

# Diabetes in Pregnancy



**DIP-Project**  
Diabetes In Pregnancy - Project



AMD - SID Pregnancy Working Group  
*"Lombardy Region"*



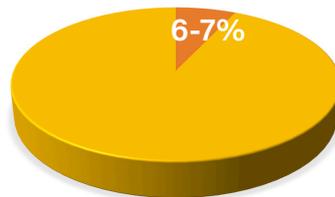


## AMD - SID Pregnancy Working Group "Lombardy Region"

### GESTATIONAL DIABETES

This is a type of diabetes that develops during pregnancy, usually between the **24th and 28th weeks**.

In women with many risk factors, also between the **16th and 18th weeks**.



It occurs in 5-7% of pregnant women and is a disease that in most cases **heals after delivery**.

Gestational diabetes **increases the mother's levels of:**

- Blood sugar (glycemia) on **waking up**
- Blood sugar **after meals**

This occurs because, due to the hormonal changes during pregnancy, a **shortage of insulin** (a hormone that lowers blood sugar) occurs.



**If the mother's glycemia is higher than it should be**, too much sugar reaches the fetus, but one should rest assured: **gestational diabetes is not transmitted directly to the fetus**.

It is the excess sugar in the blood that **could cause harm** to the baby!

For this reason, it **is very important to treat** this pregnancy disease **carefully**.

If gestational diabetes is not well treated and blood sugar levels remain too high, it could cause:

- **excessive growth of the baby**  
(fetal macrosomia, this may necessitate a caesarean section)
- **Fetal malformations**
- **Increased risk of miscarriage** and intrauterine **death**
- **Neonatal hypoglycaemia** immediately after delivery
- **Increased risk of the child to develop diabetes** during his or her lifetime



**If blood glycemia remains appropriately low, all these risks are reduced!**

**Gestational diabetes comes more easily to women** who have one or more of these risk conditions:

- **relatives with diabetes**
- **overweight or obesity**
- **age over 35 years**
- **ethnicity at risk** (South Asia, Middle East, Caribbean)
- **Gestational diabetes or a macrosomic fetus ( weight greater than 4 kg)** in a previous pregnancy



In most cases, **gestational diabetes heals after delivery.**

However, it may recur in subsequent pregnancies or present again as permanent (type 2) diabetes in the years after pregnancy.

In some cases, however, it may remain even after delivery.

Therefore, it is very important to remember after **delivery to repeat the glucose concentration curve** to check whether it is healed!

You should also try to **reduce the modifiable risk factors of diabetes** to prevent it from recurring out of pregnancies as type 2 diabetes in later years and **check your glycemia periodically**, as your doctor would recommend.



### Oral Glucose Tolerance Test

In the next chapters of this Project **you will find recommendations** on how to **manage your gestational diabetes well** through all stages of both pregnancy and its postpartum to ensure the **lowest possible risk** for the mom and her baby!

**Managing Gestational Diabetes is a team game; you can always count on the support of your diabetes and gynecology specialist team.**





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### DIET FOR EXPECTANT MOTHERS

#### BREAKFAST 8:00/8:30 a.m.



- 1 cup of partly skimmed, unsweetened milk (..... ml)
- barley coffee to taste
- 4 whole wheat rusks. Instead of them you can consume:
  - n..... whole wheat crackers (..... g)
  - n..... whole wheat sandwich (..... g)
  - n..... whole wheat biscuits (..... g)

#### ALTERNATIVE BREAKFASTS

##### Alternative 1



- n..... natural whole milk yogurt
- n..... tablespoon of cereal flakes

##### Alternative 2



- 1 cup of unsweetened tea
- 1 whole wheat sandwich ..... g +
- ricotta cheese made from cow's milk .....g

*Alternative to sandwich and ricotta cheese*

- n..... whole wheat crackers ..... g

##### Alternative 3



- 1 cup of unsweetened soy milk .....ml
- n..... whole wheat rusks .....g

#### SNACKS 10:30 a.m. - 4:30 p.m. - 10:30 p.m. • 1 serving of fresh fruit

.....g choice of all



.....g choice of all

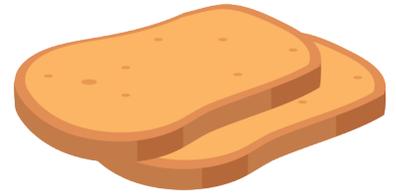


..... g



In addition to the portion of fresh fruit, the snack includes:

- n..... whole wheat rusks. In their place you can have:
  - n..... whole wheat crackers .....g
  - n..... corn/rice crackers .....g



**Alternative 1**



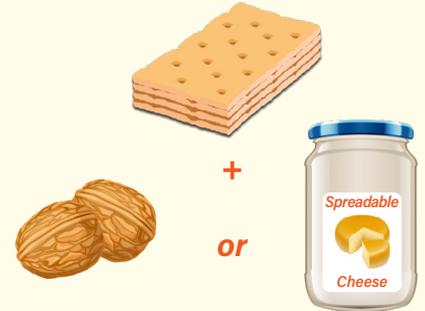
- 1 natural whole milk yogurt
- n..... whole wheat crackers

**Alternative 2**



- 1 unsweetened yogurt
- n..... whole wheat rusks

**Alternative 3**



- n..... whole wheat crackers plus your choices of
  - ..... walnuts
  - ..... g of spreadable cheese

**LUNCH AND DINNER 12:30/13:00 p.m. - 8:30/21:00 p.m.**

1 dish of ..... g to choose from:

**pasta**



**rice**



**cous cous**



**legumes**



**polenta**



**spelt**



**tortellini**



**ravioli**



**bread**



Or 1 dish of ..... g of your choice from:

In addition to a first course as indicated above, lunch or dinner includes a choice of one of the following foods:

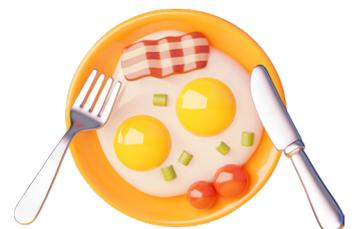
**meat ..... g**



**fish ..... g**



**n..... eggs**



Fresh cheeses ..... g



Aged cheeses ..... g



In addition to a first course and a second course, as indicated above, lunch or dinner includes the consumption of various vegetables, raw or cooked (excluding POTATOES, which are tubers).



The recommended seasoning is 3 tablespoons of olive oil per day

**Please note**

As an alternative to meat and fish (to be eaten every day), the following foods should be eaten at the following weekly frequency:

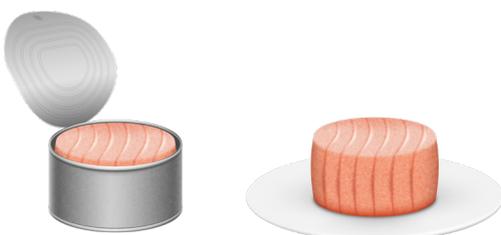
- fresh cheese no more than n..... times a week



- eggs no more than n..... times a week



- Canned tuna/salmon in water .....g no more than n..... time a week



You can eat 1 pizza with vegetables as a single course n..... a week





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### PHYSICAL ACTIVITY DURING PREGNANCY

**Physical activity** during pregnancy has many favourable effects on the mother as it **reduces the risk of:**

- **excessive weight gain**
- **gestational diabetes**
- **preeclampsia**
- **preterm delivery**
- **varicose veins and deep vein thrombosis**



**it reduces:**

- **the duration of labour**
- **complications during labour**
- **the sense of fatigue**
- **stress**
- **anxiety and depression**



Thus leading to an improved sense of well-being.

**physical activity in pregnancy improves blood sugar control..**



Doing sport during pregnancy is not only harmless, it helps the mother-to-be's well-being and is also good for the baby.

We recommend 30-40 minutes of low-intensity aerobic activity every day three to four times a week.

Favourite activities are:

- **swimming**
- **walking**
- **exercise bike**
- **water gymnastics**
- **prenatal aerobics**



In addition to gentle gymnastics such as **yoga**.

These are to be **avoided**:

- **all fall-risk activities**
- **belly-down exercises**
- **excessive exertion that could reduce the flow of nutrients and oxygen to the baby.**



**Physical activity combined with proper nutrition** can **prevent and/or delay the onset of type 2 diabetes mellitus** in women with previous GDM.



**Please note**

**It is ALWAYS advisable to consult your gynaecologist** before starting any physical activity programme.



# DIP-Project

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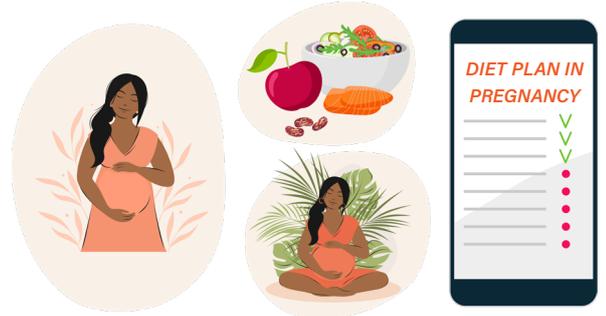
## AMD - SID Pregnancy Working Group "Lombardy Region"

### GESTATIONAL DIABETES THERAPY

If a diagnosis of gestational diabetes has been made, **a diet** will be prescribed.

**Diet and regular exercise can in most cases keep high blood glucose values under control.**

**If diet and exercise are not sufficient** to adequately control gestational diabetes, it is necessary to resort to INSULIN therapy.



**INSULIN is the only drug that can be used to treat gestational diabetes;** the use of other diabetes drugs is not permitted in pregnancy. Only under special conditions may oral metformin therapy be considered; the diabetologist will suggest it if there is an indication..



#### **INSULIN:**

It is administered with small injections under the skin before:

- **breakfast**
- **lunch**
- **dinner**
- **bedtime**



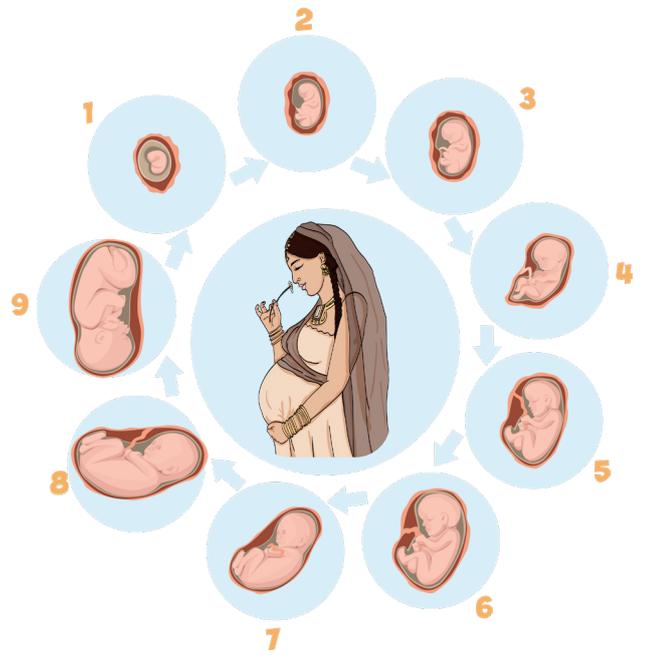
**The diabetologist will check when and how often it is needed.**

The purpose of **insulin therapy** is to **prevent excessively high blood glucose values** from causing the baby to **overgrow, thus complicating pregnancy and birth.**



## INSULIN:

- *is safe for mother and baby*
- does not pass through the placenta and therefore has ***no harmful effects on the fetus***
- is not addictive and is ***not a drug***
- it must be continued until delivery, ***then it can be interrupted***

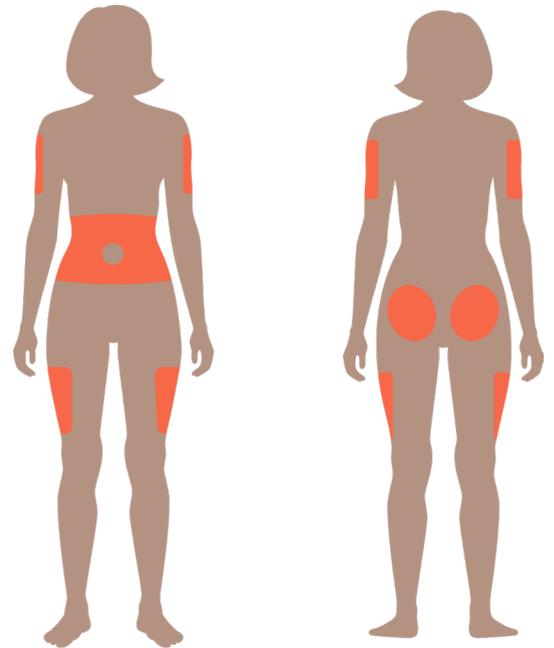


## INSULIN INJECTION:

- *is painless*

it is done with ***preloaded pens***, using a very small needle, and can be administered:

- in the abdomen
- in the arms
- in the legs



***The nursing staff at your reference centre will explain in detail how and when to administer the injection according to your doctor's instructions.***





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## BLOOD GLUCOSE MONITORING

### *Gestational diabetes: how is blood glucose monitored during pregnancy?*

With gestational diabetes, it is important to measure the blood glucose (sugar) in your blood; **this helps to know whether the diet or therapy** you are following **is adequate or not**.

**Checking blood sugar** is important to **know if what you have eaten is right or not**: it will better help you face the days living with gestational diabetes, **making life easier and reducing the anxiety of... eating the wrong things!**



Moreover, **checking blood glucose is a pillar** of gestational diabetes care, useful for **oneself and for the diabetes team** treating us.

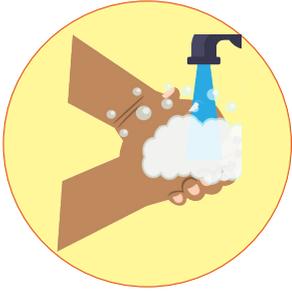
**During your first visit** to the diabetes centre, **you will be given an instrument (glucometer)** to measure your **blood glucose**.

The device **works by using** a tiny **drop of blood** after a **fingertip** puncture.



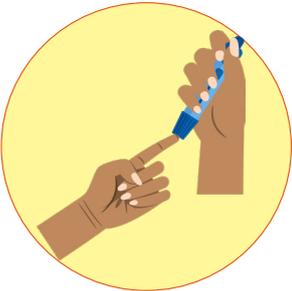
## What needs to be done to perform a proper self-check?

To answer this question, just follow the instructions below precisely.



**Wash your hands** with warm or hot water and soap, then dry them well. It is not necessary to use disinfectant.

**Place the strip** inside the glucose meter making it turn on.



**Take the lancing device** and place it perpendicular to the fingertip. Use the side areas of the fingertips, which are less sensitive and cause less pain.

**DO NOT apply strong pressure** to the base of the finger on which the lancing device was used in order to allow a drop of blood to come out. Press gently as very very little is needed.



**Bring the strip** sticking out of the glucose meter closer to the drop of blood being drawn.

**Place** the glucose meter **on a flat surface** and after a few seconds you will be able to see the blood glucose value on the screen.



It is recommended to take care of the device and all the material needed to check blood glucose, avoid getting it dirty and store the strips well, this will ensure that you always have reliable values



## How many times will one have to pierce one's finger?

It all depends on the type of therapy to be done

If one is advised to follow **only a diet**, it will be enough to check one's blood glucose **twice a day**, according to what is called the chessboard pattern:

**Each day one should check a different meal:**

- One day **breakfast**
- One day **lunch**
- One day **dinner**



**In pregnancy, blood glucose is measured immediately before eating and after 1 hour from the start of the meal.**

## What are the glycemic targets of self-monitoring?

- **On an empty stomach** less than or equal to **90 mg/dl**
- **1 hour after a meal** less than or equal to **130 mg/dl**
- **2 hours after a meal** less than or equal to **120 mg/dl**



**After the first visit** to the diabetes centre, a new **check-up** will be scheduled **within two weeks**, and **if the blood sugar levels are not within the indicated limits** despite attention to diet, a recommendation will be made to **start insulin therapy**.

**If insulin therapy is recommended**, blood glucose **will have to be checked much more often** both before and after one hour from meals, **according to a schedule** that will be shared with the **treatment team**.



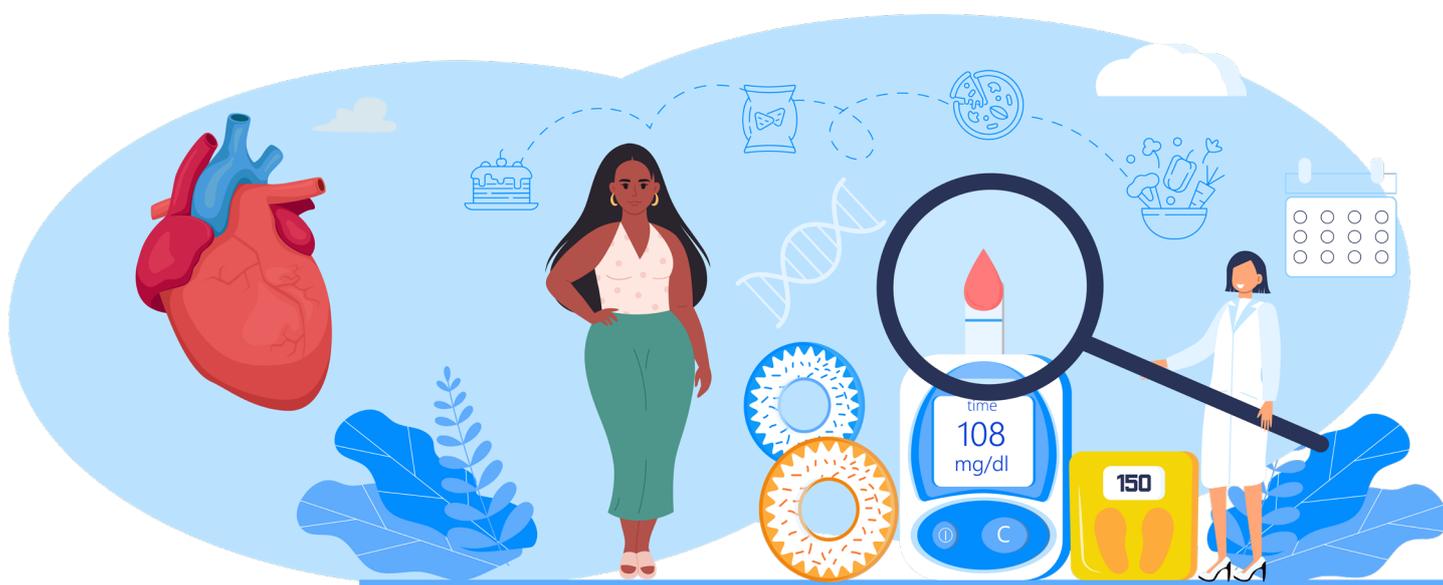


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### GESTATIONAL DIABETES - FOLLOW UP

#### *Did you have gestational diabetes during pregnancy?*

You should know that women who have had gestational diabetes **have an increased risk of developing type 2 diabetes mellitus both in the first five years after giving birth and in older age.**



*This is why it is important to continue with a correct lifestyle as done during pregnancy.*

- **Healthy, balanced diet low in simple sugars** (few sweets, sugary drinks...)
- **Moderate but regular physical activity** (walking, cycling...)

It is important to maintain a normal body weight (BMI, which is the ratio of weight to height, should be kept between 18 and 25).



**After delivery**, follow-up examinations (control) will be recommended, which are important for early screening/diagnosis of a possible onset of type 2 diabetes.

- Carrying out the 75 g **oral glucose tolerance test** about 6-12 weeks after delivery
- Carrying out the 75 g oral glucose tolerance test also at a later date, approximately 1-3-5 years after delivery, at the discretion of the physician.

Or alternatively

- **Annual check of blood glucose and glycated hemoglobin**





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### BREAST-FEEDING

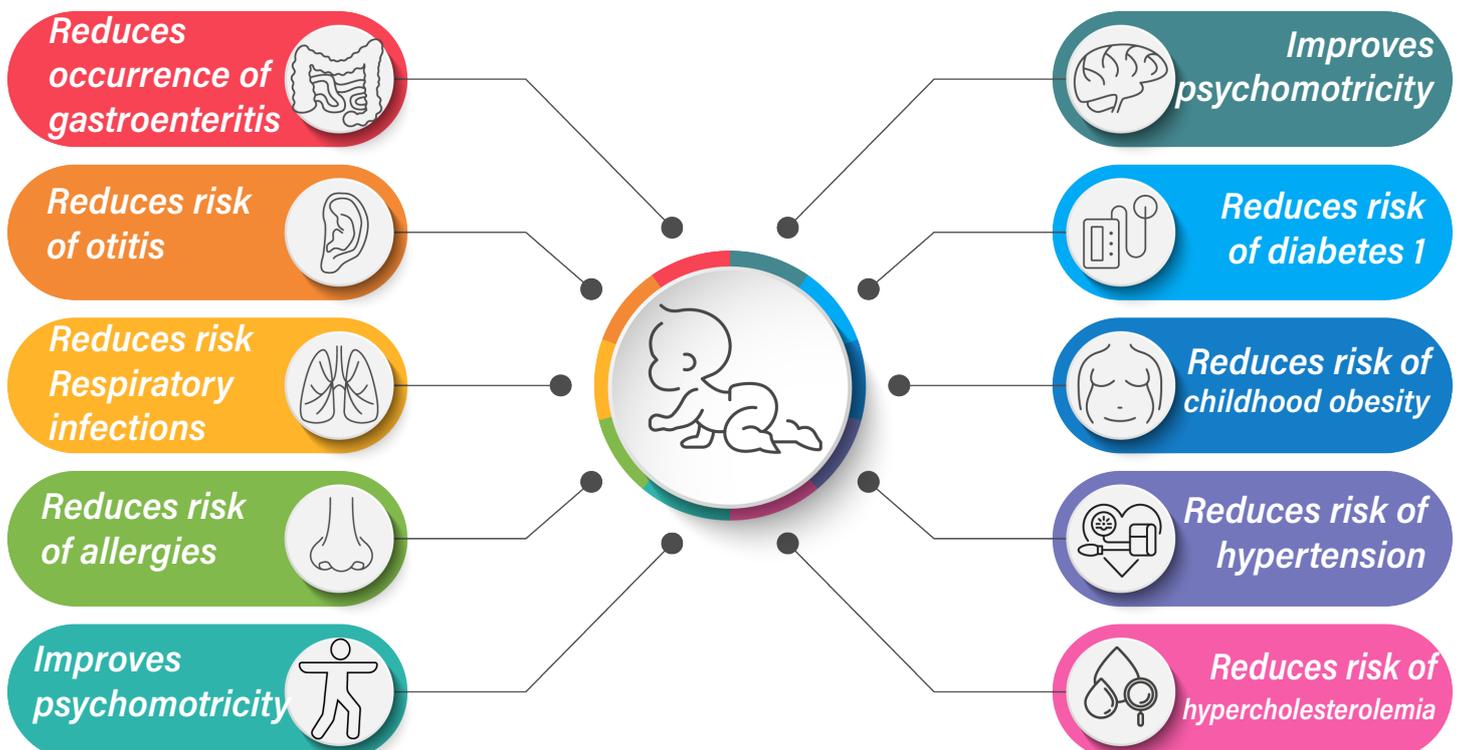


**Breast milk**, precisely because *it contains all the nutrients* necessary for the growth and the development, represents the best possible food for a newborn baby, and it is for this reason that *the World Health Organisation and the most important national and international scientific societies recommend exclusive breastfeeding for the first six months of life*, followed by complementary breastfeeding until at least two years of age.

#### What are the benefits?

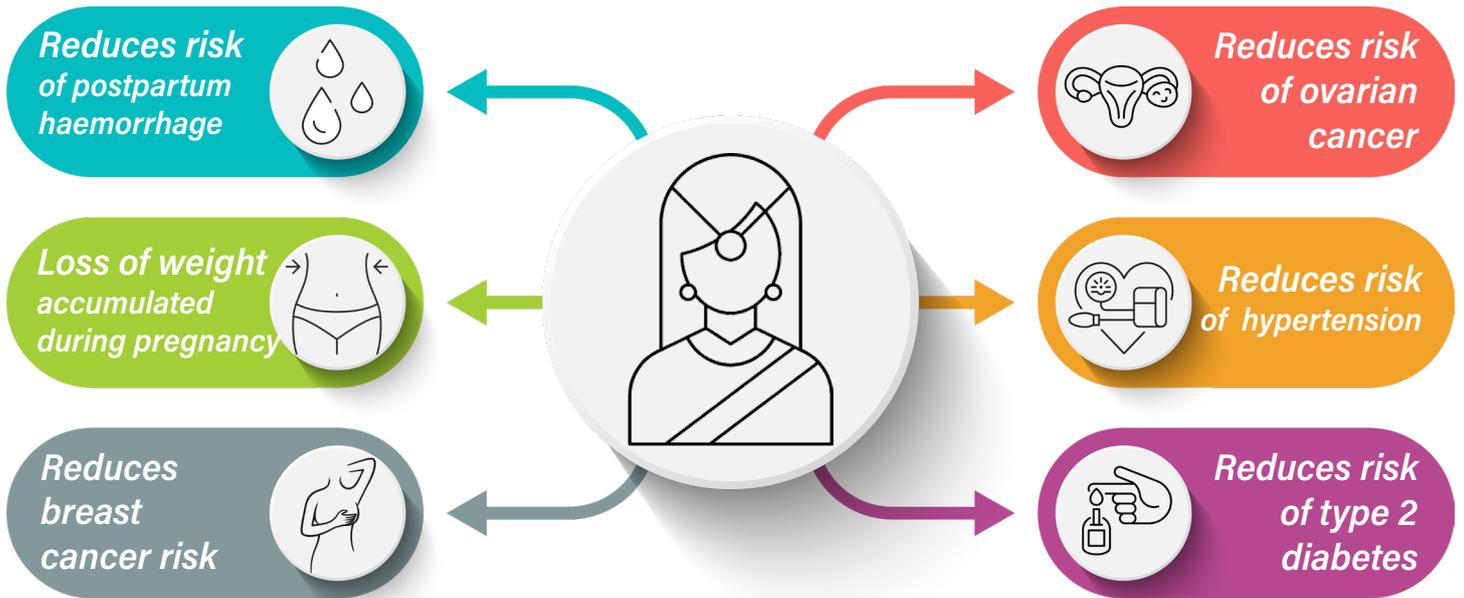
**In children**, breastfeeding:

- **reduces the occurrence** and duration of **gastro-enteritis** episodes
- **reduces the risk** of developing **otitis, respiratory infections and allergies**
- **improves psychomotor development**
- **reduces the risk** of developing **type 1 diabetes and overweight/obesity in childhood**
- **reduces the risk** of developing **hypertension and hypercholesterolaemia** in adulthood



Not only the baby but **also the mother** has considerable advantages in breastfeeding her baby. They include:

- **loss of weight accumulated during pregnancy**
- **reduced risk of breast and ovarian cancer, high blood pressure and type 2 diabetes** later in life
- **reduced risk of breast and ovarian cancer, high blood pressure and type 2 diabetes** later in life



**Breastfeeding is therefore an important public health strategy that can improve the health of infants, children and women.**

Gruppo di Lavoro AMD - SID  
"Regione Lombardia"

Coordinatore: **Alessandra Ciucci**

Componenti:

- **Barbara Agosti**
- **Valeria Guazzoni**
- **Elisabetta Lovati**
- **Paola Morpurgo**
- **Cristina Romano**
- **Silvia Severgnini**

Traduzione in Lingua Inglese a cura di: **Martina Madrigali**

Realizzazione  
Progettuale Grafica



A cura di  
Federico Paoli