indeed always be of limited value when screening for type 2 diabetes

Roubicek et al. feel that instead of using glucose cutoffs, a single HbA_{1c} cutoff could be more appropriate for identifying subjects at high risk of developing long-term diabetic complications. We have reservations about applying this to every individual because, again, our study demonstrated that subjects with similar glycemia can have markedly different HbA_{1c} values and, presumably, vice versa. Indeed, if our findings are applied to the Diabetes Control and Complications Trial (DCCT) assay, then two subjects with the same glucose control may have HbA_{1c} values that differ by 2%. Thus, a patient with an HbA_{1c} of 7% (as found in the DCCT "intensively treated" group) could well have the same glycemic control as someone with an HbA_{1c} of 9% (whom we consider to be "conventionally treated").

Conversely, if, as has been suggested, we take 7% HbA_{1c} as a threshold for diagnosing diabetes (4), we may assume that the former individual will be significantly more hyperglycemic at an HbA_{1c} of 7% than the latter.

Do both subjects have the same risk of microvascular complications at 7% HbA_{1c}? If exposure to hyperglycemia is the main determinant of complication risk, then the answer is no. Even if, as Roubicek et al. suggest, we take a leap of faith and consider glycation to be the main determinant, then we still have to be sure that glycation of hemoglobin is an unerring reflection of glycation in small vessel tissues. Our concern is that this may not be the case, since glycated hemoglobin values can be influenced by many factors that are independent of glycemia, e.g., variations in red cell survival, which do not apply to vascular tissue.

Eberhardt and Flegal correctly state that we were speculating (albeit plausibly) when we applied our findings to diabetic patients, but they fail to mention that our findings are entirely consistent with DCCT clinical data (5) that demonstrated that diabetic patients with similar glycemia can also have markedly different HbA_{1c} values. They also state that our nondiabetic HbA_{1c} values are much lower than the mean of ~7.0% HbA_{1c} found in newly diagnosed patients. However, our assay was clearly not the DCCT assay, where the quoted reference range of 4.05–6.05% is much closer to the 7% value mentioned. Because we were examining biological (and not analytical) variation, we have no reason to believe that our data would not be equally applicable to this and other HbA_{1c} methods. Like Eberhardt and Flegal, we would also like to have included more subjects in our study, but given the unequivocal nature of our results, it seems very unlikely that our conclusions would change with increasing numbers. Likewise, if we took the advice of Eberhardt and Flegal and included more elderly and obese subjects in our study, the interindividual variance of HbA_{1c} would be likely to increase rather than decrease, since HbA_{1c} is known to rise with subject age in nondiabetic individuals (6).

Diagnosing diabetes using an HbA_{1c} cutoff is appealing because of its simplicity. However, we must remember that glycated hemoglobin is only a surrogate marker of both hyperglycemia and small-vessel glycation. As such, we feel clinicians should still be cautious that they do not overestimate the usefulness of HbA_{1c} testing.

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Agreement Between Old and New Diagnostic Criteria in Postpartum Testing of Women With Gestational Diabetes

Women with gestational diabetes should be retested postpartum to reclassify their glucose tolerance status. Previous American Diabetes Association (ADA) guidelines suggested that the 75-g oral glucose tolerance test (OGTT) should be performed at 6 weeks postpartum using the World Health Organization's diagnostic criteria (1). The recent report by the ADA's Expert Committee on the Diagnosis and Classification of Diabetes Mellitus has suggested a number of important changes to the diagnostic criteria of diabetes (2). The most significant changes are the reduction of the fasting blood glucose criterion for diabetes and the introduction of a new intermediate category of impaired fasting glucose, so that the sensitivity of the fasting blood glucose for the diagnosis of glucose intolerance is comparable to that of the 2-h value, making the OGTT redundant. These changes could be of particular value after childbirth because attendance for the postpartum OGTT is often poor. In our clinic, about one-third of women with gestational diabetes fail to undergo a postpartum OGTT.

We have evaluated the agreement between the old and new diagnostic criteria in a population that includes ethnic groups with a high incidence of type 2 diabetes (Polynesian and Asian). In a consecutive series of 475 women with gestational diabetes completing a postpartum OGTT, we have categorized the results according to the new fasting plasma glucose criteria: normal (≤6.0 mmol/l), intermediate (impaired fasting glucose) (6.1–6.9 mmol/l), or diabetes (≥7.0 mmol/l). Similarly, the results were categorized according to the old criteria: normal (fasting and 2-h, ≤7.7 mmol/l), intermediate (impaired glucose tolerance) (fasting, ≤7.7 mmol/l, and 2-h, 7.8–11 mmol/l), or diabetes (fasting, ≥7.8 mmol/l, and/or 2-h, ≥11.1 mmol/l). Thus, there were nine potential groups into which individuals could be classified (Table 1). The results were examined for concordance within diagnostic groups and for the overall presence of glucose intolerance (Table 1).

Table 1—*Classification of subjects having a postpartum OGTT based on both old and new diagnostic criteria*

New diagnostic criteria	Classification according to old diagnostic criteria		
	Normal	Impaired glucose tolerance	Diabetes
Normal	359	33	1
Impaired fasting glucose	25	17	5
Diabetes	4	5	26

Data are *n*. Old diagnostic criteria are based on fasting and 2-h blood glucose, and new diagnostic criteria are based on fasting blood glucose.

The prevalence of glucose intolerance was virtually identical for each set of diagnostic criteria: 83% normal, 10% impaired, and 7% diabetes for the new criteria, and 82% normal, 12% impaired, and 6% diabetes for the old criteria. Complete concordance between categories was present in 85% of cases, and a further 14% were discordant by only one category. In only five cases (1%) was there discordance by two categories (i.e., diabetes by one criterion but normal by the other). Four of these subjects had fasting blood glucose values in the 7.0–7.7 mmol/l range, and one subject had a fasting blood glucose value of 5.9 mmol/l and a 2-h value of 11.9 mmol/l. Not surprisingly, the intermediate categories had the poorest agreement. Only about one-third of the patients with impaired fasting glucose also had impaired glucose tolerance, and vice versa.

Our results strongly support the view that for the postpartum reclassification of women with gestational diabetes, fasting blood glucose can be used instead of the 75-g OGTT without any overall change in diagnostic sensitivity. However, the population so identified by the new diagnostic criteria will not be exactly the same as that identified by the older criteria. Repeat testing may alter the categorization of individual subjects with milder degrees of glucose intolerance. The importance of a second diagnostic test in subjects with equivocal hyperglycemia and without hyperglycemic symptoms is rightly emphasized in the new ADA recommendations (2).

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