

GESTATIONAL DIABETES MELLITUS: SCREENING, DIAGNOSIS AND FOLLOW UP

The effects of gestational diabetes (GDM) on both maternal and foetal health are well documented and have been recently confirmed by results from the Hyperglycaemia and Adverse Pregnancy Outcomes (HAPO) study¹. Consensus on screening and diagnosis still remain controversial, however, with variability in published guidelines from the major societies.

As a result, the International Association of Diabetes and Pregnancy Study Groups (IADPSG) have formulated guidelines for screening and diagnosis of diabetes in pregnancy. Recent evidence suggests adopting these new criteria may be more cost effective². NICE is currently reviewing their *Diabetes in pregnancy guidelines*³ but these will not be published until 2014.

The National Diabetes in Pregnancy Network, supported by NHS Diabetes, is in the process of conducting a short survey on current practice for screening, diagnosis and follow up of GDM across England. This information will be used to add to the evidence base on GDM, and inform future projects and service improvement initiatives.

The survey is aimed at the representative from each maternity unit in England who has agreed to be unit lead for the Diabetes in Pregnancy Network. To date, the survey has been completed in six of the ten former SHA regions, and a short report detailing the findings from the survey has been generated for each of these regions. The survey continues to be rolled out across the remaining four regions and reports will be produced for each of these regions once data collection is complete.

This interim national report presents an overview of the survey findings to date.

KEY FINDINGS

- 108 unit representatives have completed the questionnaire to date.
- 90% of maternity units only screen for GDM in women with risk factors and use the 75g OGTT for screening purposes.
- 92% of units use the 75g OGTT using fasting and 2-hour readings to diagnose GDM.
- Criteria for diagnosing GDM varies considerably: World Health Organization (WHO) (59%); modified WHO (14%); International Association of the Diabetes and Pregnancy Study Groups (IADPSG) (4%); non-guideline aligned criteria (23%).
- 20% of units stratify the management of women with GDM according to their OGTT result.
- 85% of respondents recommend screening for diabetes in women with GDM 6-weeks postpartum but the test used for screening varies considerably.
- 90% of respondents recommend annual diabetes screening in women with GDM after the postpartum period.

¹ HAPO Study Cooperative Research Group. Hyperglycaemia and adverse pregnancy outcomes. *N Engl J Med*. 2008 May 8; 358 (19): 1991-2002. doi: 10.1056/NEJMoa0707943.

² Mission JF, Ohno MS, Cheng YW, Caughey AB. Gestational diabetes screening with the new IADPSG guidelines: a cost-effectiveness analysis. *Am J Obstet Gynecol*. 2012 Oct; 207 (4): 326.e1-9. doi: 10.1016/j.ajog.2012.06.048.

³ <http://www.nice.org.uk/CG063>

WHO HAS RESPONDED TO THE SURVEY SO FAR?

To date, the survey has been completed by 108 network leads representing 100 maternity units providing care for women with diabetes in England (Table 1). Some units have more than one network representative and provided multiple responses per unit. If duplicate responses were supplied, one response was excluded from the analysis; all differing responses from a single unit were included in the analysis.

Region	Number of units providing care for women with diabetes	Total number of survey responses	Number of units represented	Response rate (%)	Survey status
East of England	18	14	14	77.8	Complete
East Midlands	To be determined	0	0		Data collection underway
London	To be determined	5	5		Data collection underway
North East	9	9	8	88.9	Complete
North West	23	20*	20	87.0	Complete
South Central	To be determined	2	2		Data collection underway
South East Coast	To be determined	1	1		Data collection underway
South West	18	20*	17	94.4	Complete
West Midlands	19	23‡	19	100	Complete
Yorkshire and the Humber	16	14‡	14	87.5	Complete

Table 1: Survey status and response rates (‡includes duplicate responses; *includes more than one response for some units)

Around half (n=55) of respondents were consultant diabetologists/endocrinologists and about a fifth (n=20) were diabetes specialist/link midwives. The remaining respondents comprised diabetes specialist nurses (n=15), consultant obstetricians (n=11), two dietitians, two midwives (non-diabetes specialist), a registrar, an associate specialist in diabetes and endocrinology, and one unknown (Figure 1).

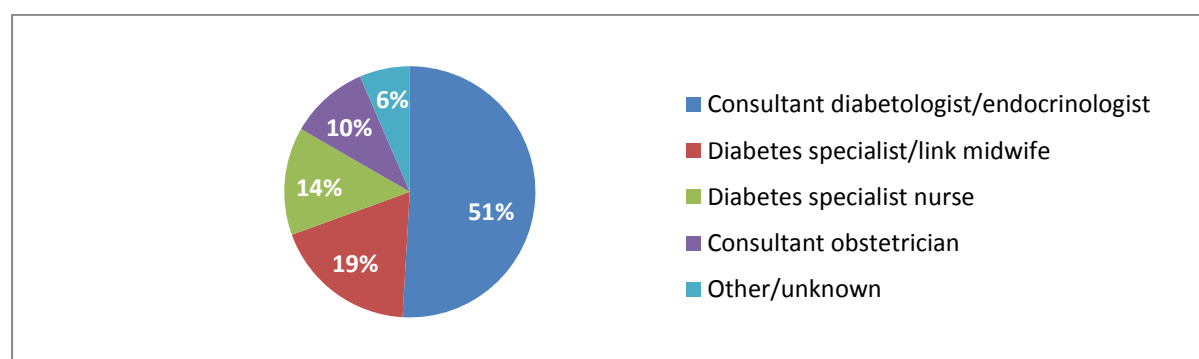


Figure 1: Profession of survey respondents

SCREENING FOR GESTATIONAL DIABETES MELLITUS

SCREENING POLICY

The majority (n=93) of survey respondents reported their unit only screen for GDM in women with risk factors, but eight reported having a universal screening policy (Figure 2). The precise screening policy for two units was unclear.

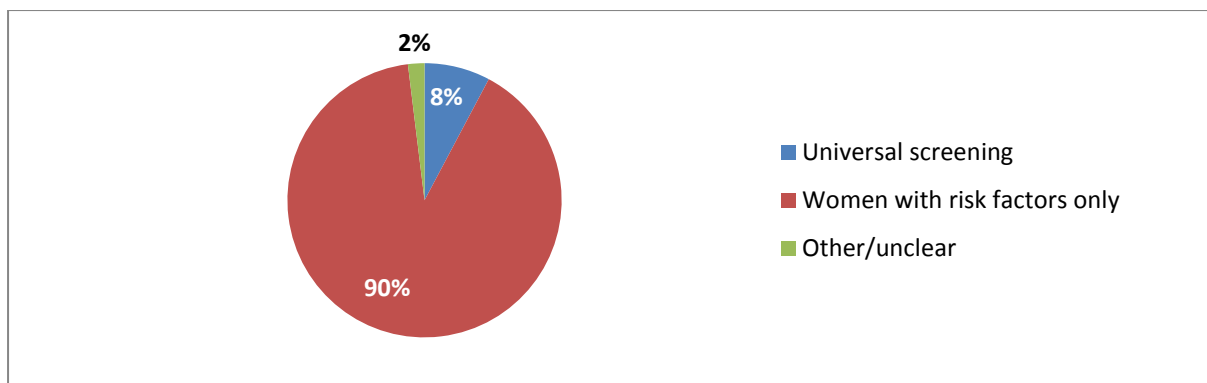


Figure 2: GDM screening policy

SCREENING TEST

All but one of the units screening women with risk factors only use the 75g OGTT for screening purposes; the other unit uses a random glucose test.

In the units with a universal screening policy, five use a random glucose test, two use a 50g glucose challenge, and one uses the 75g OGTT for screening women without risk factors. For women with risk factors, three units use a random glucose test, two use a 50g glucose challenge, and three use the 75g OGTT (Figure 3).

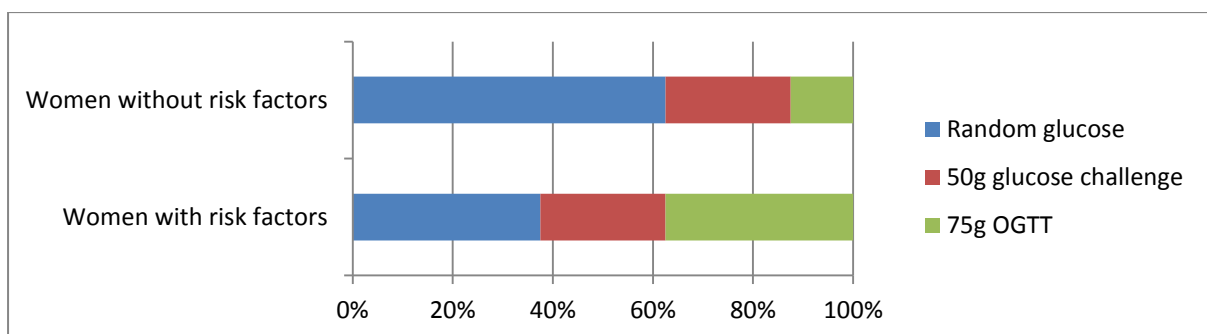


Figure 3: GDM screening test used by units with a universal screening policy

DIAGNOSIS OF GESTATIONAL DIABETES MELLITUS

DIAGNOSTIC TEST

The majority (n=95) of survey respondents utilise the 75g OGTT using fasting and 2-hour readings for the diagnosis of GDM. The remaining eight respondents also carry out the 75g OGTT but use fasting, 1-hour and 2-hour readings (Figure 4).

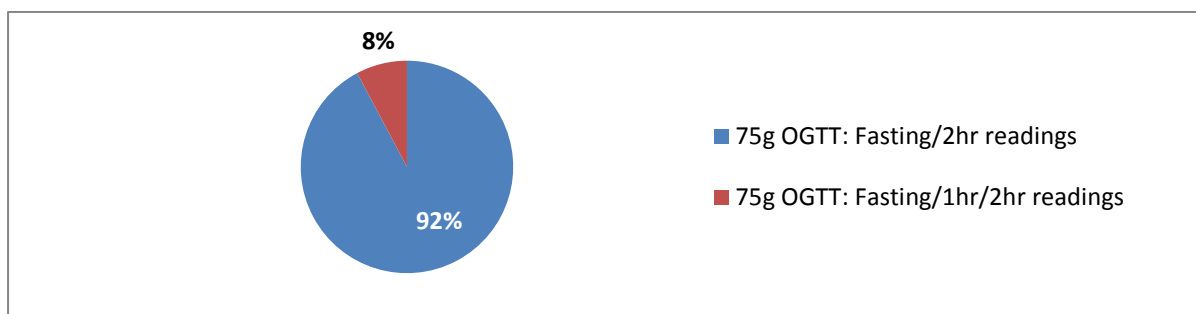


Figure 4: Diagnostic test for GDM

DIAGNOSTIC CRITERIA

There are several diagnostic criteria for GDM using the 75g OGTT in use worldwide. For example:

- **World Health Organization (WHO):** FPG ≥ 6.1 mmol/L; 2hour ≥ 7.8 mmol/L
- **Modified World Health Organization:** FPG ≥ 7.1 mmol/L; 2hour ≥ 7.8 mmol/L
- **American College of Obstetricians and Gynaecologists (ACOG) earlier criteria:** two abnormal values: FPG ≥ 5.3 mmol/L; 1hour ≥ 10 mmol/L; 2hour ≥ 8.6 mmol/L; 3hour ≥ 7.8 mmol/L
- **International Association of the Diabetes and Pregnancy Study Groups (IADPSG) and American Diabetes Association:** One abnormal value: FPG ≥ 5.1 mmol/L; 1-hour ≥ 10 mmo/L and 2-hour > 8.5 mmol/L

Over half (n=61) of survey respondents use the WHO criteria for diagnosing GDM, 14 use the modified WHO version and four use the IADPSG criteria. The remaining respondents use one of a variety of criteria, with FPG values ranging between ≥ 5.0 to > 5.5 mmol/L; and 2-hour values ranging between ≥ 7.0 and > 8.5 mmol/L (Figure 5). For a full list of reported diagnostic criteria currently in use see Appendix I.

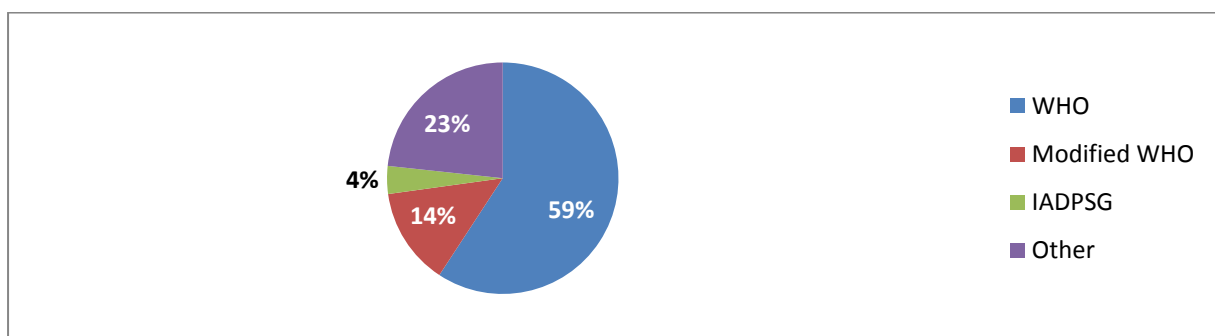


Figure 5: Diagnostic criteria for GDM

MANAGEMENT OF WOMEN WITH GDM

A fifth (n=20) of survey respondents reported their unit stratified the management of women with GDM according to the OGTT results (Figure 6). A range of different management strategies were reported including:

- Home blood glucose monitoring (BGM) with treatment modified if targets are not reached.
- Referral to dietetic team for dietary advice.
- Joint diabetes/obstetric clinic reviews.
- If very high 2-hour OGTT reading:
 - treated more rapidly
 - commence insulin therapy from outset
 - consider undiagnosed type 1 or type 2.
- If moderately high 2-hour reading:
 - dietary advice only or dietary advice plus metformin.
- If all readings raised medication is started immediately.
- Insulin therapy started quickly if targets not reached on diet and metformin.
- Monthly/regular growth scans and treatment modified if necessary.
- Obstetric management may be dependent on timing of diagnosis and treatment, for example:
 - early diagnosis (first trimester) more intensive monitoring and delivered at 38 weeks, later diagnosis (third trimester) delivered 38 to 40-weeks
 - delivered by term if diet controlled or 38 to 39-weeks if metformin or insulin controlled.

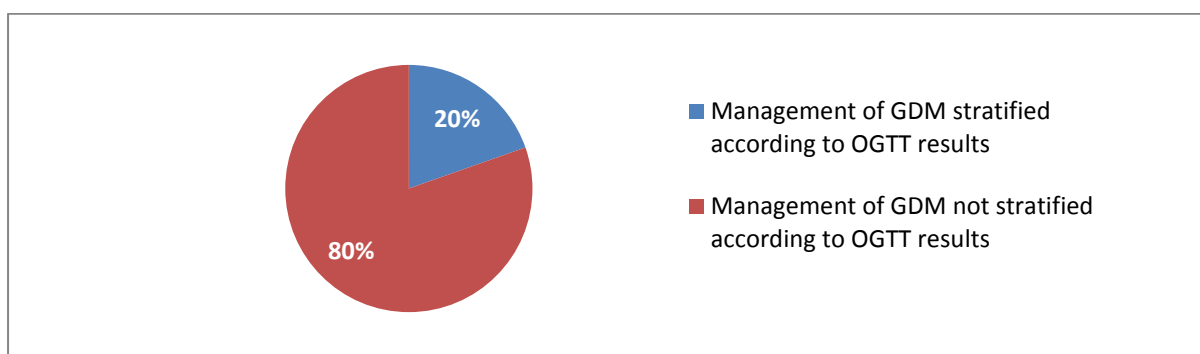


Figure 6: Management of women with GDM stratified according to OGTT result

POSTNATAL SCREENING OF WOMEN WITH GDM

TIMING OF SCREENING

The majority (n=88) of survey respondents recommend screening women with GDM for diabetes 6-weeks postpartum, and ten recommend screening 3-months postpartum (Figure 7). Other postpartum screening strategies included:

- 48-hour postpartum/before discharge, then repeated at 6-weeks postpartum if result abnormal.
- 6-weeks if metformin or diet controlled; 12-weeks if insulin controlled.

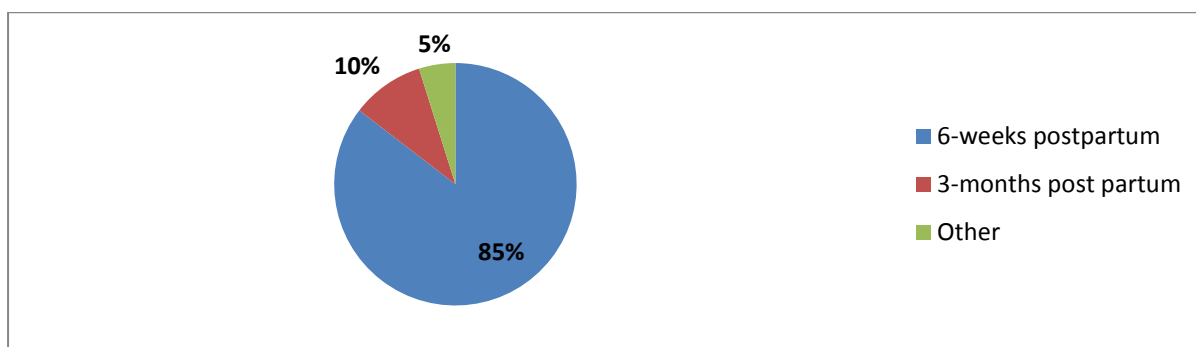


Figure 7: Timing of postpartum screening for diabetes in women with GDM

POSTPARTUM SCREENING TEST

The test to screen for diabetes in women with GDM postpartum varies considerably across the country (Figure 8). Almost half of the survey respondents (n=48) use the 2-hour 75g OGTT and a third (n=33) use the FPG test. HbA1c (n=4) and a combination of FPG and HbA1c (n=4) are also used. The remaining 14 respondents reported the choice of screening test was dependent on one of a number of different factors, including:

- Complexity of GDM in the pregnancy.
- Whether GDM was insulin or metformin/diet controlled.
- Initial/antenatal OGTT results.

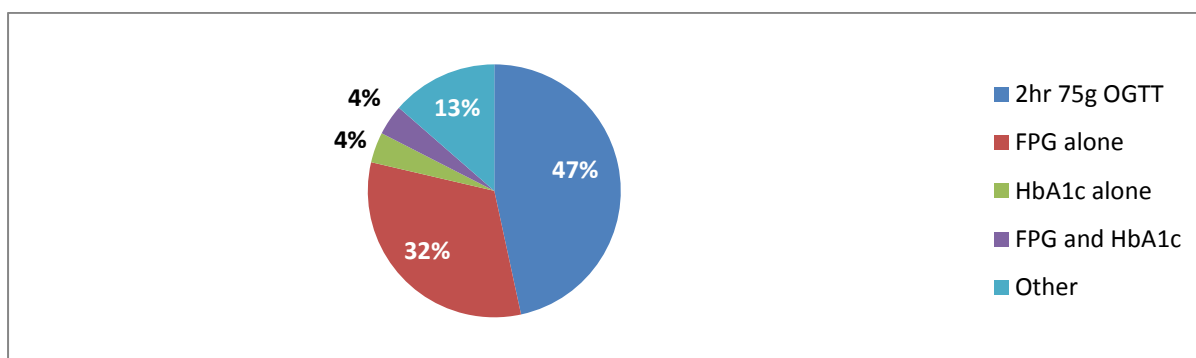


Figure 8: Postpartum screening test for diabetes in women with GDM

ONGOING SCREENING FOR DIABETES

Annual diabetes testing for women with GDM after the postpartum period was recommended by most survey respondents (n=92). One consultant obstetrician stated a lack of resources as the reason for not recommending annual screening. Another respondent reported that individual GP practices had their own policies for repeat testing. The remaining respondents thought the timing of diabetes screening was dependent on risk, with some suggesting screening should be carried out every three years (Figure 9).

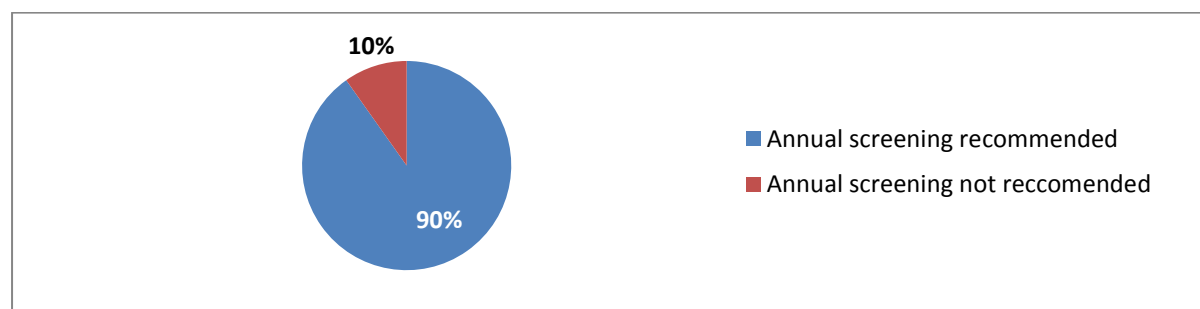


Figure 9: Recommended diabetes screening policy for women with GDM postpartum

NEXT STEPS

Data collection continues in four former SHA regions. Once regional data collection is complete, a final overarching national report will be produced.

APPENDIX I

The range of diagnostic criteria not aligned with any guidelines, currently being used by survey respondents includes:

- FPG \geq 5.0mmol/L; 2-hour \geq 7.0mmol/L
- FPG \geq 5.1mmol/L; 2-hour $>$ 8.5mmol/L
- FPG $>$ 5.1mmol/L; 2-hour $>$ 7.6mmol/L
- FPG $>$ 5.2mmol/L; 2-hour \geq 7.8mmol/L or more (changing to 8.5 soon)
- FPG 5.3mmol/L; 1-hour 11.0mmol/L, 2-hour 7.8mmol/L
- FPG $>$ 5.4mmol/L; 2-hour $>$ 7.7mmol/L
- FPG $>$ 5.5mmol/L; 2-hour $>$ 7.8mmol/L
- FPG \geq 5.5; 2-hour \geq 7.8mmol/L
- FPG \geq 5.5mmol/L; 2-hour \geq 8.5mmol/L
- FPG $>$ 5.5mmol/L; 2-hour $>$ 8.5mmol/L
- FPG \geq 5.5mmol/L; 2-hour \geq 8.5mmol/L
- ACOG but no 3 hour value performed
- FPG $>$ 5.5 and $<$ 7mmol/L or 2-hour $>$ 7.8 and $<$ 11.0mmol/L