COMMENT ON D'EMDEN

Do the New Threshold Levels for the Diagnosis of Gestational Diabetes Mellitus Correctly Identify Women at Risk? Diabetes Care 2014;37:e30

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In this issue, d'Emden (1) challenges the plasma glucose level diagnostic thresholds for gestational diabetes mellitus (GDM) recommended by the International Association of the Diabetes and Pregnancy Study Groups (IADPSG) (2). In particular, it is asserted that the rate of large-for-gestational-age (LGA) children (birth weight >90th percentile) in the Hyperglycemia and Adverse Pregnancy Outcome (HAPO) study cohort (3) is lower when the 1-h and/or 2-h threshold as a single value is equal to or greater than a threshold value than is the case when the fasting plasma glucose (FPG) threshold is met or exceeded; in this case, the odds ratio (OR) of 1.75 is not met or exceeded. It is claimed that the putative lower rates of LGA indicate that the 1.75 OR is not met and that "normal" values for 1-h and 2-h oral glucose tolerance test (OGTT) values may be "protective."

The data in Table 2 and Supplementary Table B of the original publication of HAPO study results (3) cannot provide an accurate estimate of the rate of LGA when any of the glucose measures are equal to or greater than the threshold value and one or both of the other two values are less than the threshold value. Thus, the calculated odds of the outcome, rather than risk ratio as stated, are truly estimates.

The IADPSG-recommended diagnostic thresholds are the average glucose values at which odds for birth weight, cord C-peptide, and percent body fat, each >90th percentile reached 1.75 times the estimated odds of these outcomes at mean fasting, 1-h, and 2-h OGTT glucose values, based on fully adjusted logistic regression models. At least one of these thresholds must be equaled or exceeded to make a diagnosis of GDM (2). The rates of LGA are not identical at the mean of each OGTT glucose measure, and there is no reason to assume that at the diagnostic threshold the rates for 1-h and 2-h plasma glucose at threshold are expected to equal that for FPG.

Table 1—ORs for glucose combinations for LGA

GDM category	*N*	Fully adjusted OR (95% CI)*
No GDM	19,570	1.00
FPG ≥5.1 only	1,235	1.76 (1.49–2.08)
1-h PG ≥10.0 only	856	1.76 (1.42–2.18)
2-h PG ≥8.5 only	491	2.04 (1.56–2.66)
FPG ≥5.1 and 1-h PG ≥10.0 only	346	3.25 (2.51–4.20)
FPG ≥5.1 and 2-h PG ≥8.5 only	92	3.49 (2.15–5.67)
1-h PG ≥10.0 and 2-h PG ≥8.5 only	464	1.81 (1.34–2.44)
FPG ≥5.1 and 1-h PG ≥10.0 and 2-h PG ≥8.5	262	3.04 (2.23–4.13)

*Adjusted for gender, ethnicity, field center, gestational age, and parity in defining LGA, and additionally for age, BMI, smoking, drinking, hospitalization prior to delivery, any family history of diabetes, mean arterial blood pressure, gestational age at OGTT, and maternal height at the OGTT. PG, plasma glucose.

Using glucose thresholds at any ORs of 1.5, 1.75, or 2.0 relative to the mean glucose levels are associated with generally similar risk ratios for the HAPO study outcomes in those defined as GDM compared with non-GDM (4). Although d'Emden (1) focused on GDM diagnosis by IADPSG criteria when only one of the three OGTT glucose values is equal to or greater than a threshold value, it should be noted that 48% of those meeting IADPSG criteria in the entire (unblinded plus blinded participants) HAPO study cohort had two or more values meeting or exceeding threshold values (5). The ORs for single glucose values and combinations of values that are equal to or greater than threshold values and LGA are illustrated in Table 1. It should be noted that all of these ORs are >1.75.

The IADPSG Consensus Panel acknowledged that in the final analysis the choice of thresholds for associations that are continuous and linear is

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arbitrary. After much consideration and debate, intermediate thresholds based on OR 1.75 were recommended for the diagnosis of GDM. We continue to support that decision.

Duality of Interest. No potential conflicts of interest relevant to this article were reported.

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