



Gestational diabetes mellitus

An update on screening, diagnosis, and follow-up

Key messages

- 1 During their first trimester, screen high-risk women for pre-existing diabetes using non-pregnancy glucose thresholds. If results are normal, re-evaluate women for GDM at 24 to 28 weeks of gestation.
- 2 At 24 to 28 weeks of gestation, screen all pregnant women for GDM using 3-point 75 g OGTT unless they have pre-existing diabetes.
- 3 At 6 to 12 weeks after delivery, reassess glycaemic status for women diagnosed with GDM using 2-point 75 g OGTT.
- 4 Screen all women with GDM history for diabetes at least once every three years from then on.

Managing GDM to improve outcomes

Gestational diabetes mellitus (GDM) is diabetes first diagnosed in the second to third trimester that is clearly not pre-existing.¹ It is associated with higher risk of perinatal complications such as pre-eclampsia, macrosomia, and shoulder dystocia. GDM history is associated with increased lifetime risk of diabetes and cardiovascular disease.²

In Singapore, higher prevalence of obesity and advanced maternal age has contributed to an increase in GDM, which occurs in about 1 in 4 to 5 pregnancies.^{3,4} Appropriate management with diet, exercise, and/or insulin therapy can lower the risk of developing perinatal complications by up to 58%.⁵

First trimester

Screen women at high risk for undiagnosed pre-existing diabetes

It is recommended women at high risk be screened for pre-existing diabetes, before conception or during the first prenatal visit (first trimester) using non-pregnancy thresholds.¹

If results are normal, re-evaluate them for GDM at 24 to 28 weeks of gestation.

Women with pre-existing diabetes are at greater risk of adverse outcomes than those with GDM. They require tight glucose control, regular eye checks, and specialist management.¹

Women are considered to be high risk for diabetes if they:

- have a pre-pregnancy BMI of more than 30 kg/m²;
- have GDM history;
- have a history of polycystic ovary syndrome;
- have pre-diabetes history;
- have delivered a baby 4 kg and heavier;
- are 40 years and older.

Women below 40 can do an online diabetes risk assessment at <https://www.healthhub.sg/programmes/dra>.

24–28 weeks

Screen all women for GDM

Screen women without any pre-diabetes or diabetes history at 24 to 28 weeks of gestation using 3-point 75 g OGTT. Re-evaluate high-risk women who had normal test results in their first trimester.

Universal screening is favoured over risk-based screening for GDM because Asians generally have a high prevalence of GDM.⁴ Apart from detecting more GDM cases, universal screening is also associated with improving maternal and foetal outcomes compared to risk-based screening.⁶

GDM screening is recommended at 24 to 28 weeks of gestation because this phase coincides with an increase in gestational insulin resistance.

The International Association of Diabetes and Pregnancy Study Group (IADPSG) 3-point diagnostic criteria for GDM using the 75 g OGTT is adopted by many organisations including the World Health Organisation and Singapore's College of Obstetricians and Gynaecologists.⁷⁻⁹ GDM is diagnosed if any of the 3-point diagnostic criteria is met (Table 1).

These criteria are based on findings from the Hyperglycaemia and Adverse Pregnancy Outcomes study, a large-scale observational study that included patients from Singapore.¹⁰ Studies have shown that using the IADPSG criteria instead of the 2-point criteria identifies GDM cases with higher risks of adverse pregnancy outcomes, suggesting that the IADPSG criteria may be better in identifying women for appropriate GDM management.¹¹

Table 1. GDM diagnostic criteria

Plasma glucose levels*	Previous recommendations	Current recommendations
Fasting	≥7.0	≥5.1
1-hour post-OGTT	Not applicable	≥10.0
2-hour post-OGTT	≥7.8	≥8.5

*All values in mmol/L



Avoiding HbA1c for GDM screening and diagnosis

HbA1c should not be used to screen for or diagnose GDM. It is not sensitive in detecting postprandial hyperglycaemia and is generally lower during pregnancy because of increased red blood cell turnover. Screening GDM with HbA1c has also not been validated locally.



Post pregnancy Follow-up for women with a history of GDM

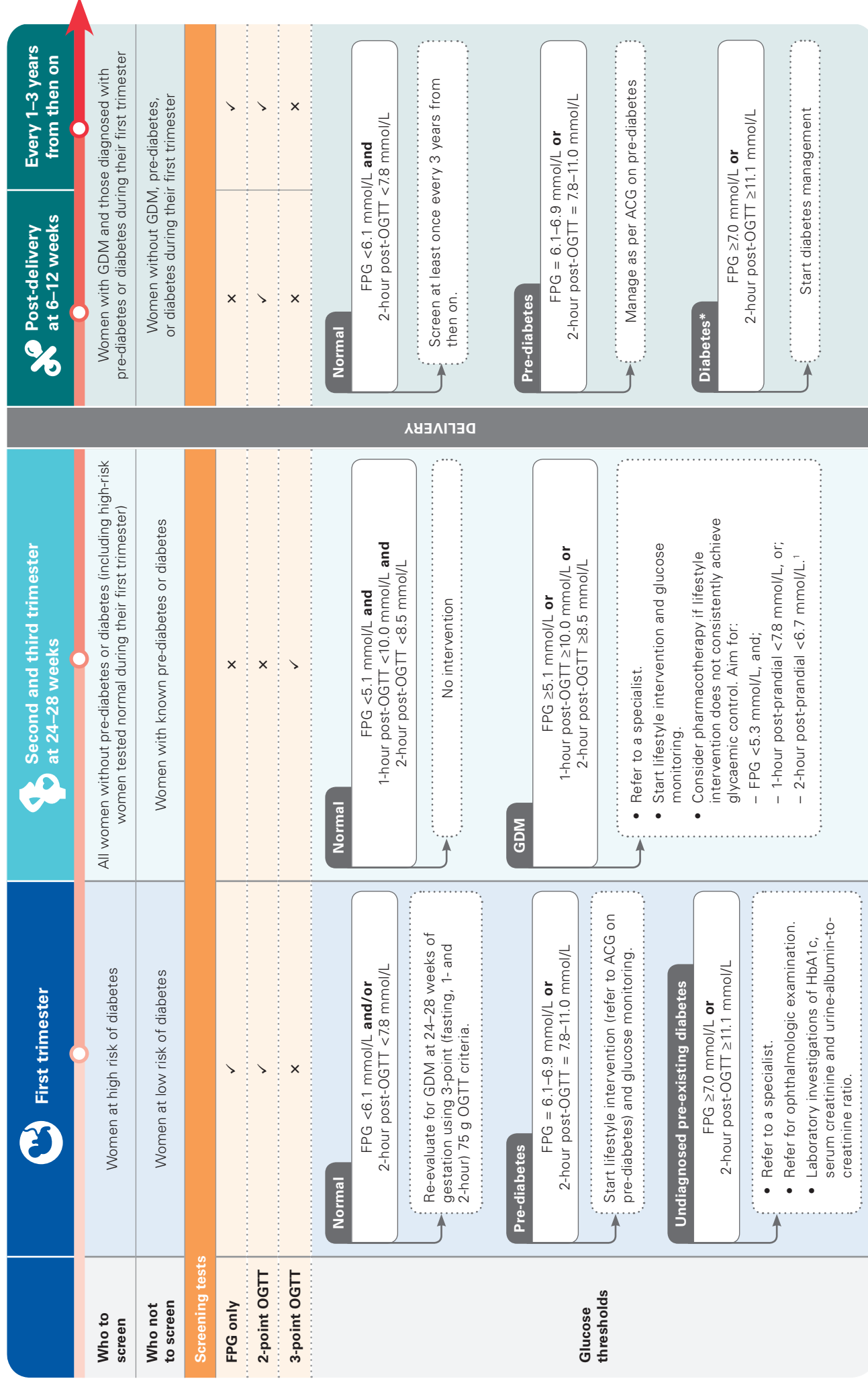
Plasma glucose usually reverts to pre-pregnancy levels six weeks after delivery. It is recommended 2-point (fasting and two-hour) 75 g OGTT be performed in women with GDM between 6 to 12 weeks after delivery to reassess glycaemic status using non-pregnancy thresholds.¹² The same approach applies to women diagnosed with pre-diabetes or diabetes in their first trimester.

Women with GDM history have a seven-fold lifetime risk of developing diabetes.² In Singapore, an estimated 4 in 10 women with GDM could develop pre-diabetes or diabetes within five years.¹³

Lifestyle intervention, including increased physical activity and healthy diet, has been shown to reduce the progression from pre-diabetes to diabetes by 35% over 10 years for women with a GDM history.¹⁴ Thus, women with a history of GDM should be advised to adopt a healthy lifestyle and regular screening for diabetes or pre-diabetes at least once every three years from then on.¹

More frequent follow-up may be required for women who received insulin during pregnancy or those with risk factors for developing diabetes, such as obesity and a family history of diabetes.¹

Figure 1. Screening and diagnostic criteria



*Results should be confirmed by repeating the test with the result above the diagnostic threshold. FPG, fasting plasma glucose; OGTT, oral glucose tolerance test

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Expert group

Lead discussants

Dr Claudia Chi (NUHS)

A/Prof Chong Yap Seng (NUHS)

Chairperson

Prof Tan Kok Hian (KKH)

Group members

Dr Goh Su-Yen (SGH)

A/Prof Michelle Jong (TTSH)

Dr Khoo Chin Meng (NUHS)

Dr Phyllis Liew
(Thomson Medical Centre)

A/Prof Lim Su Chi (KTPH)

Dr Ng Lai Peng (SHP)

Dr Desmond Ong (NUP)

Dr Adrian Tan
(Healthmark Pioneer Mall Clinic)

A/Prof Tan Lay Kok (SGH)

Dr Teh Kailin (NHGP)

About the Agency

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Head (Evaluation)

Agency for Care Effectiveness

Email: ACE_HTA@moh.gov.sg

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Agency for Care Effectiveness (ACE)

College of Medicine Building

16 College Road Singapore 169854