





























Prenatal Development Timeline

- | | | | |
|---|---|--|--|
| ■ Nervous | ■ Cardiovascular | ■ Muscular | ■ Early Events |
| ■ Special Senses | ■ Respiratory | ■ Skeletal | ■ Growth Parameters |
| ■ Blood & Immune | ■ Gastrointestinal | ■ Endocrine | ■ General |
| ■ Skin/Integument | ■ Renal/Urinary | ■ Reproductive | ■ Movement |










Unit 1: The First Week	
Day 0	■ Embryonic period begins
Day 1	■ Embryo is spherically shaped with 12 to 16 cells
Day 1 - Day 1	■ Fertilization - development begins with a single-cell embryo!!!
Day 2	■ Zygote divides into two blastomeres (24 - 30 hours from start of fertilization)
Day 4	■ Free floating blastocyst ■ Inner cell mass ■ See where the back and chest will be
Day 6	■ Embryo attaches to wall of uterus
1 week	■ Placenta begins to form
Unit 2: 1 to 2 Weeks	
1 week, 1 day	■ Positive pregnancy test
1 week, 2 days	■ Cells in womb engorged with nutrients
1 week, 5 days	■ Implantation complete ■ Yolk sac
Unit 3: 2 to 3 Weeks	
2 weeks, 1 day	■ Rostral-caudal orientation
2 weeks, 2 days	■ Three types of blood-forming cells in yolk sac
2 weeks, 4 days	■ Foregut, midgut, and hindgut ■ Brain is first organ to appear
2 weeks, 6 days	■ Beginnings of the heart can be seen ■ Forebrain, midbrain, and hindbrain ■ Three main divisions of brain
3 weeks	■ Blood and blood vessels
Unit 4: 3 to 4 Weeks	
3 weeks, 1 day	■ Respiratory outgrowth ■ Circulatory system function begins ■ Heart begins beating ■ Tubular heart begins folding ■ Umbilical arteries ■ Umbilical veins (right and left) ■ Body cavities
3 weeks, 3 days	■ Liver ■ Membrane between future mouth and throat may begin to rupture
3 weeks, 5 days	■ First part of pancreas ■ Lung bud

	 Descending aorta
	 Lowermost spinal cord formation begins
	 Neural tube closes (lower back)
	 Upper limb primordium at level of somites 8 to 10
	 Progressively C-shaped embryo
4 weeks	 Skin is so thin, you can see through it!
	 Esophagus primordia
	 Pancreas: Ventral pancreas
	 Pharynx
	 Small & large intestines
	 Lungs begin filling chest cavity
	 Trachea
	 Circulatory system "well established"
	 Functioning two-chamber heart
	 Heart rate (about) 113 beats/min
	 Fourth ventricle
	 Cervical flexure
	 Limb buds - the first sign of arms and legs
	 Umbilical cord emerging
	 Upper and lower limb buds




Unit 5: 4 to 5 Weeks

4 weeks, 4 days	 Nose: Nasal pits
	 Brain: Cerebral hemispheres appear and begin rapid growth
4 weeks, 5 days	 Blood vessels penetrate diencephalon
	 Brain with five main sections
	 First nerve fibers
5 weeks	 Lobar pattern mimics adult pattern
	 Pacemaker cells
	 Head is one third of entire embryo

Unit 6: 5 to 6 Weeks

5 weeks, 2 days	 All cranial nerves identifiable
5½ weeks	 Initial tooth formation
5½ weeks - 6 weeks	 Subtle movement begins
5 weeks, 6 days	 Primordial vermiform appendix
6 weeks	 Face withdraws from light touch around mouth
	 Blood forming in liver
	 Tooth buds (primary teeth)
	 Intestines fill base of umbilical cord
	 External ears

Unit 7: 6 to 7 Weeks

6 weeks, 2 days	 Elbow regions sometimes identifiable
	 Humerus, radius, and ulna
	 Submandibular gland primordia

	<ul style="list-style-type: none"> Brainwave activity has begun
6½ weeks	<ul style="list-style-type: none"> The hands begin to move Bones first form in the collar bones and lower jaw
6 weeks, 5 days	<ul style="list-style-type: none"> Arms point forward Beginnings of occipital and sphenoid bones
6 weeks, 6 days	<ul style="list-style-type: none"> Cloacal membrane ruptures
7 weeks	<ul style="list-style-type: none"> Head rotates Leg movements Ovaries Hiccups The heart has four chambers and is nearly complete. The heart rate peaks at 165 to 170 beats per minute.

Unit 8: 7 to 8 Weeks

7 weeks, 1 day	<ul style="list-style-type: none"> Upper limbs with slightly flexed elbows Sacrocaudal spinal cord formation (secondary neurulation) complete
7 weeks, 1 day - 8 weeks	<ul style="list-style-type: none"> Stomach: Folds in stomach wall
7 weeks, 2 days	<ul style="list-style-type: none"> Arteries and veins of heart complete
7 weeks, 3 days	<ul style="list-style-type: none"> The knee joints have arrived Eyelids growing rapidly
7½ weeks	<ul style="list-style-type: none"> Fingertips thicken EKG pattern similar to adult
7 weeks, 4 days	<ul style="list-style-type: none"> The fingers are free
7 weeks, 5 days	<ul style="list-style-type: none"> Bone-forming cells emerge Hands can reach one another and fingers can overlap
8 weeks	<ul style="list-style-type: none"> Complex response to touch More frequent hand-to-face contact Urine production and release Occasional breathing motions begin Blood supply to the brain closely resembles adult pattern Ear drum "The hindbrain "presents striking resemblance to that of the newborn." Brain represents 43% of embryo Right- and left-handedness emerges Embryonic Period Ends

Unit 9: 8 to 9 Weeks

8½ weeks	<ul style="list-style-type: none"> Eyelids completely fused
9 weeks	<ul style="list-style-type: none"> Bends hip & knee if sole of foot touched Drinking fluid is becoming routine Sucking the thumb The young fetus now sighs, stretches, moves the head, opens the mouth, and moves the tongue Thyroid gland weighs 2 grams

	<ul style="list-style-type: none"> Face, hands, and feet sense light touch
Unit 10: 9 to 10 Weeks	
9 weeks - 10 weeks	My weight will rise more than 75% this week
9 weeks, 4 days	Yawns
10 weeks	Palatine tonsils
	Fingernails and toenails begin to grow!
	Three-layered epidermis
	Tiny unique fingerprints have arrived!
	Now, all the bones are getting harder
	Tooth buds (secondary teeth)
Unit 11: 10 to 11 Weeks	
10½ weeks	Volar and plantar pads regress
11 weeks	Nose & lips completely formed
	Now you can tell if your baby is a girl or a boy!
	Thyroid gland weighs 12 grams
	Intestines absorb water & glucose
Unit 12: 11 to 12 Weeks	
12 weeks	Many different hormones are present in pituitary gland
	Upper limbs reach final proportion
	Bowel movements
	Liver: Bile production begins
	There are taste buds all over the mouth
	Head circumference 10 cm
Unit 13: 3 to 4 Months	
13 weeks	Teeth are growing
	Most of body sensitive to touch
14 weeks	Girls move their jaws more than the boys do
	Light touch to mouth evokes turn toward stimulus
	Cerebellum resembles adult structure
	Fat deposits in cheeks
15 weeks	Body fat emerges throughout the body
16 weeks	Quickening
	Fat deposits upper & lower limbs
Unit 14: 4 to 5 Months	
18 weeks	Cream-like substance protects skin
	Sweat glands
19 weeks	Melanin production
	Daily cycles in biological rhythms
20 weeks	All skin layers and structures
	Hearing and responding to sound begins
	Hearing and responding to sound begins
	Head circumference 20 cm
Unit 15: 5 to 6 Months	
20 weeks - 24 weeks	Eyelids separate, eyes open and close

21 weeks - 22 weeks	<input type="checkbox"/> If born prematurely from this point on, survival is possible
23 weeks	<input type="checkbox"/> Brain weight 100 grams
Unit 16: 6 to 7 Months	
25 weeks	<input checked="" type="checkbox"/> Intestinal lining contains all adult cell types
	<input checked="" type="checkbox"/> The ability to taste
26 weeks	<input checked="" type="checkbox"/> Additional fat deposits decrease wrinkles
	<input checked="" type="checkbox"/> The ability to smell has arrived
26 weeks - 38 weeks	<input checked="" type="checkbox"/> Brain weight increases 400% to 500%
27 weeks	<input checked="" type="checkbox"/> Pupils react to light
Unit 17: 7 to 8 Months	
30 weeks	<input checked="" type="checkbox"/> Breathing motions are common even though there is no air in the womb
	<input type="checkbox"/> Head circumference 30 cm
32 weeks	<input checked="" type="checkbox"/> Esophagus: Lower esophagus muscles functional
Unit 18: 8 to 9 Months	
32 weeks - 36 weeks	<input checked="" type="checkbox"/> Prenatal food affects newborn taste preferences
35 weeks	<input checked="" type="checkbox"/> Firm grip
36 weeks	<input type="checkbox"/> Brain weight 300 grams
Unit 19: 9 Months to Birth	
37 weeks	<input checked="" type="checkbox"/> Fetus drinks an estimated 15 oz (or 450cc) of amniotic fluid/day
38 weeks	<input checked="" type="checkbox"/> Heart beats 54 million times before birth
	<input type="checkbox"/> Brain weight 350 grams
	<input type="checkbox"/> Fetus initiates labor
	<input type="checkbox"/> Head circumference 35 cm
	<input type="checkbox"/> Time to be born!