

wider range of the estimates of the 1990 demand made by the Committee.

Between 1980 and 1990, the largest growth is projected for nurses with the associate degree, with those with baccalaureates fairly close to that increase.

The Committee on Nursing found that "a substantial increase of nurses with graduate degrees will be required to achieve even modest gains in maintaining, and improving the leadership cadre of the nation's nursing resources" (19b). The projections detailed in this paper are that the number of active nurses with master's or doctoral degrees will almost double during the present decade. This would indeed be a substantial increase, although one which would fall short of the need as it has been projected by some leaders of the nursing profession (14b).

One final caution, again from the report of the Committee on Nursing: "Any such projections can, at best, be considered not as firm forecasts but as tools with which to examine the possible effects of alternative assumptions about policies and practices" (19c).

- ington, D.C., 1980, tables 5-2 and 5-4, using the appropriate values for 1939-41, 1949-51, 1959-61, 1969-71, and 1978.
6. Surgeon General's Consultant Group on Nursing: Toward quality in nursing: needs and goals. PHS Publication No. 992. U.S. Government Printing Office, Washington, D.C., 1963.
7. Department of Health, Education and Welfare: Health manpower source book, section 2. Nursing personnel. PHS publication No. 263. U.S. Government Printing Office, Washington, D.C., 1969.
8. Department of Health, Education, and Welfare: Source book: nursing personnel. DHEW Publication No. (HRA)-75-43. U.S. Government Printing Office, Washington, D.C., 1974.
9. American Nurses' Association: Facts about nursing 80-81. American Journal of Nursing Company, New York, 1982.
10. Schulte, D.C.: Inventory of registered nurses, 1977-1978. American Nurses Association, Kansas City, Mo., 1981.
11. National League for Nursing, Division of Research: NLN nursing data book, 1982. Publication No. 19-1915, New York, 1983.
12. Frankel, M.M. and Gerald, D.E.: Projections of education statistics to 1988-89. U.S. Government Printing Office, Washington, D.C., 1980.
13. Health Resources Administration: Source book-nursing personnel. DHHS Publication No. (HRA) 81-21. U.S. Government Printing Office, Washington, D.C., 1981.
14. Secretary of Health and Human Services: Third report to the Congress, February 17, 1982: Nurse Training Act of 1975. Health Resources Administration, Hyattsville, Md., 1982; (a) p. 68; (b) table 40, p. 177.
15. Bureau of Labor Statistics: Labor force status of the civilian non-institutional population (Printout Matrix 45010). Bureau of Labor Statistics, Washington, D.C., 1981.
16. U.S. Bureau of the Census: A statistical portrait of women in the United States. Series P-23, No. 58. U.S. Government Printing Office, Washington, D.C., 1976, p. 28.
17. American Hospital Association: Hospital statistics. Chicago, Ill., 1981; (a) table 1, p. 4 and (b) table 3, p.13.
18. American Hospital Association: Hospital statistics. Chicago Ill., 1972, table 3, p. 27.
19. Institute of Medicine, Division of Health Care Services: Nursing and nursing education: public policies and private actions. National Academy Press, Washington, D.C., 1983; (a) p. 74; (b) p. 146; (c) p. 63.

## References .....

1. Health Resources Administration: The registered nurse population, an overview. From national sample survey of registered nurses, November 1980. Report No. 82-5, revised June 1982. Hyattsville, Md., 1982; (a) table 1, p. 9; (b) table 3, p. 11.
2. Committee on the Grading of Nursing Schools: Results of the first grading study of nursing schools. New York, 1929.
3. West, M.D.: Estimating the future supply of professional nurses. Am J Nurs 10: 656-658 (1950).
4. Altman, S.H.: Present and future supply of registered nurses. DHEW Publication No. (NIH) 73-134. U.S. Government Printing Office, Washington, D.C., 1971, pp. 73-134.
5. National Center for Health Statistics: Vital statistics of the United States, 1978, vol. 2, sec. 5. DHHS Publication No. (PHS) 81-1104. U.S. Government Printing Office, Wash-

---

## High Utilizers of Ambulatory Care Services: 6-Year Followup at Alaska Native Medical Center

THOMAS S. NIGHSWANDER, MD, MPH

Dr. Nighswander is Chief of Family Medicine Service, Alaska Native Medical Center, Anchorage, Alaska 99510. Gloria Park, MD, Director of Ambulatory Care at the Center, developed the original list of high utilizers of ambulatory care.

Tearsheet requests to Dr. Nighswander.

## Synopsis .....

*In a retrospective study, 100 randomly selected, high utilizers of ambulatory care services in 1972 were followed for a 6-year period, 1973-78. The 22 men and 78 women had visited the Alaska Native Medical Center in Anchorage 15 or more times in 1972. Each patient was matched by age and sex with a control patient who had made three or fewer visits.*

*There were predominately more women than men in all age groups in the high-utilizer group and in all but one*

age group in the general clinic population. High-utilizer men as a group were older than high-utilizer women.

*In the followup period, the men in the high-utilizer group had three times the number of hospitalizations as the controls, and women had two times the number. At the end of the followup period, 1 of every 4 men in the high-utilizer group had died, and 1 of every 10 women had died. One-half of these deaths were associated with alcohol.*

*Several approaches to high-utilizer patients are useful. A well-organized medical record, with a complete problem list and index, is imperative. Just as helpful is only having one or several health care providers consistently see the patient at each encounter. Until there is more study of these complex issues, high utilizers must be recognized as a subgroup of patients at high risk for hospitalization and early death.*

**T**HE FOCUS FOR RESEARCHERS and political institutions on utilization of health services has been on hospitalized patients. Little attention has been placed on utilization of ambulatory care services and, specifically, on the fate of individual high utilizers of these services. Health care workers in ambulatory care in a variety of settings are acutely aware of a group of patients who consistently and chronically visit clinics. They are considered problem patients by the staff because of the thickness of their charts, the nature of their complaints, their unscheduled use of clinics, and the unresponsiveness of their symptoms to medical intervention.

What factors lead to high utilization of ambulatory care services? Mullooly and Freeborn investigated use of services in a health maintenance organization (HMO) and found that age, sex, socioeconomic background, and health status were the most important factors in determining high utilization. They found that disadvantaged groups, especially in the 45–59 year age cohort, had higher rates of utilization than other age cohorts in disadvantaged groups (1). Another suggestion came from Berki and Ashcraft, who found that the number of chronic and acute conditions was the most consistent predictor of illness-related visits to an ambulatory care facility (2). In investigating lifestyle questions and medical care utilization, Pope found that people who drank alcoholic beverages more than normal tended to use medical care services less frequently, except in cases of trauma. This relationship was true except for males under the age of 35; among those young men a significant relationship was found between drinking and the rate of medical care contacts for diseases with a high emotional component, for symptoms of undiagnosed disease, and for trauma (3).

Distress syndromes were investigated by Mechanic and coworkers. They found that persons receiving mental health services had considerably higher rates of utilization of medical services in both retrospective and prospective studies. The authors suggested that high utilization rates by patients receiving mental health services is a

product of physical symptoms and discomfort concomitant with psychological disorders (4).

In light of these studies and because of our high rates of utilization by some patients at the Alaska Native Medical Center, I became interested in several questions. Who are the high utilizers of services? What problems do they have? What happens to them over time? Answers to these questions might lead to more appropriate intervention, modify utilization behavior, and produce good results in patients.

### **The Setting**

The Alaska Native Medical Center in Anchorage is charged with the primary care of Indians, Aleuts, and Eskimos in Southcentral Alaska and tertiary care for those elsewhere in the State. Beneficiaries in the Center's program have a health care package that covers all ambulatory care services, including dental and pharmaceutical services and all inpatient care. Approximately 95,000 ambulatory care visits are made to the Alaska Native Medical Center each year. The program is operated by the Indian Health Service, part of the Department of Health and Human Services.

### **Methods**

All patients who made 15 or more visits in 1972 to the Alaska Native Medical Center were identified from their medical records. From the 698 people in this high-utilizer group a random sample of 100 patients was chosen in the spring of 1979 in the following manner.

The 698 patients were listed in order by the date of original registration at the hospital. To obtain a sample of 100, every sixth patient's chart was reviewed until a sample of 100 patients who had made 15 or more visits in 1972 was obtained. After the review of the chart or summary of the chart of each patient, demographic data were recorded, and all hospital and ambulatory care visits were summarized for the 6-year period of 1973–78.

Each ambulatory visit was detailed by date, clinical encounter, diagnosis or problem initiating the visit, provider's name and treatment if any, hospitalization, and cause of death, if applicable. All patients in the sample received their health care exclusively at the Alaska Native Medical Center.

There were 22 men and 78 women in the sample. The largest number of ambulatory care visits by any one patient in the 6-year period—228—was made by a 49-year-old woman whose chart weighed 8 pounds. The largest number of visits in 1 year was 64, by a 28-year-old woman with symptoms such as back pains, stomach pain, and tension headaches.

For each patient in the high-utilizer sample, a control patient with few visits for ambulatory care services was selected. The hospital records were searched for a control whose registration into the system most closely matched the high-utilizer patient's and who was of the same sex and age and had three or fewer visits in 1972.

## Results

The age and sex distributions in 1972 of the general ambulatory clinic population (fig. 1) are a contrast to the age and sex distributions of the high-utilizer group (fig. 2). In most age groups, women made predominately

Figure 1. Random sample of patient visits of ambulatory clinic population, by sex and age, 1972

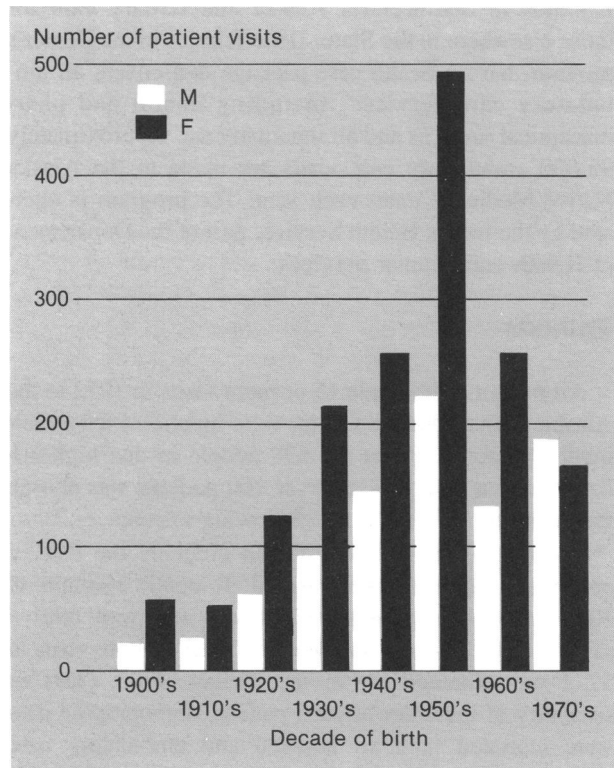
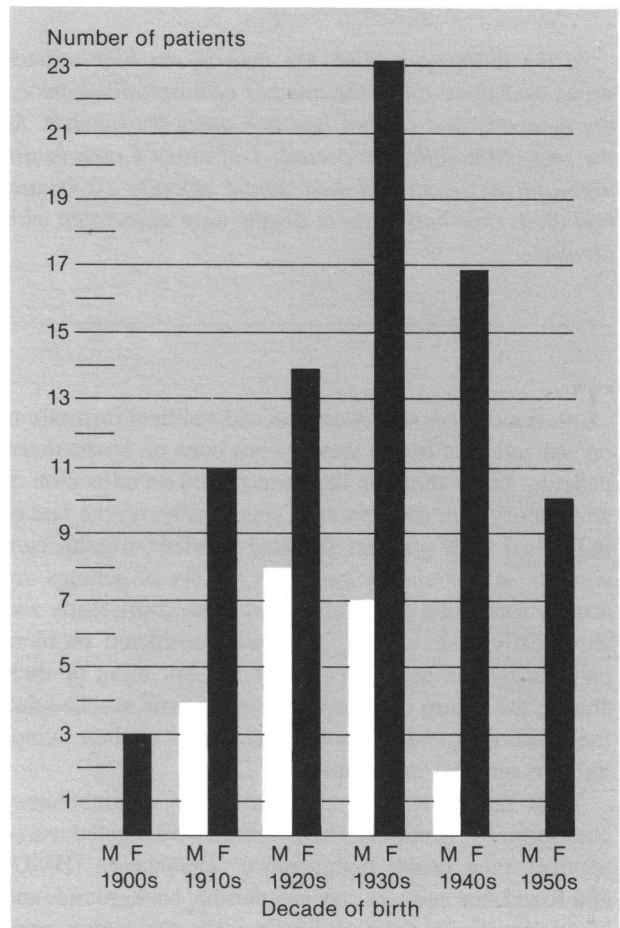


Figure 2. Number of high utilizers of health services, 1972, by sex and age



more visits for ambulatory care than men (fig. 1). The only exception was the group born in the 1970s, which had a slight predominance of males. The women born in the 1950s made the largest number of visits. Among men, the number of visits generally followed the bell-shape curve typical of the womens' visits, and they also reached a peak in the group born in the 1950s.

In the high-utilizer group, there were predominately more women in all age groups (fig. 2). In each age group there were at least twice as many women as men and, in some cases, 8–10 times as many women. The biggest group of high-utilizer patients consisted of the 23 women born in the 1930s. The bell-shape curves for the two sexes in the high-utilizer group are different. The curve for men is shifted to the left of the curve for women, indicating that the group of high-utilizer men was older than the group of women. There were almost equal numbers of men born in the 1920s and 1930s.

The number of hospitalizations during 1973–78 for each age group of high-utilizers and controls is shown in table 1. As a group, the men in the high-utilizer group

Table 1. Hospitalization among high utilizers and controls and deaths<sup>1</sup> of high utilizers in followup period, 1973–78

Decade of birth	Men				Women			
	Number of high utilizers	Utilization		Number of deaths	Number of high utilizers	Utilization		Number of deaths
		Case	Control			Case	Control	
1890 .....	1	0	0	1	0	...	...	0
1900 .....	0	...	...	0	3	6	0	0
1910 .....	4	4	1	0	11	4	1	1
1920 .....	8	3	3	1	14	2	4	3
1930 .....	7	4	1	4	23	2	1	1
1940 .....	2	4	0	0	17	3	1	3
1950 .....	0	...	...	0	10	1	2	0
<b>Total</b>	<b>22</b>	<b>15</b>	<b>5</b>	<b>6</b>	<b>78</b>	<b>18</b>	<b>9</b>	<b>8</b>

<sup>1</sup> There were no deaths in the control group.

had three times the number of hospitalizations in the followup period as their controls. The women had twice the number of hospitalizations as their controls.

Three of the five most frequent major diagnoses differed for men and women in the high-utilizer group. The major diagnosis was the one that prompted the most outpatient visits. Alcohol and its associated problems ranked first for both men and women. Psychiatric and psychosomatic diagnoses ranked second and third for women, and seizures and chronic brain syndrome ranked second and third for men.

The five most frequent major diagnoses for men and women in the high-utilizer groups in descending order of frequency follow:

Men	Women
1. Alcoholism	1. Alcoholism
2. Seizures	2. Psychiatric diagnoses
3. Chronic brain syndrome	3. Psychosomatic complaints
4. Chronic obstructive lung disease	4. Chronic obstructive lung disease
5. Chronic low back pain	5. Seizures

Deaths in the high-utilizer group by the end of the study in 1978 are also noted in table 1. A total of 6 of 22 men (27 percent) and 8 of 78 women (10 percent) had died. For the total group of 100, approximately 3 of every 20 high-utilizer patients had died in the 6-year period. There were no deaths in the control group.

Alcoholism and its sequelae were the most common causes of death (table 2). One-half of all the deaths, when the groups of men and women are considered together, were associated with alcohol.

## Discussion

Almost all medical students, residents, and staff physicians have worked in a busy general clinic and had the experience of the patients who drop in with 5-pound

Table 2. Causes of deaths of 14 high utilizers

Decade of birth	Men	Women
1890 ....	Pneumonia	.....
1910 ....	.....	Alcoholism with cirrhosis
1920 ....	Gunshot wound to head	Chronic obstructive pulmonary disease (2 cases); cardiopulmonary arrest
1930 ....	Alcohol withdrawal; chronic alcoholism and gastritis; chronic alcoholism; respiratory and cardiac failure	Chronic alcoholism with hypertension
1940 ....	.....	Alcoholism with subdural hematoma; hit by car (hysterical personality); alcoholism with neurosis

charts. Generally, staff members have been reluctant to see them even though it is recognized that they might have significant problems. They might not be given optimal service and the staff may give overtones—such as being curt—that the patient overuses the services of the clinic. Many staff members find it difficult to care for high utilizers because their medical problems are complicated by difficult social, environmental, and personality issues.

As this study suggests, patients who are frequent clinic visitors, in a high proportion of cases, are significantly ill with diseases that lead to death in a short time. More than one out of four men in the group of high-utilizers of ambulatory care services were dead at the end of 6 years of followup. One out of ten women in the high-utilizer group was dead in the same period.

Alcohol abuse and its sequelae of both trauma and chronic disease were most closely associated with the highest rates of utilization of ambulatory care services. This relationship might be expected to hold true for hospitalizations. In fact, in addition to more frequent clinic visits, the high-utilizer group had many more hospitalizations in the followup period. Men in the high utilization group had three times as many hospitalizations in the followup period as the controls. The corresponding group of women had twice as many hospitalizations as the controls. This finding is consistent with other studies in the literature. For example, Putnam investigated alcohol, morbidity, and care-seeking behavior and found hospitalization rates for alcoholics almost two and one-half times the rate of controls (5).

Can we modify our intervention and make a difference for the patient? Jones and Vischi reviewed the research literature on medical care utilization behavior and the impact of alcohol, drug abuse, and mental health treatment (6). Twenty-five studies were examined and, in general, reductions in utilization in the range of 20–40 percent occurred after treatment. However, causality was not established. Also, time spans were short, making it unclear whether these differences lasted or not.

In my experience, there are several useful approaches to those who are high-utilizers. A well-organized medical record is imperative. At the minimum, it is necessary to have a complete problem list on the record and some type of indexing that makes the various types of subjective and objective data easy to find. Just as helpful is only having one or several health care providers consistently see the patient at each encounter. The patients are more satisfied, and it is much easier for the physician who no longer has to review a complicated problem list and complex chart of an unknown patient. The goal is to not miss diagnosing and treating what is amenable to treatment.

However, many of the issues that cause the high utilizers to seek medical care cannot be solved by health

care providers. Nor is it fair or realistic to say that these problems can only be solved by the patient. These issues are more complex than that. High utilization is a result of patterns of behavior from the patient's distant past and interactions with his environment and other people. Our responsibility as clinicians is to treat him for what we know how to treat and support him to the extent possible as he seeks to deal with all other issues that bring him to our offices.

Is this approach successful? There are few objective data to answer this question. One could hope for studies that demonstrate intervention strategies make a difference in both morbidity and mortality. At the Alaska Native Medical Center, we do see high-utilizer patients whose health improves. When they are asked how it happened, they say that they had to do it by themselves and in their own way. Does this group of patients have some common characteristics? This question needs to be answered.

In the meantime, we must all first recognize and then remind ourselves that patients who are high utilizers of ambulatory care services represent a subgroup of patients at high risk for hospitalization and early death.

## References .....

1. Mullooly, J. P., and Freeborn, D. K.: The effect of length of membership upon the utilization of ambulatory care services. *Med Care* 17: 922–936 (1979).
2. Berki, S. E., and Ashcraft, M. L.: On the analysis of ambulatory utilization. *Med Care* 17: 1163–1180 (1979).
3. Pope, C. R.: Life-styles, health status and medical care utilization. *Med Care* 20: 402–413 (1982).
4. Mechanic, D., Cleary, P. D., and Greenley, J. R.: Distress syndromes, illness behavior, access to care and medical utilization in a defined population. *Med Care* 20: 361–372 (1982).
5. Putnam, S. L.: Alcoholism, morbidity and care-seeking. *Med Care* 20: 97–121 (1982).
6. Jones, K. R., and Vischi, T. R.: Impact of alcohol, drug abuse and mental health treatment on medical care utilization. *Med Care* 17 (supp.): 1–17 (1979).

---

## Epidemiology of *Haemophilus Influenzae* Type B Disease Among Navajo Indians

JOHN L. COULEHAN, MD  
RICHARD H. MICHAELS, MD  
CHRISTIAN HALLOWELL, MD  
RICHARD SCHULTS, MD  
THOMAS K. WELTY, MD  
JOSEPH S. C. KUO, PhD

Dr. Coulehan is associate professor of community medicine, and Dr. Michaels is professor of pediatrics, University of Pittsburgh School of Medicine. Dr. Schults participated in the study as a fourth-year medical student. Dr. Hallowell and Dr. Welty were on the medical staff of the Public Health Service Hospital, Tuba City, Ariz., at the time of this study. Dr. Kuo is a bacteriologist with Lederle Laboratories, Pearl River, N. Y.

Kenneth Fleshman, MD, of the Gallup Indian Medical Center, collected the neonatal cord blood specimens, and Frederick Sieber, MD, assisted in collecting data on systemic *Haemophilus influenzae* infections.

Tearsheet requests to Dr. John L. Coulehan, Department of Community Medicine, M-200 Scaife Hall, University of Pittsburgh School of Medicine, Pittsburgh, Pa. 15261.