The Human Reproductive System

Caesar Mensah

Lecture delivered in Ghana

June 2011

Motec Life-UK

What is the human reproductive system?

- It includes the organs and tissues involved in the production and maturation of the male and female gametes (sperm and the egg) and in their union and subsequent development as offspring.
- They consist in the male of the testes, penis, seminal vesicles, prostate gland and urethra and in the female of the ovaries, fallopian tubes, uterus, vagina, and vulva.
- These organs are specifically designed to produce, nourish, and transport either the sperm or the egg.
- The reproductive organs do not start to function until puberty. The aim of the transitional period of puberty through to adolescence is to prepare the male and female child for adulthood.
- During this period the reproductive organs develop and become matured for the purpose of making babies in adulthood.

Male Reproductive system

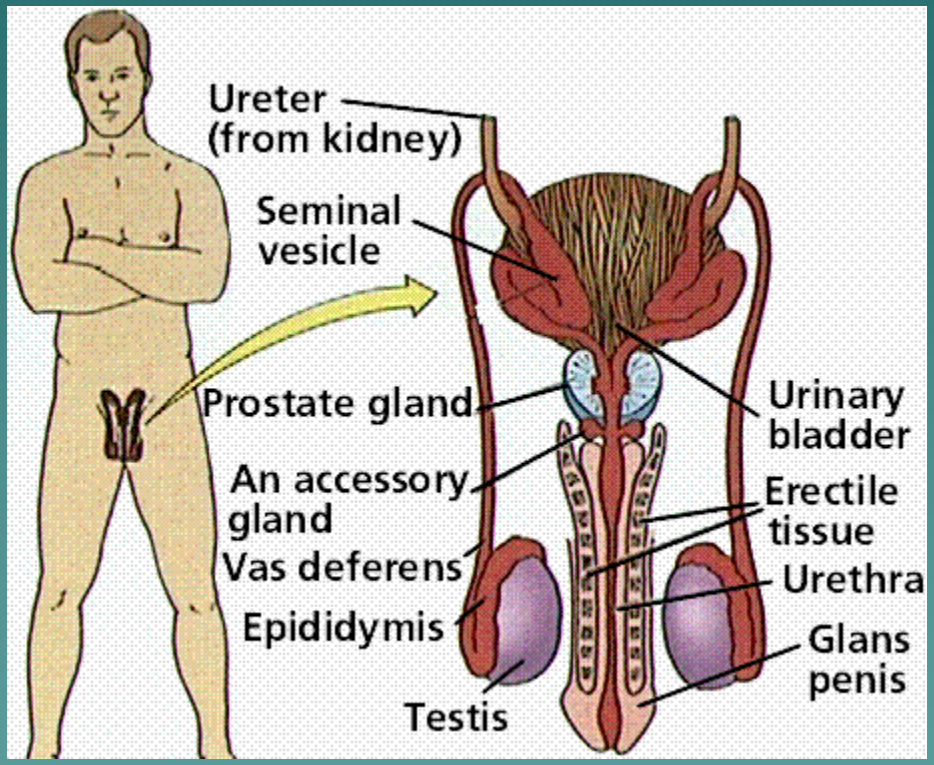
- **The male reproductive system consists of the organs that function together to produce a new individual. The main organs are**
  - **the testes (located in the scrotum) ,**
  - **the penis (the muscular shaft which when erected helps to deposit the sperm in the vagina)**
- **The testes are responsible for the production of sperms and the male hormone called testosterone.**
- **The penis and the scrotum constitute the external genitalia.**

Male Reproductive system

- Other internal structures are a network of excretory ducts that include the epididymis, the vas deferens, ejaculatory ducts, the seminal vesicles, the urethra, the prostate and the bulbourethral glands.

- Three hormones are the main regulators of the male reproductive system. These are
  - Follicle-stimulating hormone (FSH):- stimulates sperm development
  - Leutenizing hormone (LH): stimulates the production of tetesterone, and
  - Testosterone:- stimulates the development of male secondary sex characteristics and sperm formation and development.

Male Reproductive system



The Testes

- The testes or testicles are male gonads which hang in the scrotal sac. Usually the right testis hangs higher than the left one by about 1 cm.

  They begin their development high in the abdominal cavity, near the kidneys. During the last two months before birth, or shortly after birth, they descend through the inguinal canal into the scrotum, a pouch that extends below the abdomen, behind the penis.

- Although this location of the testes, outside the abdominal cavity, may seem to make them vulnerable to injury, it provides a temperature about 3° C below normal body temperature. This lower temperature is necessary for the production of viable sperm. The scrotum consists of skin and subcutaneous tissue. A vertical septum, or partition, of subcutaneous tissue in the centre divides it into two parts, each containing one testis.

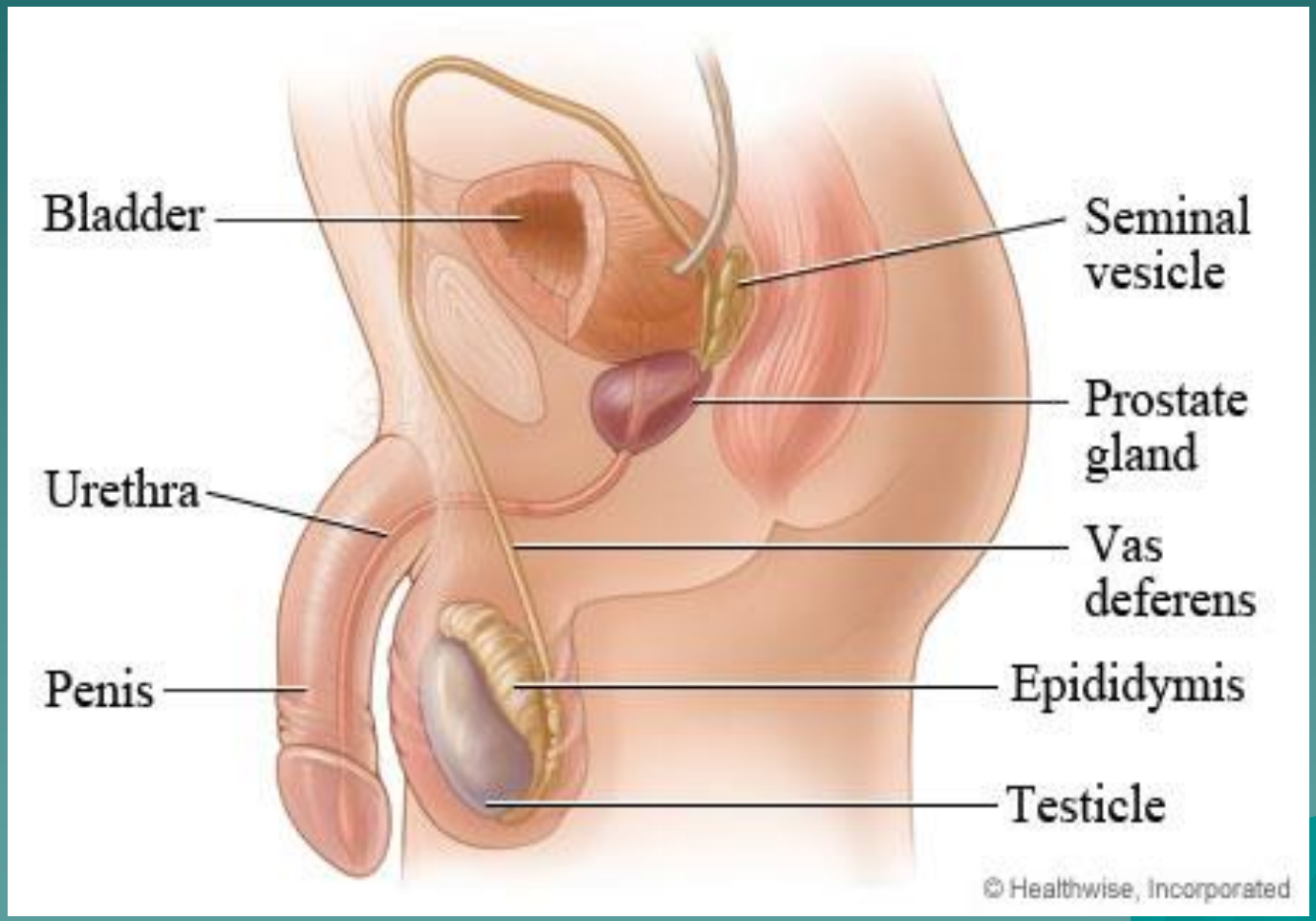
- There are smooth muscle fibres, (dartos muscle); in the subcutaneous tissue, which contract to give the scrotum, its wrinkled appearance. When these fibres are relaxed, the scrotum is smooth.

- Another group of skeletal muscles, (the cremaster muscle), control the position of the scrotum and testes. When it is cold or a man is sexually aroused, these muscle contract to pull the testes closer to the body for warmth.

The Penis

- Its is the male organ used for sexual intercourse and also for urinary excretion. It is cylindrical, hanging in front of the scrotum. It functions to transfer sperm to the vagina.
- The penis consists of three columns of erectile tissue that are wrapped in connective tissue and covered with skin. The two dorsal columns are the corpora cavernosa. The single, midline ventral column surrounds the urethra, called the corpus spongiosum.
- The penis has a root, body (shaft), and glans penis. The root attaches to the pubic arch, the body is the visible hanging portion and the glans penis is the sensitive bulbous structure at the distal end or the head of the penis .
- The corpus spongiosum expands at the distal end to form the glans penis. The urethra, which extends throughout the length of the corpus spongiosum, opens through the external urethral orifice at the tip of the glans penis.
- A loose fold of skin, called the prepuce, or foreskin, covers the glans penis. In some cultures the prepuce or the fore skin is removed, a practice known as circumcision.

The Penis


Bladder
Urethra
Penis
Seminal vesicle
Prostate gland
Vas deferens
Epididymis
Testicle
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Other accessory glands of male reproductive system

- There are other accessory glands which secrete fluid to add to the sperm. They include:
- seminal vesicles
- Prostate gland,
- Bulbourethral glands

The seminal vesicles

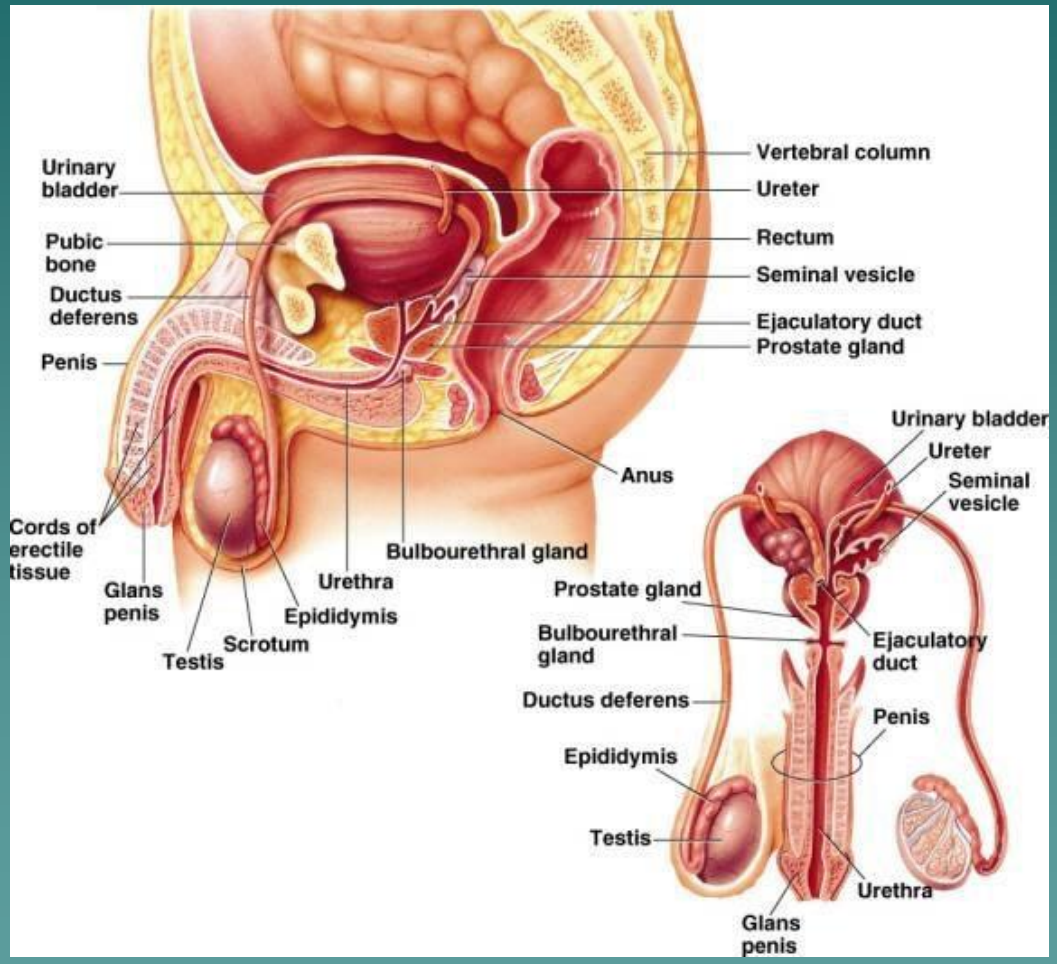
- A pair of sac-like glands located behind the urinary bladder. Each gland has a short duct that opens into the dilated part (ampulla) of the vas deferens to form an ejaculatory duct, which then empties into the urethra.

- Fluid from seminal vesicles is thick and provides energy for the sperm. It helps to make the sperm mobile and viable and provide the slight coagulation reactions in the semen after ejaculation.

The Prostrate Gland

- It is a firm, dense structure located below the urinary bladder. It is about the size of a walnut and surrounds the urethra as it leaves the urinary bladder. Many ducts from the prostate gland empty into the prostatic urethra.
- The prostate, along with seminal vesicles secretes thin, milky coloured and alkaline fluids which nourish and also enhance the movement of the sperm.
- The fluid dilutes the semen to allow easy movement. After the age of 40 the prostate enlarges and can press on the urethra. An enlarged prostate is often the cause of urinary problems in older men.

Cross-section of Male reproductive Organ



The bulbourethhral Glands

- Also called Cowper's glands are a pair of small glands, about the size of a pea, and located near the base of the penis. A short duct from each gland enters the proximal end of the penile urethra.
- When there is sexual stimulation, the bulbourethral glands secrete an alkaline mucus-like fluid into the urethra.
- The fluid neutralizes the acidity of the urethra from the urine residue, and in the female, the acidity of the vagina.
- It also provides some lubrication for the tip of the penis during intercourse.

The Epididymis

- They are a pair of tubes, about 6 metres long, a comma-shaped organ located along the superior and posterior margins of the testes.
- From the testes, the sperm is immature and infertile. As they pass through the epididymis, a journey of about 20 days, they become mature, fertile and “motile”, (ability to move in a swimming motion).
- They are stored in the lower portion or the tail of the epididymis.

Vas (ductus) Deference

- It is a fibromuscular tube that transports sperm from the epididymis up to the prostate gland. It begins at the bottom or (tail) of the epididymis and then turns sharply upwards along the back margin of the testes.

- The section of the vas deferens that is above the testis can be felt through the loose part of the scrotum. In vasectomy this is the part that is snipped. It enters the pelvic cavity through the inguinal canal, along the lateral pelvic wall and crosses over the ureter and posterior portion of the urinary bladder. It then descends behind the bladder towards the prostate gland. Just before entering the prostate gland, each vas deferens forms an ampulla.

Vas (ductus) Deference

- Sperms are stored in the vas deferens, at the proximal or near portion of the epididymis. When the body is aroused, through peristaltic movements, the sperm are propelled through the tube.

- The proximal part of the vas deferens is a part of the spermatic cord. It contains arteries and veins, lymph vessels, nerves and muscles that supply the testes.

Vas deferens

- The vas deferens enlarges at the ends forming an ampulla. It then joins the duct from the seminal vesicle to form a short ejaculatory duct that passes through the prostate gland and empties into the urethra.

The Urethra

- The urethra extends from the urinary bladder to the external urethral orifice at the tip of the penis. It is a passageway for sperm and urine from the urinary system.

- When seminal fluid (semen) is passing through the urethra, the sphincters that guard the urinary bladder opening contract tightly to keep urine from entering the urethra.

- The male urethra is divided into 3 regions:

  1. The part nearer and passing through the prostrate portion is referred to as the prostatic urethra. The ejaculatory duct opens into the prostatic urethra.

  2. The next part is the membranous urethra which is a short region that passes through the pelvic floor.

The Urethra

3. The 3rd portion is the penile urethra also called spongy or cavernous urethra. It is the longest part of the urethra, extending to the external opening at the tip of the penis, the urethral orifice. The ducts from the bulbourethral glands open into the penile urethra, secreting their alkaline fluid to neutralise urine that may be in the urethra before the sperm comes through

- The male response to sexual arousal or stimulation is erection and orgasm which is accompanied by ejaculation of semen. Orgasm is the climax or the peak of the sexual excitement. Note that
- It is not possible to achieve another erection immediately following an orgasm.

What is semen or Seminal Fluid?

- **Seminal fluid or semen**
  It is a slightly alkaline mixture of sperms and secretions from the accessory glands. Secretions from the seminal vesicles make up about 60 percent of the volume of the semen, while most of the remaining 40% comes from the prostate gland. The sperm and secretions from the bulbourethral gland contribute only a small volume.

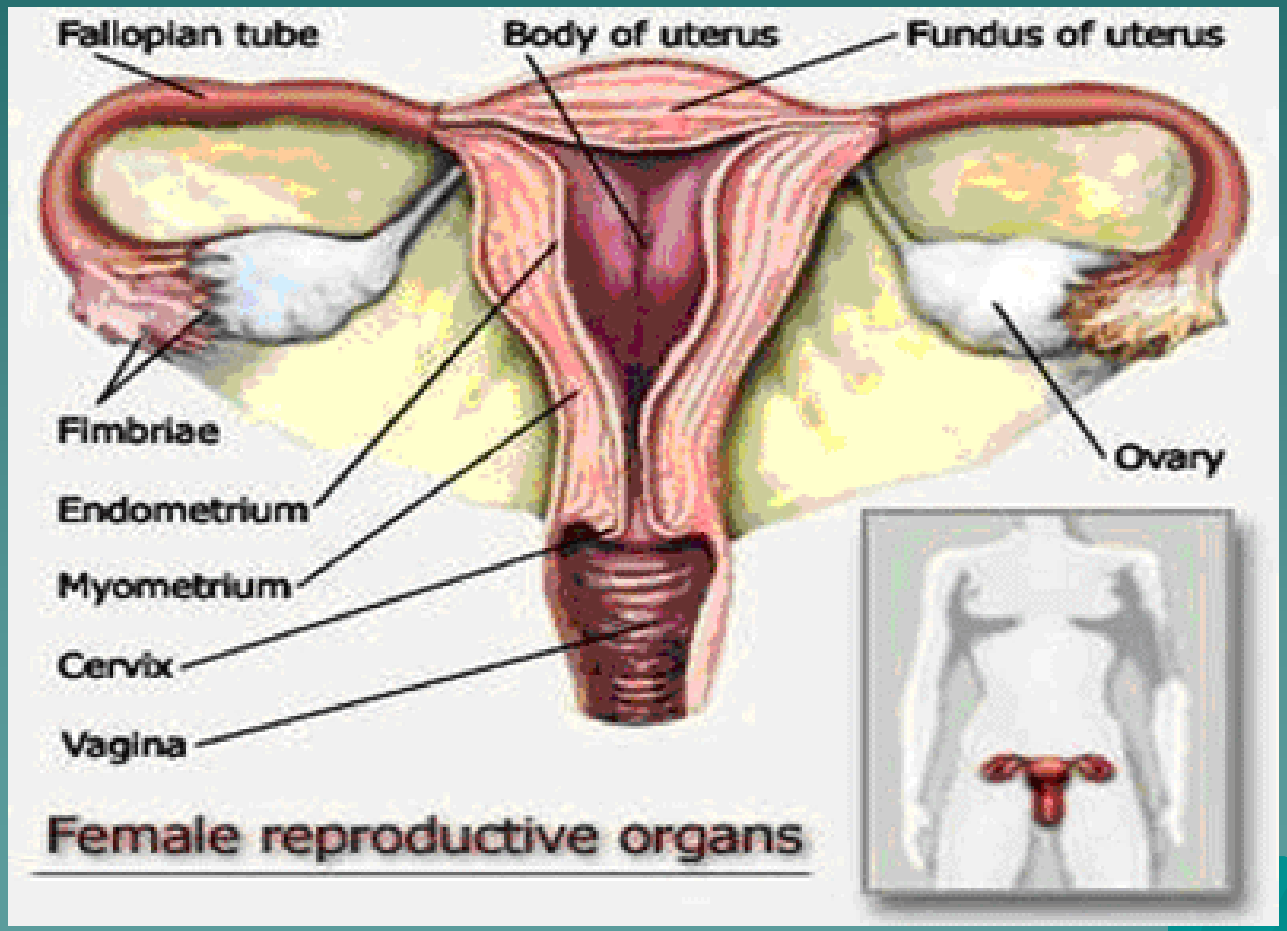
- **One ejaculation will release between 1.5 to 6.0 mls of semen. Each ml of semen usually will have between 50 to 150 million sperms. A sperm count below 10 to 20 million per ml usually presents fertility problems. Although only one sperm actually penetrates and fertilizes the egg, it takes several million sperms in an ejaculation to ensure that fertilisation will take place.**

Female reproductive system

- The female reproductive system consists of the organs that together function to produce a new individual to accomplish reproduction.
- It is more complex than the male reproductive system and it is located entirely in the pelvis.
- It nourishes, carries, and protects the developing embryo; and nurses the newborn after birth.
- It consists of the ovary, uterine tubes, uterus, vagina, vulva, and mammary glands.

The ovaries

- They are 2 oval-shaped organs, about the size of an almond, that lie to the upper right and left of the uterus. Each ovary measures about 4 to 5 centimetres in a grown woman.
- They are held in place by various ligaments which anchor them to the uterus and the pelvis.
- They are the main reproductive organs of a woman, producing the female hormones (oestrogen and progesterone) and eggs (ova). All the other female reproductive organs are there to transport, nurture and otherwise meet the needs of the egg or developing foetus.
- The ovary contains ovarian follicles in which eggs develop. A matured follicle ruptures and ejects the developing egg from the ovary into the fallopian tubes. This is called ovulation which occurs in the middle of the menstrual cycle which usually takes place every 28 days in a mature female. It takes place from either the right or left ovary at random and rarely from both ovaries


Fallopian tube
Body of uterus
Fundus of uterus
Fimbriae
Ovary
Endometrium
Myometrium
Cervix
Vagina
Female reproductive organs

The Fallopian tubes

- Fallopian tubes are the two funnel-shaped passages, about 10 centimetres long that connect the ovaries to the uterus on either side. They have a number of finger-like projections known as fimbriae on the end near the ovary.
- A releasd egg by the ovary is ‘caught’ by one of the fimbriae and then transported along the fallopian tube to the uterus by the wafting action of tiny hair-like projections called cilia lining the tube and the contractions made by the tube.
- The egg’s journey along the fallopian tube to the uterus takes about 5 days. It is on this journey down the fallopian tube that fertilisation may occur if a sperm penetrates and fuses with the egg.
- The egg, however, is only usually viable for 24 hours after ovulation, so fertilisation usually occurs in the top one-third of the fallopian tube.

The Uterus

- The uterus (womb) is a hollow cavity, the size and shape like a pear turned upside-down with a thick lining and muscular walls. These muscles are able to expand and contract to accommodate a growing foetus and then help push the baby out during labour. When there is no pregnancy the uterus is only about 7.5 centimetres long and 5 centimetres wide.

- The uterus has 3 main parts; the body which sits in the pelvic cavity, the rounded region above the entrance of the fallopian tubes is the fundus while the narrow outlet which protrudes into the vagina is the cervix.

- The thick wall of the uterus is composed of 3 layers. The inner layer is known as the endometrium. A fertilised egg will penetrate and embed in the endometrium, where it will stay for the rest of its growth. The uterus will expand during a pregnancy to make room for the growing foetus. The site of the endometrial wall where the fertilised egg has implanted will develop into the placenta.

- If an egg has not been fertilised, the endometrial lining is shed at the end of each menstrual cycle.

- The myometrium is the large middle layer of the uterus which is made up of interlocking groups of muscle. It plays an important role during the birth of a baby, contracting rhythmically to move the baby out of the body via the birth canal (vagina).

The cervix

- It is the lower 3rd portion of the uterus, forming the neck of the uterus and opens into the vagina.
- The cervix has strong, thick walls lined by epithelium.
- The opening of the cervix is very small, about the size of a straw called the os. The os allows menstrual blood to flow out.
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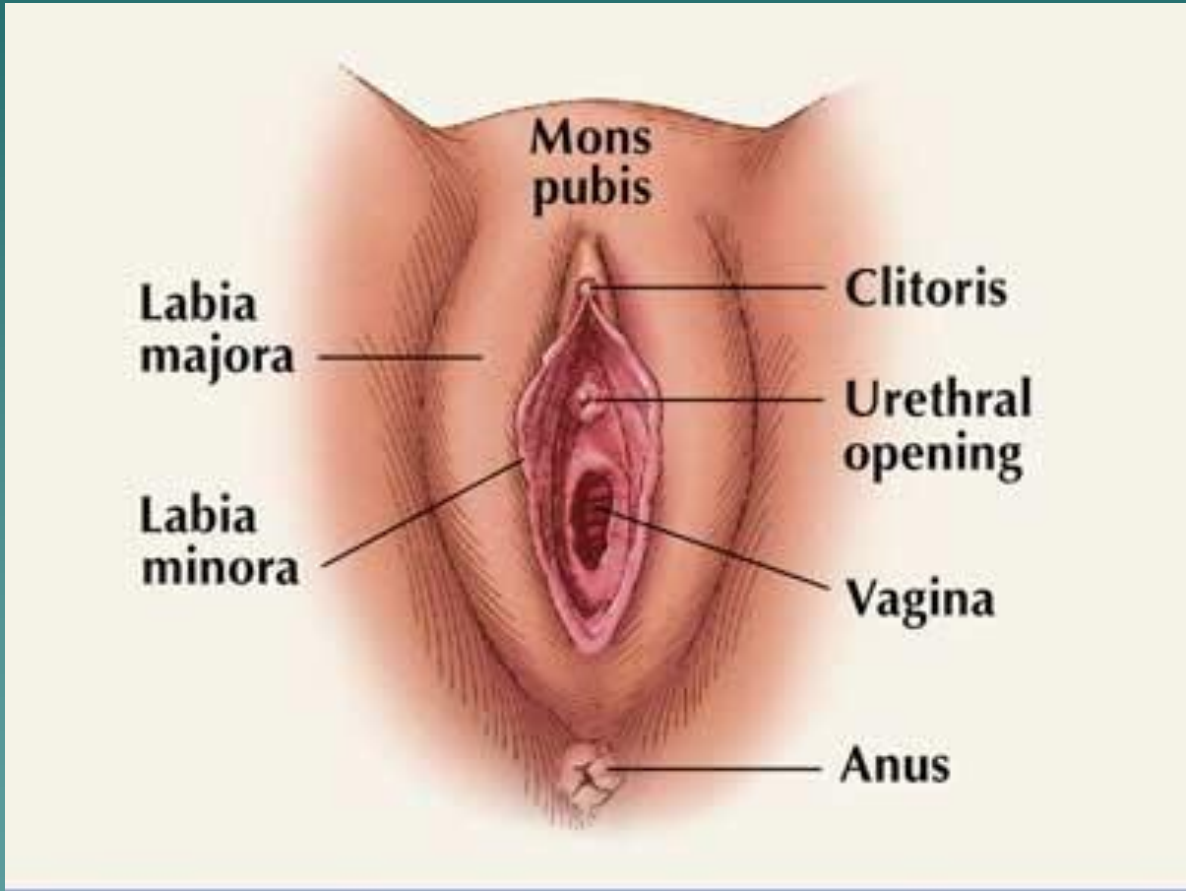
- During childbirth, the cervix expands and the os also widens to allow the foetus (baby) to pass through the vagina

The Vagina

- The vagina is a fibromuscular tube extending about 8 to 12 centimetres long from the cervix to the vulva.
- In adolescence and before the first sexual encounter, the vaginal orifice or the opening into the vagina is partially covered by a perforated thin sheet of tissue called “hymen” making the adolescent a “virgin”.
- During the first sexual intercourse or any other form of vaginal penetration the hymen ruptures with some pain and bleeding. When this happens the adolescent girl is said to have broken her virginity.
- The vagina receives the penis and semen or sperm during sexual intercourse and provides a channel for the menstrual flow out of the body.
- It is also the birth canal for the baby during childbirth. It is normally collapsed, but its muscular walls make it expand and contract to allow the vagina to accommodate something as slim as an erect penis or as wide as a baby during childbirth.

The Vulva



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The Vulva

- The vulva (meaning opening) is the external part of the female reproductive organs. The vulva covers the opening to the vagina and the other reproductive organs located inside the body. They are also referred to as the external genitalia and the include:

1. mons pubis
2. labia majora
3. labia minora
4. clitoris.

- <u>The mons pubis</u>

  It is the mound fleshy area of fatty tissue just above the vaginal opening at the junction of the thighs and trunk. During puberty the mons pubis is covered with hair.

Cont. The Vulva

- **The labia majora** are two skin folds that form the outer border of the vulva. During puberty, the labia majora are also covered with hair.

- **The labia minora**
  They are the other two smaller inner skin folds that surround the urethral and vaginal openings. They merge anteriorly to form the prepuce or the foreskin of the clitoris.

- **The clitoris**
  This is a small sensory and erectile organ, located in front of the vulva where the labia minora merge. It is comparable to the male penis and becomes engorged with blood during sexual excitement.

- It is the female centre of sexual sensation. Between the labia and above the vaginal openings is the urethral opening that carries urine from the bladder to the outside of the body.

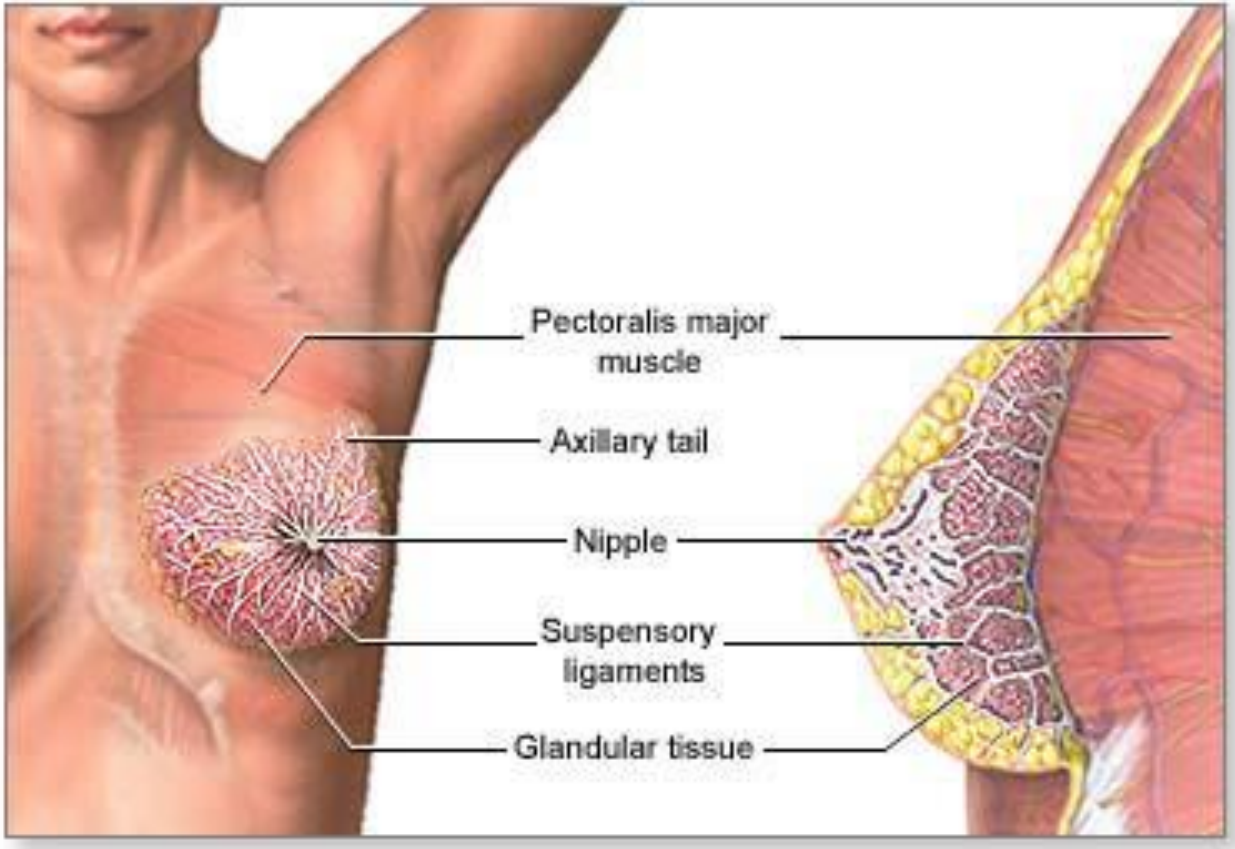
The Breast

- The breast (also called mammary gland) are modified sweat glands that produce milk for the baby after birth. Each breast has 15 to 20 lobes of glandular tissue arranged in a circular fashion.
- The breast tissues do not have muscles but a layer of fat. This fat layer covers the lobes, surrounds the glands and throughout the breast giving it the size, shape and consistency.
- The breast are supported by and attached to the front of the chest wall on either side of the breastbone by ligaments. They rest on the major chest muscles called the pectoralis.

Cont. The Breast

- The development and enlargement of the breast and production of milk are a response to signals from the hormones - oestrogen, progesterone and prolactin. These are the hormones that cause changes during menstrual cycle.
- Each lobe comprises of many lobules, at the end of which are tiny bulb like glands or sacs where milk is produced in response to hormonal signals.
- Each lobe contains milk-secreting cell (aveoli) which under the influence of the hormone secret milk. Lactiferous duct in the lobe converge towards the nipple. They drain milk from the lobules towards the lactiferous sinuses that empty milk at the nipple.
- These ducts dilate just before they reach the lactiferous sinus, then constrict again before passing out of the nipple through 15 to 20 openings. The areola is the darker-pigmented area surrounding the nipple.

The Breast



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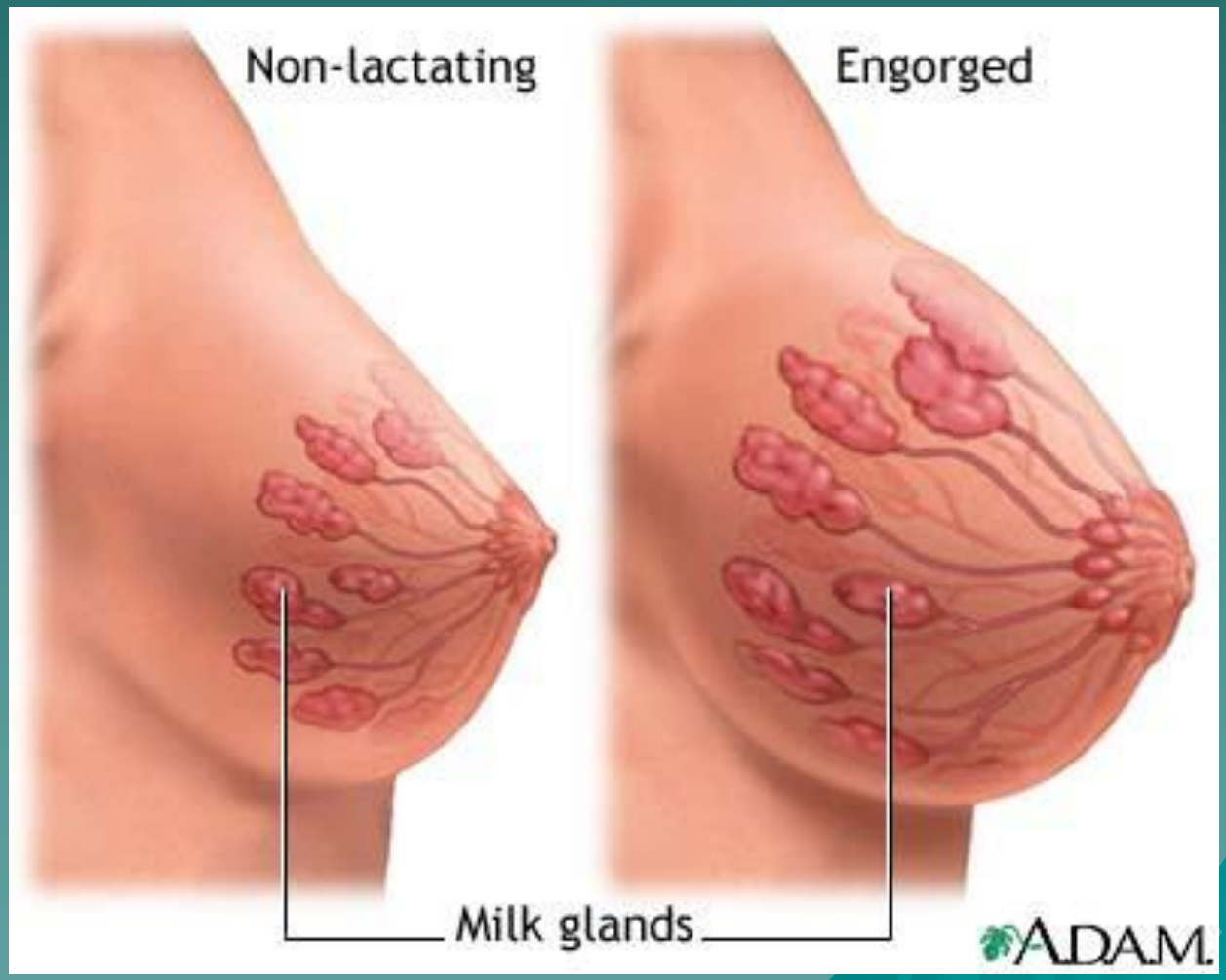
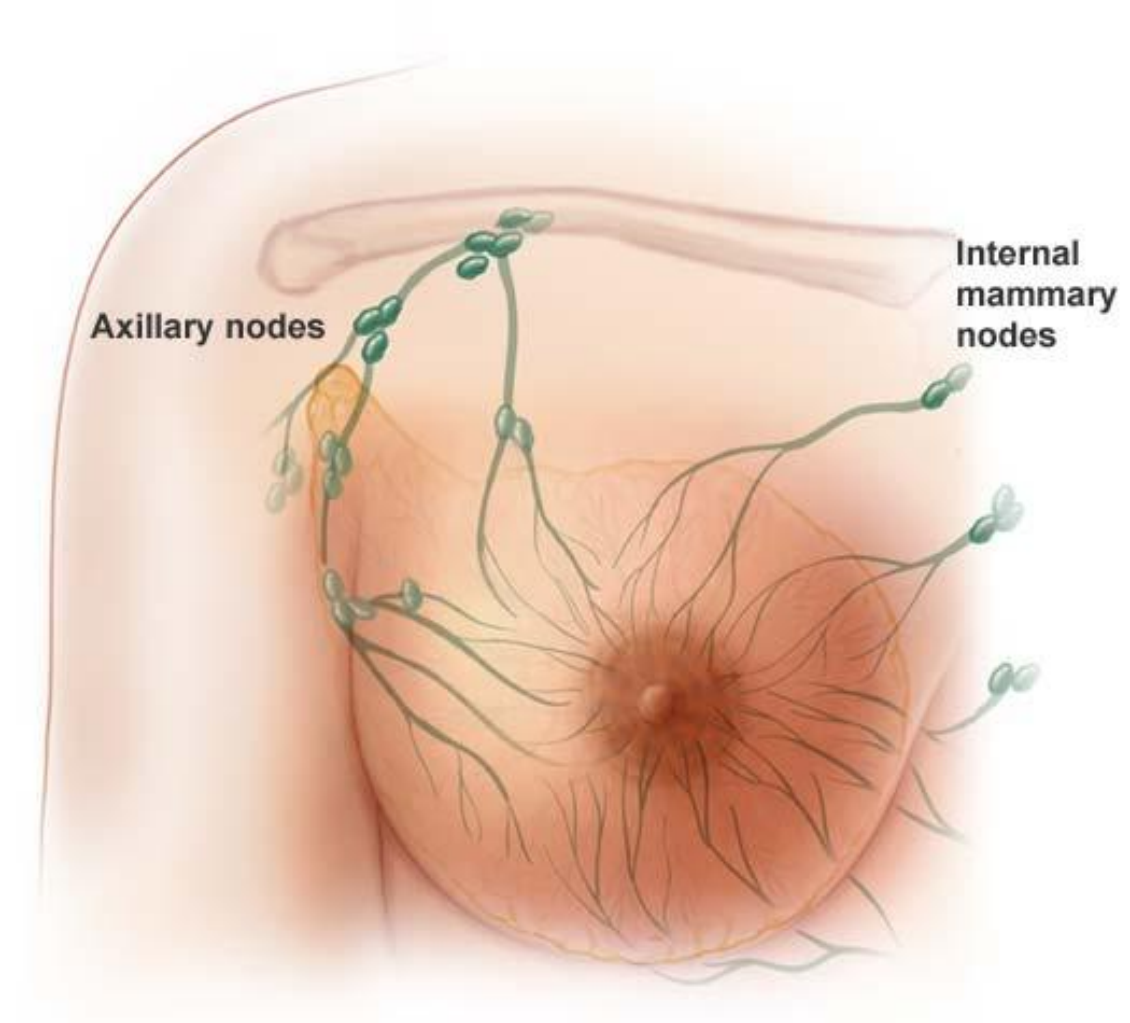
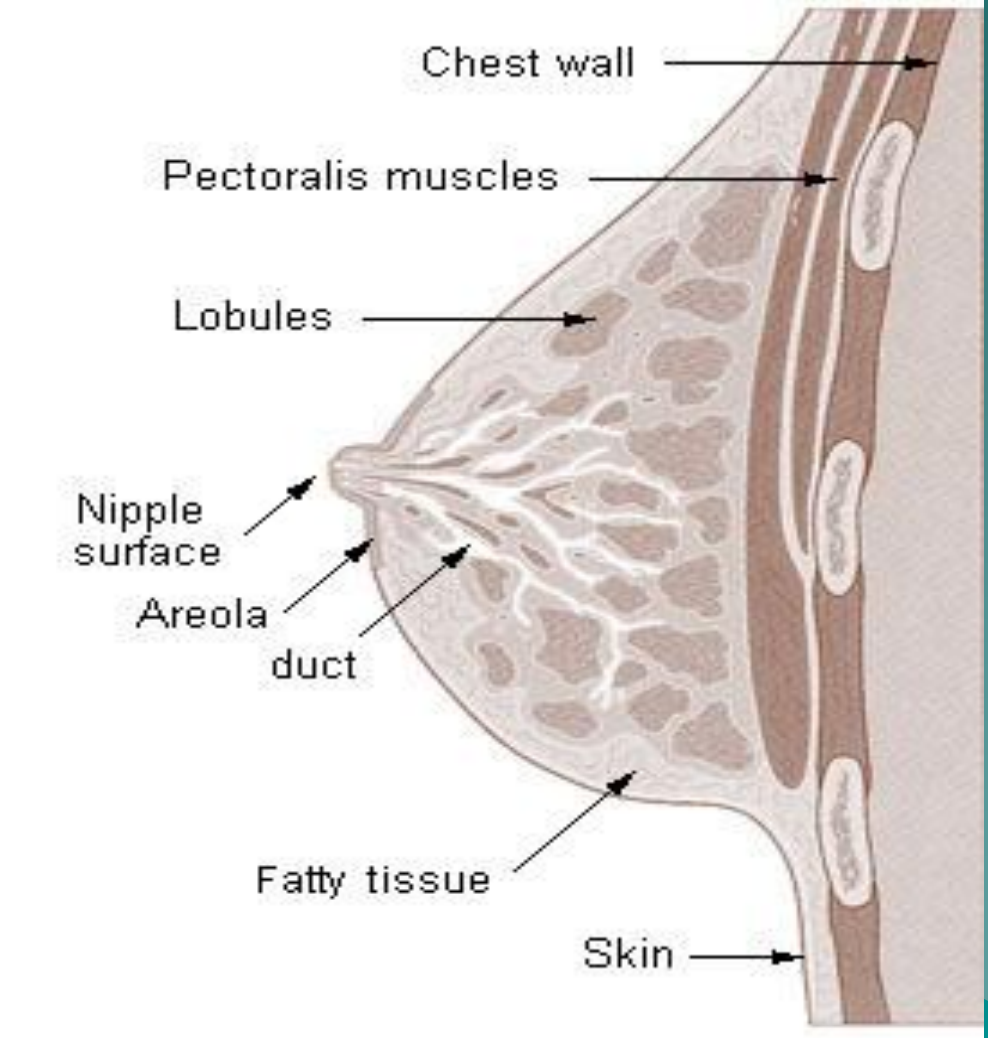
The Breast




Axillary nodes
Internal mammary nodes

The Breast


Chest wall
Pectoralis muscles
Lobules
Nipple surface
Areola
duct
Fatty tissue
Skin

Menstrual Cycle/Menstruation

- Sexual reproduction could not happen without the ovaries (eggs) from the female and testes (sperms) from the male

- A girl is born with millions of eggs in her ovaries, (inactive until puberty). In puberty, the pituitary gland (in the centre of the brain) produces hormones that stimulate the ovaries to produce female sex hormones that cause the girl to develop into a sexually mature woman.

- Towards the end of puberty, the girl releases her first developed and matured eggs to start her first menstrual cycle which continues once every month (about 28 days) until menopause.

What is menstrual cycle?

- **Menstrual cycle is technical term referring to a series of cyclic changes in the endometrium (lining of the uterus) that occur approximately every month (28 days) in adult females in response to changes in levels of hormones from the ovary and the brain.**

- **The term "menstrual", *menses* in Latin, means month. This cyclic changes prepares the uterine lining, (endometrium), to receive the fertilized egg (zygote).**

- **Menstrual cycle has 3 phases correlating with the ovarian cycle such that the endometrium is most ready for implantation of the fertilised egg 7 days after ovulation. They include the menstruation, proliferative and secretory phases**

The Menstrual cycle

- **Menstrual phase (1-5 days)**
  The functional layer of the endometrium becomes detached from the uterine wall resulting in bleeding of usually between 50-150ml. The passage of the detached tissues and blood through the vagina is the menstrual flow, menstruation or period. It is the shedding of a combination of blood and tissues from the inner lining of the uterus as menstrual flow which in most females, lasts from 3 to 5 days.

- **During this process the uterus is said to be weeping because it is disappointed. The expected visitor, the egg, never came so it throws away all the preparations made. The menstruation process continues throughout the female's lifetime until menopause when it ceases.**

- **(Proliferative phase days 6-14)**
  As levels of oestrogen increase the endometrium begins to proliferate (grow) and thicken, tubular glands and spiral arteries form. Oestrogen also stimulates the synthesis of progesterone receptors in endometrial cells. Ovulation occurs at the end of this phase. During this phase, usually on day 14 of the cycle, an ovary sheds an egg or two in some cases, into one of the fallopian tubes. This is Ovulation.

Cont. Menstrual Cycle

- After ovulation, the remains of the follicles or corpus luteum help to increase the levels of progesterone which causes the uterine lining and the blood vessels in it to become more developed (vascularisation), in preparation to receive an egg.

- <u>Secretory phase (days 15-28)</u>
  The secreted hormones also help to build up the lining of the uterus. Rising levels of progesterone produced by the corpus luteum act on the endometrium stimulating the enlargement of glands which begin secreting mucus and glycogen in preparation for implantation of the fertilised ovum.

- If the egg does not get fertilized, it dies leading to a decrease in the production of progesterone in the next few days. This leads to a breakdown of the thickened uterine lining resulting in menstruation about 2 weeks later, usually on the 28th day and then the cycle starts again with the first day of menstrual flow.

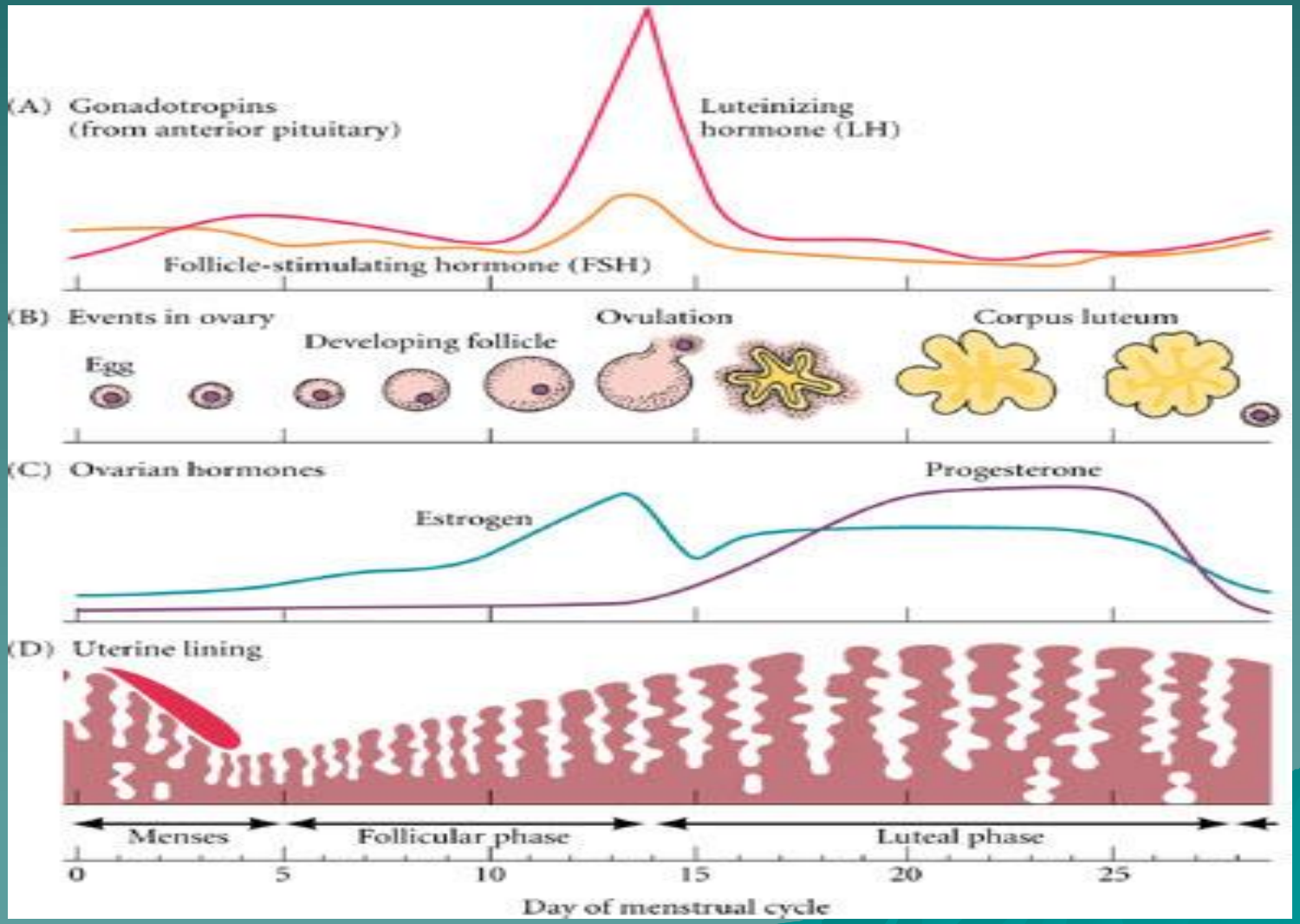
Hormones and female cycle

- **Menstrual cycle varies from between 15 and 31 days. The first day of the cycle is the first day of blood flow (day 1) known as menstruation. During menstruation the uterine lining is broken down and shed as menstrual flow. FSH and LH are secreted on day 1, beginning both the menstrual cycle and the ovarian cycle.**

- **Both FSH and LH stimulate the maturation of a single follicle in one of the ovaries and the secretion of oestrogen. Rising levels of oestrogen in the blood trigger secretion of LH, which stimulates follicle maturation and ovulation (day 14, or mid-cycle). LH stimulates the remaining follicle cells to form the corpus luteum, which produces both oestrogen and progesterone**

- **Oestrogen and progesterone stimulate the development of the endometrium and preparation of the uterine inner lining for implantation of the fertilised egg (zygote). If pregnancy does not occur, there is a drop in FSH and LH causing the corpus luteum to break down and the inner lining of the uterus also to slough off by a series of muscle contractions of the uterus**

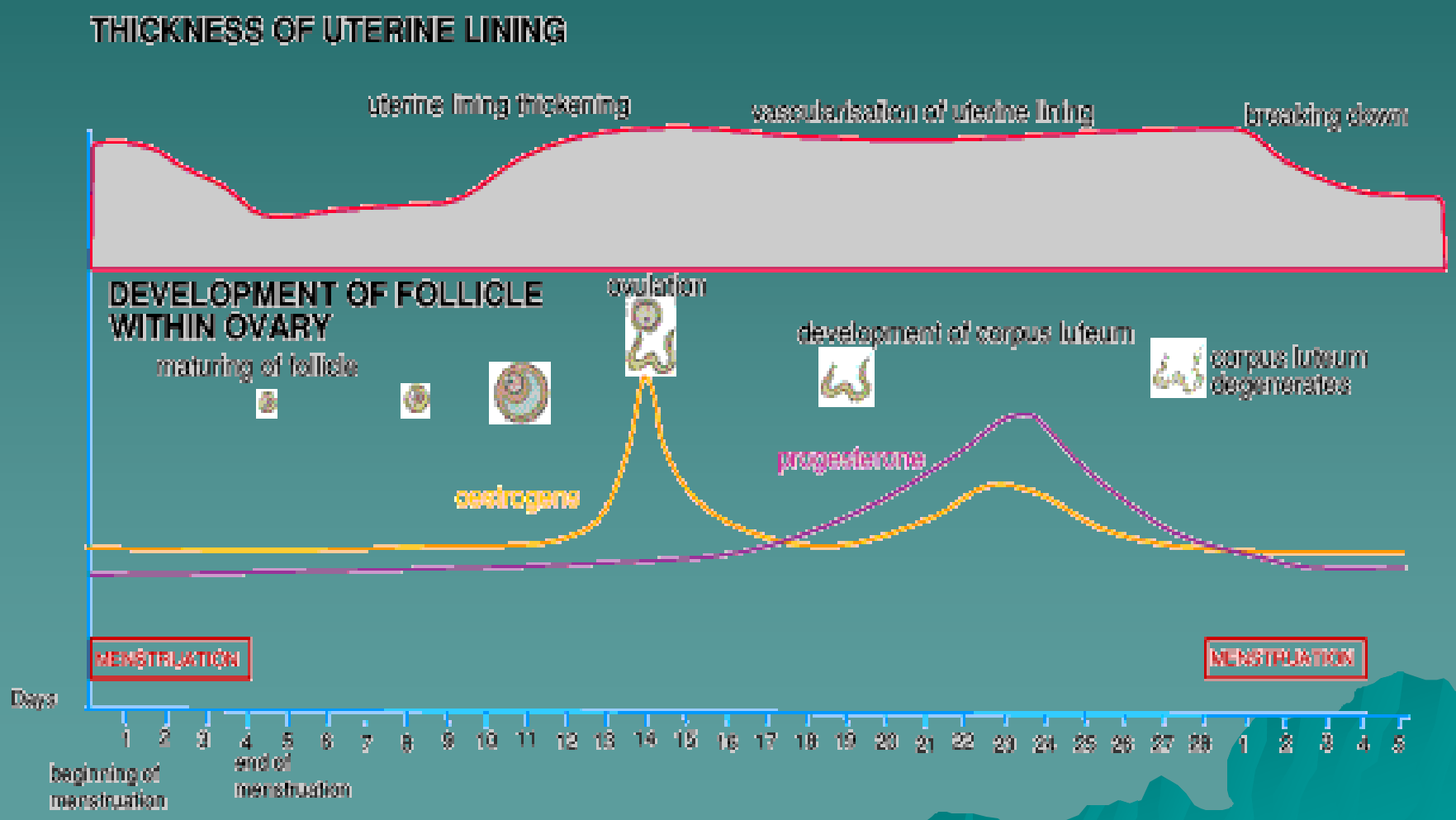
The menstrual cycle



What is Ovulation?

- **Ovulation is the release of mature eggs from the ovary into the fallopian tube.**
- **It occurs only once in every menstrual cycle, usually on day 14 or around 12 - 16 days before the next period.**
- **The counting of the menstrual days starts from the first day of bleeding till the next bleeding start, noting the 14th day (the middle) as usually the ovulation day of the menstrual cycle.**
- **There are, however, some variations in the length of the cycle among individuals.**

The menstrual cycle



The menstrual cycle

Hormonal Control of the Ovarian Cycle (Figure 5)

- During the ovarian cycle, growth and development of the follicle is driven by two gonadotrophic hormones:
  - Follicle Stimulating Hormone (FSH)
  - Luteinising hormone (LH)

- Both FSH and LH are secreted by the anterior pituitary and are under the control of gonadotrophin releasing hormone (GnRH) secreted by the hypothalamus.

- FSH and LH stimulate follicle growth. As the follicle grows, thecal cells secrete estrogens.

  Rising levels of estrogen in the plasma have a negative feedback effect on the anterior pituitary inhibiting output of FSH and LH.

- However, this negative feedback is only transient and as levels of estrogen increase they begin to have a positive effect on the hypothalamic-pituitary axis from the corpus luteum have a negative feedback effect on the anterior pituitary and inhibit FSH and LH resulting in a burst of LH and, to a lesser extent, FSH.

The menstrual cycle

- **This sudden burst of LH and FSH stimulates completion of meiosis I in the primary oocyte and is also believed to be involved in stimulating synthesis of enzymes involved in bulging of the ovarian wall.**
- **After ovulation, LH promotes the transformation of the ruptured graafian follicle into the corpus luteum. LH stimulates the corpus luteum to secrete progesterone and oestrogen.**
- **Progesterone and oestrogen production. This prevents development of new follicles.**
- **As LH levels fall, the corpus luteum begins to degenerate. Levels of progesterone and estrogen fall. FSH and LH are again produced by the anterior pituitary and a new cycle begins.**

Human Sexual Responses

- Humans do not have a mating season. Humans (females) are ever sexually receptive (ready) to the male at all times of the year. There are four stages in mating: arousal, plateau, orgasm, and resolution.

- **Arousal**: In the male, blood flows into the three shafts of spongy erectile tissue inside the penis, causing it to become elongated and erect. In the female, there is the swelling of the areas around the vagina, erection of the clitoris and nipples, and secretion of lubricating fluids in the vagina.

Human sexual responses

- **Plateau**: After insertion of the penis into the vagina, pelvic thrusts by both partners stimulate sensory receptors in the penis, vaginal walls, and clitoris. The sperm leave the epididymis and secretions of glands form the semen.

- **Orgasm**: There are contractions of muscles of the penis (male) or vagina (female) giving waves of pleasurable sensations.

- **Resolution**: This is the reverses the previous phases where the muscles relax, breathing slows, the penis , especially and vagina return to their normal size

Menstrual Cycle

- **Menstrual Cycle - Proliferative Phase**
- **During the proliferative phase in the uterus, the wall of the endometrium begins to thicken. This phase of the uterus begins at the end of menstruation and lasts until ovulation, when the egg is ejected from the ovary. Follicle-stimulating hormone (FSH), secreted by the anterior pituitary gland in the brain, targets the ovaries and triggers the maturation process of up to 25 follicles. Each month,...**
- **Menstrual Cycle - Secretory Phase**
- **During the secretory phase of the uterus, the hormone progesterone is produced by the ovaries. Progesterone (as well as estrogen) is secreted by the corpus luteum, (which means yellow body), which develops from the Graafian follicle. Progesterone secreted by the corpus luteum stimulates the further build-up of the cells in the endometrium of the uterus. Progesterone also stimulates the glands in t...**
- **Menstrual Cycle - Menstruation**
- **The expulsion of tissue and blood from the uterus lasts from three to eight days, with much variation among women. Some women experience painful cramps during menstruation, which are the result of uterine contractions that expel the endometrium. Hormones known as prostaglandins are produced by uterine cells during menstruation, and the excessive production of prostaglandins is associated with stro...**
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Read more: **Menstrual Cycle - Proliferative Phase, Secretory Phase, Menstruation - Changes, Cyclic, Lining, Uterus, Blood, and Levels http://science.jrank.org/pages/4235/Menstrual-Cycle.html#ixzz1Ls8Op8ty**

Fertilisation

- Fertilisation (fertilization in American usage of English) is the meeting between an egg and a spermatozoon. The egg is able to be impregnated during 24 hours from when it leaves the follicle.
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- During a male ejaculation, there are anywhere between 60 million and 500 million spermatozoa that have a go at the 'big race'.
- They cross the collar of the uterus pretty much within ten minutes. It is for this reason that women are often advised to not get up directly after!...
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- They cross into the uterus at a speed of 2 to 3 millimeters per minute, then they arrive at the fertilisation point within about 2 hours. The journey is a rough one and only about 100 to 200 of the 'chosen ones' will arrive at the the most strategic place.
-
- The spermatozoa next fix themselves onto a membrane that surrounds the egg and alters the shape of the acrosome at the head in order to create a drive-piling effect to try to enter the egg.
-
- Only one can get through! Once one is successful, the champion spermatozoon loses it's tail and it's head increases in size. This entrance creates an 'activation' in the egg and it too begins to enlarge. The two come closer and merge.
-
- An animation of this process can be found at http://www.stanford.edu/group/Urchin/fusion.htm .... but again, this is in sea urchins, so if anyone can help us here.....
-
- A small zygote now exists. This will then begin to divide to hopefully produce a baby in nine months time!

How a girl or boy is created

- A simple game of genetics will determine the sex of your baby.
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- Every man and woman constitutes 22 pairs of chromosomes plus one pair that is the difference between them; these are the sexual chromosomes X and Y.
- Men have the chromosomes pairing of XY and women have the pairing of XX.
-
- - Both the egg and the spermatozoa have 23 chromosomes.
- - The egg is always the carrier of the X chromosome
- - The spermatozoa can carry either an X or a Y chromosome.
-
- This means that it is the male side that determines the sex of the baby.
-
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- A little point to make…
- Spermatozoa that carry the Y chromosome (required for a boy) get to the target very quickly, but they are less resistant.
- Spermatozoa that carry the X chromosome (required for a girl) are slower, but are much more resistant.
- (Question: does this reflect in men & women in general?)
- Therefore:
- If you have sexual intercourse a little before ovulation, you have higher chances of having a girl.
- If you have sexual intercourse at the same time as ovulation then you have higher chances of having a boy.

- The duration of the feminine cycle is on average 28 days. The first day of bleeding establishes the first day of the cycle.
- This cycle is divided into several phases: The Follicular-Stage, Ovulation and then Luteal-Stage.
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- The follicular stage lasts for about the first 14 or 15 days of the cycle from the first day of the period. During this phase, the release from the ovaries then the maturation of a number of follicles takes place, however only the most mature one of these follicles will produce an egg capable of being fertilised. A follicle is driven to maturity by the secreted hormone FSH (Follicle Stimulating Hormone).
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- As the follicles mature, they release the hormone estrogen. This makes the uterus wall thicken and the cervical mucus to alter it's consistency.
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- The Ovulation: As the FSH levels and estrogen levels rise, the secretion of large amounts of another hormone, LH (Leutenising Hormone) is triggered. This rise in LH provokes the most mature follicle to burst open and release an egg from the ovary into the fallopian tube.
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- As soon as the egg is freed, it is helped along the tube by tiny horn-like fronds that line the fallopian tube. The egg is now in a fertilisable state in a window of about 24 hours.
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- The graph below shows how the levels of FSH and LH hormones change during a standard 28 day menstruation cycle.
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-
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- For more detail on the timing of ovulation, see the article on Ovulation Testing
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- Luteal Stage: This is the stage that leads to the next period. It lasts for about 12 to 14 days. The follicle that released the egg will very quickly become what is known as the "Yellow Body" (in Latin it's name is "Corpus Luteum"). This produces an high level of progesterone (and a small amount of estrogen) which is required to generate the mucus on the uterus surface to assist a fertilised egg.
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- At the same time, the uterine wall, which is normally very thin, becomes thicker and thicker under the influence of the progesterone secreted by the "yellow body". It is about the 20th day of the cycle that the uterus is prepared to accept an impregnated egg.
-
- If the released egg is impregnated, it will become implanted in the surface of the uterus about 8 days after fertilisation. This implantation will have the effect of releasing a new hormone, HCG. It is this hormone that is tested for with home pregnancy tests.
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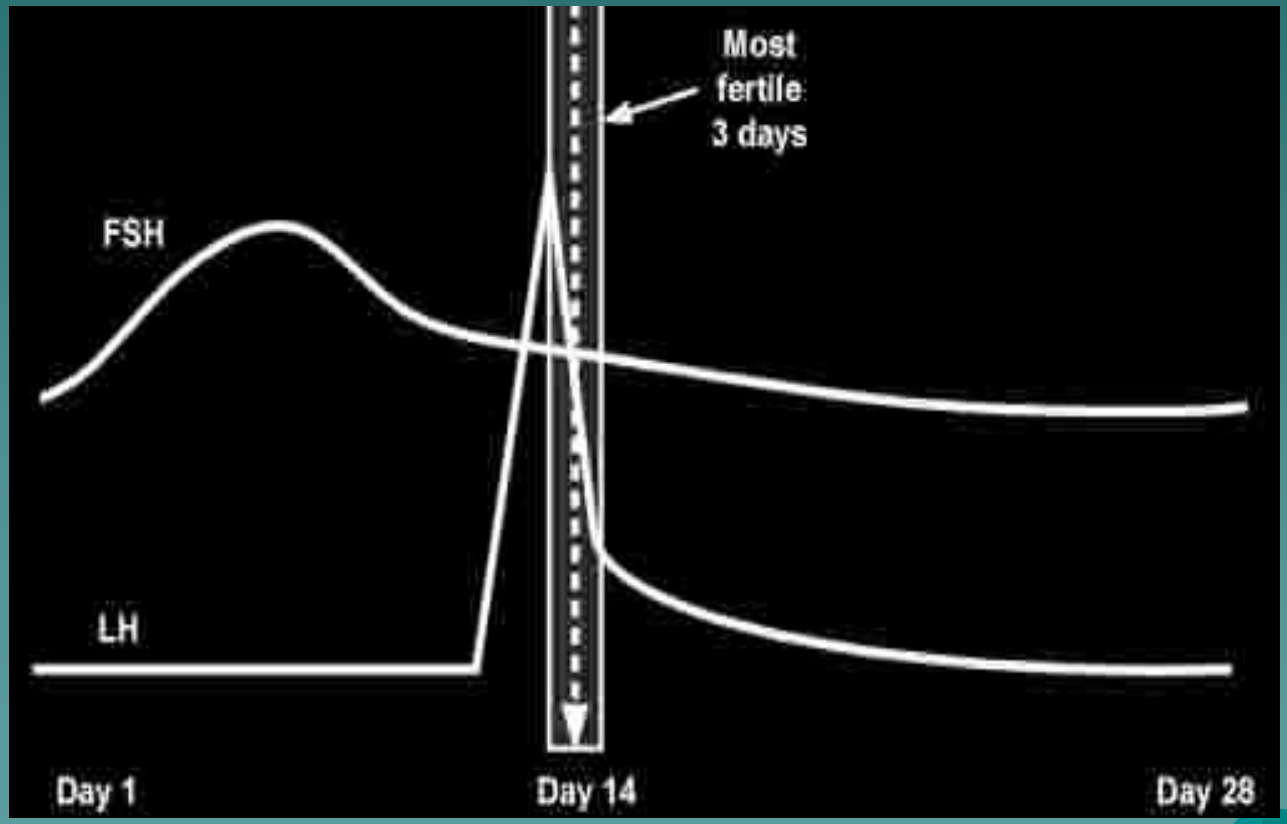
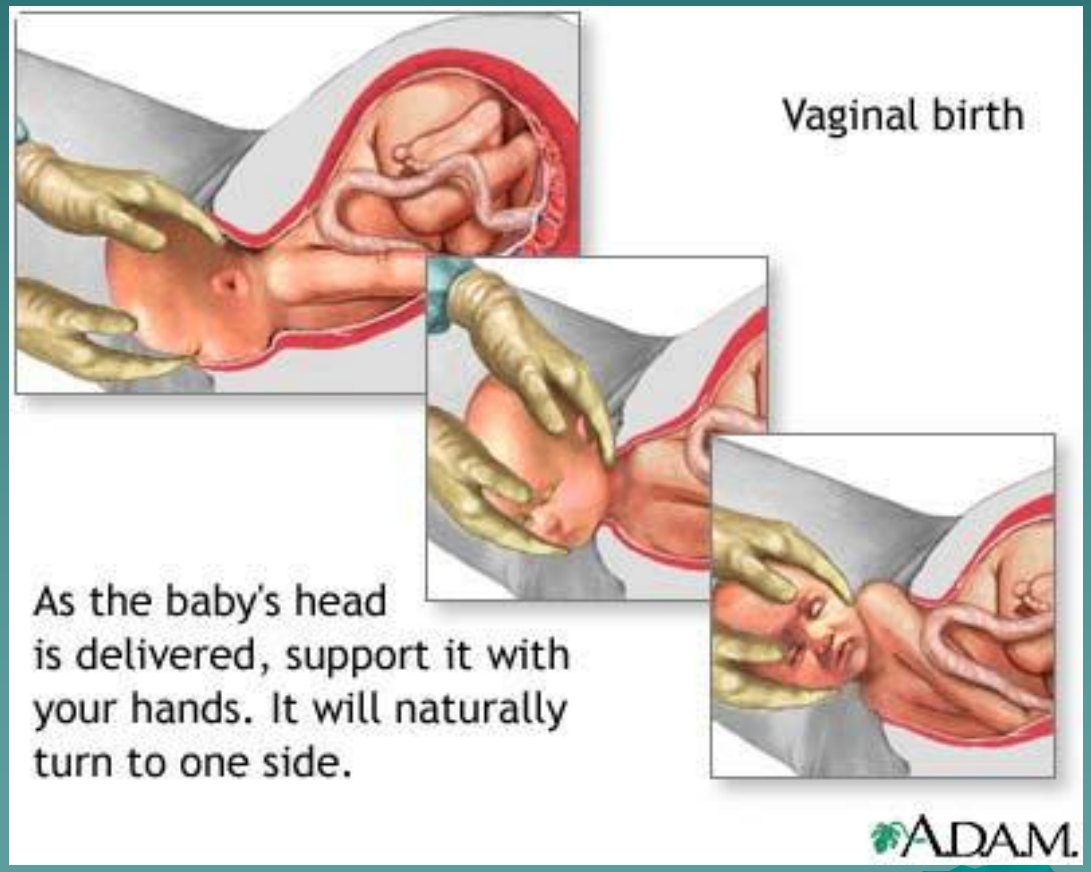
- The HCG allows the "yellow body" to be maintained and continue to produce progesterone and estrogen, assuring the continuation of the pregnancy. This situation remains the same for the first 3 months of pregnancy, the placenta will eventually replace the function of the "yellow body".
-
- If the egg was not fertilised, the "yellow body" stops its activity and degenerates into a "white body" (corpus albican in Latin). The absence of progesterone causes the blood flow to be stopped before reaching the surface of the uterine lining which causes a blood pocket between the surface and the uterus wall that will eventually break the surface lining from the wall and cause the period to begin.
-
- A little point to make...
- Young girls are born with all (or usually many more) of the follicles that they will be able to use during a lifetime!


Most
fertile
3 days
FSH
LH
Day 1
Day 14
Day 28

Labour

Mechanism of Labour

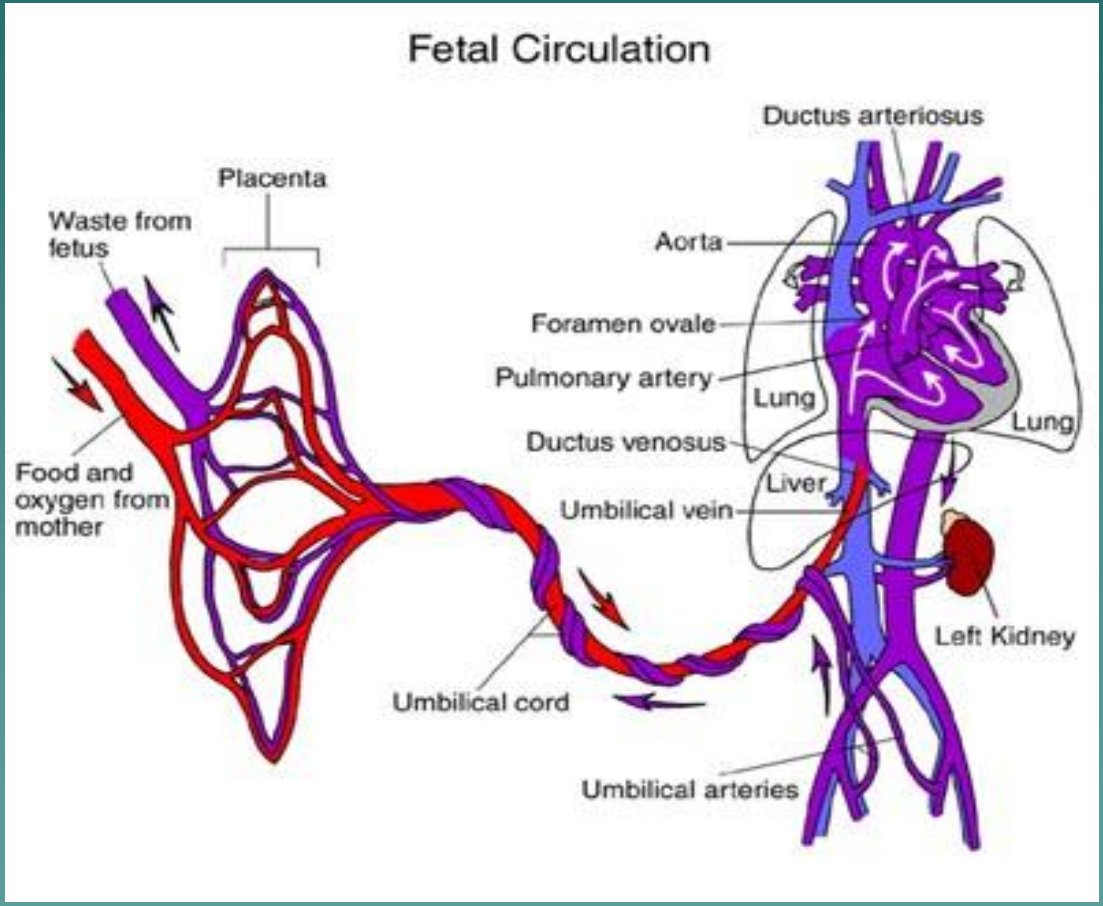


Delivery

- *

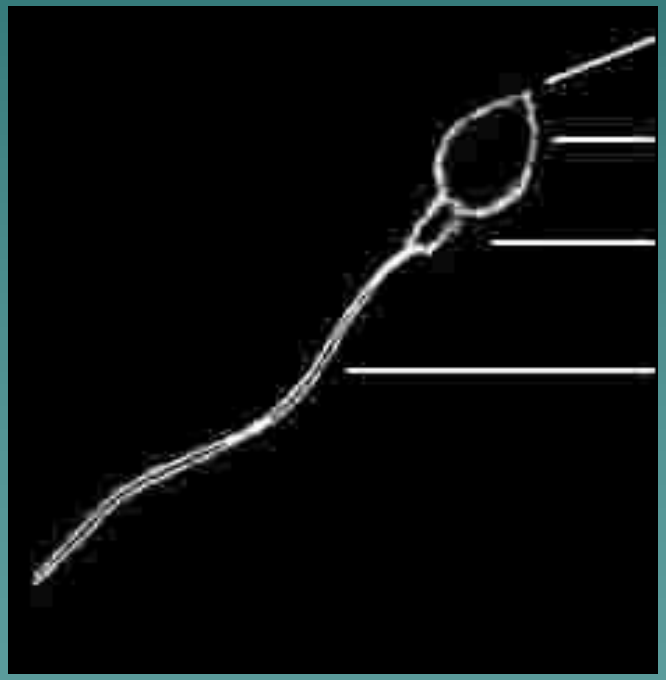
Foetal circulation

- *



Sperm

- *



Foetal position

Thank You

Motec Life-UK