**Weeks 4 to 12 Prenatal Development Notes**

Based on videos from BabyCenter.ca

**Inside pregnancy: Early fetal development**

**Video Transcript**

Structures form that will become the spinal cord and brain. The fetus doesn't look human yet, but it's on its way.  
The embryo becomes established in its new place. First it settles into the mucous membrane of the uterus and then the placenta is formed.

The placenta is the organ connecting the fetus to the uterine lining.

Its function is to supply food and oxygen to the fetus while removing waste materials.

A disk forms in the center of the embryo. The embryo is 14 days ( 2 weeks) old and still the size of the head of a pin.

The disk thickens. It is centered between two pockets of fluid and ready to begin building the body's systems.

The nervous system comes first. A deep groove forms along the back. It folds inward to create a tube that will later become the spinal cord. The two large balls will eventually become the brain hemispheres.

The embryo begins to curve inward. The heart and blood vessels begin to form the foundation of the vascular system.

As it develops, the embryo goes through all the evolutionary stages. First it is like a fish, then like a reptile. It will take weeks before it assumes human form.

Within 20 days (almost 3 weeks) the embryo has developed from one cell into a sophisticated system with perfectly synchronized cells. This tiny organism is its own genius architect.

Your baby's heart begins to beat, the head and facial features appear, and the organs settle into place.  
  
**Video Transcript**

Let's take a moment to look at one of the most mysterious phenomena, the creation of a living machine – the beating heart. All of these tiny molecules are cells that will eventually become the heart. They come to life one by one and start beating in unison. This basic beat is the beat of life, the precise operation of the blood pump.

The embryo is only 20 (almost 3 weeks) days old and about 2 millimeters long. It is a period of enormous changes to the embryo's shape. It slowly assumes human form.

The head and facial features appear. Two dark bumps emerge in the middle of the head and within days will become tiny eyes. Slowly, other organs are formed: the cartilage, muscles, and tendons.

The embryo is 34 days old (5 weeks) and 5 millimeters long. Its development is rapid and it grows 1 millimeter a day. As the arms and legs form, the hip bone will replace the tail. The mouth and nostrils take shape and the neck shortens. Meanwhile, the brain continues to develop and is preparing for the role of "concertmaster" to the body.

The embryo is now 44 days (6 weeks) old and 17 millimeters long. The eyes are protected by a thin, downy membrane. The back hardens and the head straightens. At this stage, the heart and most organs settle into their fixed places and begin to function.

The embryo is 60 days old (8 ½ weeks) and weighs almost 11 grams. At the end of the eighth week, all of the organs are

present, but they still have seven more months to continue to develop

**Inside pregnancy: Weeks 1 to 9**

In early pregnancy your baby grows dramatically, from a tiny dot to the size of a grape.

**Video Transcript**

Within a week of conception, your fertilized egg, known as a blastocyst, will make its way to your uterus. The egg is about the size of a pen tip.

In days, the cells in the egg arrange themselves into groupings. The inner cell mass will become your baby. The outer cells will become the amniotic sac and placenta.

The blastocyst then sheds its protective casing in a process called hatching, and burrows into the lush uterine wall.

Around week 5, your developing baby is the size of a sesame seed. The cells that once formed the blastocyst's inner cell mass begin organizing and arranging, giving shape to the young embryo and forming primitive organs.

Your baby's brain and spinal cord are visible through his translucent skin.

Right around this time, your baby's circulatory system also forms and his heart begins to beat.

Your baby looks more like a tiny tadpole than a human. He's drawing nutrients and oxygen through the newly formed placenta and umbilical cord.

By week 9, the embryonic tail is gone. Your baby's looking more human every day, with protruding limbs and fingers, a defined nose, mouth, and eyes, and tiny earlobes.

Your new resident is about the size of a grape and weighs a fraction of an ounce.

It's hard to believe how rapidly one cell evolves in such a short time into the unmistakable body of a baby.

Fingerprints and nails are forming, and eyes and ears move into place so your baby can squint and grimace.

**Inside pregnancy: Weeks 10 to 14**

**Video Transcript**

At ten weeks and barely the size of a kumquat, your baby is entering the fetal stage of development.

His facial features are defined, and his tooth buds are forming.

Over the next weeks (week 11), his tissues and organs will rapidly grow and mature.

The webbing is gone between his fingers and toes, and his nails and fingerprints are developing. Your baby can open and close his fists and curl his toes.

Thanks to his developing muscles and reflexes, he's now moving his limbs and kicking up a storm. If this is your first baby, though, you likely won't feel his flutters until 18 to 20 weeks.

Through translucent skin, his vital organs are visible and functioning, including his growing brain, nervous system, intestines, and liver, which is making red blood cells in place of the disappearing yolk sac.

The umbilical cord is working hard now. One vein delivers oxygen and nutrient-rich blood to your baby. Two arteries then carry the blood away.

Around week 12, the kidneys have begun producing urine, which your baby will soon start excreting into the amniotic fluid. He'll swallow the fluid, and the process will begin again.

By week 14, your baby's eyes and ears have moved into place, and he can squint, frown, and grimace.

You're now beginning the second trimester of pregnancy, which many women say is when they feel their best.