

The Interest of Public Health in Diabetes

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IN DEALING WITH diabetes mellitus, we are dealing with a disease "so widespread as to make public action . . . the only hope for a successful attack" (1). According to the best estimates, some 2,230,000 persons in the United States have diabetes, and only slightly more than half of these people know that they have the disease. Since diabetes occurs more often among older persons, prevalence of the disease, which today is approximately 15 per 1,000 population, can be expected to increase progressively as our older population continues to grow in number.

Mortality data provide two notable facts about diabetes: First, estimates for the year 1951 reveal that diabetes accounted for approximately 25,000 deaths in the United States—only about 5,000 fewer than the number of deaths estimated for tuberculosis (2). Second, diabetes has moved from twenty-first place among causes of death in 1900 to tenth place in 1950 (taking into account changes in classification of cause of death since 1900 and omitting all ill-defined causes).

With the threat of communicable diseases substantially diminished, the growing problem of chronic diseases stands out as the principal challenge and a most urgent responsibility for

the public health worker. The record of progress against the chronic diseases in the future will be more and more critical in determining the standard of health which we as a Nation shall achieve.

Public health is especially concerned with the prevention of disease—prevention either in the primary sense of preventing the occurrence of the disease, or in the secondary sense of preventing progression of the disease from an early stage to a more severe one.

As is true of many of the chronic diseases, primary prevention of diabetes is as yet an unfulfilled objective. It is now confined to measures suggested by the epidemiology of the disease. The incidence of diabetes is higher among overweight people than among those whose weight is normal or below normal; therefore, discouragement of overweight is in a sense a measure to prevent diabetes. Diabetes appears to run in families; therefore, the advisability of marriage between persons from diabetic families is a question to be considered in terms of preventing the disease. But without more basic knowledge of the cause of diabetes, we cannot depend upon preventing its occurrence.

Secondary prevention of diabetes—preventing the complications which account for a large proportion of the disability and death due to the disease—can, however, be undertaken with definite hope of success. Our broadening knowledge of the nature of diabetes makes feasible an intensive program in which the public health and medical professions can participate. High diabetes morbidity and mortality emphasize the necessity for action.

Case-finding procedures in diabetes are relatively simple and fast, and a variety of tests is

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available for this purpose. Of all the chronic diseases, diabetes is one of the easiest to diagnose, and, thanks to insulin and diet, one of the easiest to control in the individual patient, provided the patient understands the relatively simple treatment measures and cooperates fully with his physician.

Diabetes, a condition in which the body's ability to use and store carbohydrates is impaired, is most likely to be found in persons over 40 years of age, in the obese, or in those who have a history of diabetes in the family. Because mild diabetes does not necessarily produce symptoms recognizable to the patient, it may be present for some time before it is discovered. Usually diabetes becomes serious when the diabetic patient does not know of his condition or when, once knowing, he allows his condition to get out of control. Through case-finding programs the diabetic person can be sent to his physician for care while his disease is in an early stage. Under continued medical supervision, he can learn how to remain a contributing member of society.

During the past few years, a definite pattern for diabetes control has been evolving, and activity areas have been staked out: case finding and referral for care, patient and professional education, and education of the general public designed to disseminate the facts and to encourage a positive attitude regarding diabetes.

Community Detection Programs

The progression of unrecognized and uncontrolled diabetes results all too often in serious complications. The insidious development of the disease calls for aggressive case-finding efforts. For this, community action is needed.

A number of diabetes case-finding programs have been conducted during recent years. Many communities have undertaken urine-testing programs during a special "diabetes week," with varying intensity of campaigns and degree of coverage. In Connecticut, a diabetes detection program has been undertaken each fall since 1948 (3). The program is sponsored by the Connecticut Diabetes Association and the State department of health on a statewide basis. From 1948 through 1951, 55,990 urine

tests were performed, of which 1,503 (or 2.7 percent) were found positive. These persons were referred to their physicians.

In Florida, a continuing statewide program of case finding is now in progress under sponsorship of the State board of health (4). In 1951, a mobile unit did blood sugar tests on 31,334 persons, of whom 411 with possible diabetes were referred to their physicians. Miami, Jacksonville, and Tallahassee have already been screened, and the program is now concentrating in rural areas. A followup study is also in progress. In addition to its diabetes-screening program, Florida has been maintaining a program of insulin distribution to indigent diabetic patients. In 1951, insulin worth more than \$32,000 was given free to 2,555 such patients.

In Georgia, a program of blood-testing for anemia and for abnormalities of carbohydrate metabolism was added in 1949 to the existing health test program for venereal disease and tuberculosis (5). During the past 2 years, over 300,000 persons have been screened for diabetes.

The first blood-sugar screening program in Georgia was conducted in Atlanta in 1950. Statistics for this survey show that 3.3 percent of the population examined had blood-sugar levels above normal. Confirmatory tests were not made on these people; they were referred to their private physicians for final diagnosis. One group of 6 Georgia counties tested in 1951 included 43,543 persons, of whom 55 were previously known diabetic persons, 449 were classified as suspects, and 169 had borderline blood-sugar determinations. These persons, too, were referred to their physicians.

In 1951, diabetes detection was combined with a communitywide chest X-ray survey in Contra Costa County, Calif. (6). Sponsorship of this combined screening program included State and local official and voluntary health agencies and the Public Health Service. A total of 14,681 persons who stated that they did not have diabetes were given the Wilkerson-Heftmann blood-sugar screening test. Results of this primary screening revealed 191 persons with positive tests, a rate of 1.3 percent. A more specific, second blood-sugar screening test reduced the number actually referred to private physicians

to 127. Final diagnostic reports which were received for 102 of these 127 referrals revealed 58 new cases of diabetes, 0.40 percent of the 14,681 participants. In the year following initial screening, glucose tolerance tests were performed on 32 diabetes suspects whose referrals immediately following the survey had resulted in diagnoses of either "not diabetic" or "unknown." Fifteen of them were found to have diabetic glucose tolerance curves, increasing the number of newly discovered diabetic patients to 73. This represents a discovery rate of 0.50 percent among the 14,681 participants in the survey.

These few examples of community detection programs serve to indicate the results to be achieved by such programs. In each instance, many unknowing victims of diabetes were discovered and advised to place themselves under medical care. They have thus been given the opportunity to attain their optimum health.

Education of the Public

As is true with all case-finding programs, the discovery of new cases of diabetes is not the only benefit which accrues from a diabetes detection program. This activity also provides both the occasion and the opportunity for educating the general public.

The diabetes case-finding survey affords an effective vehicle for the transmission of detailed information about the disease. It can emphasize the need for periodic health examinations as a means of preventing or forestalling many of the difficulties of long-term diabetes. Equally important, it provides the opportunity to impart to the public an understanding of the problems faced by diabetic patients in the management of their disease. Public education on diabetes can prevent the oft-repeated and tragic mistake of arresting on alcoholism charges a diabetic patient in coma or insulin shock.

The case-finding survey can serve as the basis for public support of a public health program for diabetes control. Many medical leaders believe that the concentration of attention on the problem of diabetes in the community leads to improvement in the diagnosis and treatment of the disease.

Patient Education

In no disease or pathological condition is the education of the patient a more important part of treatment than in diabetes. The patient with newly discovered diabetes faces a period of great adjustment to a new and, at first, psychologically difficult way of life. Here the public health profession can perform a great service by sharing with the physician the task of educating the patient.

Supervision by the physician is essential, but the patient himself has a major responsibility for the control of his disease. Injection of insulin, the following of a diet, a program of exercise, care of the feet, and testing of the urine are all indispensable to successful control of diabetes. Every patient, at least subconsciously, wants to do his job well, but in order for him to do so he must be given special instruction. Public health, with its long experience in health education, can help the physician by giving the diabetic patient the detailed instruction he needs to adjust to and live normally with his disease.

Leading diabetes specialists and clinics treating large numbers of diabetic patients make arrangements for special instruction through individual consultation or formal classes. Diabetes specialists also have written many manuals for the patient's instruction. This type of education, however, does not usually reach the large number of diabetic patients under the care of general practitioners. Here is a distinct opportunity for public health agencies. The wholehearted interest and enthusiasm that can be expected in such classes has been demonstrated in Jacksonville, Fla., Rochester, N. Y., and Boston, Mass.

A number of teaching aids are available for use in group or individual instruction—for example, the widely used kit, "Taking Care of Diabetes," prepared by the American Diabetes Association, the American Dietetic Association, and the Public Health Service. The kit consists of 11 film strips with sound, covering most of the problems the diabetic person faces. There are 12 wall charts, an instructor's guide, a sample set of booklets for the patient, a sample set of meal planning booklets, and a diabetes

guidebook for the physician. The kit is available for preview purposes from the Public Health Service medical directors in regional offices of the Department of Health, Education, and Welfare.

Another excellent teaching aid is the booklet, "Meal Planning With Exchange Lists," prepared by the American Diabetes Association, the American Dietetic Association, and the Public Health Service. This booklet, a recent contribution to the field, standardizes and simplifies the patient's diet. Used under the guidance of a physician, the booklet and lists allow the patient's diet to be adapted from the family menu. It is therefore easier for the patient to accept and follow the prescribed diet.

Establishing Community Programs

As has been learned from experience in the control of a disease such as tuberculosis, a detection and health education program is greatly strengthened by the cooperation of community organizations and institutions. In setting up a diabetes detection and control program, therefore, it is wise to enlist the cooperation and guidance of the local diabetes association. Encouragement of the formation of local affiliate chapters of the American Diabetes Association where none exist will pay big dividends in the successful operation of the diabetes control program.

Any control program poses problems which each community must solve for itself. In diabetes detection and control, the community must decide, for instance, whether its needs and resources indicate diabetes detection alone, or whether to add diabetes detection to a battery of tests. A community must decide, too, whether its diabetes screening program should involve the entire population or only especially vulnerable groups—persons over 40 years of age, those who are overweight, and relatives of diabetic patients. These are decisions which are best made through joint planning with the

local medical society and, if one exists, the local diabetes association.

Once a community decides on detection as part of its diabetes program, a screening technique must be selected. Examination of both blood and urine for sugar is the most reliable method of detection, but this technique is not always practical when a large-scale program is under way. For mass-testing purposes, blood-sugar analysis appears to be the most productive technique, since many suspects can be missed when urinalysis alone is used. For a relatively small expenditure of funds, special equipment for mass-testing, utilizing the blood-sugar technique, can be put into operation, and a full-scale detection program begun. Technical personnel for such an operation can be trained with relative ease, and needed supplies and materials are readily available and relatively inexpensive.

In the control of diabetes mellitus, the public health agency is both a catalyst and an auxiliary force: a catalyst which speeds up the discovery of all cases of diabetes through community action; an auxiliary force which assists the practicing physician in giving the diabetes patient the detailed information which he needs to control and live with his disease successfully.

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