

ORAL HYPOGLYCEMIC AGENTS ARE WORTHWHILE

**Table 2. Causes of Death in 912 Diabetics
(Per Cent of Total Deaths)
1966-1969***

Vascular disease, total	74.3
Cardiac	54.6
Renal	8.0
Cerebrovascular	10.0
Gangrene, "circulatory"	1.7
Cancer	12.8
Infectious, Non-TBC	5.9
All others	6.0

*Experience of the Joslin Clinic.

general population, but cardiovascular disease as a cause of death is nearly doubled in the diabetic. Table 2 shows that cardiovascular causes account for at least two thirds of the mortality in the diabetic population as a whole. With such a high frequency and with so many factors other than diabetes playing a potential role, any attempts to assess the possible benefits of diabetes treatment are extremely difficult to evaluate. An additional problem in trying to judge the effects of therapy directed toward improved diabetes control is that in the adult maturity-onset diabetic the duration of hyperglycemia is extremely difficult to ascertain, except in those individuals who have been subjected to blood glucose measurements from early in life either because of a family history or as part of routine examinations.

Many observations relate vascular disease of medium-sized arteries to the presence of hyperglycemia.²⁶ Perhaps the earliest, and certainly one of the most striking, has been derived from the huge autopsy series of Bell at the University of Minnesota²⁷ (Table 3), which points out the extraordinary prevalence of peripheral vascular disease and gangrene in the hyperglycemic individual. Such associations appear to justify efforts of physicians within reason to provide "metabolic control" of diabetes.

In the clinical use of oral hypoglycemic agents, the assumption has been that lowering blood glucose would reverse the metabolic abnormalities related to insulin deficits, such as those in protein and lipid metabolism, much as such defects are reversible with comparable degrees of blood glucose lowering following insulin. As has been summarized elsewhere,²⁸ various types of circulating lipid abnormalities are reversible with sulfonylureas in those patients who have sufficient endogenous insulin, such that blood glucose levels fall to normal following the administration of one of these oral agents. On the other hand, a number of

Table 3. Results of Autopsies Following Atherosclerotic Gangrene*

NONDIABETIC (59,733) (PER CENT)			DIABETIC (2130) (PER CENT)		RATIO OF FREQUENCY
Age	M	F	M	F	
20-40	0	0	3.4	0	Diabetic/Nondiabetic
40-60	0.1	0.08	14.7	14.0	All Ages > 40
60-80	0.45	0.46	24.3	24.6	M 53:1
					F 71:1

*From Bell, E. T.: *Am. J. Clin. Path.* 28:27, 1957.