Chapter 19: Hormones & Reproduction



Organs of the endocrine system (purple) and other organs containing tissues that secrete hormones (tan)

Hypothalamus

Secretes hormones involved with fluid balance, smooth muscle contraction, and the control of hormone secretion by the anterior pituitary gland

Pituitary Gland

Secretes multiple hormones that regulate the endocrine activities of the adrenal cortex, thyroid gland, and reproductive organs, and a hormone that stimulates melanin production

Thyroid Gland

Secretes hormones that affect metabolic rate and calcium levels in body fluids.

Adrenal Glands

Secrete hormones involved with mineral balance, metabolic control, and resistance to stress; the adrenal medullae release E and NE during sympathetic activation

Pancreas (Pancreatic Islets)

Secretes hormones regulating the rate of glucose uptake and utilization by body tissues

Pineal Gland

Secretes melatonin, which affects reproductive function and helps establish circadian (day/night) rhythms

Parathyroid Glands

Secrete a hormone important to the regulation of calcium ion concentrations in body fluids

Organs with Secondary Endocrine Functions

Heart: Secretes hormones involved in the regulation of blood volume

Thymus: Secretes hormones involved in the stimulation and coordination of the immune response

Digestive Tract: Secretes numerous hormones involved in the coordination of system functions, glucose metabolism, and appetite

Kidneys: Secrete hormones that regulate blood cell production and the rates of calcium and phosphate absorption by the intestinal tract

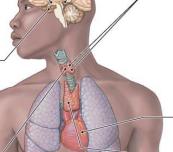
Gonads: Secrete hormones affecting growth, metabolism, and sexual characteristics, as well as hormones coordinating the activities of organs in the reproductive system

The Endocrine



 Produces chemical messengers called

that control body activities



Testis

Ovary

How It Works

Endocrine glands produce and/or release hormones

turn on, turn off, speed up, or slow down body organs & activities.

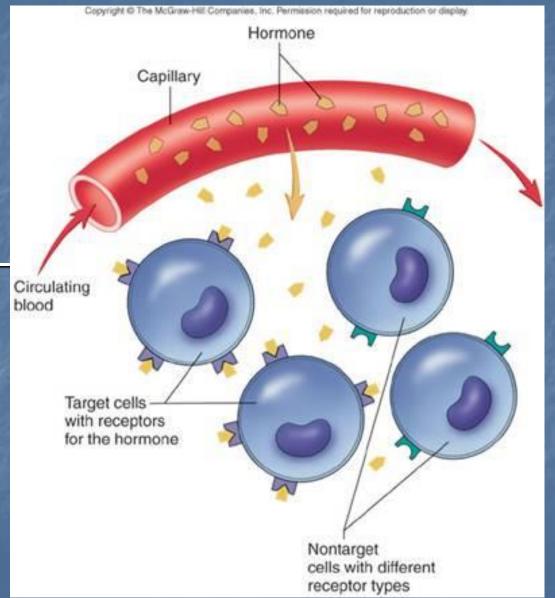


For Example

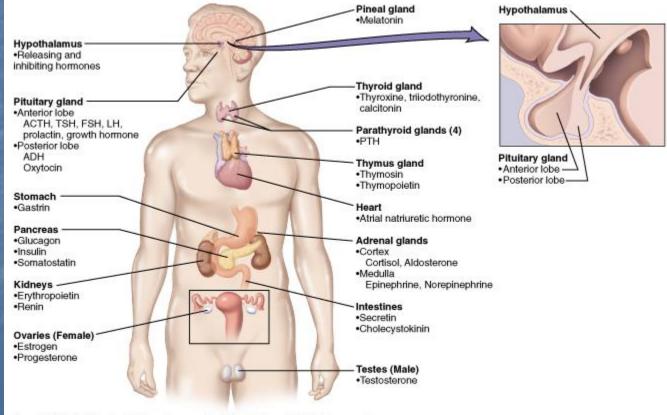
You see a burglar
Nerve impulse to brain
Brain sends impulse to adrenal glands to release adrenaline
Heart and breathing rates increase



How Does It Know?



Links Nervous System to Endocrine System



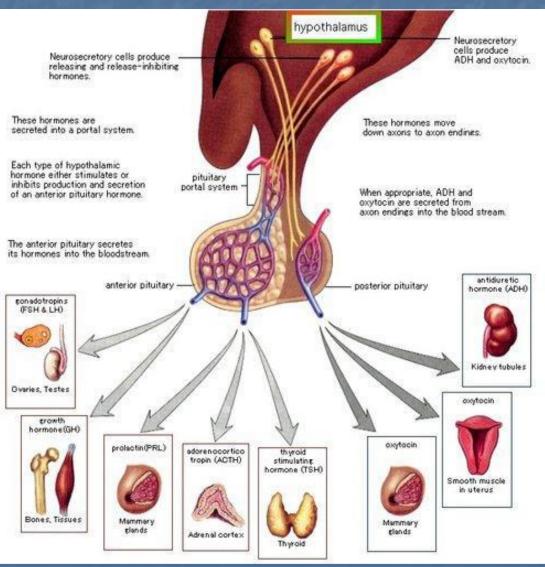
Copyright @ 2001 Benjamin Cummings, an imprint of Addison Wesley Longman, Inc.

Pituitary Gland

11

11

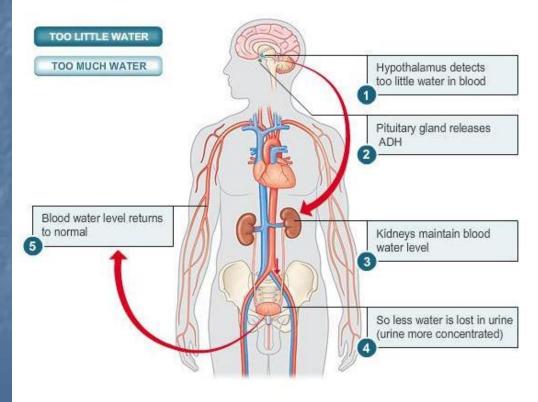
that regulates
metabolism (thyroid)
growth (bones)
puberty (gonads)
water regulation (kidneys)



Negative Feedback

When levels

endocrine system signals to

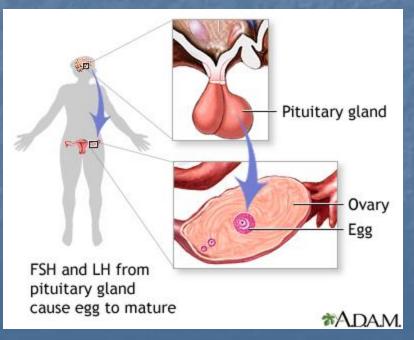


Puberty "Wake Up" Hormones

Follicle Stimulating Hormone (FSH) from pituitary

Luteinizing Hormone (LH), also from pituitary, signals

Both rise and fall together during menstrual cycle



Sexual Reproduction

Egg – female sex cell
Sperm – male sex cell
_____ – joining of sperm & egg

Zygote –

Chromosomes

Found in nucleus
Contain DNA
Gametes (sperm & egg) carry 1/2 genetic code
When combined make a whole – YOU!



Y х

autosomes

sex chromosomes

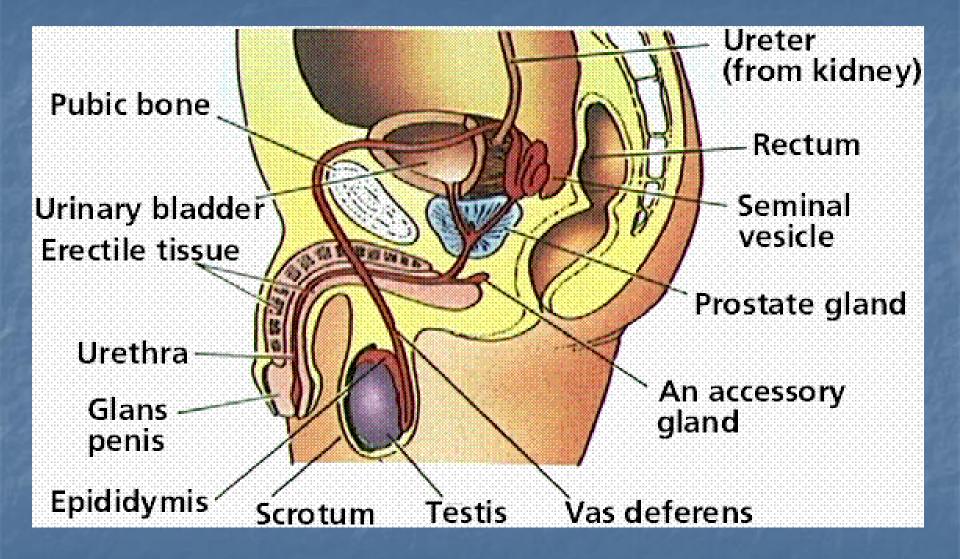
U.S. National Library of Medicine

Male Reproductive System

Produces

 2 testes produce <u>sperm</u>
 Testes protected in (external sac)
 _____mix with____to form semen

when semen leaves the body thru _____ of penis



Circumcision

Removal of _

Foreskin Glans



on penis

Female Reproductive System

To produce eggs, _____ and nourish a developing baby until birth

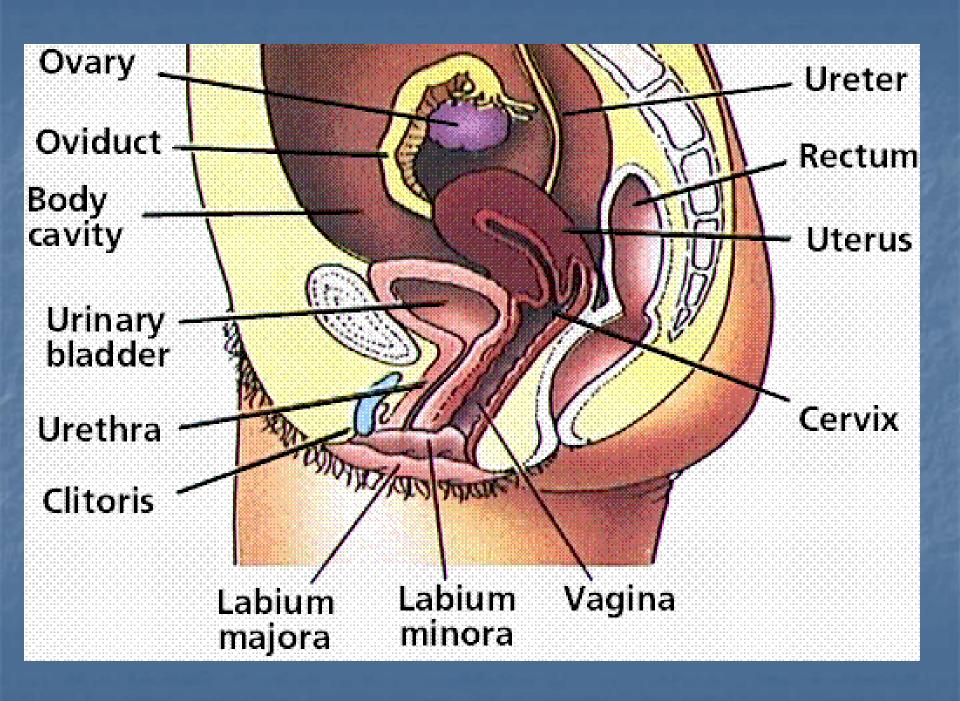
2

Egg

_ house eggs

tubes lead to uterus
 Base of the uterus is the

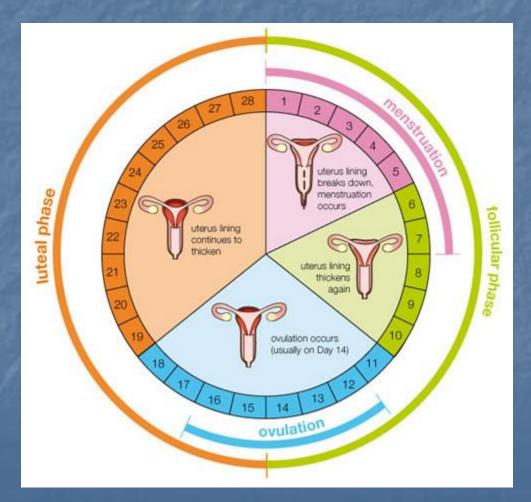
 (a common site of cancer in women: story of Henrietta Lacks)
 to outside of body



The Menstrual Cycle (about 28 days)

- An egg matures in an
- Lining of uterus begins to thicken
 During

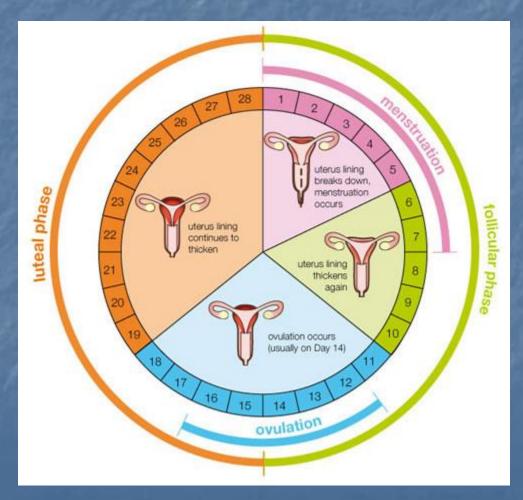
mature egg is released while cervical mucus thins



The Menstrual Cycle (about 28 days)

If egg not fertilized in a few days, will break down (along with uterine wall)

Thickened lining passes out of body for 4 – 6 days
Another egg begins to mature





What About the Egg?

 Fertilization? = Pregnant
 No Fertilization? = Menstruation

Pregnancy

 Implantation - Embryo attaches to uterine wall
 Amniotic sac forms (filled with fluid to protect & cushion)

develops from uterine lining

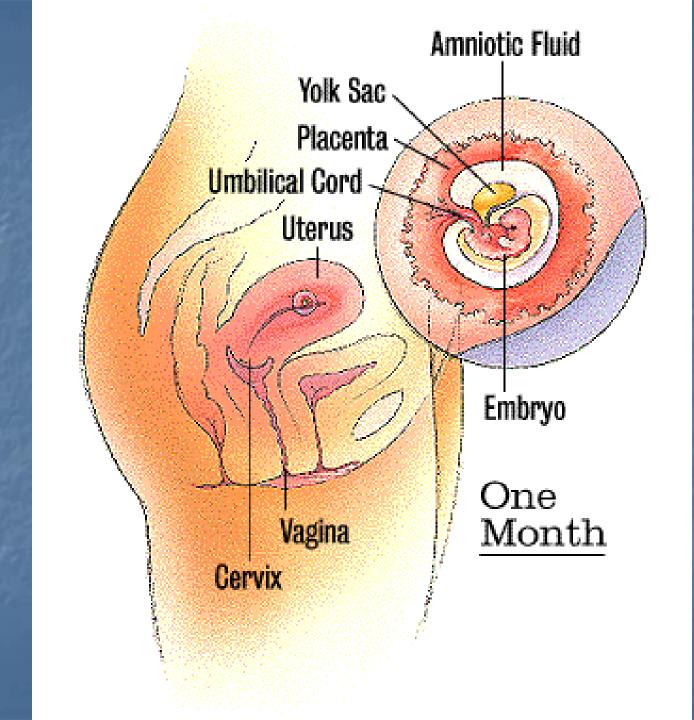
attaches where nutrients, gases & wastes are exchanged

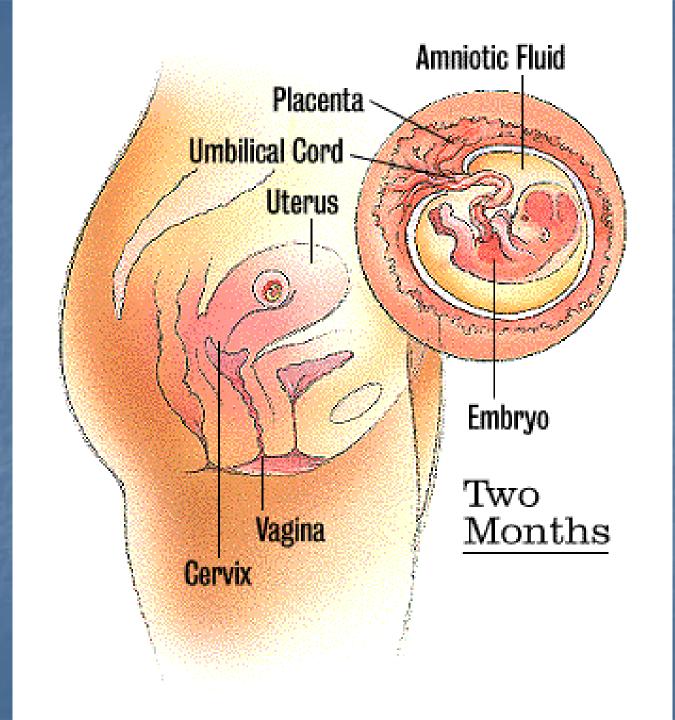
Human Development

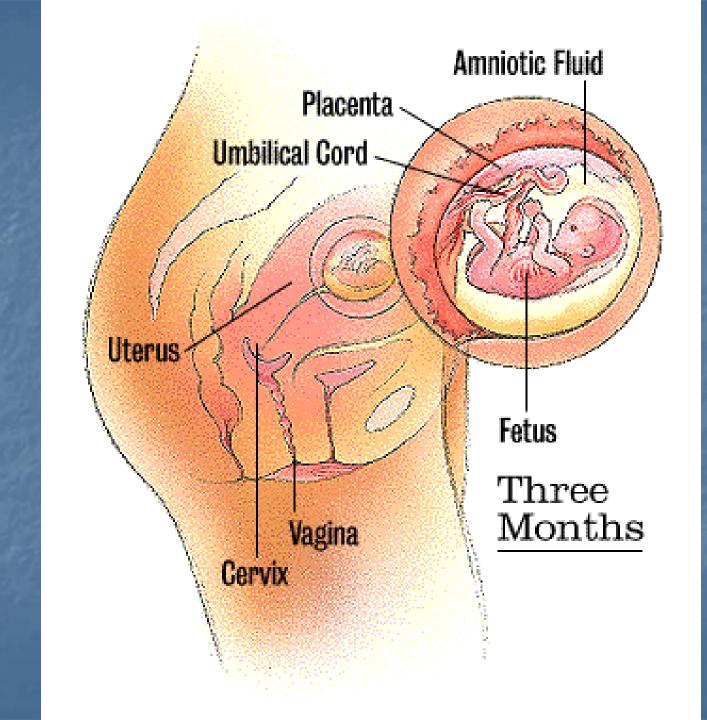
Zygote – fertilized egg – til 8 weeks – 9 wks to birth



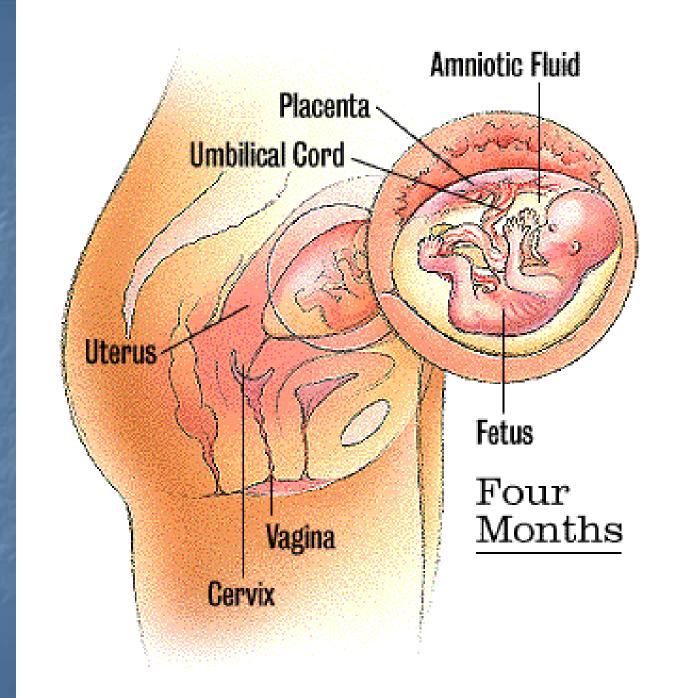
3 Stages of Pregnancy 40 week Gestation ■ 1st Trimester ■ 1st 12 - 14 weeks Organs forming Most critical time

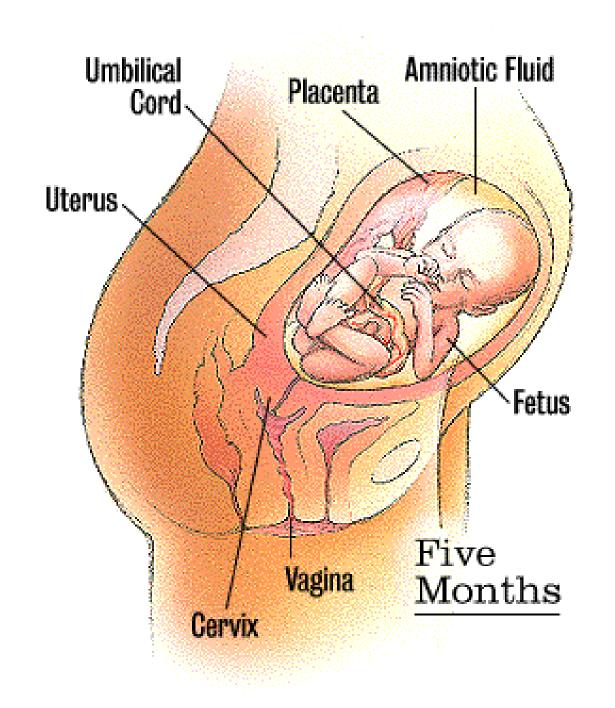


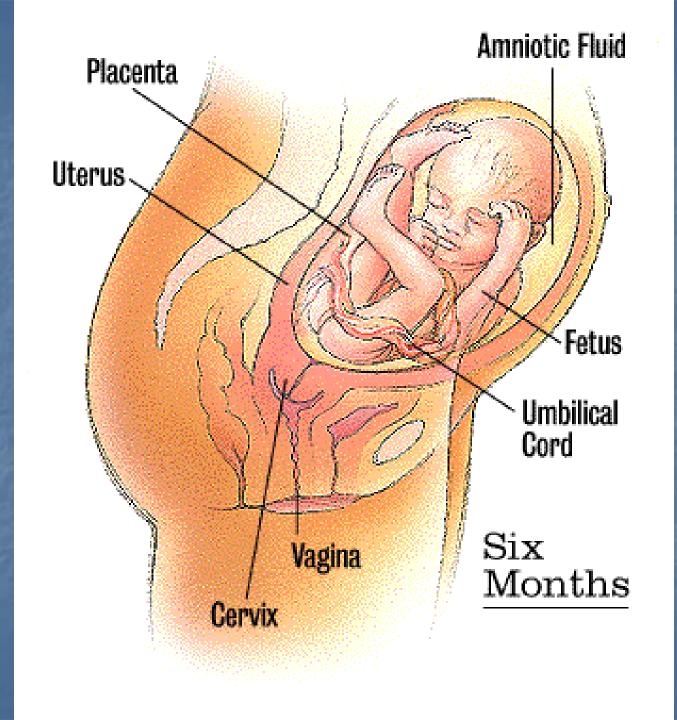


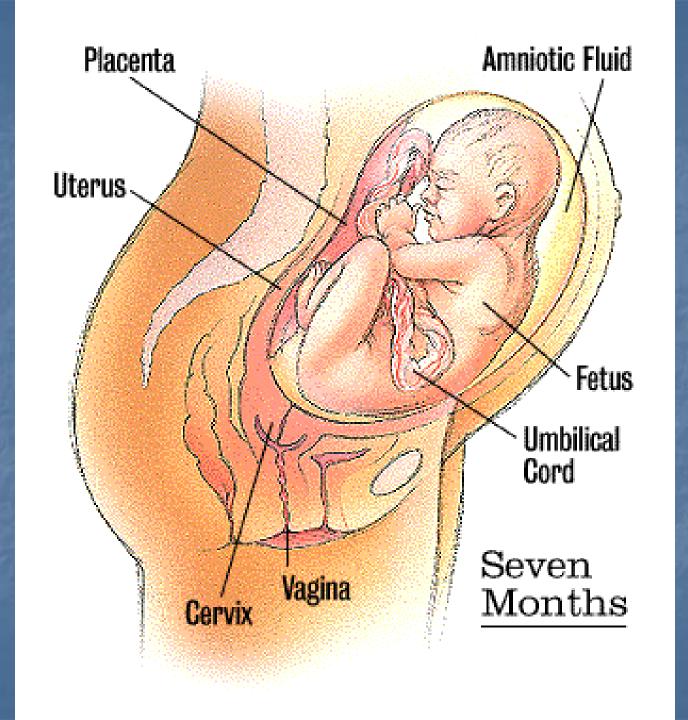


3 Stages of Pregnancy (cont.) 2nd Trimester ■ Til end of 7th month Organ systems formed & maturing





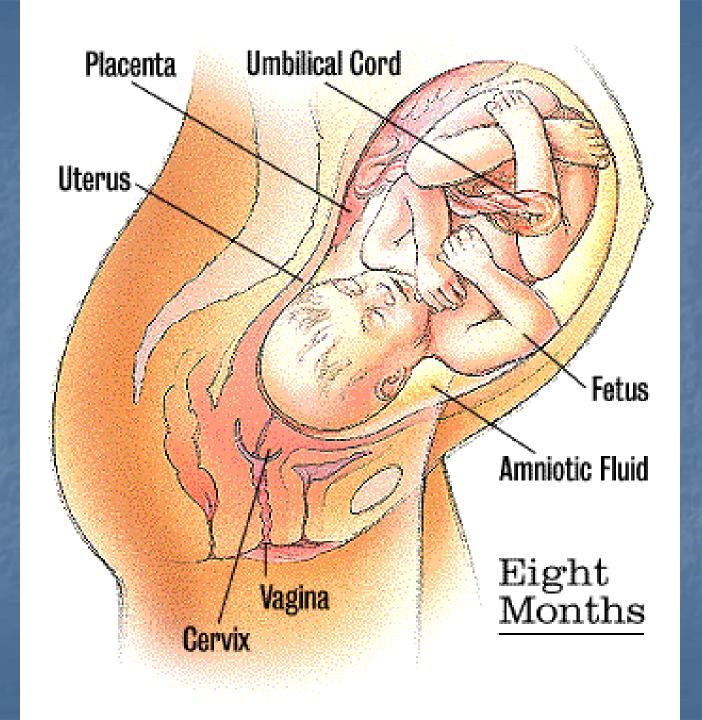


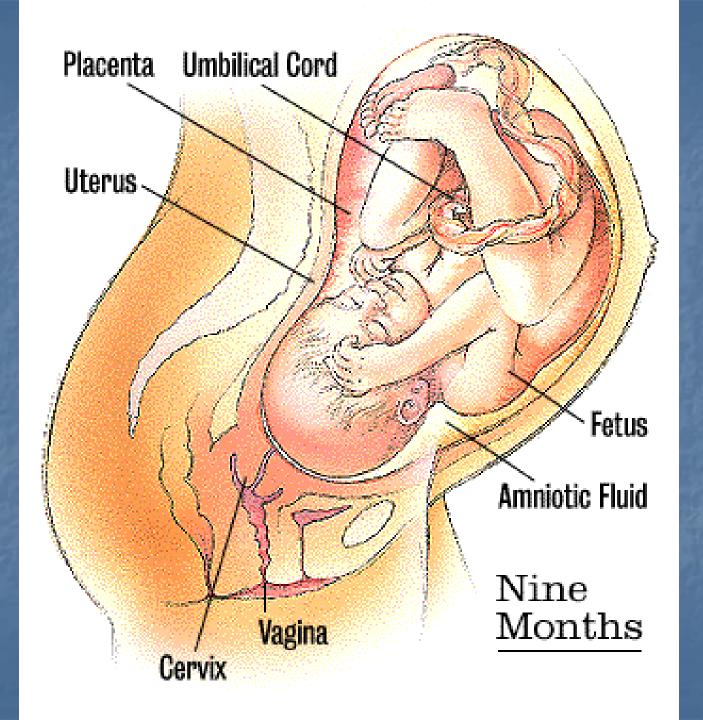


3 Stages of Pregnancy (cont.)

 3rd Trimester
 Final weeks
 Rapid growth and weight gain of fetus







Ready?

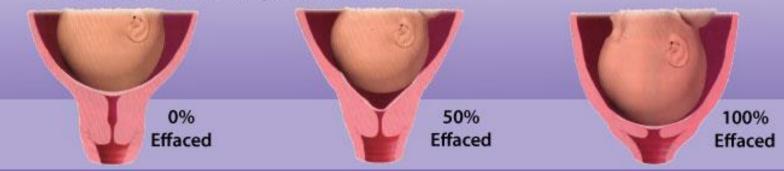
 Between 38 & 42 weeks, all systems mature
 Baby's size puts pressure on cervix & amniotic sac



Cervical Effacement & Dilation (Borramiento y Dilatación Cervical)

Effacement -the gradual thinning, shortening and drawing up of the cervix measured in percentages from 0 to 100%. *Borramiento* - el adelgazamiento, acortamiento y encogimiento gradual del

Borramiento - el adelgazamiento, acortamiento y encogimiento gradual de cervix medido en porcentajes del 0 al 100 %.



Dilation - the gradual opening of the cervix measured in centimeters from 0 to 10 cms.

Dilatación - La apertura gradual del cérvix medida en centímetros de 0 a 10 cms.



1cm



7cm

8cm

9cm

10cm

Stages of Childbirth

cervix dilates, uterus

contracts

 ______ – baby pushed out through vagina (aka birth canal)
 Afterbirth – Placenta is delivered
 Caesarean Section (_____) – baby is removed surgically from abdomen

Other Pregnancy Terms



Siblings – brothers and sisters
Fraternal Twins – 2 eggs and 2 sperm
Identical Twins – zygote splits

Infancy

 1st two years
 Rapid learning, growth, and development



Toddlers

Continued growth and independence





Childhood

Growth slows but continues, more coordinated in activities

Adolescence

 "Awkward" stage between childhood and adulthood
 Puberty – sexual development



Adulthood

Body peaks at 22 and by 27 body and brain starts its slow decline, which varies depending on individual.



Aging

 skin wrinkles, muscles decrease, sense organs decline
 Slow aging process by diet & exercise