



# Management of gestational diabetes in the community

Training Manual for Community Health Workers



**International  
Diabetes  
Federation**



The content in this brochure has been developed by the International Diabetes Federation (IDF) in collaboration with the Madras Diabetes Research Foundation (MDRF) in Chennai, India, based on the learnings from the WINGS Project (Women in India with GDM Strategy). The WINGS project was developed and supported through a partnership among IDF, MDRF and the Abbott Fund, the philanthropic foundation of the global healthcare company Abbott.

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# WHAT IS GESTATIONAL DIABETES MELLITUS (GDM)?

When a pregnant woman who is not known to have diabetes before becoming pregnant has blood sugar levels above a certain level, she is diagnosed as having gestational diabetes. This usually occurs between 24 and 28 weeks of the pregnancy, but may show up earlier or later.

The pregnancy hormones work against insulin so pregnant women need more insulin than usual. Most women are able to produce more insulin during their pregnancy. Some women cannot produce more – usually due to being overweight, having a family history of diabetes or being older. These women may develop gestational diabetes.

Gestational diabetes is very common, some studies have shown 10 – 20% of women will have it. It is more common in women who are overweight, older, less active or have a family history of diabetes.



# WHY SHOULD WE TREAT WOMEN WITH GESTATIONAL DIABETES?

If not treated gestational diabetes may result in problems for both mother and baby.

## **COMPLICATIONS FOR THE MOTHER**

- She may develop high blood pressure
- She may have to have a caesarean section
- She may go into labour early
- She may develop type 2 diabetes within 5 – 10 years
- She has a higher risk of developing cardiovascular disease in the future

## **COMPLICATIONS FOR THE BABY**

- The baby may get too big
- The baby's blood sugar level may drop too low after birth
- The baby may have jaundice
- The baby may be injured during vaginal delivery, due to being too big
- The baby may have trouble breathing
- The risk of being overweight as a child is higher
- The risk of developing type 2 diabetes in the future is higher

# WHO SHOULD BE SCREENED FOR GESTATIONAL DIABETES AND HOW?

All pregnant women should be screened at the first visit to the antenatal clinic. Early in pregnancy screening is done to see if the woman already has diabetes that she does not know about. Screening can be done using a fasting plasma glucose (FPG), glycosylated haemoglobin (A1C) or a random plasma glucose (RPG). If one of the results is higher than the numbers below, the woman should be treated as having diabetes before she became pregnant.

FPG > 7 mmol/L (126 mg/dl)

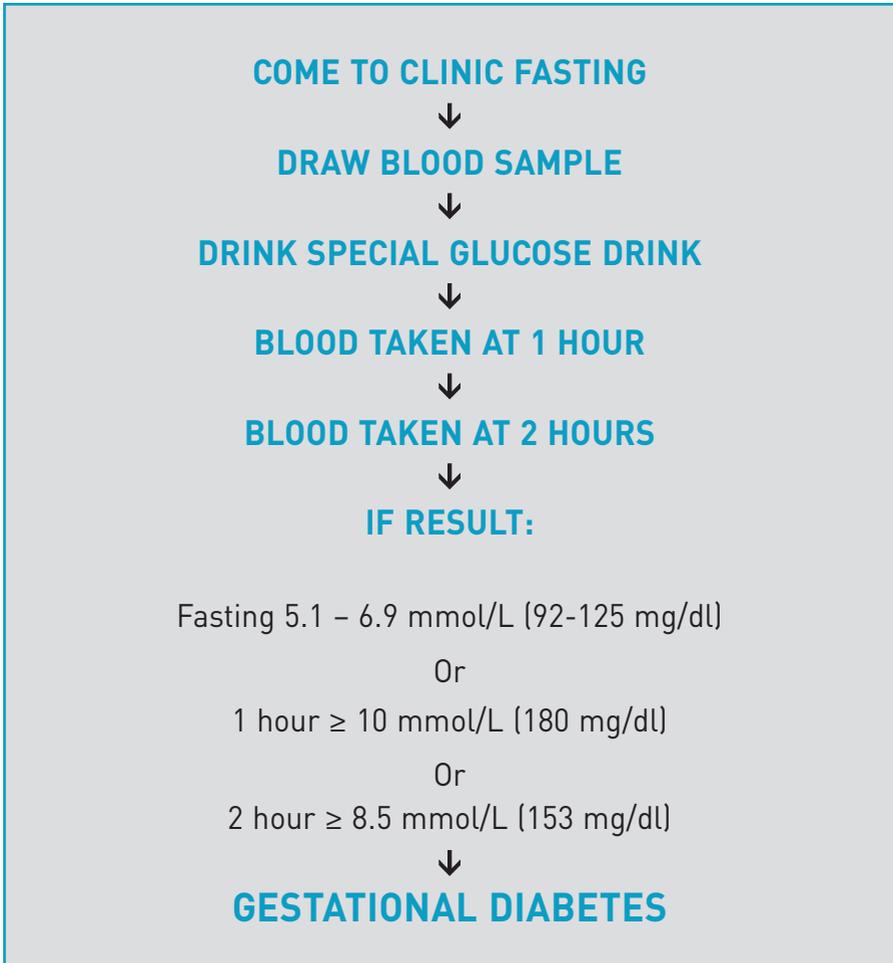
A1C > 6.5%

RPG > 11.1 mmol/L (200 mg/dl)

All women who have normal levels on these tests early in pregnancy should be screened again between 24 and 28 weeks of the pregnancy. At this time the woman should come to the clinic fasting, that is nothing to eat or drink, except water, for at least 8 hours. She will have some blood drawn then be given a glucose drink, after which blood will be drawn in one and two hours. If one of the tests is high the woman will be diagnosed with gestational diabetes (see box on the next page for the diagnostic levels).

If possible all blood tests should be done using venous blood and sent to a lab, not measured using a handheld glucose meter.

## SCREENING FOR GDM AT 24 - 28 WEEKS



Women who have normal results but are at high risk of gestational diabetes should be retested at 32 weeks.

# WHY IS SELF- MANAGEMENT EDUCATION IMPORTANT?

Women want to be healthy and have healthy babies. They are responsible for their own care 24 hours a day. They need to know what they can do to have a healthy pregnancy and a healthy baby.

The situation and needs of each woman need to be considered when treatment is planned. Suggestions for a healthy pregnancy need to be tailored to what the woman is able to do and what she is willing to do. This means considering her living situation, support from family, finances and ability to make the recommended changes.



# NUTRITION

One of the key factors in managing gestational diabetes is healthy eating. When possible all pregnant women should see a dietitian who will prepare an appropriate meal plan.

Women should be advised to eat 3 meals and 3 snacks during the day. Spreading the food out over the day helps to keep the blood sugars balanced.

To get all the nutrients, minerals and vitamins needed for a healthy pregnancy and baby, women should eat foods from a variety of sources.

- Grains and starches, such as wheat, brown rice
- Vegetables and fruit
- Vegetable protein such as lentils, pulses, tofu and nuts
- Animal proteins such as egg whites, chicken and fish
- Milk and milk sources such as yogurt, cheese

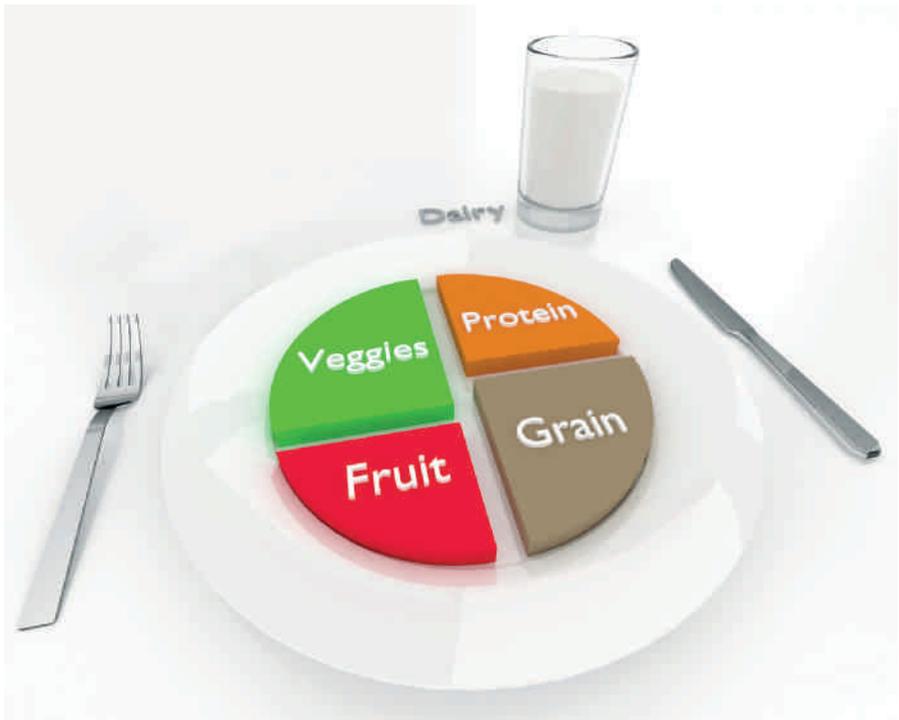
Note:

- Fish that may contain higher levels of methyl mercury should be limited such as fresh and frozen tuna, shark, swordfish, marlin, orangy roughy and escolar

Some general guidelines for healthy eating:

- Include 4-5 servings of yellow and green vegetables in the daily diet
- Include iron rich foods such as brown rice , wheat germ
- Include fresh wholesome foods – whole fruits instead of juices, whole grains/ multigrain flours instead of refined flours
- Include adequate intake of fluids – 2 litres/day unless advised a lower amount
- Include a minimum of 650 ml milk or alternate to meet calcium needs
- Eat less junk foods, bakery products, fried foods, salted foods
- Use less oil in cooking
- Avoid direct sugars, saccharin and cyclamates
- Minimize the use of other artificial sweeteners
- Avoid alcohol and tobacco and recreational or non prescription drugs in all forms.

A simple way to teach healthy eating is to suggest that the plate be half covered with vegetables and fruits, ¼ covered with grains and starches and ¼ covered with protein.



All pregnant women should gain some weight during pregnancy. The amount of weight to gain depends on the weight before becoming pregnant.

If the BMI is	Recommended weight gain is
Less than 18.5	12.5 – 18 kg
18.5 - 24.9	11.5 - 16 kg
25 - 29.9	7 - 11.5 kg
Over 30	5 - 9 kg

$$\frac{\text{Weight in kg}}{\text{Height in meters}^2} = \text{BMI}$$

**AN EXAMPLE:**

Weight is 65 kg  
Height is 1.6 meters

$$\frac{65}{1.6 \times 1.6} = 23.3 = \text{BMI}$$

Most women should add about 350 calories to their daily intake around the 4<sup>th</sup> month. For those who are overweight fewer calories should be added, for those who are underweight more calories could be added. Where possible a dietitian should recommend the amount of calories to add.

# EXERCISE

- Any physical activity is better than no physical activity during pregnancy.
- Even low levels of physical activity have shown benefit in control of blood sugars.
- Aerobic activity of moderate intensity for 30 minutes a day on most days of the week is the usual recommendation to help control blood sugars. Aerobic activity is walking, biking or swimming.
- Upper body resistance training in addition to the aerobic activity may help in controlling blood sugars.

## SOME CAUTIONS ABOUT EXERCISE

- Exercise should not be done while lying flat on the back.
- Exercise should be stopped if contractions are felt.
- Exercise should be stopped if the heart rate goes over 140 beats per minute.
- If the woman is taking insulin and has symptoms of a low blood sugar, exercise must be stopped and the low sugar treated.

# MONITORING

## BLOOD SUGAR

Women will have their blood sugar checked every time they go to the clinic or health centre.

Target levels during pregnancy are:

- Fasting or before eating or drinking anything: less than 5.3 mmol/L (90 mg/dl)
- 1 hour after eating a meal: less than 7.8 mmol/L (140 mg/dl)
- 2 hours after eating a meal: less than 6.7 mmol/L (120 mg/dl)

Some women will test at home using a blood glucose meter. If they are testing at home they could test before breakfast and at 1 or 2 hours after one or more meals a couple of days a week. If the results are higher than the target levels the doctor should be notified.

## ULTRASOUND

Most women will have an ultrasound done several times during the pregnancy. These are done to determine the size of the baby and to make sure the baby is developing normally.

# PHARMACOLOGICAL MANAGEMENT

## INSULIN

When blood sugars continue to be above the target levels in spite of a healthy meal plan and regular activity, the best way to get them down is to start insulin. Insulin must be injected daily, sometimes several times a day, depending on the type of insulin prescribed. The doctor will prescribe the insulin dose.

### Things to remember about insulin

- Insulin must be kept between 15 and 30 degrees Celsius. It can be kept out of the fridge if the room does not get hotter than 30 degrees, otherwise it should be kept in the fridge, but not in the freezer.
- If insulin is kept in the fridge it should be allowed to warm slightly before it is injected. This is done by letting it sit in the room for a few minutes. Do not put it in warm water to warm it.
- Insulin must never be allowed to freeze.
- Insulin should be stored away from a source of heat.
- If no refrigeration is available it could be stored on a clay pot filled with water.
- Insulin may be damaged by direct sunlight or vigorous shaking. Cloudy insulin (N, NPH or premixed insulins) need to be rolled between two hands (not shaken) to mix it before it is used.

The most common side effect of insulin is low blood sugar, meaning the insulin worked too well and the level dropped below 4 mmol/L (72 mg/dl). See next page for more about low blood sugars.

Some women may be prescribed metformin (a pill) instead of insulin. Metformin has been shown to be safe for use in pregnancy but insulin is still considered the best choice.

# HYPOGLYCEMIA OR LOW BLOOD SUGAR

**ONLY THOSE TAKING INSULIN ARE AT RISK OF A LOW BLOOD SUGAR.**

## **Blood sugars drop too low when:**

- The woman has not eaten enough carbohydrate (grains, starches, fruit)
- The meal is late or missed
- The woman has done a lot of activity but not eaten enough
- The woman took too much insulin for the planned meal

## **Signs of hypoglycemia**

- Shaking
- Heart pounding
- Sweating
- Hunger
- Tiredness, no energy
- Headache
- Mood change
- Confusion
- Agitation
- Passing out

### **Treatment of low blood sugar**

A low blood sugar must be treated immediately - if not treated the woman may have a seizure and pass out.

If possible check the blood sugar level with a glucose meter.

**Give the woman 15 grams of sugar**, this could be:

- 3/4 cup of fruit juice
- 3/4 can of regular (not lite, zero or diet) soft drink
- 4-6 hard candies, to be chewed
- 3 teaspoons of sugar or honey

If there is no improvement in 10 - 15 minutes, give the same amount of sugar again.

If the low blood sugar happens before a meal, it should be treated and then the meal eaten as usual.

If the next meal is more than 1 hour away, a snack should be taken. The snack should be a starch and some protein.

If low blood sugars happen frequently (more than one time a week) the doctor should be consulted and the insulin dose may need to be changed.

# AFTER THE BABY IS BORN

All women should be encouraged to breastfeed.

Women will have their blood sugars tested after delivery - in gestational diabetes blood sugars return to normal after delivery and insulin will no longer be needed. Some women will not return to normal blood sugar levels after the baby is born. They will need guidance regarding healthy eating and medications to keep their blood sugars in the normal range.

The risk of developing diabetes in the future is high, therefore women should be encouraged to eat a healthy meal plan and achieve a healthy body weight.

All women need to have their blood glucose tested between 6 - 12 weeks after the baby is born. This test will require the woman to go to the clinic or centre before she has eaten anything in the morning. Blood will be drawn, then she will be given a sugary drink and blood will be drawn again after 2 hours.



# FUTURE PREGNANCIES

Women should plan when they will become pregnant again. They should be educated on birth control methods to ensure they do not become pregnant before they want to and only when the woman is ready and in optimal health.

Women should be encouraged to achieve a healthy weight prior to becoming pregnant again as this may lessen the chance of developing gestational diabetes a second time.

Prior to becoming pregnant, blood glucose levels should be checked and there should be a consultation with a doctor to make sure the woman has not developed diabetes in the interim.







**WINGS**  
WOMEN IN  
INDIA with GDM  
STRATEGY

An International Diabetes Federation Project