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Postpartum glucose testing for women with gestational diabetes mellitus: Improving regional recall rates

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ABSTRACT

Our aim was to evaluate attendance for postpartum glucose testing among women attending five antenatal centres with a diagnosis of GDM in the preceding pregnancy. A central, regional coordinator who made verbal and written contact with each individual facilitated a favourable recall rate of 75%.

1. Introduction

Gestational diabetes mellitus (GDM) is defined as diabetes diagnosed in the second or third trimester of pregnancy that is not clearly overt diabetes [1]. In Ireland, using universal screening and International Association for the Study of Diabetes in Pregnancy (IADPSG) criteria, the prevalence is 12.4% [2,3]. Women affected by GDM have a higher risk of developing glucose intolerance in the future compared to women without GDM, with cumulative incidence rates of type 2 diabetes ranging from 30 to 62% in the first five years postpartum [4,5].

International guidelines recommend a repeat oral glucose tolerance test (OGTT) between 6 and 12 weeks postpartum but unfortunately these recommendations are not typically reflected in clinical practice with reported rates of postpartum screening at 5–60% [6–10]. Various barriers to postpartum testing are cited in the literature and include physician, system and patient factors [6,11,12]. Our aim was to assess the rates of attendance for postpartum glucose testing over a five-year period across five antenatal centres and observe the effect of appointing a regional coordinator to facilitate this process.

2. Materials and methods

The Atlantic Diabetes in Pregnancy (DIP) programme comprises a number of prospective, observational studies on women with diabetes in pregnancy and focuses on screening, management and follow-up. It covers a regional population of 500,000 mixed urban and rural dwellers attending five antenatal centres with 11,000 deliveries per year. Women diagnosed with GDM and recalled for postpartum testing between January 2008 and December 2012 were included. The

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Table 1 – Attendance rates on a per year basis.

Year	N	Attended *n* (%)	Did not attend *n* (%)
Total	1520	1149 (75.6%)	371 (24.4%)
2008	364	251 (69.0%)	113 (31.0%)
2009[a]	300	232 (77.3%)	68 (22.7%)
2010	296	236 (79.7%)	60 (20.3%)
2011	282	217 (77.0%)	65 (23.0%)
2012	278	213 (76.7%)	65 (23.3%)

[a] Appointment of a central coordinator in 2009.

1999 World Health Organisation (WHO) criteria were used to diagnose GDM via a universal screening process up to 2010 and thereafter, the IADPSG criteria were utilised with risk factor-based screening [3,13]. Post delivery, at the time of hospital discharge, women were verbally reminded by the diabetes team to schedule a glucose tolerance test at 6–12 weeks postpartum. From 2009 onwards, the women were also posted a reminder letter and received a telephone call from a central coordinator to schedule a test. Test results were reviewed in the outpatient clinic with lifestyle advice and pharmacological intervention provided if necessary. Data were prospectively recorded using an optimised digital database, namely DIAMOND (Hicom). Data were analysed using Statistical Package for the Social Sciences (SPSS) version 20.0 (IBM).

3. Results

In total, 1520 women were diagnosed with GDM during the study period. A postpartum OGTT was completed by 1149 (75.6%) women. Table 1 outlines attendance rates per year. Following the appointment of a central coordinator in 2009 there was a 12% increase in attendance on the previous year and this increase was sustained over the following four years. This translates into a significant difference between attendance rates in 2008 compared with subsequent years (69.0% versus 77.7%, $p = <0.001$). Table 2 compares the maternal characteristics of those who did and did not attend for postpartum OGTT. Women who attended for postpartum OGTT were older (33.4 ± 7.3 years versus 31.8 ± 11.3 years, $p = 0.002$) and more likely to have used insulin during the preceding pregnancy (34.1% versus 22.4%, $p < 0.001$). There was no difference in rates of maternal complications during pregnancy between the two groups. The majority of women ($n = 929$, 80.9%) had normal glucose tolerance postpartum. Among the remainder, 67 (5.7%) had impaired fasting glucose (IFG); 104 (9.0%) had impaired glucose tolerance (IGT); 43 (3.8%) had type 2 diabetes and 6 (0.5%) women received a diagnosis of type 1 diabetes.

4. Discussion

This study demonstrates that postpartum screening rates of 75% may be achieved and sustained for an entire region by the institution of a central coordinator to remind women verbally and in writing about the need for the test. These results compare favourably to previous smaller studies reporting rates of 20–60% and one large study in the US involving nearly one million women that reported a test rate of 19% [10,11,14].

Table 2 – Maternal characteristics and postpartum OGTT results.

	Attended ($n = 1149$)	Did not attend ($n = 371$)	*P* value
Age at delivery (years)	33.4 ± 7.3	31.8 ± 11.3	0.002
Gravida	2.7 ± 1.8	2.8 ± 1.9	0.36
Parity	1.2 ± 1.4	1.3 ± 1.5	0.24
Caucasian ethnicity	1004 (87.4%)	314 (84.6%)	0.18
Postpartum BMI (kg/m^2)	29.5 ± 6.43	–	–
Insulin use during pregnancy	392 (34.1%)	83 (22.4%)	<0.001
Maternal complications:			
PPH	60 (5.2%)	22 (5.9%)	0.60
Preeclampsia	56 (4.9%)	11 (3.0%)	0.12
PIH	136 (11.8%)	42 (11.3%)	0.79
CD	449 (39.1%)	131 (35.3%)	0.20
Postpartum OGTT			
Fasting glucose (mmol/L)	5.02 ± 0.63	–	–
2 h glucose (mmol/L)	5.61 ± 1.73	–	–
Postpartum diagnosis			
NGT	929 (80.9%)	–	–
IFG	67 (5.7%)	–	–
IGT	104 (9.0%)	–	–
Type 2 diabetes	43 (3.8%)	–	–
Type 1 diabetes	6 (0.5%)	–	–

BMI, body mass index; PPH, postpartum haemorrhage; PIH, pregnancy induced hypertension; CD, caesarean delivery; OGTT, oral glucose tolerance test; NGT, normal glucose tolerance; IFG, impaired fasting glucose; IGT, impaired glucose tolerance.
Data are expressed as mean ± standard deviation and number of patients (%) of the total group.