be as important to overall health as screening medical services¹⁵; therefore, five of these social level items were presented, along with an "other" category. Finally, a ten-question multiple choice quiz was included to determine the level of knowledge of the respondents concerning the standards for health maintenance and screening procedures (items listed in Table 4). It should not be assumed that patients understand what is being asked in a survey utilizing medical terms just because they mark some of the items.

Statistical Analysis

The association between categorical variables, such as patient characteristics and those selecting and not selecting items, was tested by chi-square. Analysis of variance controlling for covariance was applied to test the significance of item selection across groups by sex, age, and method of payment.

RESULTS

When asked, "How long ago was your most recent doctor visit for a health checkup, that is, a visit when you were feeling well?" 70 percent of the respondents reported either a brief (10 to 20 minutes) or a complete (60 minutes) physical examination within the past two years. An additional 11 percent marked the "other" category, which included insurance, employment, and miscellaneous physicals. Only 8.2 percent marked that they could not recall ever having had a health-screening checkup. When these 146 patients who had not had a physical examination were compared with those who had, there was no difference in number of years with their current physician or any of the other demographic variables. Patients who listed a health checkup visit were then asked, "What did you learn or gain from that health checkup?" The majority, 68 percent, indicated that all the screening results were within normal limits (Table 2). Nine percent of the respondents checked that a new problem had been uncovered during their last examination. Two thirds of the patients obtaining a screening examination in these primary care office settings did not have a chronic illness that would have required regular outpatient visits. Eight percent reported that they received health habit or lifestyle education, and only 8 percent recalled being advised on how frequently to return for future checkups.

Procedure and Laboratory Selection

Ninety-seven percent of the patients answered the question "How likely would you be to have the following proce-

TABLE 4. PATIENT KNOWLEDGE OF RECOMMENDED SCREENING AND HEALTH PRACTICES

Question	Correct Answer*	Patients With Correct Answer No. (%)
An adult's blood pressure should be checked every _____ years? ¹	1-2	1,676 (94)
A healthy person should eat _____ meals a day? ¹⁷	3	1,575 (88)
The average healthy adult should get _____ hours of sleep per night? ¹⁸	7-8	1,676 (94)
An adult woman needs how much calcium per day to prevent osteoporosis (weak bones)? ¹⁹	1-2 g	751 (42)
An adult needs a tetanus/diphtheria booster every _____ years? ²	10	707 (40)
After a woman turns age 40 years, a doctor should examine her breasts for cancer lumps every _____ years? ³	1	1,411 (79)
A patient aged over 45 years should have the stool (bowel movement) checked for hidden blood every _____ years? ³	1	888 (50)
A breast x-ray examination to look for hidden cancer is recommended for women aged over 40 years every _____ years? ³	1-2	817 (46)
For healthy adults, a chest x-ray examination is recommended at least every _____ years? ³	Not recommended	505 (28)
For healthy adults, a blood cholesterol check is recommended every _____ years? ¹	4-10	246 (15)

* Drawn from the professional literature as referenced

dures done, if your family doctor recommended them and explained why?" Typical costs were listed. The results are listed by item and compared by age decades in Table 3. All ten items for women or eight items for men were selected by 36 percent of the respondents. The following comment is an example of this group's attitude: "If my doctor feels I need it, I'll have it." Each of the ten items in Table 3 (with costs listed) were selected by more than one half of the respondents; most of them were desired by 70 percent to 90 percent. Seventy-seven percent of patients apparently would not object to the chest x-ray examination, although it is now obsolete as a screening procedure. Mammograms and Papanicolaou smears seem to be well accepted by women, 79 percent and 88 percent, respectively. Influenza immunization was at the bottom of the selection percentage ranking, being acceptable to 54 percent of these patients. Sigmoidoscopy was acceptable to fewer patients overall (64 percent), especially among the elderly (42 percent). The ranking of cholesterol screening was also lower (74 percent).

Recommendations for screening are age-specific. Because age appears to be the most important patient characteristic influencing selection of laboratory and procedure items, the data for each item were tabulated by age decade in Table 3. Each item was classed as selected or not selected and analyzed across age decades by chi-square. All these age comparisons for each of the ten items were significant at $P < .01$. Blood pressure measurement was important to and desired by all age groups. Tetanus immunization was selected by only 40 percent of patients aged 70 years or over, which was one half the rate of

acceptance by those aged less than 40 years. Only one third of the patients aged over 65 years, for whom it is most indicated, would choose to have the influenza immunization. Acceptance of mammography declined at age 50 years (or even in the 40s). This age is when the consensus recommendation is to begin screening. Stool occult blood screening and rectal examination selection rates remained relatively high across age groups by comparison, being selected by nearly one half of patients aged over 70 years. Papanicolaou smears were well accepted by younger women of the reproductive age range, but for women aged over 60 years the decline in acceptance was sharp.

The total selection rates of laboratory tests and screening procedures were next compared by the subcategories of age, sex, and method of payment as enumerated in Table 1. Insured young and middle-aged patients tended to have the highest test selection rate. The lowest acceptance of laboratory screening and procedures occurred among insured elderly men and elderly women who were unsure of their payment status. When the overall laboratory and procedure selection rates were compared between men (75 percent overall selection rate) and women (78 percent overall selection rate) controlling for age and method of payment, there was no significant difference between the sexes ($P = .12$). Comparing selection rates by method of payment (80 percent for insured, 76 percent for self-pay, and 74 percent for "other and unsure"), those who felt insurance would cover the cost selected items at a significantly higher rate controlling for the effects of age and sex ($P < .01$). The effect of age on item selection

rates was most significant because of the decline in interest by the geriatric decades (Table 3, $P < .001$) when controlling for the effects of sex and method of payment.

Patient Education

When asked, "Which of the following potential problems would you like to discuss with your doctor, if given the chance?" 72 percent of the respondents indicated they wanted to discuss one or more topics. Only 503 patients (28 percent) did not mark any of these discussion items. Weight and nutrition education were desired by 45 percent of the patients, followed closely by a desire for information about exercise and fitness (34 percent). Sexual concerns (not specifying birth control) were marked by 13 percent. The lowest level of interest was in accident prevention (3 percent). Patients aged over 70 years had the lowest interest level in patient education. Of the 106 individuals in this elderly category, one would discuss smoking, none would discuss alcohol use, four had sexual concerns, and 22 had questions about vitamins.

Social Issues

Because environmental and political concerns may eventually have more influence on the patient's health than medical screening procedures, the question was presented: "How important are the following political and environmental factors to you in maintaining your health?" Clean air and water were very important to 91 percent of all respondents. Financial security was checked by 70 percent, followed by nuclear disarmament (56 percent) and government health policies (53 percent). These social items were marked just as frequently as the above procedure and laboratory items. When these environmental and political issues were analyzed by age and sex categories, younger men tended to underselect them and middle-aged men tended to select them at the highest rate.

Health-Screening Knowledge

Ten multiple choice questions were presented to obtain some estimate of how knowledgeable this group of respondents was about health practices and screening (Table 4). Performance on the questions that match items on the laboratory and procedures list (Table 3) indicated that most patients had some knowledge of the items they were asked to select (blood pressure screening frequency, 94 percent correct; tetanus immunization booster, 40 percent correct; breast examination frequency, 79 percent correct; occult blood screening frequency, 50 percent correct; mammography screening interval, 46 percent correct).

Opinions vary as to the "correct" answers for these

recommendations listed in the quiz. It is interesting to note that 80 percent of the 1,422 patients who missed the cholesterol question wanted it screened more often than every five years. More calcium than is recommended was selected by a majority of the respondents, and a high percentage of blanks on the calcium dose question may indicate patients were not sure what was correct. Ten percent (188 patients) thought no tetanus booster was indicated after the childhood series, and 42 percent (754) thought a booster was indicated every five years or less. Twenty-eight percent (500 patients) thought stool should be screened for occult blood every two years instead of annually. Forty-one percent (543) of the women thought the mammogram interval could be three to five years.

DISCUSSION

Patient interest in the concept of preventive health maintenance examinations is reconfirmed by these data. When widely agreed upon criteria for clinical screening are established, and clinicians become motivated to follow them, most patients will be ready and willing to submit to the screening. Even the current depression of the farm economy in this midwestern state did not seem to deter enthusiasm for selection of a majority of the items. Patients perceive several different types of benefits from preventive screening examinations. Physicians should discuss with their patients what a screening examination can and cannot do. Monitoring a known illness in one category while screening all other categories doubles the value of the time spent at such office visit examinations. The patient-reported discovery of a new problem in 9 percent of the well-care examinations seems to be a high yield, even if some of the illnesses or problems discovered may have been rather minor. Some patient education remains to be done, as patients do not always know which procedures are indicated for their age and risk category. The elderly especially need encouragement to participate in cancer screening.

A criticism of this "laundry list" method of data collection for the screening items section is that subjects tend to mark everything indiscriminately. Indeed, 586 patients marked all "yes" and six all "no" for the ten-item list. The majority of patients, however (1,140 individuals), selectively marked some items and not other items. In other words, 64 percent of the sample appeared to be discriminating consumers when marking this list. Another limitation of the study is that the sample was selected by convenience and is not representative of the population; therefore, the results of this study are not generalizable. There are more rural, more female, more educated patients, and only active patients who were presenting for a visit were represented in the sample.

There are some notable differences between these data and Romm's North Carolina samples.^{6,11} The elderly in the Iowa sample seem less likely to desire screening compared with the North Carolina sample, where Romm reported no difference by age.¹¹ The difference between the two samples in regard to influenza immunization (Romm⁶ 75 percent and Iowa 54 percent) is mostly the result of the lower rate of selection by the Iowa elderly. These Iowans seem much less willing to have rectal examinations (73 percent vs 91 percent) or have their cholesterol levels measured (74 percent vs 91 percent) even though these items are not of high cost. The discrepancies between the two samples with regard to alcohol discussion (5 percent Iowa vs 54 percent North Carolina), tobacco discussion (13 percent Iowa vs 64 percent North Carolina), and accident prevention (3 percent Iowa vs 65 percent North Carolina) are marked. Romm asked, "Should your doctor ask you about . . . ?"⁶ indicating these questions would be part of the history. Moving these three items to patient education with restatement as ". . . would you like to discuss the following with your doctor?" apparently changes the patient's perception of these areas. Patients might be thinking of the historical question as something that physicians should be universally asking for screening purposes. When health education is involved, however, perhaps patients do not perceive a need to apply it personally.

This survey of a large number of patients confirms the results of previous surveys that interest in health maintenance screening and wellness is widespread. A personal physician is an accepted resource for assessing health risks and conducting the screening examination. This personal, individualized approach may also be the most cost effective. Follow-up and treatment, when indicated, are efficient when provided in the same office setting in which the screening is conducted. Frame's routine approach¹⁶ of using a screening checklist on every patient's chart and formulating a list of risk factors to monitor lifestyle factors a patient needs to modify is a model that could be efficiently applied to most outpatient settings during the course of routine primary care delivery.

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