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GUIDELINES

Screening for Gestational Diabetes

The Maltese population has repeatedly been shown to have an overall higher prevalence of DM/IGT, mainly of the Non-Insulin Dependent form. This higher prevalence is reflected in the pregnant population. Epidemiological studies have suggested that the prevalence of DM/IGT in the Maltese pregnant population approximates 6.2%, including a small proportion of pre-existing DM. The prevalence of GDM amounted to about 5.9% of the total pregnant population when a sample population was screened with a 75-gram oral glucose tolerance test.

Clinical severity	**Prevalence** **% total pregnant population**	**Incidence** **% total pregnant population**
Pre-existing IDDM	0.3%	0.3%
Pre-existing NIDDM/IGT/MODY	0.1%	0.1%
Gestational DM - severe	0.7%	0.7%
Gestational DM - mild	5.2%	1.3%

Rates of Gestational problems – Maltese population

[diagnostic criteria – vide infra]

The high prevalence of gestational DM makes routine screening with a 75-gram glucose load the ideal policy. However, the cost-effectiveness of this screening methodology remains debatable. Repeated audit studies of screening based on historic-clinical risk factors have shown that, in the Maltese context, the use of these risk factors appears to identify all the severe GDM cases that require careful metabolic management. These risk factors however only identify 25% of the expected cases of mild GDM, usually managed by dietary modifications alone. Using primary Historic-Clinical risk factor screening significantly reduces the number of oGTTs performed by the laboratory. Only 7.6% of Maltese pregnant women were referred for oGTTs during their pregnancy during 1999-2004.

Risk Factors

Gestational DM may be considered the harbinger of later full-blown metabolic disease. Thus women having historic or clinical features related to the metabolic syndrome including polycystic ovarian disease with its insulin resistance must be considered as being high risk candidates. Similarly women with a past obstetric history suggestive of possibly undiagnosed GDM must also be considered high risk individuals. These women should be formally screened with a 75-gram oGTT during their pregnancy. Women previously known to have diabetic abnormalities, including pre-existing IGT or previous history of GDM, **should not** be subject to the metabolic stress of a significantly high glucose load. Their management is to be based solely on metabolic profiling alone since the oGTT value has no real bearing on metabolic control.

1. Maternal biological criteria	***4. Features of PCOD***
Maternal Age >35 years	P/H recurrent miscarriages
2. Past obstetric history	P/H oligomenorrhoea
P/H Perinatal loss	P/H need for ovulation induction
Multiparity +4	P/H obesity weight >100 kg
P/H Macrosomia	***5. Present clinical picture***
P/H GDM mild-severe	Recurrent fasting glucosuria
3. Family history	Polyhydramnios
F/H Maternal	Present suspected macrosomia
F/H Siblings	Present malformation
F/H Paternal	Elevated untimed booking glucose [>=7.0 mmol/l]

Risk Factors

Screening protocol

Patients are first assessed as to Risk Status during their booking visit. All are further screened using an untimed blood glucose estimation.

Those identified as Low Risk are best given general advice regarding diet – advice which should include avoidance of sugar products.[1]

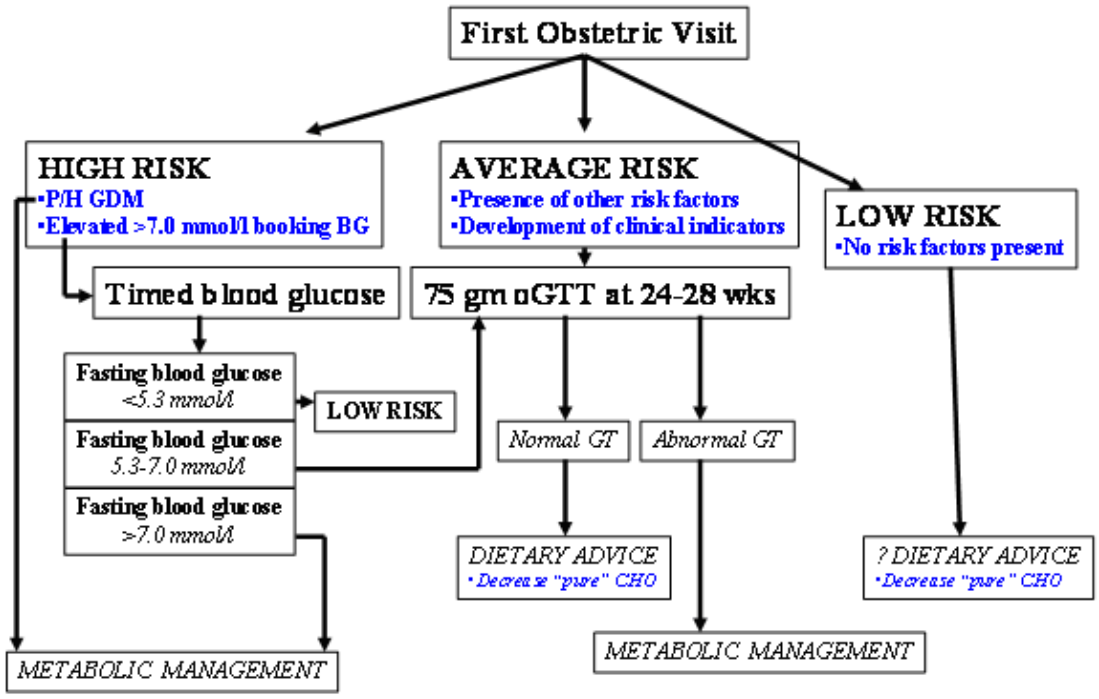
Those labelled as Average or Moderate Risk should have a formal 75-gram glucose tolerance test performed at 24-28 weeks of gestation. If seen earlier, a fasting blood glucose would help exclude previously existing but undiagnosed carbohydrate intolerance. Subsequent management will depend on the result of the oGTT.

[1] Since the use of Historic-Clinical Risk Criteria identifies only 25% of those women suffering from mild GDM, then it would be prudent to reduce sugar intake during pregnancy in all pregnant women to ensure that unidentified mild GDM women also receive a degree of metabolic advice.

Those women labelled as High Risk [including those with an elevated >7.0 mmol/l untimed blood glucose] should be followed up with a timed fasting blood glucose estimation.

If the level is low <5.3 mmol/l, then the patient should be considered Low Risk unless other relevant risk factors are present; if borderline value 5.3-7.0 mmol/l then the patient should be managed with a 75-gram glucose load; if elevated >7.0 mmol/l the patient should be managed as GDM.

Those patients with a past history of GDM should be simply managed as GDM without the need to reconfirm the diagnosis. Their inherent tendency towards insulin resistance would not have changed in the interim, even if they would have lost weight.



Diagnostic criteria

The diabetogenic changes that occur in response to pregnancy have resulted in a long-standing controversy in the literature regarding the diagnostic criteria that should be used to interpret the oral glucose tolerance test. Further controversy dominates also the glucose load that should be used. It has been standard policy in the last three decades in Malta to use the standard 75-gram glucose load during pregnancy. Interpretation of the results has varied during this period, initially being based on the criteria proposed by the World Health Organisation which ignores the physiological changes of pregnancy. The criteria being currently used [see next page] are those adopted by the European Diabetes in Pregnancy Study Group and the European Association of Perinatal Medicine. The diagnostic classification has been further modified to reflect severity.

Correct interpretation of the oral Glucose Tolerance Test is obviously essential to enable correct diagnosis and institute proportionate management. It is essential to observe a rise in the blood glucose levels at the 1-hour post-glucose load testing since if such a rise has not been confirmed the patient may be suffering from delayed gastric emptying.

Fasting	1-hour	2-hour	Diagnosis
4.0	10.0	6.0	Normal glucose tolerance
4.0	6.0	10.0	Delayed gastric emptying – metabolic status not identified – a further 3-hour glucose values would be ideal in this case.
4.0	11.0	9.5	Mild GDM
5.7	12.0	11.0	Severe GDM

oGTT interpretation – examples

Clinical Diagnosis	Definitions
Pre-IDDM & Pre-NIDDM/IGT	Patients with a past history of carbohydrate metabolism problems occurring prior to pregnancy, whether dependent on insulin or not.
Pre-GDM mild-severe	Patients with a past history of carbohydrate metabolism problems during their previous pregnancies. These have been already diagnosed as insulin resistant.
GDM - severe	Fasting blood glucose >= 7.0 mmol/l 1-hour blood glucose >=11.0 mmol/l 2-hour blood glucose >=11.0 mmol/l
GDM - mild	Fasting blood glucose >= 5.3 mmol/l 1-hour blood glucose >=10.0 mmol/l 2-hour blood glucose >= 8.6 mmol/l
Suspected GDM	Patients whose clinical history during pregnancy is highly suggestive of carbohydrate metabolism problems but whose oGTT status has not been assessed during the present pregnancy.
Borderline GT ***This group is labeled as mild GDM by either the WHO or the ADA criteria.***	a. those with a 2-hour blood glucose value of 8.0-8.5 mmol/l b. those with a fasting blood glucose of 5.3-6.9 mmol/l and a 1-hour blood glucose value of >=10.0 mmol/l but a 2-hour blood glucose value of <=7.9 mmol/l.
Normal Glucose Tolerance	Fasting blood glucose < 5.3 mmol/l 1-hour blood glucose <10.0 mmol/l 2-hour blood glucose <=7.9 mmol/l