A National Survey of Implementation of Guidelines for Gestational Diabetes Mellitus

Abstract:
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In 2010, national guidelines for the management of gestational diabetes mellitus (GDM) were published by the Health Service Executive (HSE). In 2012, a questionnaire was distributed to all maternity units to survey implementation of the guidelines. All units screened women for GDM, but used different screening tests with fifteen units (79%) using the recommended 75g OGTT, three units (16%) using a 100g OGTT and one unit (5%) using a 50g glucose challenge test. Optimal outcomes are best achieved through multidisciplinary diabetes-obstetric care and this was available in 63% of the units (47%). The prevalence of GDM varied from 2.2 to 7.4%. Insulin usage varied from 15-56%. Six centres (31%) had not implemented the national guidelines in full because of lack of resources. Despite national endorsement of the guidelines, significant variations remain in implementation. This may lead to differences in clinical outcomes depending on where a woman attends for obstetric care.

Introduction
The World Health Organization defines gestational diabetes mellitus (GDM) as any degree of glucose intolerance with onset or first recognition during pregnancy. GDM results in increased maternal and neonatal morbidity. Adverse neonatal outcomes include pre-eclampsia, pregnancy-induced hypertension and caesarean section. Women with GDM have an increased lifetime risk of developing type II diabetes mellitus (T2DM) and cardiovascular disease, independent of gestational age. The optimal screening regime remains controversial, with conflicting recommendations among various expert groups. Currently the American Diabetes Association (ADA), the United States Preventive Services Task Force, National Institute for Health and Clinical Excellence (NICE) and the 2010 Irish guidelines recommend selective screening based on risk factors.

Recent studies, including the landmark Hyperglycaemia and Adverse Pregnancy Outcome (HAPO) study, have highlighted the increased clinical risks associated even with mild maternal hyperglycaemia. The Australasian Carbohydrate Intolerance Study in Pregnant Women (ACHOIS) has shown that screening for and treating mild GDM leads to a reduction in perinatal morbidity. This led to revised international recommendations on screening for GDM including, in particular, clinical recommendations by the International Association of Diabetes and Pregnancy Study Groups (IADPSG). These groups recommend screening with a 75g oral glucose tolerance test. Internationally, adoption of the IADPSG criteria has been controversial. All units performed a 75g glucose tolerance test. The Australasian Carbohydrate Intolerance Study in Pregnant Women recommends a two-step screening process with a 50g glucose challenge test with abnormal results further investigated by a 100g glucose tolerance test. The Irish guidelines recommend the same two-step screening process. These groups recommend that if the screening test is abnormal, a larger number diagnoses will have significant impact on the provision and cost of healthcare services while the benefits of the 75g test over the two-step test have not been proven in a randomised controlled trial.

In Ireland the Health Services Executive (HSE) has established a number of Clinical Care Programmes to provide clinical leadership in the management of the health services. One of the responsibilities of the Programme in Obstetrics and Gynaecology is the development, dissemination and implementation of national guidelines to improve the quality of healthcare by standardising clinical practices. One of the first tasks of the Programme was to establish multidisciplinary Programme Implementation Boards in all the maternity hospitals with responsibility for the implementation of national guidelines. The programme, however, does not manage staffing levels or skill mix in the individual maternity units. In August 2010, the HSE published national guidelines for the management of diabetes in pregnancy which included guidelines on screening and management of GDM. These guidelines were updated in June 2012 by the national professional bodies, including the Institute of Obstetricians and Gynaecologists. The purpose of this national audit was to examine the current implementation of guidelines for GDM in all 19 maternity units funded by the HSE.

Methods
The maternity services in the Republic of Ireland are highly centralised. In 2011, 74373 women were delivered in 20 maternity units with the number of women delivered per unit ranging from 1242 to 9458. Four of the units delivered over 8000 women. Of the 20 units in the country, 19 are funded by the HSE. In July 2012 a standardised questionnaire was distributed to all 19 units by the Programme Manager (BL) of the Obstetrics and Gynaecology Clinical Care Programme to audit the implementation of the national guidelines.

Results
All nineteen maternity units responded to the questionnaire within four months. All units offered selective screening for GDM with three units involving the general practitioner in performing the OGTT. One unit (5%) was performed by a phlebotomist in eleven centres and by a midwife in eight centres. Although all units provided some form of screening, there was always carried out in line with the guideline recommendations. Fifteen units (79%) used a 75g OGTT, three units (16%) used a 100g OGTT and one unit (5%) used a 50g glucose challenge test and if this was abnormal, a 100g OGTT. The OGTT was performed at routinely 24-26 weeks gestation in three units (16%), at 26-28 weeks in ten units (53%) and at 24-26 weeks in four units (21%). The prevalence of GDM was reported by sixteen units and varied from 2.2-7.4% of all pregnant women. Insulin usage was reported from five units and varied from 15-56% of GDM patients.

Only nine units (47%) had a multidisciplinary clinic providing a comprehensive service for women with GDM. One of the 19 maternity units had a consultant attached to another hospital once GDM was diagnosed. All units weighed women at their first antenatal visit. Ten units (53%) provided a diabetic diet, but only five units (26%) had a dedicated midwife as part of the GDM care team. All units produced patient information leaflets. Two units (11%) did not have a policy for the treatment of diabetic ketoacidosis and three units (16%) did not have a policy for the management of maternal hypoglycaemia. Two units (11%) did not have a policy for insulin administration around delivery and five units (26%) did not have a policy for insulin administration to cover steroid administration. All units had policies for admission to neonatal intensive care and recommended a postnatal OGTT for the mother. Seven of the units (37%) involved the general practitioner in performing the postnatal OGTT.

The number of ultrasound examinations performed routinely in GDM pregnancies varied from one to four. Twelve units (63%) had on site laboratory facilities for HbA1C measurements. Six of the units (32%) had not fully implemented the 2010 national diagnostic guidelines and cited lack of resources as a barrier. None of the units have the resources to implement universal screening at present.

Discussion
Despite the endorsement of the new national guidelines on GDM by the country’s professional body, the Institute of Obstetricians and Gynaecologists, and by the HSE, there remains significant variation in implementation across the
In a systematic review and meta-analysis, shoulder dystocia was less common in women treated specifically for GDM 

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References


7. Matsuda R, Rickard M. Intrauterine growth restriction and adverse pregnancy outcomes. If such guidelines are also incompletely implemented then we may be increasing adverse clinical events and be missing opportunities where the health of both the woman and her baby can be improved. Although lack of resources is a barrier to implementation, we may need to review our process of care and deliver revised guidelines within finite available resources because incomplete implementation may not be in a position to increase staffing levels given the current financial challenges in the health services.


12. Landon MB, Spong CY, Thom E, Carpenter MW, Ramin SM, Casey B, Wagner Rj, Varner MW, Rouse DJ, Thom JM Jr, Grimes DA, Saade G, Sciscione AC, Tolosa JE, Saade G, Catalano P, Sciscione A, Lain KY, Peaceman AM, Varner MW, Ramin SM, Carpenter MW, Casey B, Rouse DJ, 12. The ACHOIS study also showed a reduction in perinatal morbidity in women with mild GDM who were screened and treated at the appropriate time 17. The publication of the HAPO study led to a lowering of the threshold of serum glucose levels required for a diagnosis of GDM and the development of the IADPSG criteria 18. These developments, along with improved adherence to criteria for selective screening has led to an increase in the number of women diagnosed with GDM 19. Previous reviews have highlighted the international variations in thresholds for diagnosis ranging from 5% to 38% 20. In addition, there is also international evidence of variations in the use of guidelines within maternity services nationally. In the United Kingdom a survey of 256 maternity hospitals in the United Kingdom showed that 97% of units had a policy for selective screening for GDM. A (n=241) responded and 69% of responding units screened for GDM. For the diagnosis of GDM, 79% used a 75g OGTT, 14% used a 50g OGTT, 9% used a 100g OGTT and 1% used a test meal. Of the 214 units responding, 54% reported a consensus policy about screening while 42% reported that specialists acted independently. Only 58% of units had a written policy on screening for GDM. 21. A study of 822 women reported 31% of women fulfilled at least one criterion for selective screening according to the local guidelines, however, only 9.6% of women were screened in practice 22. In a sample of 9,842 women in the west of Ireland a total of 45.7% were screened for GDM, only 55% accepted and attended for screening. Distance from the maternity hospital had a negative impact on screening uptake as did socioeconomic status. Thus, variations in patient population further compound variations in hospital practice. The usefulness of selective screening has also been examined through the ATLANTIC DIP (Diabetes In Pregnancy) collaboration by comparing the sensitivity and specificity of known selective screening strategies on a population previously screened by universal screening. When applying NICE guidelines, 54% of women (n=5,500) diagnosed with GDM through universal screening had at least one risk factor for GDM and would have been recommended for selective screening, but 20% had no risk factors and would have gone undiagnosed. When applying ADA guidelines, 76% would have been recommended for selective screening but 5% would have remained undiagnosed. When applying IADPSG criteria estimates a prevalence of GDM of about 12%. The prevalence of GDM reported from Irish maternity units in this survey varies from 2.27%.4 suggesting that 5-10% of pregnant women potentially remain undiagnosed.

In summary, GDM is a common pregnancy complication in Ireland. Guidelines are in place for screening, and treatment is available at a low cost, requiring only advice about diet and exercise in approximately 70% of cases. There is evidence that treatment is effective in reducing perinatal morbidity. It has been argued that the current guidelines are too broad and may be used excessively, particularly in those who have had diabetes for more than 40 years and BMI over 29.9 kg/m². "Cases of GDM are potentially being missed resulting in a lost opportunity to reduce adverse pregnancy outcomes. If such guidelines are also incompletely implemented then we may be increasing adverse clinical events and be missing opportunities where the health of both the woman and her baby can be improved. Although lack of resources is a barrier to implementation, we may need to review our process of care and deliver revised guidelines within finite available resources because incomplete implementation may not be in a position to increase staffing levels given the current financial challenges in the health services.

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