Pulsenmore™
Home Ultrasound

The pregnancy

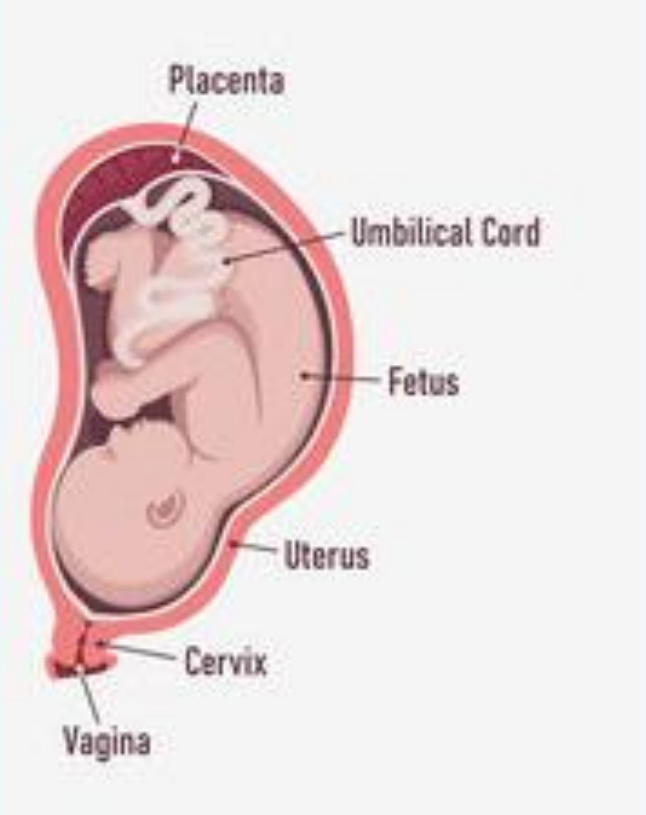
- Pregnancy check-ups
- Fetal presentation
- High risk pregnancies

The pregnancy

An unborn baby spends around 38 weeks in the womb, but the average length of pregnancy (gestation) is counted as 40 weeks.

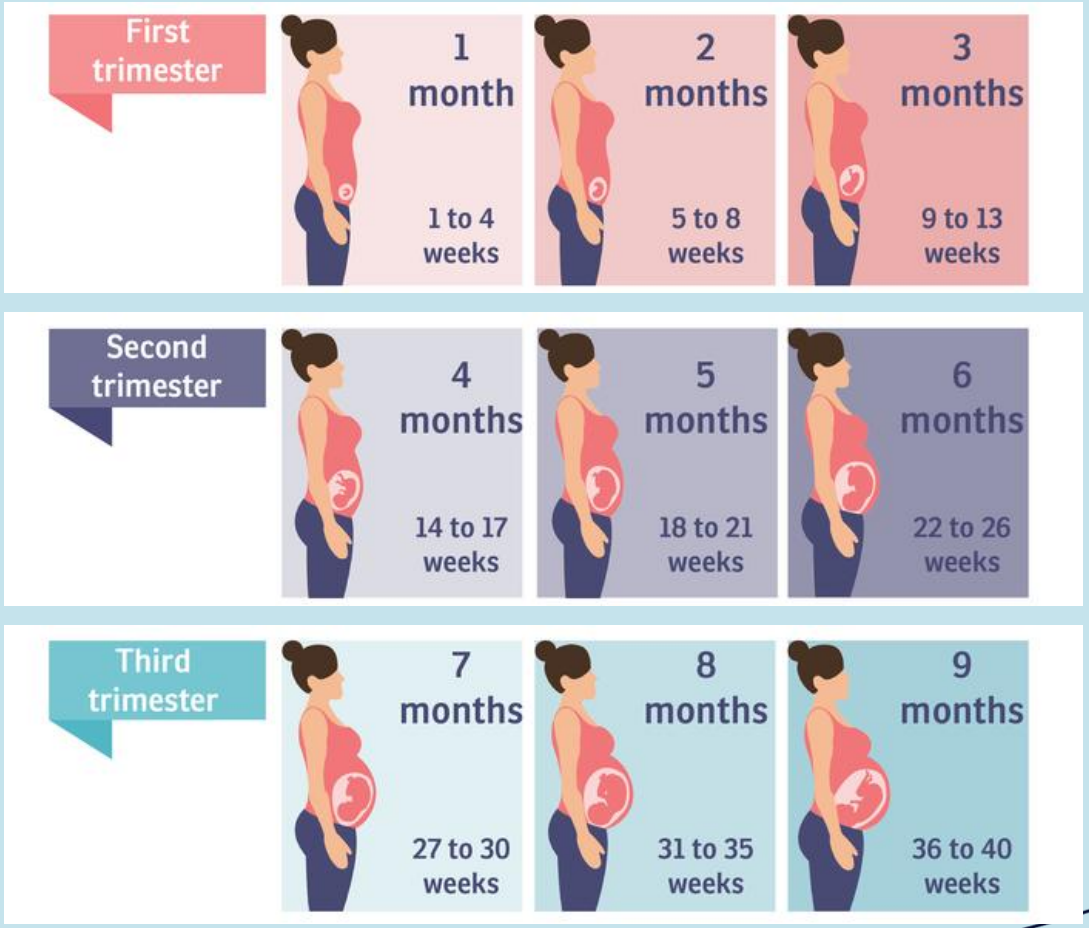
This is because pregnancy is counted from the first day of the woman's last period, not the date of conception, which generally occurs 2 weeks later.

Length of pregnancy can vary between women – babies are considered 'full term' if they are born anywhere between 37-42 weeks.



The three trimesters

A pregnancy is roughly divided into 3 stages known as trimesters of about 3 months each :



Pregnancy check-ups

Prenatal tests 1st trimester 0-13 weeks

First Ultrasound	NIPT	Genetic screening tests	Blood & urine tests	CVS	Nuchal scan
Detects the fetal pulse.	Screening to detect chromosomal disorders or fetus syndromes.	Screening to detect chromosomal disorders or fetus syndromes.	blood count, sugar, type and RH antibodies will be tested. General urine and a culture test to detect syphilis.	Testing for chromosomal abnormalities and diagnosis of genetic diseases in the fetus such as Down syndrome.	Statistical evaluation of the chance of Down syndrome in the fetus.

First ultrasound - transvaginal week 8-12

Prenatal tests 2nd trimester (14-26)

2nd Ultrasound	Fetal protein	Amniocentesis	Advanced review	Fetal echocardiogram	Sugar loading
A review to detect birth defects and/or abnormalities in the fetal structure. Also, the position of the placenta, the amount of amniotic fluid, the sex & growth.	The purpose of the test is to assess the risk of Down syndrome or defects in the brain and neural canal, in the abdominal wall.	By taking an amniotic fluid sample, in the fluid to detect chromosomal defects in the hereditary material.	Advanced examination for defects that may develop during this time frame.	ultrasound of the fetal heart for identifying fetal heart problems and treating them early or immediately after birth.	Diagnosing anemia and identifying women at risk of gestational diabetes

Most critical ultrasound test - 18-22 GW – checking for anomalies

Prenatal tests 3rd trimester (27-42)

3rd Ultrasound

Advanced examination for defects that may develop during this time frame. The normal structural development of the fetus, the growth, the amount of amniotic fluid, the position of the placenta and the length of the cervix will be checked.

Weight estimation

Assessment of fetal growth rate and identification of fetuses at risk due to slowed or accelerated growth of one or more of the organs.

Culture test for GBS

Testing for the carriers of the GBS bacteria, for appropriate treatment if necessary.

Third trimester nurse follow-up

Bi-monthly examination of the structure and function of the fetal heart for the purpose of identifying fetal heart problems and treating them early or immediately after birth.

The BPP

Biophysical Profile (BPP)

A **Biophysical Profile (BPP)** is a prenatal test used to evaluate the well-being of a fetus, typically performed during the third trimester of pregnancy or earlier if there are concerns about the baby's health. It combines an **ultrasound assessment** with a **non-stress test (NST)** to monitor fetal health and identify any signs of distress.

Purpose of the BPP is often used to:

1. Assess the risk of complications or the need for early delivery.
2. Monitor pregnancies with conditions like high blood pressure, diabetes, or growth concerns.
3. Check fetal well-being in cases of reduced fetal movement or overdue pregnancies.

Components of the BPP

The test evaluates 5 parameters, each scored on a scale of 0 (abnormal) to 2 (normal), for a maximum score of 10:

1. Fetal Breathing Movements:
Observes the baby practicing "breathing" by moving its diaphragm.
Normal: At least one episode of rhythmic breathing lasting 30 seconds or more.

2. Fetal Body Movement:
Monitors gross body movements like arm or leg movements.
Normal: At least three distinct body movements.

3. Fetal Tone:
Assesses the baby's muscle tone through movements like opening and closing of hands or flexing limbs.
Normal: At least one episode of active flexion and extension.

Components of the BPP cont.

4. Amniotic Fluid Volume (AFV):
Measures the amount of amniotic fluid in the uterus, indicating placental function.
Normal: At least one pocket of fluid measuring 2 cm in depth or an AFI (Amniotic Fluid Index) within the normal range.

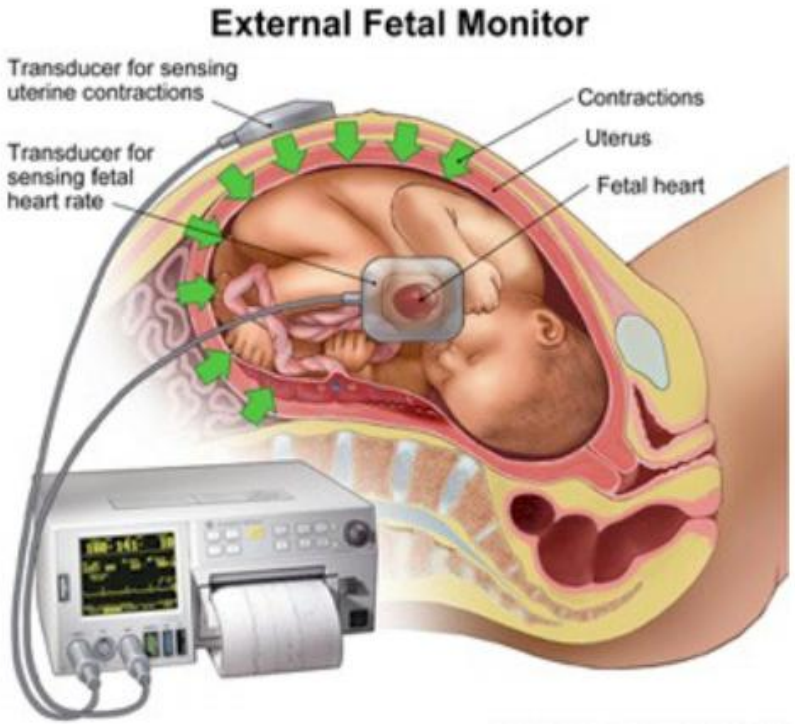
5. Non-Stress Test (NST):
Evaluates the baby's heart rate response to its own movements.
Normal: Two or more heart rate accelerations within 20 minutes.

Scoring:
8–10: Normal, indicating the baby is healthy.
6: Considered borderline; may require repeat testing or further evaluation.
4 or lower: Abnormal, suggesting the baby may be in distress; additional testing or delivery might be necessary.

Why Is the BPP Important?

The BPP helps doctors determine whether the baby is receiving enough oxygen and nutrients from the placenta. It can guide decisions about continuing the pregnancy or considering an early delivery if there are signs of fetal compromise.

Non-Stress Test (NST)



- The term NST is used because the test is designed to monitor the baby's heart rate without causing any stress to the mother or the baby.
- The NST measures the fetal heart rate in response to the baby's movements. A healthy baby's heart rate typically increases when the baby moves, similar to how our heart rate increases with physical activity.
- Procedure: During the test, a belt with sensors is placed around the mother's abdomen to monitor the baby's heart rate and any uterine contractions. The mother may be asked to press a button whenever she feels the baby move.
- Why "Non-Stress"? The name reflects that the test is non-invasive and does not put any physical stress on the baby.
- This test is often used in the 3rd trimester to ensure the baby is healthy and getting enough oxygen.

The Non-Stress Test (NST) key components

Cardiotocography (CTG)

CTG is a comprehensive monitoring system that tracks both the fetal heart rate and uterine contractions. It uses two sensors:

Fetal Heart Rate Sensor: This sensor can use Doppler ultrasound technology to monitor the baby's heart rate.

Tocodynamometer (Toco)

Sensor: This sensor measures the frequency and duration of uterine contractions by detecting changes in the shape of the mother's abdomen.

Fetal presentation

Fetal presentation before birth

Head down, face down
This the most common position for a baby to be born in. With the face down and turned slightly to the side, the smallest part of the baby's head leads the way through the birth canal. It is the easiest way for a baby to be born.

Head down, face up
In this position, it might be harder for a baby's head to go under the pubic bone during delivery. That can make labor take longer.

Complete and incomplete breech

When a baby's feet or buttocks are in place to come out first during birth, it's called a breech presentation.
This happens in about 3% to 4% of babies close to the time of birth.

After week 36 health care professional may try to move the baby into a head-down position putting pressure on the belly with their hands to get the baby to roll into a head-down position.

Most babies in a frank breech position are born by planned C-section.

Sideways

When a baby is sideways, lying horizontal across the uterus, rather than vertical it's called a transverse lie.

After week 36 it will also receive the same care as a breeched baby.

Twins

Only the twin that's lower in the uterus is head down, as shown below, may first be delivered vaginally. The breached baby is birthed like a breached baby turned or by C-section

High risk pregnancies

Approximately 20% of all pregnancies are considered “high risk.” High-risk heart-related conditions, autoimmune and neurologic conditions.

What makes a pregnancy high risk?

Underlying chronic conditions, such as pregestational diabetes, hypertension or other heart-related conditions, autoimmune and neurologic conditions.

More acute conditions such as preterm labor, premature rupture of membranes, viral infections in pregnancy and antepartum bleeding.

Other high risk conditions twin pregnancies or higher order pregnancies, as well as those involving birth defects or genetic conditions that may affect the fetus, the newborn and the affected couple’s future reproductivity.

A wide variety of common conditions, many related to pre-existing conditions to becoming pregnant or conditions developed while pregnant or during delivery.

- **Diabetes**
- **Pre-eclampsia** (high blood pressure in conjunction with protein in your urine and edema)
- **Hypertension**
- **Multiples twins** or higher-order multiples
- Sexually transmitted **diseases** (STDs), viral diseases, HIV
- **Obesity** – BMI >30
- Age under 17 or older than 35

More conditions for a high-risk pregnancy

- Intrauterine growth restriction **IUGR** - fetal growth restriction, is the poor growth of a fetus while in the womb during pregnancy
- In vitro fertilization (**IVF**) is one of several techniques available to help people with fertility problems have a baby.
- Maternal conditions such as: lupus, cancer, cardiac diseases and more…

How are high-risk pregnancies managed?

For the mother, a high-risk pregnancy is more stressful and more time consuming than a low-risk pregnancy

The mother may need to consult a maternal-fetal medicine specialist and undergo more monitoring than someone with a low-risk pregnancy.

In some cases, early hospitalization for closer monitoring to receive antepartum (before childbirth) care. A doctor may also schedule labor induction or cesarean birth, also known as a Cesarean delivery, if mother or baby's health is at risk.

How are high-risk pregnancies managed?

- Frequent follow-ups with an OBGYN
- Checkups with a perinatologist (an expert doctor in maternal-fetal medicine)
- Advanced ultrasound technology and evaluation during prenatal care
- Close monitoring of fetal growth and progress
- Medication
- At home vital measurements

Gestational Diabetes Mellitus (GDM)

- **GDM** is a type of diabetes that develops during pregnancy. It occurs when the body cannot produce enough insulin to meet the increased needs during pregnancy, leading to high blood sugar levels.
- Key points about GDM:
- **Risk Factors**: These include being overweight, having a family history of diabetes, being older than 25, having previously had gestational diabetes, and having certain ethnic backgrounds (e.g., African American, Hispanic, Native American).
- **Diagnosis**: GDM is usually diagnosed through a glucose tolerance test, typically between the 24th and 28th week of pregnancy.
- **Management**: GDM can often be managed with dietary changes, regular exercise, and, in some cases, medication (such as insulin). Blood sugar levels need to be carefully monitored throughout pregnancy to avoid complications.
- **Complications**: If not well-managed, GDM can lead to excessive birth weight, premature birth, or respiratory issues for the baby, and an increased risk of developing type 2 diabetes later in life for the mother.