

## NOTE ON MORTALITY AMONG THE DIABETIC BLIND

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A RECENT STUDY (1) of survivorship among the registered legally blind in Massachusetts showed that persons with diabetes as the underlying cause of blindness experienced extremely high mortality. For example, the probability of dying in 10 years for diabetic males under 65 years of age at blindness registration was 79 per 100 as compared to 14 per 100 for males under 65 in the general population; for diabetic males 65 and over at registration, the observed value was 84 per 100 compared to an expected of 62 per 100. Similar findings were noted for females.

One question naturally arises. How does survivorship of blind diabetics compare with that of other diabetics? The data to answer this question are not readily available. However, results of studies measuring survivorship of diabetic patients treated at the Joslin Clinic in Boston, Mass., are available (2-4). Aside from blindness, the latter group may be roughly comparable to the diabetic blind registered by the Massachusetts Division of the Blind. For example, Marks has pointed out that the great majority of the Joslin patients resided in the area within a 50-mile radius of Boston (2).

A comparison of the two groups is given in table 1. Death rates per 1,000 person-years, by sex and age (15 to 74 years) are shown for the study periods. Mortality among the diabetic blind is much greater than that for the Joslin Clinic patients, for each sex and age group shown. In an absolute sense, the death rates for the diabetic blind are unusually high, ranging from 132 to 219 per 1,000 person-years for males and from 131 to 167 per 1,000 for

females. This order of magnitude is approximately that observed for ages over 80 in the general population (5).

A factor which no doubt accounts for part of the observed differences in rates is that duration of diabetes at the time of blindness registration is probably longer than at the time a patient is first seen at the Joslin Clinic. Persons with longer duration suffer higher mortality than those of the same age with a shorter duration of the disease (2, 6). Another factor may be the better treatment and management of disease afforded patients of the Joslin Clinic compared to other diabetics. The lack of strict compar-

**Table 1. Death rates per 1,000 person-years, diabetic patients of the Joslin Clinic, Boston, Mass., and the diabetic blind in Massachusetts, by sex and age for selected time periods<sup>1</sup>**

Sex and age (years)	Joslin Clinic patients (first seen)		Diabetic blind (1,023 persons first registered as blind)
	1940-49	1950-58	1940-59
<b>Males:</b>			
15-24.....	2 6.5	2 5.4	2 132.4
25-34.....	10.9	2 10.3	218.8
35-44.....	16.4	16.1	151.7
45-54.....	23.1	21.5	144.3
55-64.....	49.6	44.9	137.0
65-74.....	85.1	84.8	161.0
<b>Females:</b>			
15-24.....	2 5.7	3 8	3 166.7
25-34.....	10.1	15.3	2 134.3
35-44.....	11.0	2 10.4	2 131.4
45-54.....	19.9	18.2	137.5
55-64.....	42.3	35.7	151.4
65-74.....	78.3	85.8	160.6

<sup>1</sup> Followup experience limited to 10 years.

<sup>2</sup> Based on 5-19 deaths.

<sup>3</sup> Based on less than 5 deaths.

NOTE: Excludes deaths within 1 week of first observation, hospital discharge, or blindness registration.

SOURCE: References 1 and 2.

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**Table 2. Causes of death among the diabetic blind in Massachusetts, first registered as blind 1940-59, with followup to December 31, 1961**

Underlying cause of death <sup>1</sup>	Number	Percent
Infective and parasitic diseases (001-138)-----	3	0.3
Cancer (140-205)-----	40	4.1
Diabetes (260)-----	400	41.3
Vascular lesions affecting the central nervous system (330-334)-----	67	6.9
Heart disease (400-402, 410-443)---	309	31.9
General arteriosclerosis (444-468) <sup>2</sup> ---	28	2.9
Influenza and pneumonia (480-493)-----	18	1.9
Chronic and unspecified nephritis and other renal sclerosis (592-594)-----	31	3.2
Accidents (E800-E962)-----	16	1.7
Other-----	30	3.1
Unknown-----	26	2.7
Total-----	968	100.0

<sup>1</sup> Classified according to the Fifth, Sixth, and Seventh Revision of the International Statistical Classification of Diseases, Injuries, and Causes of Death. Category numbers of the Seventh Revision are shown.

<sup>2</sup> Includes hypertension without mention of heart, diseases of arteries, and other diseases of the circulatory system.

SOURCE: Reference 1.

bility between the two groups may account for still more of the observed differences.

However, the wide differences noted in table 1 indicate that the diabetic blind are probably those with severe diabetes. If this is so, one might predict that diabetes would be frequently

assigned as the underlying cause of death on the death certificate. This is supported in table 2 which presents the distribution of causes of death among the diabetic blind studied in Massachusetts. Of the total of 968 deaths, 400 or 41 percent were attributed to diabetes, with the second most frequent cause of death, heart disease, accounting for 309 or 32 percent of the total.

Although it appears that the diabetic blind are persons with severe diabetes, a more definitive investigation of this high-risk mortality group is needed. In such a study, a control group of diabetics matched with respect to duration of the disease, as well as other relevant variables, would be desirable.

#### REFERENCES

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## Purer Waste Water

The Public Health Service and the District of Columbia will participate in the construction of pilot treatment facilities to investigate possible methods of attaining a much higher degree of purification of waste water than is possible with methods now in general use. The new methods at the pilot installation are expected to remove up to 99 percent of the impurities from the effluent.

The project, which will cost \$150,000 during the first year, will include laboratory studies of new treatment methods, construction of the pilot facilities, and analysis of the results.

Development of techniques for the ultimate disposal of the concentrations of wastes left after complete treatment will be included as part of the study.