

The Second Look Project

Fetal Development

Embryonic Period

The embryonic period refers to the early stages of human development, from fertilization to the end of eight weeks' (56 days') gestation. It is during the embryonic period that all major systems and structures develop.

In weeks 4 to 8, tissue and organs develop rapidly and exposure of the embryo during this time to certain drugs and viruses may cause major congenital anomalies. By the end of the eighth week, all major organs are in place, and the heart and circulation are functioning.



Fertilization



Approx. 1 week



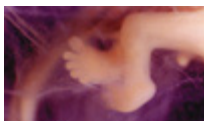
Approx. 4 weeks



6 weeks



7 weeks



8 weeks

Month 1

Month 2

First days: Human development begins at fertilization, when sperm penetrates the ovum. The early embryo moves through the fallopian tube to the uterus, where it embeds in the uterine wall approximately 5-12 days after fertilization.

14-21 days: The cardio-vascular system is the first major system to function in the human embryo. Blood is circulating and the heart begins to beat at 21 or 22 days, and can be detected on ultrasound.

21-28 days: The first rudiments of the nervous system appear in the third week; in week four main divisions of the central nervous system are established: forebrain, midbrain, hindbrain and spinal cord. Upper limb buds appear in days 24-26 (lower limb buds follow a few days later), and the primordia of the lungs, liver, stomach, pancreas and thyroid are evident.

5th week: The foot plate appears on lower limbs, and pigment appears in the retina of the eye.

6th week: The embryo measures about one inch in length; trunk is beginning to straighten.

At 40 days, brain waves are recordable.

7-8 week: The embryo bears the familiar external features and all internal organs of an adult; its length is about 1-1/2 inches.

By day 51-52 upper limbs bend at the elbow, by day 54, toes have formed.

Using ultrasound early movements are apparent.

Fetal Period

The fetal period begins on day 57 (first day of the ninth week) and concludes at birth. It is characterized by rapid growth of the fetus and further differentiation of the tissues and organs. During weeks 10 to 20, the fetus grows primarily in length. During weeks 21 to 40, the fetus grows primarily in weight. Toward the end of pregnancy, the fetus can distinguish its mother's voice. It also responds to music and loud noise and is able to see light through the abdominal wall. The expected date of delivery is 38 weeks after fertilization; i.e., 280 days or 40 weeks after LMP (onset of a woman's last menses).

Month 3



12 weeks†

9-12 weeks: Fingernails develop. Eyelids fuse and will remain closed until about the 25th week.

Urine formation begins between weeks 9-12, and when the fetus urinates, urine is discharged into the amniotic fluid.

The sex of the fetus is distinguishable externally.

Month 4



14 weeks

13-16 weeks: The fetus is about 3 inches in length. It is able to hear and pain sensors are operative. Limb movement, which began at the end of the embryonic period, becomes more coordinated by the 14th week, but the mother is not aware of movement.

The fetus can suck its thumb from 13 weeks on. Skin remains thin and blood vessels are clearly visible through the skin.

By the 14th week, fingernails are well formed, and hairs on the head are present. Lower limbs are well developed; early toe nail development takes place.

Month 5



20 weeks

By the beginning of the sixteenth week, bones are clearly visible on ultrasound.

17-20 weeks: Rapid growth rate subsides; the mother becomes aware of fetal movements (quickening).

If born at five months' gestation, chances of surviving with medical intervention are approximately 50 percent.

Months 6 & 7



20 weeks

21-25 weeks: Rapid eye movements begin at 21 weeks; by week 25 fingernails, eyelids and eyebrows are well developed. If born at 22-25 weeks, the fetus usually survives. Skin is wrinkled due to a lack of subcutaneous fat; blood is visible in the capillaries.

26-29 weeks: Eyes open; eyelashes are well developed, and the fetal body becomes plump as subcutaneous fat is deposited. If born now, lungs are sufficiently developed to breathe air; the central nervous system is also well developed.

Months 8 & 9



40 weeks

30-34 weeks: The body continues to put on weight; toenails are present, and in males testes begin to descend. Fingernails go all the way to the fingertips. Fetal skin is now usually pink and smooth and its limbs have a chubby appearance.

35-38 weeks: Toe nails reach the tip of toes. During the last weeks of gestation the fetus adds about 14gm of fat a day, and spontaneously responds to light; its grasp is firm.

ABORTION

HAVE WE GONE TOO FAR?

THE SECOND LOOK PROJECT

