HEALTH BASICS

Fetal development

Fetal development is the process of growth and organ maturation before birth.

WHAT IT IS
Growth and development from conception until birth

WHERE IT COMES UP
Prenatal visits, ultrasound reports, and pregnancy screening

WHY IT MATTERS
Guides pregnancy dating, monitoring, and prenatal care

WHAT IT IS NOT
Not a disease or diagnosis

WHO TO ASK
A midwife, obstetric clinician, or prenatal care service

HOW IT IS CHECKED
Ultrasound, growth measurements, and sometimes prenatal genetic testing

Overview

Fetal development describes how a fertilized egg grows into an embryo and then a fetus before birth. It is a normal biological process, not a disease or diagnosis.

Pregnancy is usually dated from the first day of the last menstrual period. This is called gestational age . Fertilization usually happens about two weeks later, although the timing is not always known. As a result, "10 weeks pregnant" generally means about eight weeks have passed since fertilization.

The developing pregnancy is called an embryo through the first eight weeks after fertilization. From the ninth week after fertilization, or about 11 weeks of gestational age, it is called a fetus .

A due date is an estimate based on pregnancy dating. It is not an exact prediction of when birth will happen.

How it works

After fertilization, the single fertilized cell divides many times. It travels toward the uterus and forms a small cluster of cells. This cluster attaches to the lining of the uterus in a process called

implantation .

Some cells develop into the embryo. Others help form the placenta and related tissues. The placenta is an organ that supports the pregnancy. It transfers oxygen and nutrients from the pregnant person's blood and carries waste products away from the fetus. Maternal and fetal blood usually do not mix directly.

During the embryonic period, the basic body plan forms. The neural tube develops into the brain and spinal cord. The early heart, digestive system, limbs, eyes, and ears begin forming. This is a period of rapid change, even though the embryo remains very small.

During the fetal period, organs and body systems continue to grow and mature:

These stages overlap. Development does not switch from one task to another on a particular day.

The fetus moves well before the pregnant person can feel it. First movements may feel like fluttering, bubbling, or light taps. When movement is first noticed differs between pregnancies. Placental position, fetal position, and whether someone has been pregnant before can affect what is felt.

Genes provide instructions for development, but development is also influenced by the placenta and the environment in the uterus. Chromosomes are packages of genetic material. Changes in chromosomes or individual genes can affect how organs form or function.

- In the first trimester, major body structures begin forming
- In the second trimester, the body grows, movement becomes stronger, and many structures can be examined by ultrasound
- In the third trimester, the brain, lungs, and other organs continue maturing while body fat and weight increase

Why it matters for your health

Knowing the gestational age helps clinicians interpret growth, plan prenatal tests, and estimate the likely timing of birth. An early ultrasound can help date a pregnancy, especially when menstrual dates are uncertain.

Ultrasound uses sound waves to create images. It can assess fetal size, movement, heartbeat, placental position, amniotic fluid, and some aspects of anatomy. Amniotic fluid is the fluid surrounding the fetus.

An ultrasound cannot show every developmental difference. Image quality can be affected by pregnancy stage, fetal position, body tissues, and the structure being examined. Sometimes

another scan is offered because a view was incomplete, not because a problem has been found.

Prenatal screening estimates the chance of certain chromosome conditions or structural differences. Screening does not provide a definite diagnosis. Diagnostic tests, such as chorionic villus sampling or amniocentesis, can give more certain information about specific genetic or chromosome conditions, but they are not routine tests for every pregnancy.

Results should be interpreted using the pregnancy's dates, the type of test, and the reason it was performed.

What can go wrong

Development does not always follow the expected pattern. This may happen because of chromosome or gene changes, placental problems, infection, exposure to certain substances, or causes that cannot be identified.

Related conditions and situations include:

A measurement outside the expected range does not by itself confirm a condition. Pregnancy dates may be uncertain, normal body size differs, and individual measurements have limits. Follow-up may involve another ultrasound, more detailed imaging, blood tests, or diagnostic testing.

- Congenital conditions , meaning structural or functional differences present from birth
- Neural tube defects , which affect early formation of the brain or spinal cord
- Congenital heart defects , which affect the heart's structure
- Fetal growth restriction , when a fetus is smaller than expected because it is not reaching its growth potential
- Congenital infections , which are infections passed during pregnancy and capable of affecting development
- Placental insufficiency , when the placenta does not support growth as expected
- Pregnancy loss , when an embryo or fetus stops developing before birth

What you can do

You cannot control each stage of fetal development or guarantee a particular outcome. You can keep clear records and make informed choices about prenatal care.

Useful actions include:

Routine questions about growth, scan results, or test options can usually wait for a planned prenatal appointment.

Contact your maternity service promptly if you have vaginal bleeding, fluid leaking from the vagina, fever, regular painful contractions earlier than expected, or a clear reduction in fetal movement after you have established a usual movement pattern.

Seek emergency help for heavy bleeding, severe or persistent abdominal pain, fainting, a seizure, severe breathing difficulty, or other rapidly worsening symptoms. These symptoms do not describe fetal development itself; they may indicate a pregnancy or medical emergency.

- Ask whether your pregnancy is being dated by menstrual history, ultrasound, or both
- Keep copies of ultrasound and screening reports
- Ask whether a result is a screening estimate or a diagnosis
- Ask what a measurement means for this pregnancy, rather than considering it alone
- Tell your prenatal care team about medicines, supplements, substance use, infections, and workplace exposures
- Do not stop a prescribed medicine without discussing the risks of stopping and continuing it
- Ask what further testing could clarify an uncertain result and what that testing cannot show

Common questions

Is gestational age the same as fetal age?

No. Gestational age is counted from the first day of the last menstrual period. Fetal age is counted from fertilization and is usually about two weeks shorter. Medical records and ultrasound reports normally use gestational age.

Can an ultrasound give the exact date of conception?

No. Ultrasound estimates gestational age from fetal or embryonic measurements. It cannot usually identify the exact day of fertilization. Dating tends to be more precise earlier in pregnancy than later, when normal differences in body size become greater.

Does measuring small mean something is wrong?

Not necessarily. A fetus may be naturally small, the pregnancy dates may be different from the original estimate, or a single measurement may be imprecise. Clinicians may compare several

measurements, review blood flow and amniotic fluid, or repeat the scan to assess growth over time.

Can prenatal testing find every condition?

No. Screening looks for particular conditions, and diagnostic testing answers specific genetic or chromosome questions. Ultrasound can identify some structural differences, but not all of them. A result described as normal cannot guarantee that every aspect of health and development is typical.

When should fetal movement be felt?

The timing differs. Movement is often noticed during the second trimester, but the exact point is influenced by placental position, fetal position, and previous pregnancy experience. Once you know your fetus's usual movement pattern, a clear reduction should be discussed promptly with your maternity service.

Are trimesters exact developmental boundaries?

No. Trimesters are a practical way to divide pregnancy into three periods. Organ growth and maturation are continuous processes, so developmental changes do not begin or end exactly at a trimester boundary.

Sources

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