Gestational diabetes needs to be managed

There is a continuous relationship between glycaemia and adverse pregnancy outcomes

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Gestational diabetes mellitus (GDM) is generally asymptomatic. It is diagnosed by detection of hyperglycaemia resulting from inadequate insulin secretion in response to the increased insulin resistance that occurs during pregnancy. A GDM diagnosis identifies women at risk of pregnancy complications and later progression to type 2 diabetes.

Some commentators, such as Moynihan in the 20 August 2012 issue of the Journal,[1] have questioned the International Association of the Diabetes in Pregnancy Study Groups (IADPSG) threshold values for GDM. We consider the IADPSG recommendations well reasoned and wish to place these in context. In the face of varying definitions of GDM not derived from the risk of pregnancy complications (Box), the IADPSG used a consensus process to redefine GDM based on its association with adverse pregnancy outcomes.[1,5] Using all available high-quality data, glucose thresholds for GDM were defined by their association with diabetic fetopathy — babies born large for gestational age (LGA), with increased adiposity and hyperinsulinaemia.[5] Questions of sensitivity and specificity were balanced and it was concluded that glucose values corresponding to odds ratios of 1.75 compared with the Hyperglycemia and Adverse Pregnancy Outcome cohort mean for these three outcomes (after extensive adjustment for confounders including maternal obesity) should form the diagnostic thresholds.[5] It was recognised that, given the continuous relationship of glycaemia with adverse outcomes, no set of glucose values could provide perfect separation of "normal" and "abnormal". This issue is not unique to GDM; it applies to all continuous variables, such as factors that define hypertension and obesity. The consensus recommendations are close to historical United States standards (Box), which require two abnormal oral glucose tolerance test values. However, one abnormal value carries risks similar to two abnormal values.[6]

Identification of a risk factor does not, per se, justify widespread detection and treatment. However, two high-quality randomised controlled trials have shown that GDM treatment improves pregnancy outcomes.[3,4] The Australian Carbohydrate Intolerance Study in Pregnant Women recruited 1000 women using a lower glucose level as the entry criterion than that proposed by the IADPSG, but it showed a marked reduction in a composite of severe adverse outcomes (perinatal death, shoulder dystocia, birth trauma including fracture or nerve palsy [adjusted relative risk, 0.33; confidence interval, 0.14–0.75]), as well as reduced frequency of LGA infants and pre-eclampsia and improved maternal quality of life.[4] A US study of 958 women used glucose levels for entry criteria that are similar to the IADPSG levels; treatment in this study did not influence an alternative composite of adverse outcomes (perinatal death, neonatal hypoglycaemia, hyperbilirubinaemia, elevated cord C-peptide level, birth trauma) but did significantly reduce frequency of LGA infants, pre-eclampsia, neonatal fat mass, caesarean delivery and shoulder dystocia.[3] These are clinically important outcomes. Also, most patients (80% and 92%, respectively) were successfully managed by enhanced diet and physical activity, without pharmacotherapy.[3,4]

An integrated approach to managing GDM (diagnosis via IADPSG approach, treatment during pregnancy and intervention after pregnancy to reduce risk of maternal progression to type 2 diabetes) has been evaluated in three cost modelling studies, which concluded that this approach is cost-effective[7,8] or cost-saving.[9]

One of the major criticisms of the IADPSG criteria is that a flood of women will be identified as abnormal.[1] However, the "true prevalence" of GDM eludes definition by critics. Across the US, GDM prevalence using IADPSG criteria is 17.3%–25.5%, and prevalence of impaired glucose metabolism (impaired fasting glucose [IFG], impaired glucose tolerance [IGT] and diabetes) outside pregnancy in women aged 18–44 years has been reported as 30.7%.[5] In Australia, the prevalence of GDM using IADPSG criteria is estimated at 13.0%.[10] Although figures precisely matching the US data are not available, diabetes prevalence in Australia has increased dramatically; in 2000, impaired glucose metabolism outside pregnancy affected 13.0% of 35–44-year-old women (ie, potentially 5–14 years after child bearing [2.2% IFG, 8.5% IGT, 2.3% diabetes]).[11] GDM prevalence may be higher than hoped, but it parallels the prevalence of abnormal glucose metabolism.

Gestational diabetes deserves informed debate, not pejorative slogans such as "overdiagnosis". Delays in a uniform approach to detecting GDM and providing

OGTT threshold values used to define gestational diabetes mellitus

	Venous plasma glucose level			
	Fasting	1 hour	2 hours	3 hours
ADIPS (historical Australian criteria)[2]	≥ 5.5 mmol/L	—	≥ 8.0 mmol/L	—
MFMUN study (historical US criteria)[3]*	≥ 5.3 mmol/L (exclusion for MFMUN study)	≥ 10.0 mmol/L	≥ 8.6 mmol/L	≥ 7.8 mmol/L
ACHOIS, World Health Organization[4]	≥ 7.8 mmol/L (exclusion for ACHOIS study)	—	≥ 7.8 mmol/L	—
IADPSG (current ADIPS criteria)[5]	≥ 5.1 mmol/L	≥ 10.0 mmol/L	≥ 8.5 mmol/L	—

OGTT = oral glucose tolerance test. ADIPS = Australasian Diabetes in Pregnancy Society. MFMUN = Maternal–Fetal Medicine Units Network. ACHOIS = Australian Carbohydrate Intolerance Study in Pregnant Women. IADPSG = International Association of the Diabetes in Pregnancy Study Groups. * The historical US definition requires two abnormal values and is primarily based on the 100 g OGTT, but the same values are quoted for the 75 g OGTT. ◆

treatment and follow-up for women with GDM represent a missed opportunity to improve pregnancy outcomes and maternal health. Pregnant women should be tested appropriately, informed about the implications of GDM and offered treatment and follow-up during and after pregnancy.

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