



Infobrochure

Diabetescentrum
Waregem

Gestational diabetes: “Nutritional advice”

Dear mom-to-be,

The first part of this brochure focuses on the development of gestational diabetes, the consequences for both mother and child and how it can be treated.

In this second part the two most important aspects of treatment will be clarified and the importance of a healthy and balanced diet and sufficient body exercise will be emphasised. The aim is to achieve normal blood glucose levels by means of a balanced diet that contains sufficient nutrients for both mother and child.

In case a balanced diet and exercise should prove insufficient to keep the blood glucose levels within target range, insulin therapy will be started. The diabetes specialist nurse will then guide you. However, for three out of four women suffering from gestational diabetes following a tailored diet is sufficient.

For the baby's growth and development it is essential to maintain a healthy lifestyle by combining a healthy, balanced and varied diet with sufficient body exercise. Once gestational diabetes is diagnosed you will be referred to our dietician(s) who will ask you about your eating pattern and will adjust it to your individual needs. Our dietician will draw up a personal daily schedule. During your pregnancy your nutritional needs may change and therefore need adjustments. Your dietician will advise you on this. In order to keep your blood glucose levels within target range it is important to acquire knowledge about what a healthy diet for pregnant women implies and to bear specific points of attention in mind. Remember, a dietician is in this respect the best qualified health care provider to guide you.



Importance of a healthy and balanced diet during your pregnancy

Once gestational diabetes has been diagnosed, a patient is given dietary guidelines to keep the blood glucose levels stable. Often only a few adjustments to the patient's eating pattern are more than sufficient to prevent risks to mother and child. The main aim of an tailored diet is a healthy basic diet with sufficient nutrients for both mother and child.

A well-balanced diet during pregnancy provides:

- The right nutrients for the baby's growth
- Less complications during both pregnancy and childbirth
- A quick recovery after childbirth
- A reduced risk for the mother to develop type 2 diabetes after childbirth
- A reduced risk for the baby to develop obesity or type 2 diabetes at an older age

The recommendations for pregnant women largely correspond to those of the food triangle, an information model of the Flemish Institute for Healthy Living, in which nutrients are grouped and ranked according to their health effects (table 1).



In the case of gestational diabetes, specific dietary advice is necessary.

There are e.g. certain foods that should be avoided because they can be harmful for both mother and child. It is also important that energy intake is sufficient and that you do not restrict calories or go on a weight loss diet. This is discussed below.

TABLE 1: RECOMMENDED DAILY FOOD INTAKE DURING PREGNANCY

Nutrient	Recommendation	Tips and remarks
Beverages	1,5 litres	Prefer beverages without added sugars. Water should be your first choice. Water, herbal tea, light ordinary tea, coffee (moderate consumption), unsalted (fresh) vegetable juice, vegetable broth, soup.
Bread	3 - 5 slices	Preferably wholemeal or brown bread.
Potatoes and grain products	3 - 5 pieces (150 – 350g) or 125g cooked	Try to vary between potatoes, pasta and cereals (such as rice, couscous, quinoa). Always choose the unrefined (wholemeal) types.
Vegetables	A generous portion (300g)	Try to vary and opt for seasonal vegetables. A part of the daily intake can consist of raw vegetables and/or vegetable spread on bread.
Fruit	250g of fruit a day	Try to vary and opt for seasonal fruit. Prefer fresh fruit and limit fruit juices and dried fruits as they contain more sugar.
Milk	250 - 500ml daily	Prefer low-fat/skimmed or half-fat varieties. Milk can be replaced by buttermilk, yoghurt, plain cheese or calcium-enriched milk alternatives. You can also add some dairy in mashed potatoes, puddings or milkshakes.
Cheese	1 - 2 slices	Cheese generally contains more fat and salt so try to opt for low-fat cheese or light and less salty types of cheese.

Voedingsmiddel	Aanbeveling	Tips en opmerkingen
Meat, poultry and substitutes such as tofu, tempeh, etc.	100g	Try to add poultry to the menu once a week and limit red meat to a maximum of 500gr/ week. <i>If you are not immune to toxoplasmosis, do not eat raw or uncooked (red) meat.</i>
or fish	125 - 150g	All types of fish, including fatty fish. Replace meat 1-2 times a week by fish, one of which should be fatty fish
or eggs	Maximum 6/ week	
or legumes	60 - 90g (weighed dry)	These are a good alternative to meat and are high in fibre. Try to include them once a week.
Meats	max. 30g/week	Replace cold cuts with fish in its own juice, cheese, vegetable spread or humus, fruit slices, fresh cheese, ...
Fats	35 – 45g per dag	Preferably oils and fats rich in unsaturated fatty acids.
Seeds and kernels	15-25g per dag	Preferably those rich in omega 3 (e.g. walnuts), unsalted and non sugar coated.

Should I eat for 2?

During pregnancy the mother's body has a greater need for good nutrients. However, this does not imply that you need to 'eat for two' as is commonly said. In other words, choose quality over quantity.

Depending on your gestational age, you will need extra energy and nutrients:

- during the first trimester: about 5% energy increase
- during the second trimester: about 10% energy increase
- during the third trimester: about 25% energy increase, which can amount to about 400 Kcal.

During pregnancy your body uses certain nutrients more efficiently so there is no need to eat for two. In addition, this increased intake requirement is often compensated for as pregnant women generally get less exercise as their pregnancy progresses.

If you overeat you will gain too much weight during pregnancy, which is not good for your health nor for your baby.

A too low body weight or excessive weight loss during pregnancy on the other hand can also be harmful to your baby's development and should be avoided at all costs.

A normal weight gain is about 10 - 12kg depending on the BMI before pregnancy.

- BMI before pregnancy $<18,5 \text{ kg/m}^2$: + 12,5-18 kg weight gain
- BMI before pregnancy $18,5 - 24,9 \text{ kg/m}^2$: 11,5 - 16 kg weight gain
- BMI before pregnancy: $25 - 29,9 \text{ kg/m}^2$: 7 - 11,5 kg weight gain
- BMI before pregnancy $>30 \text{ kg/m}^2$: 5 -9 kg weight gain

Do not worry if you gain less or more than recommended. Your gynaecologist will monitor your weight closely and will refer you to a dietician if he/she considers this necessary.

Composition of a healthy, balanced diet



Carbohydrates

A healthy diet contains carbohydrates, proteins and fats. Your baby needs these nutrients, vitamins and minerals just as much as you do and you provide these to your baby by eating healthily. As gestational diabetes is in fact a carbohydrate metabolism disorder close attention should be paid to the various types of carbohydrates and their intake should be spread over three square meals and two or three snacks.

Carbohydrates are nutrients that provide energy to your body in order to properly function. Carbohydrates are in fact sugars that are broken down into glucose. They raise your blood sugar level, either quickly or slowly. That's why there is a difference between fast and slow carbohydrates. They both have a different effect on the way your blood sugar level rises after intake. The slower the blood sugar rises, the better.

1. Fast carbohydrates (sugars)

These sugars are transported into the bloodstream very quickly after ingestion and cause your blood sugar level to rise rapidly. This group includes both simple and complex sugars and is subdivided into natural and added sugars.

- **Natural sugars** are simple or complex sugars that are naturally present in food. Excluding these from the diet is not possible nor is avoiding these foods a solution. They often contain other essential nutrients, such as vitamins and minerals. It is important to include these in your diet, however in moderation and spread throughout the day.
I.e. fructose in fruit and lactose in milk and dairy products.
- **Added sugars** are the sugars that are added by the food industry. These products contain little or no essential nutrients and should be avoided as much as possible.
I.e. biscuits, sweets, chocolate, sweetened milk products, chocolate mousse, ice cream, soft drinks, fruit juices, etc.
Good alternatives with less added sugars do, however, exist, so always ask your dietician for advice.

2. Slow carbohydrates (sugars)

These are digested more slowly and thus enter the bloodstream more slowly, as a result they cause less high peaks in the blood sugar level. It is important to opt for the high-fibre (or unrefined) variety as the fibres slow down the digestion and transportation of sugars, resulting in a better blood glucose level after eating.

I.e. potatoes, wholemeal pasta, wholemeal rice, wholemeal/multi-grain bread, vegetables, fruit and unsweetened milk and dairy products (note that these also contain a proportion of quick sugars; see above), ...

WE RECOMMEND AVOIDING FAST SUGARS AS MUCH AS POSSIBLE. PREFER SLOW CARBOHYDRATES. HOWEVER, THE PEAK IN THE BLOOD SUGAR DOES NOT ONLY DEPEND ON THE KIND OF CARBOHYDRATES YOU EAT, BUT ALSO ON THE QUANTITY. IT IS IMPORTANT TO SPREAD THESE HEALTHIER, SLOW RELEASE CARBOHYDRATES THROUGHOUT THE DAY. IF YOU COMBINE SLOW CARBOHYDRATES WITH PROTEINS AND FATS, THE GLUCOSE FROM SLOW CARBOHYDRATES IS ABSORBED EVEN MORE SLOWLY INTO THE BLOOD-STREAM. THE RIGHT AMOUNT OF NUTRIENTS WILL BE ADDED TO A PERSONAL NUTRITION PLAN IN ORDER TO OBTAIN A BALANCED DIET THAT WILL KEEP YOUR GESTATIONAL DIABETES UNDER CONTROL.

Fats

Fats are, in addition to carbohydrates, important for the treatment of gestational diabetes. Like carbohydrates fats are **energy suppliers** but they also **add fat-soluble vitamins and essential fatty acids** to our bodies.

Fats are subdivided into:

1. Saturated fats:

These are also called 'bad' fats. They can raise the cholesterol level in our blood which increases the risk of cardiovascular disease.

It has also been proven that a diet rich in saturated fats (and quick sugars) increases insulin resistance. This reduces the effects of insulin, which means that sugars are absorbed less easily into the body cells, resulting in the blood sugar level to spike. The intake of these fats should therefore be limited.

Saturated fats are mainly found in animal products such as meat and full-fat dairy products, as well as in crisps, fried foods, biscuits, chocolate and other sweets.



2. Unsaturated fats:

These are commonly called 'healthy' fats because they reduce the risk of cardiovascular disease. This group is subdivided into two groups:

- **Monounsaturated fatty acids:**

These have a favourable effect on the prevention of cardiovascular diseases.

Monounsaturated fatty acids are mainly found in olive oil, peanut oil, nuts and liquid cooking fats.

- **Polyunsaturated fatty acids:**

These consist of omega 3, omega 6 and omega 9 fatty acids. They are essential for the brain development, cognitive development and visual development of your unborn child. These fatty acids also increase good cholesterol which gradually reduces bad cholesterol and the risk of cardiovascular disease.

There is currently no consensus on taking supplements of polyunsaturated fatty acids during pregnancy. However, for pregnant women the intake of these fatty acids should be encouraged.

Polyunsaturated fatty acids are mainly found in nuts, vegetable oils (soya, rapeseed, linseed), some leafy vegetables such as green cabbage or spinach and fatty fish (salmon, herring, mackerel, sardines, etc.). Omega 3 fatty acids are also added to certain edible fats and cooking oils.

Proteins

Proteins generally ensure the construction, maintenance and repair of our body tissues and also play an important role in the functioning of our immune system and hormone balance. During pregnancy, proteins are essential for both the baby's development and growth and the expansion of the uterus and growth of the placenta.

Consuming too much proteins is, however, not recommended as the proteins will then be used as a source of energy which has a negative effect on your blood sugar level. Moreover, this causes too much residual waste, which can be harmful for your baby. A ketogenic diet that replaces all carbohydrates with proteins is certainly not advised during pregnancy. In addition, consuming too much proteins overloads your kidneys.



This group is also subdivided into 2 groups:

1. Animal proteins:

Animal proteins are proteins with a high biological value because they contain the required essential amino acids in a good ratio. Moreover, they are most similar to human proteins, which makes the quality of this type of proteins very good. However, these proteins should not be consumed without restriction because they often contain a lot of saturated fats.

Animal proteins are mainly found in meat, fish, milk, dairy products, eggs and cheese.

2. Plant proteins:

These proteins are generally of a lower quality in terms of protein composition, but certainly are not indispensable. Even though they do not contain essential amino acids, they do contain many other indispensable nutrients such as unsaturated (healthy) fats, dietary fibres, carbohydrates, vitamins and minerals.

Only soya proteins are an exception as they have a high protein quality.

Plant proteins are mainly found in soya products, nuts, bread and cereals, legumes, vegetables, potatoes, pasta and rice.

Dietary fibres

Dietary fibres are **non-digestible carbohydrates**. These are not broken down by our body and therefore do not, or merely, cause the blood sugar level to rise. After consuming foods with sufficient fibres, the blood glucose will rise more slowly, resulting in a lower blood glucose level one hour after having eaten.

In addition, they provide a longer feeling of satiation, which suppresses snacking.

There are two types of dietary fibres :

1. Soluble dietary fibres:

In addition to a slower rise in blood sugar levels and a longer feeling of satiety, these fibres also provide a better intestinal flora, which encourages bowel movement. Furthermore they lower cholesterol and thus reduce the risk of cardiovascular disease.

Soluble dietary fibres are mainly found in vegetables, fruits, legumes and oats.

2. Insoluble dietary fibres:

These fibres have a particularly positive effect on the intestines. They also reduce blood sugar levels and stimulate the feeling of satiety.

Insoluble dietary fibres are mainly found in non-refined cereal products such as brown or multigrain/whole-wheat bread, whole-wheat pasta and rice, etc.

Fluids

During pregnancy it is recommended to **drink 2.5 litres of water** in order to keep the amniotic fluid fresh, to eliminate waste products and prevent urinary infections. Whereas you should not eat for two, you should drink for two. At the end of pregnancy fluid accumulation, even resulting in edema, may occur. Should this be the case, ask your gynaecologist or dietician for advice.



Vitamins and minerals

During pregnancy, the requirements for most vitamins and minerals correspond to the daily recommended intake as determined by the Superior Health Council. Certain vitamins and minerals do, however, require special attention, such as iron, calcium, iodine, folic acid and vitamin A.

A normal, balanced diet does not require the intake of vitamin or mineral supplements, other than folic acid, unless there are shortages. Your gynaecologist will advise you accordingly.



Folic acid

The intake of 0.4 mg of folic acid (= vitamin B11) per day from the discontinuation of contraception until the end of the first 3 months of pregnancy is highly recommended. It is an essential measure to protect your baby from congenital brain and spinal cord defects, such as spina bifida, cerebellar hypoplasia, cleft palate and cleft lip, etc. The body's increased requirement for folic acid during pregnancy is not sufficiently

covered by a normal diet, therefore a supplement is strongly recommended.

Folic acid is mainly found in bread, whole grain cereals, green vegetables, dairy products and meat.

Vitamin D

Our body needs vitamin D to absorb calcium from food, which is important for the growth and maintenance of strong bones and teeth for both mother and child. Vitamin D also takes an important role in the functioning of muscles and the immune system and protects the body against infections. A deficiency of vitamin D in babies can lead to muscle weakness, a low birth weight, poorly formed tooth enamel, reduced bone density, etc.

Normally, our body builds up enough vitamin D from sunlight exposure during the summer months, however sometimes this is not enough to cover the winter months. Therefore it is recommended to take extra vitamin D during pregnancy. A vitamin D deficiency is detected through blood analysis. Your gynaecologist will decide whether a vitamin D supplement is advisable for you.

Vitamin D can be found in full-fat dairy products, fatty fish and cooking fats.



Calcium

Like vitamin D, calcium is a mineral your body needs in order to build and maintain healthy bones and teeth. It also supports blood clotting and cell division in pregnant women. In order to meet this increased demand for calcium, without compromising her own bone health, a mother-to-be should make sure to consume enough calcium.

This mineral is mainly found in dairy products (such as milk, cottage cheese, yoghurt and cheese) and in calcium enriched plant alternatives such as soya drinks, nutritional drinks, ...

It is generally recommended to consume low-fat or semi-skimmed products as they contain less saturated fats.

Iron

Iron is a vital mineral for the production of red blood cells, that in turn facilitate oxygen transport. During pregnancy an iron deficiency can occur more quickly because your body is producing and transporting an extra two liters of blood towards the placenta and the baby. Iron deficiency can lead to anaemia and anaemia increases the risks of a low birth weight or a premature birth. Furthermore, anaemia makes you feel more tired and more susceptible to infections.

During pregnancy and after birth the mother's iron levels are regularly tested. Should there be an iron deficiency the doctor will recommend an iron supplement and/or the dietician will adjust your diet.

Iron is mainly found in meat, whole grain products, vegetables (especially green ones) and fruit. Dried fruit is also a source of iron, however these are not recommended because of the carbohydrates they contain.

Iron can also be found in liver and liver products, however their consumption is not recommended during pregnancy because of a high vitamin A content, which can be harmful for the unborn baby.

Physical exercise

Body exercise is part of the treatment plan in case of gestational diabetes. Therefore it is vital to continue body exercise during pregnancy. The benefits for both mother and child are the following:

- Less weight gain and a better physical condition
- Slower rise in blood sugar levels and less insulin resistance (therefore less risk of developing type 2 diabetes)
- Less risks of pregnancy symptoms such as nausea, fatigue, cramps, back pain, varicose veins, etc.
- The muscles remain strong and flexible
- A lower risk on premature birth and blood pressure problems during pregnancy
- The hormones (endorphins) released during body exercise trigger a positive feeling and therefore enhance the mental well-being

We recommend about thirty minutes of moderate exercise, e.g. walking, cycling, aqua-gym, swimming, etc. Extra exercise has a positive impact on your blood sugar levels and can delay/prevent the need for insulin therapy. During pregnancy it is, however, best to avoid certain sports such as contact sports and high intensity sports (because of the risk of falling or overloading tendons or the abdomen).

Always listen to your body and follow the gynaecologist's advice.



Alcohol

The **consumption of alcoholic beverages** should be **avoided** throughout pregnancy, from conception to delivery. Alcohol can cause serious abnormalities in the child, especially abnormalities of the face, senses and bones, brain damage, a low birth weight, ...

On top of that alcohol has a negative impact on the blood sugar regulation and many alcoholic beverages contain too much carbohydrates. As these are not essential nutrients it is preferred to avoid their intake.



Further points of attention

Toxoplasmosis

Toxoplasmosis is an infection caused by a parasite (*Toxoplasma gondii*) that can be found in undercooked or contaminated meat. For most people this disease is quite harmless, but for pregnant women it can have negative effects for the (unborn) child.

A blood test early on in pregnancy will point out whether or not you are protected against toxoplasmosis.

If you are **not immune to toxoplasmosis** the following precautions should be taken:

- avoid using raw beef, pork and mutton
- only eat meat that is cooked well done and not half done!
- thoroughly wash vegetables/fruits or peel your vegetables/fruit
- avoid dishes based on raw eggs such as tiramisu, fresh chocolate mousse, bavarois, ...
- use gloves when working in the garden or cleaning the litter box (this parasite can also be found in cat feces) and if possible have someone else clean the litter box
- ensure a good hand hygiene

Listeria

Listeriosis is an infectious disease caused by a bacteria. However, it is not possible to take a test in order to see whether you are resistant to this bacteria or not.

During pregnancy listeria can cause premature miscarriage or premature birth. An infection can occur either without or with symptoms such as a flu-like feeling, diarrhea, nausea, vomiting, abdominal pain and fever.

It is important to note that these bacteria are not resistant to heating through cooking or baking. In addition to a good hand hygiene it is essential to avoid the following foods:

- raw vegetables, unless very carefully washed
- raw milk, unless pasteurized
- cut pâté, unless kept in the refrigerator, limited and well covered
- soft cheeses made with raw milk or non-pasteurized milk (au lait cru)
- raw (vacuum-packed) fish such as smoked salmon, sushi, herring, etc.
- raw crustaceans and shellfish or oysters, unless thoroughly cooked
- raw meat and poultry
- products that have been stored in the refrigerator for more than 12 hours after preparation or opening

After childbirth

After giving birth it remains important to continue following our healthy eating advice to reduce the risk of developing type 2 diabetes. A healthy lifestyle combined with adequate exercise and a healthy weight (including losing pregnancy kilos) are crucial to delay or prevent type 2 diabetes.

Breastfeeding also has a preventive effect against developing type 2 diabetes or gestational diabetes for a future pregnancy.

Unlike what the term “gestational diabetes” suggests, not all problems are solved after giving birth. Bear in mind that developing gestational diabetes is an important signal. The condition has, so to speak, exposed a weak point of your body. It is therefore recommended to have an annual sober blood glucose test at your GP in order to detect early disturbed glucose levels or type 2 diabetes as one out of two women with gestational diabetes will develop type 2 diabetes within ten years after having given birth.

Conclusion

Should you have any further questions, do not hesitate to contact your gynaecologist, endocrinologist, diabetes nurse and / or dietician.

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