

# Prenatal Development Timeline

- |   |   |  |  |
|---|---|--|--|
| <span style="color: blue;">■</span> Nervous           | <span style="color: red;">■</span> Cardiovascular       | <span style="color: maroon;">■</span> Muscular         | <span style="color: teal;">■</span> Early Events           |
| <span style="color: yellow;">■</span> Special Senses  | <span style="color: orange;">■</span> Respiratory       | <span style="color: grey;">■</span> Skeletal           | <span style="color: limegreen;">■</span> Growth Parameters |
| <span style="color: magenta;">■</span> Blood & Immune | <span style="color: purple;">■</span> Gastrointestinal  | <span style="color: cyan;">■</span> Endocrine          | <span style="color: white;">■</span> General               |
| <span style="color: pink;">■</span> Skin/Integument   | <span style="color: olivegreen;">■</span> Renal/Urinary | <span style="color: lightgreen;">■</span> Reproductive | <span style="color: green;">■</span> Movement              |

## Unit 1: The First Week

Day 0	—	<span style="color: teal;">■</span> Embryonic period begins
Day 1	—	<span style="color: teal;">■</span> Embryo is spherically shaped with 12 to 16 cells
Day 1 - Day 1	—	<span style="color: teal;">■</span> Fertilization - development begins with a single-cell embryo!!!
Day 2	—	<span style="color: teal;">■</span> Zygote divides into two blastomeres (24 - 30 hours from start of fertilization)
Day 4	—	<span style="color: teal;">■</span> Free floating blastocyst <span style="color: teal;">■</span> Inner cell mass <span style="color: teal;">■</span> See where the back and chest will be
Day 6	—	<span style="color: teal;">■</span> Embryo attaches to wall of uterus
1 week	—	<span style="color: teal;">■</span> Placenta begins to form

## Unit 2: 1 to 2 Weeks

1 week, 1 day	—	<span style="color: teal;">■</span> Positive pregnancy test
1 week, 2 days	—	<span style="color: teal;">■</span> Cells in womb engorged with nutrients
1 week, 5 days	—	<span style="color: teal;">■</span> Implantation complete <span style="color: teal;">■</span> Yolk sac

## Unit 3: 2 to 3 Weeks

2 weeks, 1 day	—	<span style="color: teal;">■</span> Rostral-caudal orientation
2 weeks, 2 days	—	<span style="color: magenta;">■</span> Three types of blood-forming cells in yolk sac
2 weeks, 4 days	—	<span style="color: purple;">■</span> Foregut, midgut, and hindgut <span style="color: blue;">■</span> Brain is first organ to appear
2 weeks, 6 days	—	<span style="color: red;">■</span> Beginnings of the heart can be seen <span style="color: blue;">■</span> Forebrain, midbrain, and hindbrain <span style="color: blue;">■</span> Three main divisions of brain
3 weeks	—	<span style="color: red;">■</span> Blood and blood vessels

## Unit 4: 3 to 4 Weeks

3 weeks, 1 day	—	<span style="color: orange;">■</span> Respiratory outgrowth <span style="color: red;">■</span> Circulatory system function begins <span style="color: red;">■</span> Heart begins beating <span style="color: red;">■</span> Tubular heart begins folding <span style="color: red;">■</span> Umbilical arteries <span style="color: red;">■</span> Umbilical veins (right and left) <span style="color: teal;">■</span> Body cavities
3 weeks, 3 days	—	<span style="color: purple;">■</span> Liver <span style="color: purple;">■</span> Membrane between future mouth and throat may begin to rupture
3 weeks, 5 days	—	<span style="color: purple;">■</span> First part of pancreas <span style="color: orange;">■</span> 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
<b>4 weeks</b>	 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**

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

**Unit 6: 5 to 6 Weeks**

<b>5 weeks, 2 days</b>	 All cranial nerves identifiable
<b>5½ weeks</b>	 Initial tooth formation
<b>5½ weeks - 6 weeks</b>	 Subtle movement begins
<b>5 weeks, 6 days</b>	 Primordial vermiform appendix
<b>6 weeks</b>	 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**

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

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

**Unit 8: 7 to 8 Weeks**

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

**Unit 9: 8 to 9 Weeks**

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

	<ul style="list-style-type: none"> <li>Face, hands, and feet sense light touch</li> </ul>
<b>Unit 10: 9 to 10 Weeks</b>	
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)
<b>Unit 11: 10 to 11 Weeks</b>	
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
<b>Unit 12: 11 to 12 Weeks</b>	
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
<b>Unit 13: 3 to 4 Months</b>	
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
<b>Unit 14: 4 to 5 Months</b>	
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
<b>Unit 15: 5 to 6 Months</b>	
20 weeks - 24 weeks	Eyelids separate, eyes open and close

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