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Section **A**

Department **BS MLT**

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Q 1.

Ans. Male reproductive system.

The male reproductive system consists of a number of sex organs that play a role in the process of human reproduction. These organs are located on the outside of the body and within the pelvis.

The main male sex organs are the penis and the testicles which produce semen and sperm, which, as part of sexual intercourse, fertilize an ovum in the female's body; the fertilized ovum (zygote) develops into a fetus, which is later born as an infant. Penis

Human penis

The penis is the male intromittent organ. It has a long shaft and an enlarged bulbous-shaped tip called the glans penis, which supports and is protected by the foreskin. When the male becomes sexually aroused, the penis becomes erect and ready for sexual activity. Erection occurs because sinuses within the erectile tissue of the penis become filled with blood. The arteries of the penis are dilated while the veins are compressed so that blood flows into the erectile cartilage under pressure. The penis is supplied by the pudendal artery.

Scrotum

The scrotum is a pouch-like structure that hangs behind the penis. It holds and protects the testicles. It also contains numerous nerves and blood vessels. During times of lower temperatures, the Cremaster muscle contracts and pulls the scrotum closer to the body, while the Dartos muscle gives it a wrinkled appearance; when the temperature increases, the Cremaster and Dartos muscles relax to bring down the scrotum away from the body and remove the wrinkles respectively.

The scrotum remains connected with the abdomen or pelvic cavity by the inguinal canal. (The spermatic cord, formed from spermatic artery, vein and nerve bound together with connective tissue passes into the testis through inguinal canal.)

Testis

Testis has two major functions: To produce sperm by meiotic division of germ cells within the seminiferous tubules,[1] and to synthesize and secrete androgens that regulate the male reproductive functions. The site of production of androgens is the Leydig cells that are located in the interstitium between seminoferous tubules.

Epididymis

The epididymis is a long whitish mass of tightly coiled tube. The sperm that are produced in the seminiferous tubules flow into the epididymis. During passage via the epididymis, the sperm undergo maturation and are concentrated by the action of ion channels located on the apical membrane of the epididymis.

Vas deferens

The vas deferens, which is also known as the sperm duct, is a thin tube approximately 30 centimetres long that starts from the epididymis to the pelvic cavity. It carries the spermatozoa from the epididymis to ejaculatory duct.

Accessory glands

Three accessory glands provide fluids that lubricate the duct system and nourish the sperm cells. They are the seminal vesicles, the prostate gland, and the bulbourethral glands (Cowper glands).

The prostate glands produce and contain fluid that forms part of semen, the substance that is emitted during ejaculation as part of the male sexual response. This prostatic fluid is slightly alkaline, milky or white in appearance. The alkalinity of semen helps neutralize the acidity of the vaginal tract, prolonging the lifespan of sperm. The prostatic fluid is expelled in the first part of ejaculate, together with most of the sperm, because of the action of smooth muscle tissue within the prostate. In comparison with the few spermatozoa expelled together with mainly seminal vesicular fluid, those in prostatic fluid have better motility, longer survival, and better protection of genetic material.

Disorders of the prostate include enlargement, inflammation, infection, and cancer. The word prostate comes from Ancient Greek προστάτης, prostátēs, meaning "one who stands before", "protector", "guardian", with the term originally used to describe the seminal vesicles.

(B): prostate gland: The prostate is an accessory gland of the male reproductive system found only in some mammals. It differs between species anatomically, chemically, and physiologically. Anatomically, the prostate is found below the bladder, with the urethra passing through it. It is described in gross anatomy as consisting of lobes, and in microanatomy by zone. It is surrounded by a fibromuscular capsule and contains glandular tissue as well as connective tissue.

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The prostate secretes fluid which becomes part of semen. Semen is the fluid emitted (ejaculated) by males during the sexual response.When sperm is emitted, it is transmitted from the vas deferens into the male urethra via the ejaculatory ducts, which lie within the prostate gland.Ejaculation is the expulsion of semen from the urethra.Semen is moved into the urethra following contractions of the smooth muscle of the vas deferens and seminal vesicles, following stimulation, primarily of the glans penis. Stimulation sends nerve signals via the internal pudendal nerves to the upper lumbar spine; the nerve signals causing contraction act via the hypogastric nerves. After traveling into the urethra, the seminal fluid is ejaculated by contraction of the bulbocavernosus muscle. The secretions of the prostate include proteolytic enzymes, prostatic acid phosphatase, fibrinolysin, zinc, and prostate-specific antigen. Together with the secretions from the seminal vesicles, these form the major fluid part of semen.

It is possible for some men to achieve orgasm solely through stimulation of the prostate gland, such as prostate massage or anal intercourse.

Spermatogenesis.

Spermatogenesis is the process by which haploid spermatozoa develop from germ cells in the seminiferous tubules of the testis. This process starts with the mitotic division of the stem cells located close to the basement membrane of the tubules.[1] These cells are called spermatogonial stem cells. The mitotic division of these produces two types of cells. Type A cells replenish the stem cells, and type B cells differentiate into primary spermatocytes. The primary spermatocyte divides meiotically (Meiosis I) into two secondary spermatocytes; each secondary spermatocyte divides into two equal haploid spermatids by Meiosis II. The spermatids are transformed into spermatozoa (sperm) by the process of spermiogenesis. These develop into mature spermatozoa, also known as sperm cells.[2] Thus, the primary spermatocyte gives rise to two cells, the secondary spermatocytes, and the two secondary spermatocytes by their subdivision produce four spermatozoa and four haploid cells.

Spermatozoa are the mature male gametes in many sexually reproducing organisms. Thus, spermatogenesis is the male version of gametogenesis, of which the female equivalent is oogenesis. In mammals it occurs in the seminiferous tubules of the male testes in a stepwise fashion. Spermatogenesis is highly dependent upon optimal conditions for the process to occur correctly, and is essential for sexual reproduction. DNA methylation and histone modification have been implicated in the regulation of this process. It starts at puberty and usually continues uninterrupted until death, although a slight decrease can be discerned in the quantity of produced sperm with increase in age (see Male infertility).

Spermatogenesis starts in the bottom part of seminiferous tubes and, progressively, cells go deeper into tubes and moving along it until mature spermatozoa reaches the lumen, where mature spermatozoa are deposited. The division happens asynchronically; if the tube is cut transversally one could observe different maturation states. A group of cells with different maturation states that are being generated at the same time is called a spermatogenic wave.

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Q 2.

Ans. Female reproductive system.

The female reproductive system is made up of the internal and external sex organs that function in reproduction of new offspring. In humans, the female reproductive system is immature at birth and develops to maturity at puberty to be able to produce gametes, and to carry a foetus to full term. The internal sex organs are the uterus, Fallopian tubes, and ovaries. The uterus or womb accommodates the embryo which develops into the foetus. The uterus also produces vaginal and uterine secretions which help the transit of sperm to the Fallopian tubes. The ovaries produce the ova (egg cells). The external sex organs are also known as the genitals and these are the organs of the vulva including the labia, clitoris, and vaginal opening. The vagina is connected to the uterus at the cervix.

At certain intervals, the ovaries release an ovum, which passes through the Fallopian tube into the uterus. If, in this transit, it meets with sperm, a single sperm (-cell) can enter and merge with the egg or ovum (cell), fertilizing it into a zygote (cell).

Fertilization usually occurs in the Fallopian tubes and marks the beginning of embryogenesis. The zygote will then divide over enough generations of cells to form a blastocyst, which implants itself in the wall of the uterus. This begins the period of gestation and the embryo will continue to develop until full-term. When the foetus has developed enough to survive outside the uterus, the cervix dilates and contractions of the uterus propel the newborn through the birth canal (the vagina).

The female external reproductive organs are the secondary organs that are visible externally.

Vulva The vulva consists of all of the external parts and tissues and includes the mons pubis, pudendal cleft, labia majora, labia minora, Bartholin's glands, clitoris, and vaginal opening.

(A) The female internal reproductive organs are the vagina, uterus, Fallopian tubes, and ovaries.
(B)
(C) **Vagina**

(D) The vagina is a fibromuscular (made up of fibrous and muscular tissue) canal leading from the outside of the body to the cervix of the uterus or womb. It is also referred to as the birth canal in the context of pregnancy. The vagina accommodates the male penis during sexual intercourse. Semen containing spermatozoa is ejaculated from the male at orgasm, into the vagina potentially enabling fertilization of the egg cell (ovum) to take place.
(E)
(F) **Cervix**
(G) Cervix
(H) The cervix is the neck of the uterus, the lower, narrow portion where it joins with the upper part of the vagina. It is cylindrical or conical in shape and protrudes through the upper anterior vaginal wall. Approximately half its length is visible, the remainder lies above the vagina beyond view. The vagina has a thick layer outside and it is the opening where the fetus emerges during delivery.
(I)
(J) **Uterus**
(K) Uterus
(L) The uterus or womb is the major female reproductive organ. The uterus provides mechanical protection, nutritional support, and waste removal for the developing embryo (weeks 1 to 8) and fetus (from week 9 until the delivery). In addition, contractions in the muscular wall of the uterus are important in pushing out the fetus at the time of birth.
(M)
(N) The uterus contains three suspensory ligaments that help stabilize the position of the uterus and limits its range of movement. The uterosacral ligaments keep the body from moving inferiorly and anteriorly. The round ligaments restrict posterior movement of the uterus. The cardinal ligaments also prevent the inferior movement of the uterus.
(O)
(P) The uterus is a pear-shaped muscular organ. Its major function is to accept a fertilized ovum which becomes implanted into the endometrium, and derives nourishment from blood vessels which develop exclusively for this purpose. The fertilized ovum becomes an embryo, develops into a fetus and gestates until childbirth. If the egg does not embed in the wall of the uterus, a female begins menstruation.
(Q)
(R) **Fallopian tube**
(S) Fallopian tube
(T) The Fallopian tubes are two tubes leading from the ovaries into the uterus. On maturity of an ovum, the follicle and the ovary's wall rupture, allowing the ovum to escape and enter the Fallopian tube. There it travels toward the uterus, pushed along by movements of cilia on the inner lining of the tubes. This trip takes hours or days. If the ovum is fertilized while in the Fallopian tube, then it normally implants in the endometrium when it reaches the uterus, which

signals the beginning of pregnancy.The fallopian tubes made up of cillated[check spelling] columnar epithelium tissues

(U)

(V) **Ovaries**

(W) Ovary

(X) The ovaries are small, paired organs located near the lateral walls of the pelvic cavity. These organs are responsible for the production of the egg cells (ova) and the secretion of hormones. The process by which the egg cell (ovum) is released is called ovulation. The speed of ovulation is periodic and impacts directly to the length of a menstrual cycle.

(Y)

(Z) After ovulation, the egg cell is captured by the Fallopian tube, after traveling down the Fallopian tube to the uterus, occasionally being fertilized on its way by an incoming sperm. During fertilization the egg cell plays a role; it releases certain molecules that are essential to guiding the sperm and allows the surface of the egg to attach to the sperm's surface. The egg can then absorb the sperm and fertilization can then begin.[citation needed] The Fallopian tubes are lined with small hairs (cilia) to help the egg cell travel.

(B) menstrual cycle. The menstrual cycle is the regular natural change that occurs in the female reproductive system (specifically the uterus and ovaries) that makes pregnancy possible. The cycle is required for the production of oocytes, and for the preparation of the uterus for pregnancy. The menstrual cycle occurs due to the rise and fall of estrogen. This cycle results in the thickening of the lining of the uterus, and the growth of an egg, (which is required for pregnancy).The egg is released from an ovary around day fourteen in the cycle; the thickened lining of the uterus provides nutrients to an embryo after implantation.If pregnancy does not occur, the lining is released in what is known as menstruation or a "period".

Up to 80% of women report having some symptoms during the one to two weeks prior to menstruation.Common symptoms include acne, tender breasts, bloating, feeling tired, irritability and mood changes. These symptoms interfere with normal life and therefore qualify as premenstrual syndrome in 20 to 30% of women. In 3 to 8%, they are severe.

The first period usually begins between twelve and fifteen years of age, a point in time known as menarche. They may occasionally start as early as eight, and this onset may still be normal. The average age of the first period is generally later in the developing world and earlier in developed world. The typical length of time between the first day of one period and the first day of the next is 21 to 35 days in adults (an average of 28 days.Menstruation stops occurring after menopause which usually occurs between 45 and 55 years of age. Bleeding usually lasts around 3 to 7 days.

The menstrual cycle is governed by hormonal changes.[3] These changes can be altered by using hormonal birth control to prevent pregnancy.[10] Each cycle can be divided into three phases based on events in the ovary (ovarian cycle) or in the uterus (uterine cycle).[1] The ovarian cycle consists of the

follicular phase, ovulation, and luteal phase whereas the uterine cycle is divided into menstruation, proliferative phase, and secretory phase.

Stimulated by gradually increasing amounts of estrogen in the follicular phase, discharges of blood (menses) flow stop, and the lining of the uterus thickens. Follicles in the ovary begin developing under the influence of a complex interplay of hormones, and after several days one or occasionally two become dominant (non-dominant follicles shrink and die). Approximately mid-cycle, 24–36 hours after the luteinizing hormone (LH) surges, the dominant follicle releases an ovocyte, in an event called ovulation. After ovulation, the ovocyte only lives for 24 hours or less without fertilization while the remains of the dominant follicle in the ovary become a corpus luteum; this body has a primary function of producing large amounts of progesterone. Under the influence of progesterone, the uterine lining changes to prepare for potential implantation of an embryo to establish a pregnancy. If implantation does not occur within approximately two weeks, the corpus luteum will involute, causing a sharp drop in levels of both progesterone and estrogen. The hormone drop causes the uterus to shed its lining in a process termed menstruation. Menstruation also occurs in closely related primates (apes and monkeys).

Pregnancy, also known as gestation, is the time during which one or more offspring develops inside a woman.A multiple pregnancy involves more than one offspring, such as with twins. Pregnancy usually occurs by sexual intercourse, but can occur through assisted reproductive technology procedures.A pregnancy may end in a live birth, a spontaneous miscarriage, an induced abortion, or a stillbirth. Childbirth typically occurs around 40 weeks from the start of the last menstrual period (LMP). This is just over nine months – (gestational age) where each month averages 31 days.When using fertilization age it is about 38 weeks. An embryo is the developing offspring during the first eight weeks following fertilization, (ten weeks gestational age) after which, the term fetus is used until birth. Signs and symptoms of early pregnancy may include missed periods, tender breasts, nausea and vomiting, hunger, and frequent urination.Pregnancy may be confirmed with a pregnancy test.

Pregnancy is divided into three trimesters, each lasting for approximately 3 months. The first trimester includes conception, which is when the sperm fertilizes the egg.The fertilized egg then travels down the fallopian tube and attaches to the inside of the uterus, where it begins to form the embryo and placenta. During the first trimester, the possibility of miscarriage (natural death of embryo or fetus) is at its highest. Around the middle of the second trimester, movement of the fetus may be felt.At 28 weeks, more than 90% of babies can survive outside of the uterus if provided with high-quality medical care.[4]

Prenatal care improves pregnancy outcomes. Prenatal care may include taking extra folic acid, avoiding drugs, tobacco smoking, and alcohol, taking regular exercise, having blood tests, and regular physical examinations.Complications of pregnancy may include disorders of high blood pressure, gestational diabetes, iron-deficiency anemia, and severe nausea and vomiting.In the ideal childbirth labor begins on its own when a woman is "at term".Babies born before 37 weeks are "preterm" and at higher risk of health problems such as cerebral palsy.[4] Babies born between weeks 37 and 39 are considered "early term" while those born between weeks 39 and 41 are considered "full term".[4] Babies born between weeks 41 and 42 weeks are considered "late term" while after 42 week they are considered "post

term".Delivery before 39 weeks by labor induction or caesarean section is not recommended unless required for other medical reasons.

About 213 million pregnancies occurred in 2012, of which, 190 million (89%) were in the developing world and 23 million (11%) were in the developed world.The number of pregnancies in women aged between 15 and 44 is 133 per 1,000 women.[11] About 10% to 15% of recognized pregnancies end in miscarriage. In 2016, complications of pregnancy resulted in 230,600 maternal deaths, down from 377,000 deaths in 1990.[Common causes include bleeding, infections, hypertensive diseases of pregnancy, obstructed labor, miscarriage, abortion, or ectopic pregnancy. Globally, 44% of pregnancies are unplanned. Over half (56%) of unplanned pregnancies are aborted. Among unintended pregnancies in the United States, 60% of the women used birth control to some extent during the month pregnancy occurred.

Parturition.

Childbirth, also known as labour and delivery, is the ending of pregnancy where one or more babies leaves the uterus by passing through the vagina or by Caesarean section.In 2015, there were about 135 million births globally.About 15 million were born before 37 weeks of gestation,while between 3 and 12 percent were born after 42 weeks.] In the developed world most deliveries occur in hospitals, while in the developing world most births take place at home with the support of a traditional birth attendant.

The most common way of childbirth is a vaginal delivery.It involves three stages of labour: the shortening and opening of the cervix, descent and birth of the baby, and the delivery of the placenta.The first stage typically lasts 12 to 19 hours, the second stage 20 minutes to two hours, and the third stage five to 30 minutes. The first stage begins with crampy abdominal or back pain that last around half a minute and occur every 10 to 30 minutes. The pain becomes stronger and closer together over time.During the second stage, pushing with contractions may occur.In the third stage, delayed clamping of the umbilical cord is generally recommended. A number of methods can help with pain, such as relaxation techniques, opioids, and spinal blocks.

Most babies are born head first; however about 4% are born feet or buttock first, known as breech.Typically the head enters the pelvis facing to one side, and then rotates to face down. During labour, a woman can generally eat and move around as she likes.[19] However, pushing is not recommended during the first stage or during delivery of the head, and enemas are not recommended.While making a cut to the opening of the vagina, known as an episiotomy, is common, it is generally not needed. In 2012, about 23 million deliveries occurred by Caesarean section, an operation on the abdomen.C-sections may be recommended for twins, signs of distress in the baby, or breech position.This method of delivery can take longer to heal from.

Each year, complications from pregnancy and childbirth result in about 500,000 maternal deaths, seven million women have serious long-term problems, and 50 million women have negative health outcomes following delivery.Most of these occur in the developing world. Specific complications include

obstructed labour, postpartum bleeding, eclampsia, and postpartum infection. Complications in the baby may include lack of oxygen at birth, birth trauma, prematurity, and infections.

Mammary gland

mammary gland is a specific type of apocrine gland specialized for manufacture of colostrum when giving birth. Mammary glands can be identified as apocrine because they exhibit striking "decapitation" secretion. Many sources assert that mammary glands are modified sweat glandsSome authors dispute that and argue instead that they are sebaceous glands.

Lactation

Lactation describes the secretion of milk from the mammary glands and the period of time that a mother lactates to feed her young. The process naturally occurs with all post-pregnancy female mammals, although it predates mammals. In humans the process of feeding milk is also called breastfeeding or nursing. Newborn infants often produce some milk from their own breast tissue, known colloquially as witch's milk.

In most species, milk comes out of the mother's nipples; however, the monotremes, egg-laying mammals, lack nipples and release milk through ducts in the abdomen. In only one species of mammal, the Dayak fruit bat from Southeast Asia, is milk production a normal male function.

Galactopoiesis is the maintenance of milk production. This stage requires prolactin. Oxytocin is critical for the milk let-down reflex in response to suckling. Galactorrhea is milk production unrelated to nursing. It can occur in males and females of many mammal species as result of hormonal imbalances such as hyperprolactinaemia.

Hormonal influences

From the eighteenth week of pregnancy (the second and third trimesters), a woman's body produces hormones that stimulate the growth of the milk duct system in the breasts:

Progesterone influences the growth in size of alveoli and lobes; high levels of progesterone inhibit lactation before birth. Progesterone levels drop after birth; this triggers the onset of copious milk production.

Estrogen stimulates the milk duct system to grow and differentiate. Like progesterone, high levels of estrogen also inhibit lactation. Estrogen levels also drop at delivery and remain low for the first several months of breastfeeding.[4] Breastfeeding mothers should avoid estrogen-based birth control methods, as a spike in estrogen levels may reduce a mother's milk supply.

Prolactin contributes to the increased growth and differentiation of the alveoli, and also influences differentiation of ductal structures. High levels of prolactin during pregnancy and breastfeeding also increase insulin resistance, increase growth factor levels (IGF-1) and modify lipid metabolism in preparation for breastfeeding. During lactation, prolactin is the main factor maintaining tight junctions of the ductal epithelium and regulating milk production through osmotic balance.

Human placental lactogen (HPL) – from the second month of pregnancy, the placenta releases large amounts of HPL. This hormone is closely associated with prolactin and appears to be instrumental in breast, nipple, and areola growth before birth.

Follicle stimulating hormone (FSH), luteinizing hormone (LH), and human chorionic gonadotropin (hCG), through control of estrogen and progesterone production, and also, by extension, prolactin and growth hormone production, are essential.

Growth hormone (GH) is structurally very similar to prolactin and independently contributes to its galactopoiesis.

Adrenocorticotropic hormone (ACTH) and glucocorticoids such as cortisol have an important lactation inducing function in several animal species, including humans. Glucocorticoids play a complex regulating role in the maintenance of tight junctions.

Thyroid-stimulating hormone (TSH) and thyrotropin-releasing hormone (TRH) are very important galactopoietic hormones whose levels are naturally increased during pregnancy.

Oxytocin contracts the smooth muscle of the uterus during and after birth, and during orgasm(s). After birth, oxytocin contracts the smooth muscle layer of band-like cells surrounding the alveoli to squeeze the newly produced milk into the duct system. Oxytocin is necessary for the milk ejection reflex, or let-down, in response to suckling, to occur.

It is also possible to induce lactation without pregnancy. Protocols for inducing lactation are called the Goldfarb protocols. Using birth control pills to mimic the hormone levels of pregnancy, then discontinuing the birth control, followed by use of a double electric breast pump for 15 minute sessions at regular 2-3 hour intervals (100+ minutes total per day) helps to induce milk production.

Secretory differentiation

During the latter part of pregnancy, the woman's breasts enter into the Secretory Differentiation stage. This is when the breasts make colostrum (see below), a thick, sometimes yellowish fluid. At this stage, high levels of progesterone inhibit most milk production. It is not a medical concern if a pregnant woman leaks any colostrum before her baby's birth, nor is it an indication of future milk production.

Secretory activation

At birth, prolactin levels remain high, while the delivery of the placenta results in a sudden drop in progesterone, estrogen, and HPL levels. This abrupt withdrawal of progesterone in the presence of high prolactin levels stimulates the copious milk production of Secretory Activation.

When the breast is stimulated, prolactin levels in the blood rise, peak in about 45 minutes, and return to the pre-breastfeeding state about three hours later. The release of prolactin triggers the cells in the alveoli to make milk. Prolactin also transfers to the breast milk. Some research indicates that prolactin in milk is greater at times of higher milk production, and lower when breasts are fuller, and that the highest levels

Other hormones—notably insulin, thyroxine, and cortisol—are also involved, but their roles are not yet well understood. Although biochemical markers indicate that Secretory Activation begins about 30–40 hours after birth, mothers do not typically begin feeling increased breast fullness (the sensation of milk "coming in the breast") until 50–73 hours (2–3 days) after birth.

Colostrum is the first milk a breastfed baby receives. It contains higher amounts of white blood cells and antibodies than mature milk, and is especially high in immunoglobulin A (IgA), which coats the lining of the baby's immature intestines, and helps to prevent pathogens from invading the baby's system. Secretory IgA also helps prevent food allergies.[6] Over the first two weeks after the birth, colostrum production slowly gives way to mature breast milk.[4]

Autocrine control - **Galactapoiesis**

The hormonal endocrine control system drives milk production during pregnancy and the first few days after the birth. When the milk supply is more firmly established, autocrine (or local) control system begins.

During this stage, the more that milk is removed from the breasts, the more the breast will produce milk.[7][8] Research also suggests that draining the breasts more fully also increases the rate of milk production.[9] Thus the milk supply is strongly influenced by how often the baby feeds and how well it is able to transfer milk from the breast. Low supply can often be traced to:

not feeding or pumping often enough

inability of the infant to transfer milk effectively caused by, among other things:

jaw or mouth structure deficits

poor latching technique

rare maternal endocrine disorders

hypoplastic breast tissue

inadequate calorie intake or malnutrition of the mother

Milk ejection reflex

This is the mechanism by which milk is transported from the breast alveoli to the nipple. Suckling by the baby stimulates the paraventricular nuclei and supraoptic nucleus in the hypothalamus, which signals to the posterior pituitary gland to produce oxytocin. Oxytocin stimulates contraction of the myoepithelial cells surrounding the alveoli, which already hold milk. The increased pressure causes milk to flow through the duct system and be released through the nipple. This response can be conditioned e.g. to the cry of the baby.

Milk ejection is initiated in the mother's breast by the act of suckling by the baby. The milk ejection reflex (also called let-down reflex) is not always consistent, especially at first. Once a woman is conditioned to nursing, let-down can be triggered by a variety of stimuli, including the sound of any baby. Even thinking about breastfeeding can stimulate this reflex, causing unwanted leakage, or both breasts may give out m

Fertility control

Birth control, also known as contraception and fertility control, is a method or device used to prevent pregnancy. Birth control has been used since ancient times, but effective and safe methods of birth control only became available in the 20th century. Planning, making available, and using birth control is called family planning.Some cultures limit or discourage access to birth control because they consider it to be morally, religiously, or politically undesirable.

The World Health Organization and United States Centers for Disease Control and Prevention provide guidance on the safety of birth control methods among women with specific medical conditions.[5][6] The most effective methods of birth control are sterilization by means of vasectomy in males and tubal ligation in females, intrauterine devices (IUDs), and implantable birth control.This is followed by a number of hormone-based methods including oral pills, patches, vaginal rings, and injections. Less effective methods include physical barriers such as condoms, diaphragms and birth control sponges and fertility awareness methods. The least effective methods are spermicides and withdrawal by the male before ejaculation. Sterilization, while highly effective, is not usually reversible; all other methods are reversible, most immediately upon stopping them. Safe sex practices, such as with the use of male or female condoms, can also help prevent sexually transmitted infections. Other methods of birth control do not protect against sexually transmitted diseases.Emergency birth control can prevent pregnancy if taken within 72 to 120 hours after unprotected sex. Some argue not having sex is also a form of birth control, but abstinence-only sex education may increase teenage pregnancies if offered without birth control education, due to non-compliance.

In teenagers, pregnancies are at greater risk of poor outcomes. Comprehensive sex education and access to birth control decreases the rate of unwanted pregnancies in this age group. While all forms of birth control can generally be used by young people, long-acting reversible birth control such as implants, IUDs, or vaginal rings are more successful in reducing rates of teenage pregnancy.After the delivery of a child, a woman who is not exclusively breastfeeding may become pregnant again after as few as four to six weeks. Some methods of birth control can be started immediately following the birth, while others require a delay of up to six months. In women who are breastfeeding, progestin-only methods are preferred over combined oral birth control pills. In women who have reached menopause, it is recommended that birth control be continued for one year after the last period.

About 222 million women who want to avoid pregnancy in developing countries are not using a modern birth control method.Birth control use in developing countries has decreased the number of deaths during or around the time of pregnancy by 40% (about 270,000 deaths prevented in 2008) and could prevent 70% if the full demand for birth control were met.By lengthening the time between

pregnancies, birth control can improve adult women's delivery outcomes and the survival of their children. In the developing world, women's earnings, assets, and weight, as well as their children's schooling and health, all improve with greater access to birth control.Birth control increases economic growth because of fewer dependent children, more women participating in the workforce, and less use of scarce resources.

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