

of insulin during pregnancy is feasible, safe, and self-administrable. In patients with resistance to subcutaneously administered insulin, it may be the only feasible method to successfully manage the patient during pregnancy.

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Decreased Serum C-Peptide-to-Insulin Molar Ratios After Oral Glucose in Hyperthyroidism

Our recent report of a patient with hyperthyroidism who had a decreased serum C-peptide-to-insulin molar ratio that reverted to normal after methimazole treatment (1) has elicited a letter from Dr. T. Wheatley (2) that misinterprets the point of our correspondence. Probably the main misconception is that we performed the molar ratio to "investigate hypoglycemia." Our letter clearly stated our reason for measuring this ratio was to screen for the presence of a mutant insulin, and we gave details on the reported usefulness of this ratio in screening for this syndrome. Because we have an ongoing screening program for the mutant insulin syndrome (3), we considered our patient a candidate on the basis of his referral for evaluation of elevated insulin levels and impaired glucose tolerance.

It was of interest that our patient's C-peptide/insulin ruled out the mutant insulin syndrome but was compatible with the recently described findings in hyperthyroid patients reported by Osei et al. (4), and our suspicions were confirmed by documenting a high triiodothyronine level. As Dr. Wheatley's letter implies, the thyroid function tests indicated only

a mild thyrotoxic state, and consequently the symptoms and signs of hyperthyroidism were more subtle than might be indicated from the tone of Dr. Wheatley's letter. The purpose of our correspondence was to provide confirmation of a recent observation by Osei et al. (4) that insulin metabolism in our patient had been altered by hyperthyroidism and to report, for the first time, that it became normal once the euthyroid state had been restored.

There was no suggestion in our correspondence that the C-peptide-to-insulin molar ratio should be incorporated into a work-up of hyperthyroidism, and this was specifically discouraged in the reply to our letter by Osei et al. (5). It would seem, therefore, that Dr. Wheatley's comments were unnecessarily harsh and a bit redundant.

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Occurrence of Diabetes Among Decedents in North Dakota

About 2.5% of the people in the United States have been diagnosed as diabetic. Another 2% are diabetic but have not yet been diagnosed (1). The risk of developing diabetes increases with advancing age. But what is the likelihood of someone in the U.S. becoming diabetic during his/her lifetime?

In 1985, I did a concurrent study of every 10th death certificate filed in North Dakota to see how many decedents had been diagnosed as diabetics during their lifetimes. The physician who certified the death of each person in this sample was contacted within 1 mo of that person's death and asked if the decedent had had diabetes. No criteria for di-

TABLE 1
Diabetic status of decedents in sample

	n	Percent
Nondiabetic	432	78.3
Diabetic	92	16.7
Missing information	28	5.0
Total	552	100.0

agnosis were set; the physician's diagnosis of diabetes was accepted as correct. I was assisted in the collection and analysis of this data by the North Dakota State Department of Health and the University of North Dakota Department of Community Medicine.

There were 5618 deaths in North Dakota in 1985. Of these, 2% (113) were attributed to diabetes. There were 552 decedents in my sample, and of these I was able to determine the diabetic status of 95%. These data are summarized in Table 1.

Diabetes was listed as the cause of death in 15 of the 92 diabetic decedents in this sample and as a significant condition in another 26 decedents. In the other 51 cases (55.4%), diabetes was not mentioned anywhere on the death certificate, but the information was supplied by the physician who certified death.

The mean age at death of the diabetics in this sample (77.1 yr) was no different from the mean age of the nondiabetics (76.3 yr). This no doubt reflects the fact that most diabetics were diagnosed late in life. There was surprisingly little difference in the percentage of deaths attributed to diseases of the circulatory system between diabetics (59.8%) and nondiabetics (53.2%) in this sample.

In a study of a small sample of deaths in Pennsylvania in

1968–1969, Tokuhata et al. (2) estimated that 16.9% of the decedents in that state had been diagnosed diabetics. Almost 20 yr later, the same figure has been found for people who died in North Dakota.

Several important points are suggested by this study. 1) Diabetes is often not considered an important factor contributing to death, and thus it is often not mentioned by physicians completing death certificates, which has been noted by many authors previously (1). 2) Although the point prevalence of diabetes is <5%, the actual lifetime risk of developing diabetes may be close to 17%. 3) Because of the influence of milder cases diagnosed later in life, the average age of diabetics at death may not differ greatly from that of nondiabetics. 4) The lower than expected death rate from circulatory causes found among diabetics in this sample makes it tempting to speculate that, in many cases, diabetes truly may not contribute to a person's death. Thus, its omission from mention on death certificates may not be unwarranted.

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