Trends in Routine Screening Examinations

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Abstract: Data from the 1973 and 1982 National Health Interview Surveys reveal increased use of routine medical examinations between the two survey dates. The proportion of adults age 40 or older who ever had a glaucoma test increased by 50 per cent. Other large increases were in the proportion of adults age 40 or older who ever had an electrocardiogram and in the proportions of women age 17 or older who ever had breast examinations or Pap smears. (Am J Public Health 1987; 77:1004–1005.)

Introduction

It is widely believed that morbidity and mortality may be reduced by preventive medical services, including advice and information on safety and health, immunization, and screening for presymptomatic disease. The benefits of routine screening are especially important for life-threatening conditions where survival is improved by early intervention (e.g., carcinomas of the breast, colon, and cervix)[1–4] or where individual risks may be mediated by appropriate treatment or behavior modification (e.g., diabetes, hypertension, or other forms of cardiovascular disease). Screening for conditions that are not usually life-threatening, such as vision or hearing impairments, may result in benefits ranging from avoidance of developmental deficits to improved quality of life. This paper presents evidence of an increase over the past decade in the proportions of the United States population ever having had selected preventive medical examinations and screening tests.

Methods

The National Health Interview Survey (NHIS) is a cross-sectional household interview survey conducted annually by the National Center for Health Statistics. Sampling and interviewing are carried out continuously throughout the year, resulting in quarterly and annual estimates of various health parameters based on a representative sample of the noninstitutionalized civilian population of the United States. Before 1985, NHIS interviews typically were conducted annually with approximately 115,000 individuals in some 41,000 households. In 1985, the sample was redesigned to include approximately 49,000 households and 135,000 persons. The response rate for the survey exceeds 94 per cent. Details of the NHIS sample design, weighting procedures, and variance estimation have been described in numerous NCHS publications.[5,6] The 1973 and 1982 NHIS interview schedules contained questions about various preventive or routine medical examinations. The discussion below is limited to eight types of examination for which identical questions were asked in both years.

Results

Between 1973 and 1982, there were significant increases in the use of eight *routine* preventive medical procedures by US children and adults, as shown in Table 1.[7,8] The procedures include: routine physical and eye examinations for children, and glaucoma testing, eye and breast examinations, Pap smears, chest x-rays and electrocardiograms for adults. The percentage increases in persons ever having the procedure range from 50 per cent in the case of glaucoma testing of adults age 40 or older to 7 per cent in the case of eye examinations and chest x-ray examinations of adults age 17 or older.

By 1982, 89 and 90 per cent of all adult women had had a Pap smear and breast examination, respectively. Data collected in the 1985 NHIS Health Promotion and Disease Prevention Survey indicate that these proportions have continued to rise, reaching 92 per cent for Pap smear and 93 per cent for breast examination in 1985.[9]

Although the use of preventive medical examinations increased between 1973 and 1982 for all subgroups of the US population, the data for 1982 reveal continued differentials in use by geographic region and socioeconomic status.[7,8] With respect to many of the examinations, though, these differentials were smaller in 1982 than they had been in 1973.

As of 1982, for most of the screening procedures presented in Table 1, the proportions of persons who had ever had each type of examination were highest for individuals living in the Northeast and lowest for individuals living in the South. There was no geographic variation in the prevalence

TABLE 1—Per Cent of Persons Who Have Ever Had Various Types of Routine Screening Examinations United States: 1973 and 1982

Type of Examination	Per Cent Who Have Ever Had an Examination		Increase 1973–82 (95% CI)	Per Cent Increase
	1973	1982		
Glaucoma Test (Adults Age 40 or Older)	53.7	80.7	27.0 (25.7, 28.3)	50.3
Eye Examination (Children Age 3–16)	79.7	86.1	6.4 (5.4, 7.4)	8.0
Eye Examination (Adults Age 17 or Older)	90.8	96.7	5.9 (5.6, 6.2)	6.5
Breast Examination (Women Age 17 or Older)	76.3	90.2	13.9 (13.1, 14.7)	18.2
Pap Smear (Women Age 17 or Older)	75.2	89.2	14.0 (13.1, 14.9)	18.6
Routine Physical (Children Age 0–16)	86.2	96.4	10.2 (9.6, 10.8)	11.8
Chest X-Ray (Adults Age 17 or Older)	80.1	85.8	5.7 (5.1, 6.3)	7.1
Electrocardiogram (Adults Age 40 or Older)	60.4	76.4	16.0 (14.6, 17.4)	26.5

of chest x-rays among adults. Breast examinations and Pap smears were most often reported by women living in the West and were least common among women residing in the Northeast and North Central regions. All of the regional differentials were less than 10 percentage points, and all decreased between 1973 and 1982.

The proportions of persons who ever had each of the eight examinations discussed in this report increased directly with both family income and education of the household reference person.* The differential by education was greatest (19 percentage points) for breast examinations and smallest (3 percentage points) for eye examinations among children aged 3–16. The differentials by education narrowed between 1973 and 1982 for most of the examinations, but showed little change for breast and eye examinations. Income differentials varied in size from 13 percentage points for glaucoma tests to 3 percentage points each for adult eye examinations and electrocardiograms. Because of the changing income distribution between 1973 and 1982, the relative sizes of the income differentials at the two dates have not been compared.

White persons were more likely than Black persons to have ever had eye examinations and glaucoma tests, while Black individuals were the more likely to have had chest x-rays. There were no Black/White differentials for the other types of examination as of 1982. Persons of non-Hispanic background were more likely than those self-identified as being of Hispanic origin to have had all eight screening procedures. The differentials between Mexican Americans and persons of non-Hispanic origin were especially large (over 10 percentage points) for chest x-rays, electrocardiograms, and glaucoma tests.

Discussion

The US Preventive Services Task Force was convened by the Public Health Service to establish recommendations for the use of various preventive health interventions, including screening examinations. Determining the appropriate periodicity for screening examinations is among the charges of the Task Force. One way that Task Force establishes the efficacy of a proposed intervention is by means of evidence from multiple time series with and without the intervention. The NHIS data described above provide a valuable source of time series data on the use of routine screening examinations. In addition to estimating the proportions of persons who have

ever had various examinations, the NHIS data describe the interval since last examination. Differentials by socioeconomic status, region, and ethnicity may be useful indicators of target populations in need of more information or services.

The 1987 NHIS will contain an extensive set of detailed questions concerning cancer screening examinations, including Pap smears, breast examinations (self-administered or by a medical practitioner), mammograms, digital rectal examinations, blood stool tests, and proctoscopic examinations. The National Center for Health Statistics and the National Cancer Institute are considering several prospective studies that would involve following persons identified through the 1987 NHIS as being at risk of various types of cancers. In addition, a follow-up survey of respondents to the 1985 NHIS Health Promotion and Disease Prevention Survey is planned. These longitudinal studies will provide an opportunity to assess the value of routine screening examinations.

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*Differentials by education refer to three education categories, with the lowest being less than 12 years and the highest being 13 or more years. Differentials by income refer to five income categories, the lowest less than $10,000 and the highest $35,000 or more. The household reference person was usually the person or spouse or parent of the person who had the examination in question.