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## SCREENING FOR GESTATIONAL DIABETES

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Screening for gestational diabetes (GDM) is important : for its prospective relation to overt diabetes, future maternal health, outcome of the pregnancy and possibly also for the future health of the child. The two widely accepted definitions of gestational diabetes are as follows :

(1) World Health Organisation (WHO) (1980).

75 g oral glucose tolerance test

| Time (hours) | Venous Whole Blood | | Capilary Plasma | |
|---|---|---|---|---|
| | mmol/1 | mg/dl | mmol | mg/dl |
| 0 | <7.0 | < 120 | <8.0 | < 140 |
| 2 | ≥7.0 <10.0 | ≥120 <180 | >9.0 <12 | >160 <220 |

The criteria are the same as for impaired Glucose Tolerance (IGT) in the non-pregnant but the *treatment* is as for diabetes.

(2) National Diabetes Data Group (NDDG) (1979), supported by the American Diabetes Association and other official representative bodies in the U.S.A.

100 g oral glucose tolerance test

At least two values must reach or exceed the following levels :

| Time (hours) | Venous Whole Blood | | Capillary Plasma | |
|---|---|---|---|---|
| | mmol/1 | mg/dl | mmol/1 | mg/dl |
| 0 | 5.0 | 90 | 5.8 | 104 |
| 1 | 9.5 | 170 | 10.2 | 184 |
| 2 | 8.1 | 145 | 8.8 | 159 |
| 3 | 7.0 | 125 | 7.7 | 139 |

The NDDG criteria are based on the O'Sullivan criteria (1964) and have therefore had a longer period of assessment. Neither definition depends on the result of any glucose tolerance test done post partum. This contrasts with definitions widely used in the past and now allows a diagnosis of GDM to be made at the time of the test rather than retrospectively. The WHO criteria are slightly more sensitive, although they do not recognise that the fasting blood glucose is lower in the normal pregnant than non-pregnant state, and only one value instead of two needs to exceed the minimal criteria.

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It is sensible to divide GDM diagnosed by the NDDG criteria into 2 grades (1) with fasting venous whole blood glucose below 5.5 mmol/1 (100 mg/dl) and (2) equal to or greater than this level for the 2nd grade is more significant for the mother and infant.

Ideally GDM, which is asymptomatic, should be detected by performing one of these tests on all pregnant women at a time when their glucose tolerance tends to deteriorate, say at 28-30 weeks gestation, but this is clearly impracticable and uneconomic to find the 1-2% who would be test positive. Many centres have relied hitherto on testing fully only those pregnant women having certain stigmata of potential diabetes. These can be listed under three headings, namely, *Maternal Factors* in the index pregnancy (fasting glycosuria, first degree family history of diabetes and obesity, taken as the top 15 percentile in Aberdeen), *Obstetric Factors* in the *index pregnancy* (polyhydramnios, suspected large-for-dates baby and fetal congenital abnormality) and *Obsteric Factors* in *previous pregnancies* (heavy-for-dates baby, light-for-dates baby, congenital abnormality, stillbirth, neonatal death and recurrent abortions). A prospective study in Aberdeen of nearly 1,000 unselected pregnant women, who all had intravenous glucose tolerance tests at about 31 weeks gestation, showed that less than half of those who had tests in the abnormal range had any clinical indication to be tested.

It follows that a simpler screening method should be used for all the women at risk and the presence of any of the known features of potential diabetes or age above 25 years forms a good added reason for such a screening to be done. Indeed the presence of more than one "Indicator" of potential diabetes increases the likelihood of finding GDM. True glycosuria in the fasting state (second urine specimen passed before breakfast) is the commonest indicator for potential GDM in the Aberdeen series and is positively correlated with many of the ether indicators.

Such simpler screening methods have been a described by Lind who has used random blood glucose samples, time as either within or after two hours of the last meal. He chose to select the top 1 percentile for full oral GTT and so the critical random blood glucose values 6.4 mmol/1 and 5.8 mmol/1 respectively. Hadden has used random plasma glucose values above 6.6 mmol/1 irrespective of meals as an indication for full testing, whereas Gillmer has followed the recommendations of ‘O’Sullivan and has done a single plasma glucose examination one hour after a 50 g oral glucose load and figures above 7.5 mmol/1 were an indication to do a full oral glucose tolerance test. This unfortunately involves a considerable wait for patients in the clinic and good organisation. An alternative approach would be to train patients to measure their own blood glucose on a glucose oxidase strip two hours (for best discrimination) after taking a 50 or 75 g lemon flavoured glucose drink instead of breakfast. They could be taught how to measure their blood glucose on a 6 minute video tape programme which would be shown at the clinic and they would do the test the following day and one day before their next pre-natal clinic visit at 28-32 weeks of gestation, bringing the latest strip with them to be read on a meter in the clinic. Patients with a figure say in the top 5 percentile would have a full glucose tolerance test. The methods involving a standard glucose drink and a blood glucose measurement one or two hours later cut out the variable of different sizes of meal and times after it in the assessment of the test blood glucose level. Overt diabetes will have showed up with glycosuria tested for at each out-patient visit hopefully before the onset of symptoms.