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3. What are the prevalences of major chronic diseases in the group and what is the treatment status of persons with these diseases?

4. What are the personal diet, smoking, and alcohol use habits of group members?

5. What is the distribution of disability and the status of cognitive function of group members?

6. What are their current sources of health care?

7. What are the group's current rates of hospitalization, of admissions to nursing homes, and of discharges from these institutions?

8. What are the mortality rates of component groups of the elderly?

I will try to answer these and closely related questions with the help of data from one of the Established Populations for Epidemiologic Studies of the Elderly (EPESE), a joint program of professional staff of the National Institute on Aging (NIA) and the Yale School of Medicine. In addition to the study population at New Haven, CT, there are three other EPESE sites: East Boston, MA, two rural counties in Iowa, and a semi-rural area in the Piedmont region of North Carolina where local and NIA scientists collaborate. The table shows the study population of 2,802 stratified by type of housing in New Haven, and it also indicates the distributions of important sociodemographic characteristics of the group. About half of the women, but only one-third of the men lived alone; about 16 percent of the men and 30 percent of the women had annual incomes of less than \$5,000. All members of the study group were interviewed in their residence in 1982 at the beginning of the study. They are contacted annually by telephone and are interviewed at home again every third year. Important end points in the followup and the sources for these data are listed in the box.

It is important to note that about 60 percent of black females in the group had an annual income of less than \$5,000, while the other three race-sex groups received somewhat more. The educational level of the population likewise was relatively limited; about one white person in five had less than 8 years of schooling, and educational levels were lower for the blacks. About one-fifth of the men and one-tenth of the women worked for pay.

This brief sociodemographic characterization of the group indicates the kind of health services that the members need. Health services should be close to the population to be served because both private and public transportation are frequently lacking.

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## Using Epidemiologic Data to Plan Services for the Elderly

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TO PLAN HEALTH SERVICES for the elderly population, the planner needs answers to the following questions.

1. What are the sociodemographic characteristics of the group? Needed are data that characterize their numbers, geographic location, and distribution by age, sex, race, and marital and socioeconomic status.

2. What are their living arrangements and what transportation is available to the group?

Percent distribution of study sample of the Yale Health and Aging Project, by age, sex, and housing stratum: 1982 unweighted data for 2,802 persons<sup>1</sup>

Sex and age	Housing stratum							
	Community		Private		Public		Total (unweighted)	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
<i>Men</i>								
65-74 years .....	373	62.69	176	53.17	132	55.23	681	58.45
75 years or older .....	222	37.31	155	46.83	107	44.77	484	41.55
<i>Women</i>								
65-74 years .....	366	59.22	275	51.50	236	48.66	877	53.57
75 years and older .....	252	40.78	259	48.50	249	51.34	760	46.43

<sup>1</sup>Age information missing on 9 people; total number = 2,811.

Messages about health education and adherence to treatment must be stated very simply and repeated. Those living alone may have special problems in getting to a source of care, or even in getting a prescription filled. This characteristic must be kept in mind during planning. The financial constraints of many elderly persons must also be considered by health care personnel.

In 1982 the medical history of the group showed that about 5 percent have had a hip fracture, and about 12 percent have had a diagnosis of cancer. About half had high blood pressure, with more than 60 percent of black women having pressures equal to or exceeding 140 systolic and 90 diastolic mm Hg or are taking anti-hypertensive medication. About 10 percent have had a heart attack, with the highest prevalence (about 18 percent) occurring in white men. About 15 percent had diabetes. The prevalence of diabetes in black women, who were substantially more obese than any other group, exceeded 21 percent. About 10 percent have had a stroke with prevalences among blacks exceeding those among whites by about 50 percent. Seventy percent or more of those with high blood pressure are being treated. The participants are taking a mean of 3.7 medications per person.

These disease prevalences help identify the kinds of health problems that are likely to occur or recur, the kinds of treatment that are likely to be needed, and the kinds of physicians required for comprehensive care. The high prevalence of diseases related to lifestyle and personal behavior (cancer, cardiovascular disease, cerebrovascular disease, and diabetes) means that education about diet, alcohol, tobacco, exercise, and adherence to regimens must be readily available in forms understandable to the elderly in the community. Treatment that employs multiple drugs calls for very careful monitoring by a responsible physician.

In dealing with older persons, the degree of disability may be as important as the diagnosis, so

#### Sources of Information for Major Outcomes of Study Population, New Haven, CT, Established Population for Epidemiologic Studies of the Elderly

- **Mortality**—Addressed from death certificates and monitored by obituaries. Cause of death coded by nosologist for all sites
- **Hospitalization**—Health Care Financing Administration tapes obtained. Local hospital discharge data collected on weekly basis for 85-87 percent of events
- **Institutionalization**—Entry into nursing homes assessed from annual followup. Dates of nursing home entry verified by visit or phone
- **Morbidity**—Selected chronic conditions and new events and symptoms assessed annually from self-report
- **Functional disability**—Assessed from self-report annually. Focus on ADL and more minor functional limitations
- **Cognitive function**—Assessed at baseline (1982) and in face-to-face interview (1985). Brief screening instruments of mental status include Pfeiffer Short Portable Mental Status Questionnaire in 1982 and Folstein Mini-mental Status Questionnaire and Pfeiffer questionnaire in 1985

that disabilities must be clearly identified. Inability to stoop, to climb stairs, to raise arms above shoulders, or to walk a short distance was not frequent; only about 1 person in 10 was unable to carry out these activities. Fortunately, we know that about 75 percent of the disabilities noted in the first year of the study were either absent or improved a year later. The needs for physical and occupational therapy and for home health aides are clarified by enumerating disabilities. It also helps planners to understand that help needed during disability is not likely to be needed permanently.

Only about 1 1/2 percent did so poorly on the

mental status questionnaire that the diagnosis of senile dementia was considered. Of those 75 years and older, the prevalence of cognitive impairment is about 3 percent. Thus the cognitive functioning of nearly all of the elderly is adequate for patient-physician dialogues.

Hospitalization rates are higher for men than for women in all age groups, and the increase in rates over time is greater in men than in women. Over a 3-year period about half the group had at least one hospitalization and, for the age group 85 and older, the 3-year incidence of hospitalization is about 60 percent. From these kinds of data the need for hospital beds and associated services can be estimated.

The proportion of the population using nursing homes over a 2-year period was 6 percent. The use rates increased with age, and for the 85 and older group it was about 24 percent for 2 years. The 2-year mortality rate for all participants in nursing homes was about 29 percent and at 85 or older, about 40 percent. Other results indicate that the nursing home is not always the final move. Discharges from nursing homes are by no means rare. Although 148 persons were admitted to nursing homes only once, 176 others were in nursing homes more than once.

Our results suggest that older persons enter nursing homes for three primary reasons. Some go for specific rehabilitation as, for example, treatment of a fractured hip. A second group is placed in nursing homes to receive terminal care for irreversible diseases such as advanced cancer. A third group consists of those whose outcome and duration in the nursing home environment can be far less specifically identified. These include persons with relatively severe cardiovascular disease and those with senile dementia. The numbers and proportions of these three groups of patients in a defined population can help in planning the number of beds and duration of nursing home care required.

Mortality rates were about what one would expect. Mortality rates for men were about double those for women and rose more rapidly with age. The proportion of women in any elderly population has an important effect on the duration of health services that are needed for that population.

More than 90 percent of the participants could name their source of health care. Thus, in this population there were not large numbers of persons without care who needed to be brought into the system.

The results presented are simple cross-sectional

prevalence data obtained during the first contact with each participant. Only the followup data can provide information about change over time and provide opportunities to test hypotheses. But even prevalence data can help develop a rational plan for health services for an older population.

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## Educating Health Care Providers to Care for the Elderly

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AN ASSOCIATE who recently returned from Israel told this story. While she was there she visited a residential facility for elderly survivors of the Holocaust who had no family in Israel. She was warmly welcomed by residents and staff and given a royal tour of the various areas of the complex. But it was the kitchen that was the most interesting part of her visit. Although it was not an exceptionally large facility, there were 20 pots on the stove. When she asked, "Why so many pots?" . . . she was told, "We're getting ready for the Sabbath. Each pot has a different kind of gefilte fish. Like any other ethnic food, it varies—depending upon the geographic region in which it was developed. So there are 20 different pots to suit the tastes of our residents from each of the different ethnic backgrounds."

This story recalls a principle that is vital to the success of any program that serves the elderly. It is very simple—older people are different and, because they are, they have different needs.

### Critical Problems

The United States and Israel share similar concerns and, in some instances, have implemented similar solutions to meeting the needs of the elderly. Both countries are concerned about the numbers of elderly in the future—how many there will be, how many will be over age 85, and what their health status will be. Who will provide care? How many providers will we need? How do we finance their training? Will the family be available to provide care in the future?