

The human body and its functions

A simple brochure about the body and contraception



Introduction

This material has been prepared with financial support from the national grant, Efforts against HIV, AIDS and other contagious illnesses, which aims to reach the goals set in the National strategy against HIV, AIDS and certain other contagious diseases (Prop. 2005/06:60).

During her work, primarily with newly arrived young people from countries outside Europe and with different cultural backgrounds, the project leader has noted that an understanding of the body and its functions is very poor for various reasons. Young persons who came from war-torn countries have often not been able to attend school, and in some cultures there is very little instruction about the body and its functions.

This is the background to this simple brochure about the body and its functions. The brochure was first published in 2012. This is the fourth version.

Västerås, January 2017

Catrin Lindberg, project leader

for analysis and information about STI¹ and HIV for persons seeking asylum and persons who have recently been granted a permanent residence permit.

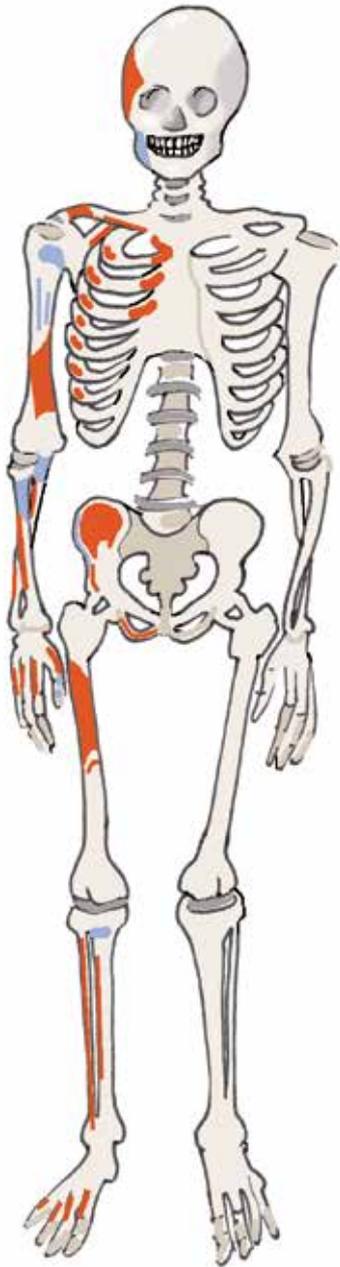
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¹ STI = Sexually transmitted infections

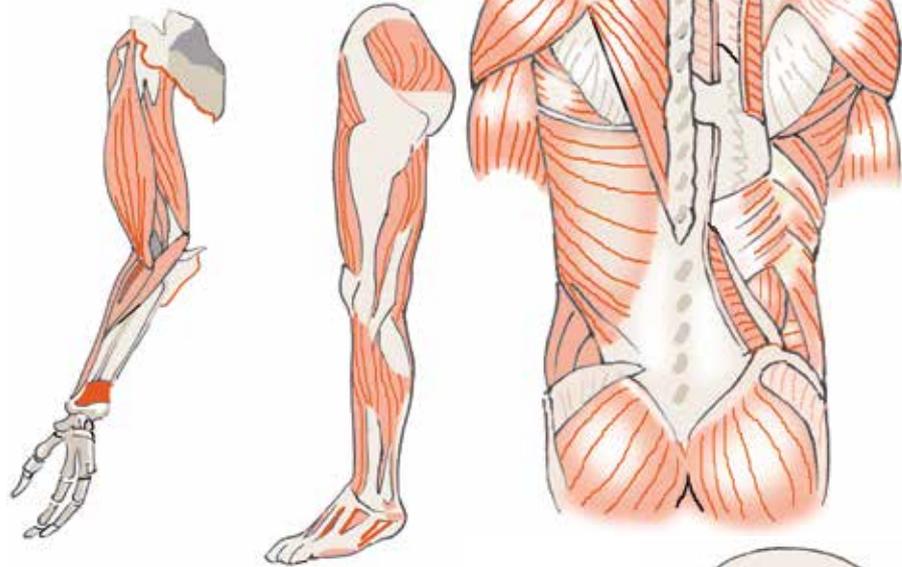


Illustrations: Graphic design Eva Conrade



The human **skeleton** (skelett) consists of more than 200 bones which make up about 20 % of the body weight. The skeleton functions as a framework for the body and keeps it upright. The skeleton protects our brain and our inner organs.

Muscles (muskler). The muscles provide support for the skeleton.

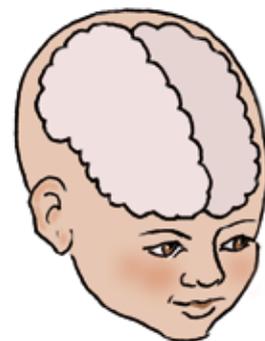


The skull (skallen) and the facial skeleton protect the brain.

A human child has 20 **milk teeth** (mjölkttänder). These are replaced with 28 **permanent teeth** (permanenta tänder) and possibly with 4 **wisdom teeth** (visdomständer).



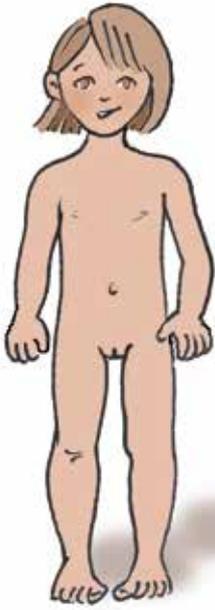
The brain (hjärnan) consists of two halves separated by a deep channel. The left-hand side of the body is controlled by the right half of the brain and the right-hand side of the body by the left half of the brain.



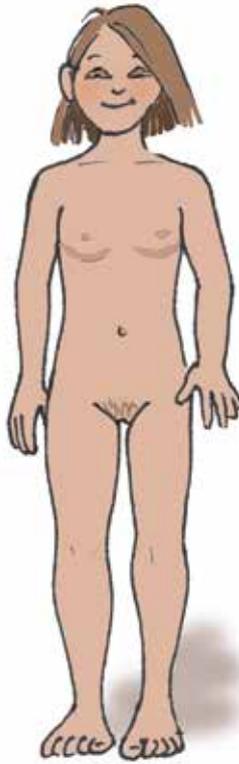
This is how the brain works:

As a person, you experience a situation through sight, hearing or touch. Nerve signals go to the brain so that you are able to make a decision regarding what you need to do. Parts of the brain are also believed to play an important role in sickness conditions such as aggression, anxiety, depression and post-traumatic stress.

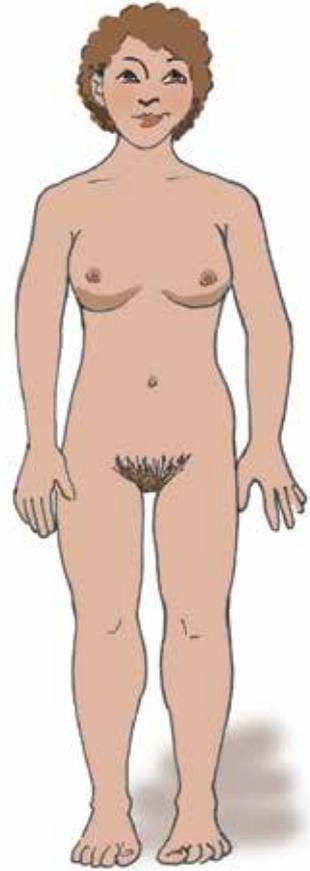
External changes in the body



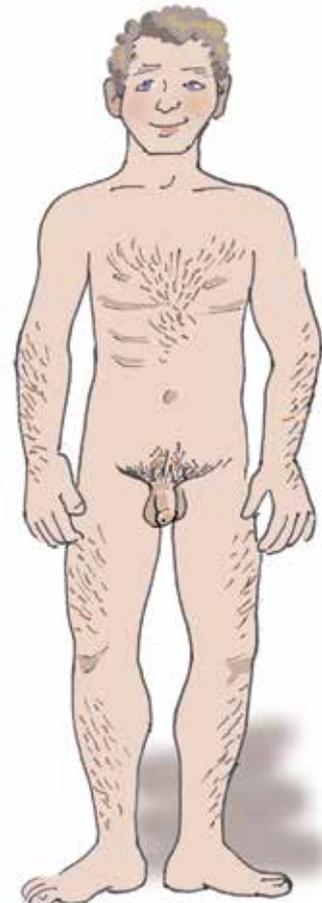
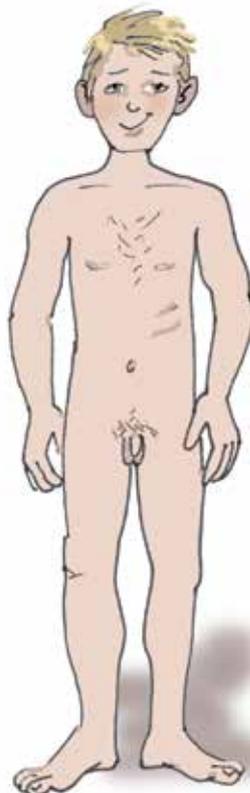
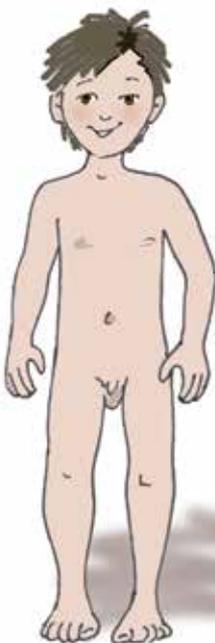
child



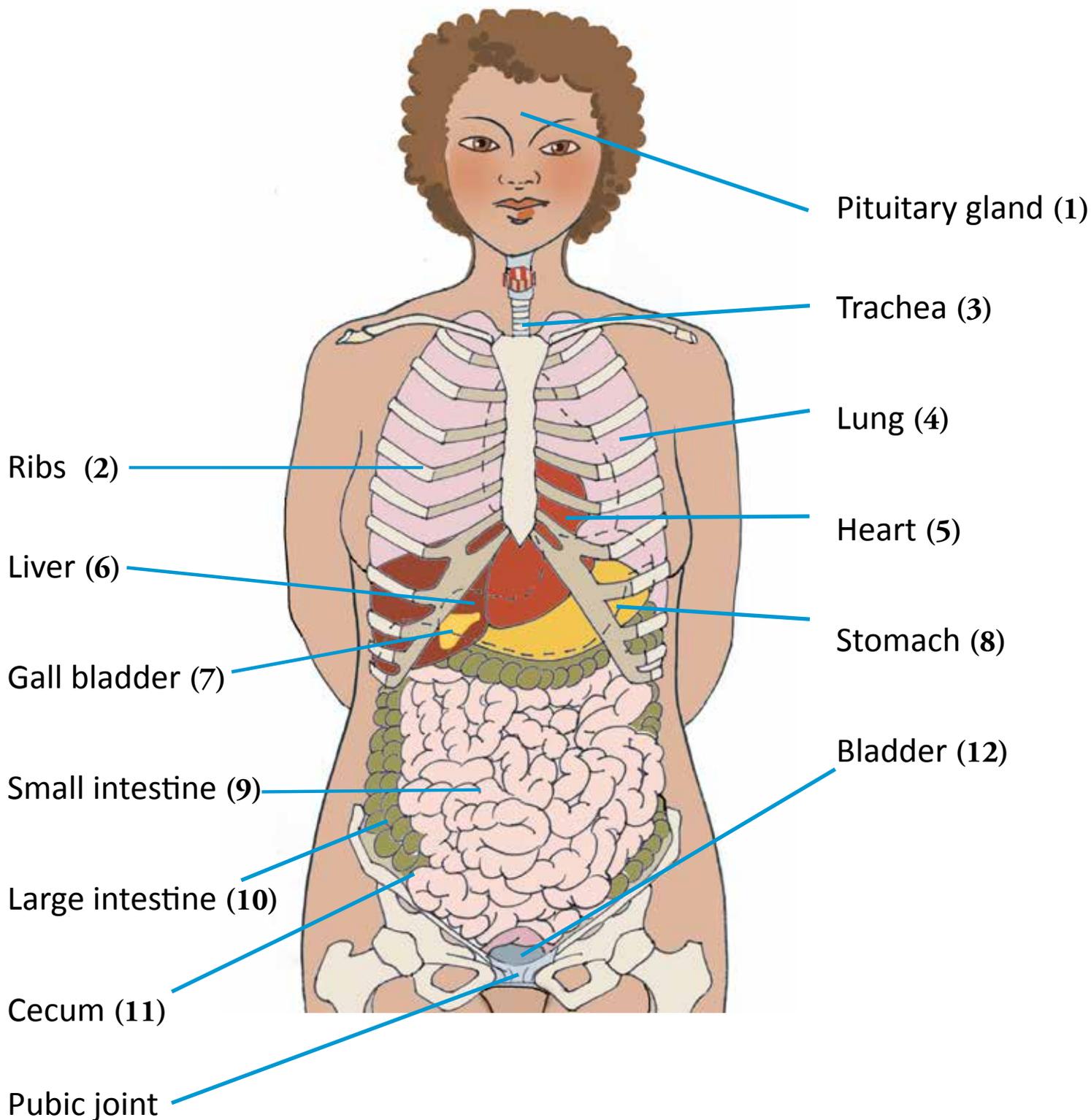
teenager



adult



A woman's and a man's inner organs are the same and have the same functions except for the genitals



The skin (hud) is a tissue that covers the surface of the body and is the body's largest organ.

The pituitary gland (hypofysen) (1) is an inner organ which gives chemical signals called hormones. The pituitary gland controls development, growth and reproduction. Different hormones stimulate development during puberty. One hormone stimulates the ovaries to produce oestrogen (female sex hormone) Another hormone stimulates the production of testosterone (male sex hormone) which stimulates ovulation in females and sperm production in the male testicles.

The rib cage (bröstkorgen) consists of twelve vertebrae, the sternum and twelve pairs of **ribs** (revben) (2).

The trachea (luftstrupen) (3) is a tube about 10 cm long which allows air to pass to and from the lungs.

The lungs (lungorna) (4) consist of a left and a right lung. In the lungs, oxygen is taken up from the inhaled air and carbon dioxide is removed in the exhaled air.

The heart (hjärtat) (5) is a hollow organ which acts as a pump. Through rhythmical contractions, the heart pumps blood round the body.

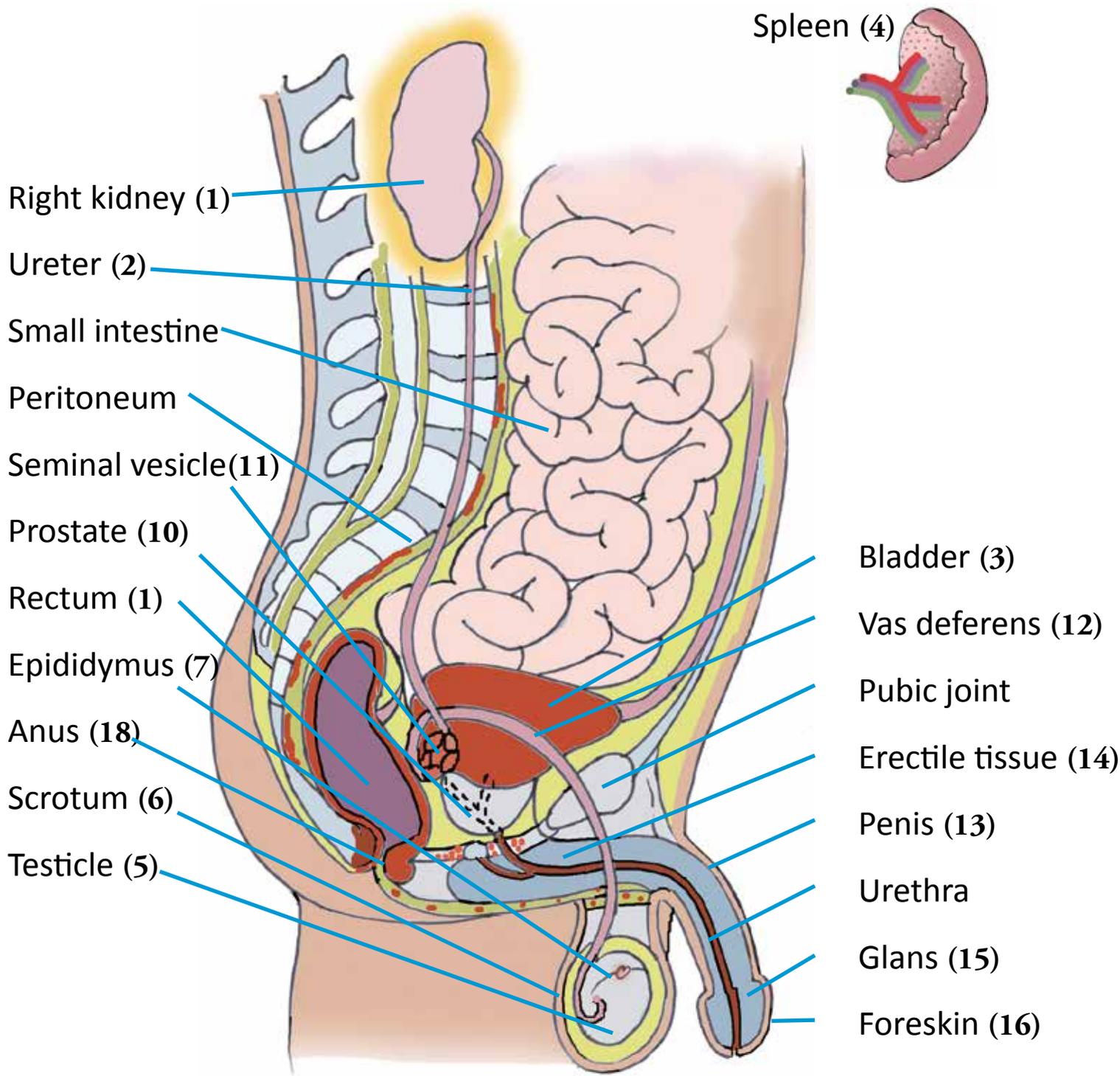
The liver (levern) (6) is the largest gland in the human body. The liver cleanses the blood from poisons which have entered the body.

The gall bladder (gallblåsan) (7) sits on the liver and acts as a temporary storage place for gall. Gall is a bodily fluid that is formed in the liver, is collected in the gall bladder and is mixed with the contents of the small intestine where it assists in the degradation of fats.

The stomach (magsäcken) (8) is a container in which food is digested and from which it is transported further in small portions.

The small intestine (tunntarmen) (9), which is five metres long, continues to break down the food and to absorb water and nutrients from the food.

The large intestine (tjocktarmen) (10) is a direct continuation of the small intestine. It is almost one and a half metres long and twice as thick as the small intestine. The first part of the large intestine is **the cecum** (blindtarmen) (11). The function of the large intestine is to absorb water, salts and vitamins into the circulating blood.



Penis (13)

Glans (15)



Sperm (8):

Head (20)

Connecting part (21)

Tail (22)



The pancreas (bukspottskörteln) is a 15-20 cm long gland behind the stomach. It produces insulin which regulates the sugar content in the blood.

The bladder (urinblåsan) (12) lies behind the pubic bone and acts as a temporary container for urine. A bladder normally holds 3-4 decilitres.

The kidneys (njurarna) (1) and the ureters purify the blood and remove substances that are not required. Urine is formed in the kidneys, is transported via the ureters (2), is collected in the bladder (3) and is released through the urethra.

The spleen (mjälten) (4) is as large as an apple and sits in front of the left kidney. Its most important function is to break down old red and white blood corpuscles and to produce the white corpuscles which we need for our immune system providing protection against disease.

The male sex cells, the sperm, are formed in **the testicles** (testiklarna) (5) which are two oval balls lying in the **scrotum** (pungen) (6). The testicles need a temperature lower than the body temperature.

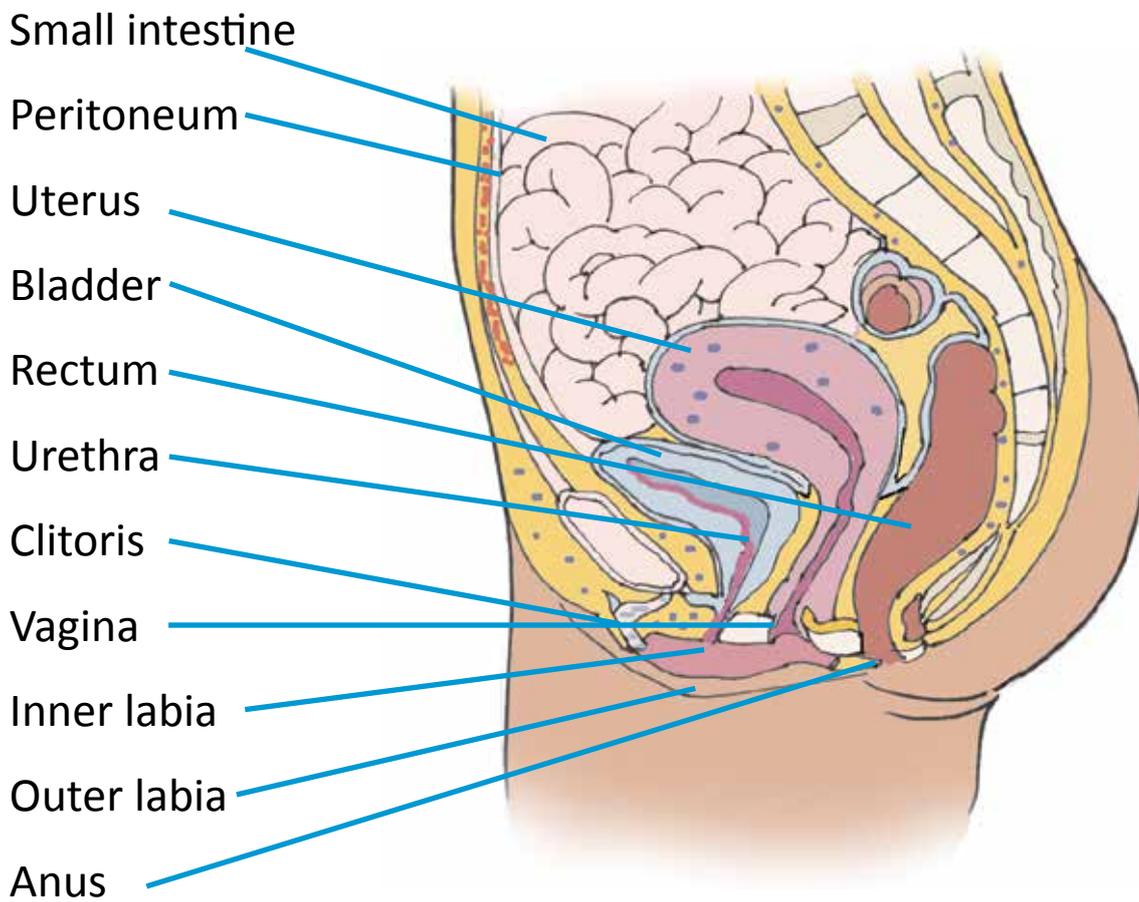
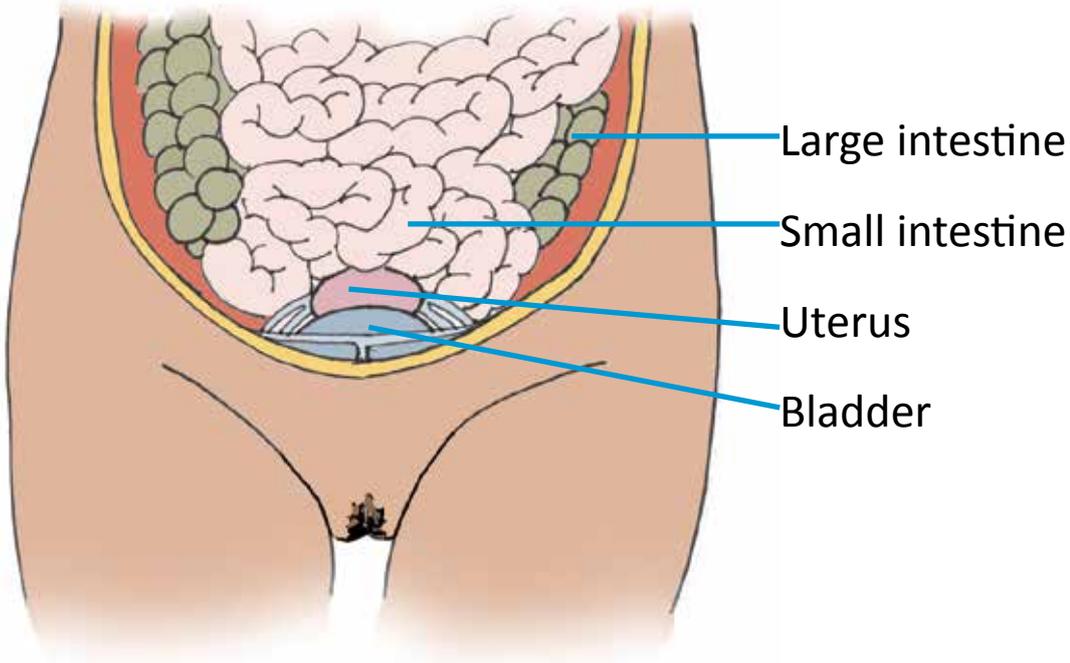
The sperm (spermie) (8) mature in **the epididymus** (bitestikel) (7) which lies at the top of each testicle, and the sperm can be stored in the epididymis for several weeks. The sperm travel via **the vas deferens** (sädelsledare) (9) to **the prostate** gland (prostata) (10), which secretes a liquid. The vas deferens is about half a metre in length.

The seminal vesicles (sädelsblåsor) (11) are small sacks opening into the **vas deferens** (sädelsledare) (12). The sacks contain a fluid which is mixed with the sperm and together constitutes the male semen. During every orgasm or ejaculation, several hundred million sperm are ejected through the urethra in the penis.

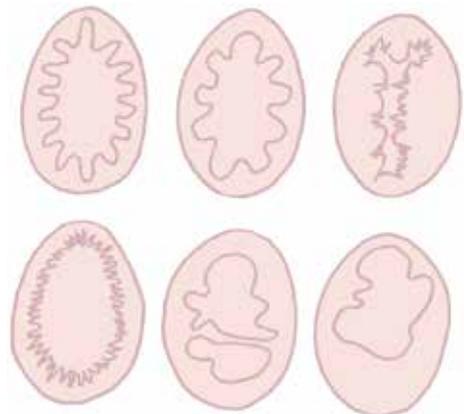
The penis (penis) (13) contains three **erectile tissues** (svällkroppar) (14), two on the top and one beneath. When the man is sexually aroused, the erectile tissue fills with blood and the man experiences an erection, where the penis becomes larger and stiffer. The urethra has an opening in the front region of the penis called **the glans** (ollonet) (15) which is covered by **the foreskin** (förhuden) (16). The glans is a very sensitive region.

The rectum (ändtarmen) (17) is the final section of the intestinal system. The rectum opens out on the under side of the body through a passage which is about three centimetres long. The opening is called **the anus** (anus) (18).

A sperm (spermie) (8) is the male sex cell and has a **head** (huvud) (20), a **connecting part** (anslutande del) (21) and a **tail** (svans) (22). A sperm is less than one tenth of a millimetre in length.



Hymen



The peritoneum (bukhinnan) is a membrane which borders the abdomen and forms a sack containing most of the abdomen's inner organs.

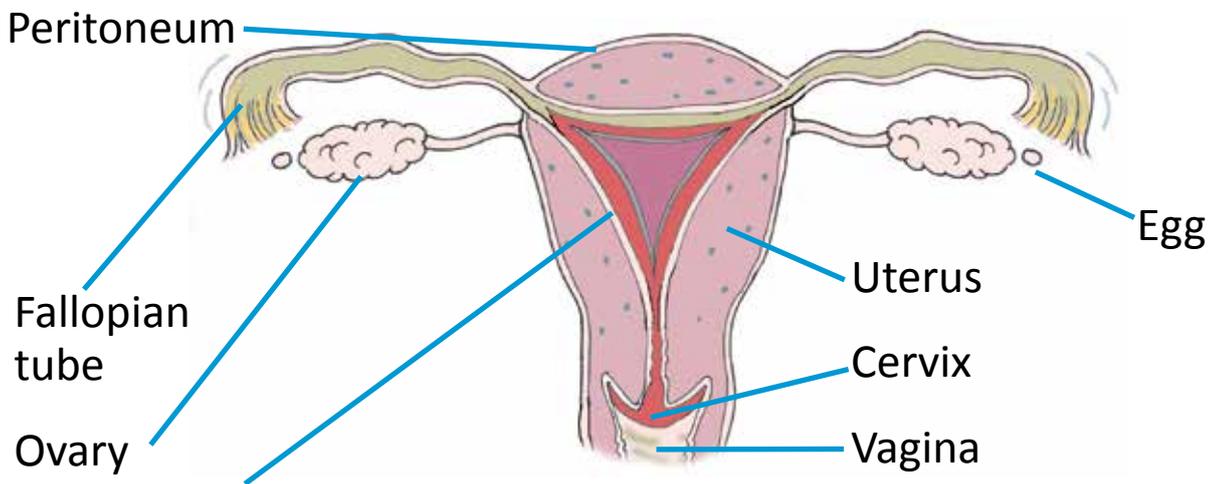
The uterus (livmodern) lies between the bladder and the rectum. The interior of the uterus is coated with a mucous membrane which varies considerably in thickness. The **mucous membrane** (slemhinna) of the uterus changes periodically from puberty until the menopause during each menstrual cycle. When the woman is not pregnant, the mucus membrane is ejected during menstruation. The woman's ability to reproduce extends from the age of 13 to 50 years. Thereafter the mucous membrane ceases to grow. The lower part of the uterus, **the cervix**, (livmodertappen) opens into the vagina.

The vagina (slidan) is the link between the uterus and the external world. The opening of the vagina is between the urethra and the rectal opening and is one or two centimetres inside the labia. During sexual intercourse the vagina encloses the man's penis which can eject semen. The secretion which is normally present in the vagina is very acidic and prevents the attack of dangerous bacteria. At the time of ovulation, the secretion changes so that the sperm can pass.

The clitoris (klitoris) is a part of the female genital system that is strongly sexually sensitive. It is an organ which is approximately 10 cm long with connections far into the body.

The labia (blygdläppar) are a part of the body which protect the clitoris and vagina from dirt and injury. They consist of the **outer labia** (yttre blygdläppar) which are often covered in hair and the **inner labia** (inre blygdläppar) which are without hair.

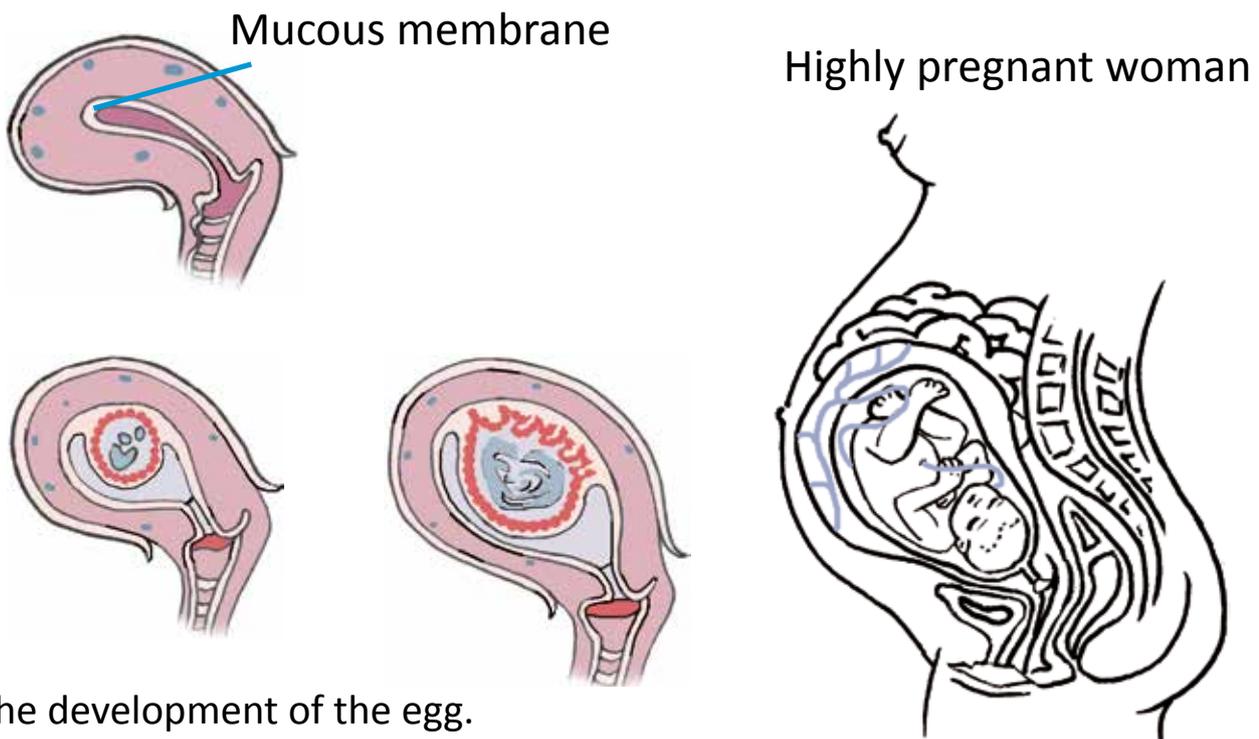
The hymen (slidkrans) is a ring of irregular mucous membrane folds about a centimetre inside the vaginal opening. This gives the vaginal opening an irregular shape with folded edges, but it is not a membrane which covers the vaginal opening. Since the hymen is not a membrane, there is nothing which can break during, for example, physical exercise or sexual intercourse. The menstrual blood flows out through the vaginal opening.



Mucous membrane varies in thickness during menstrual cycle

The ovaries (äggstockarna) lie on each side of the pelvic cavity and are suspended by a ligament. Each ovary is oval and about three centimetres long and is full of follicles, each of which contains an immature egg.

At birth, the ovaries contain about a million immature eggs, about 500 of which will mature into eggs which can be fertilized. After each menstrual bleeding, several eggs and follicles begin to grow, stimulated by a hormone from the pituitary in the brain. A follicle breaks in the middle of the menstrual cycle and the mature egg is released and is captured by **the fallopian tube** (äggledaren). This is called ovulation. The body temperature then increases by about half a degree and remains higher until a few days before the menstruation.



The development of the egg.

Egg and sperm fuse together

During intercourse, a few millilitres of semen enter the woman's vagina. The sperm then swim forwards with a speed of 1-5 millimetre per minute into the uterus and out into the fallopian tubes where they hopefully meet an egg. Only a few thousand of the several hundred million sperm which entered the vagina reach the fallopian tubes. Sperm can live a couple of days in the woman's body.

Fertilization occurs when one of the sperm penetrates the egg and the two cells fuse together to form a single cell. The egg and the sperm each contain half of the set of chromosomes with the inherited characteristics of either the mother or the father, so the fertilized egg has a complete set of chromosomes.

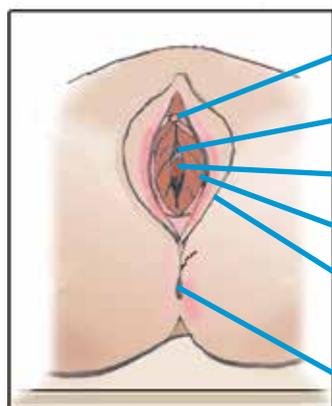
All the egg cells contain an X-chromosome, while each sperm contains either an X- or a Y-chromosome. If the fertilized egg has two X-chromosomes, it will develop into a girl, and if it has one X- and one Y-chromosome it will become a boy. The child will have characteristics of both its parents, but it will never be identical with either its mother or its father.

The egg is transported to the uterus

The fertilized egg travels from the fallopian tube to the uterus, and immediately begins to divide. Transport to the uterus takes two to four days. A clump of cells has then formed and this fastens and grows in the mucous membrane of the uterus about ten days after fertilization.

The part of the bundle of cells which fastens develops into the placenta. The placenta secretes a hormone which stimulates the ovaries to continue to produce high levels of the female sex hormones. These are required to ensure that the mucous membrane of the uterus continues to grow and is not rejected. The hormone from the placenta can be measured in the woman's urine or blood and shows that she is pregnant.

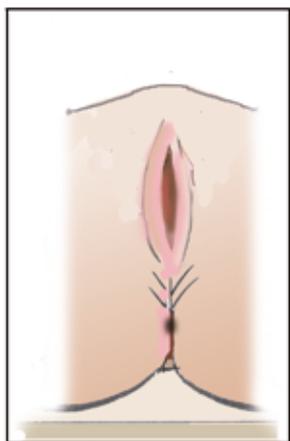
Fig 1



- Clitoris
- Urethra
- Vagina
- Inner labia
- Outer labila
- Anus

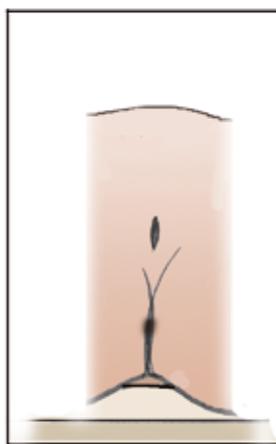
A woman's external genitals

Fig 2

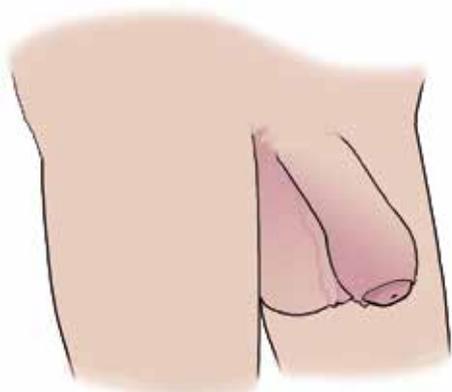


Mutilated genitals

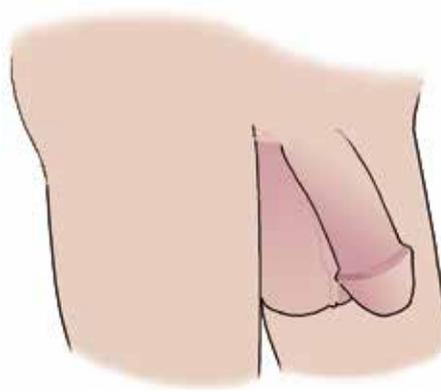
Fig 3



Mutilation by infibulation



Uncircumcised penis



Circumcised penis

Female genital mutilation, sometimes called female circumcision, means that all or parts of the woman's external genitals, i.e. the clitoris, inner and outer labia, are removed.

Female circumcision was forbidden in Sweden in 1982 by *the Act (1982:316) forbidding female genital mutilation*. Two cases have been taken to court in Sweden, both in 2006, and these have led to imprisonment.

Note: Neither the Koran nor the Bible mentions female circumcision.

Figure 1

A woman's external genitals.

Figure 2

Partial sexual circumcision involves removal of the inner labia. Sometimes the outer labia are partially or totally removed.

Note: It is incorrect to say that all the clitoris is removed. The whole clitoris cannot be removed.

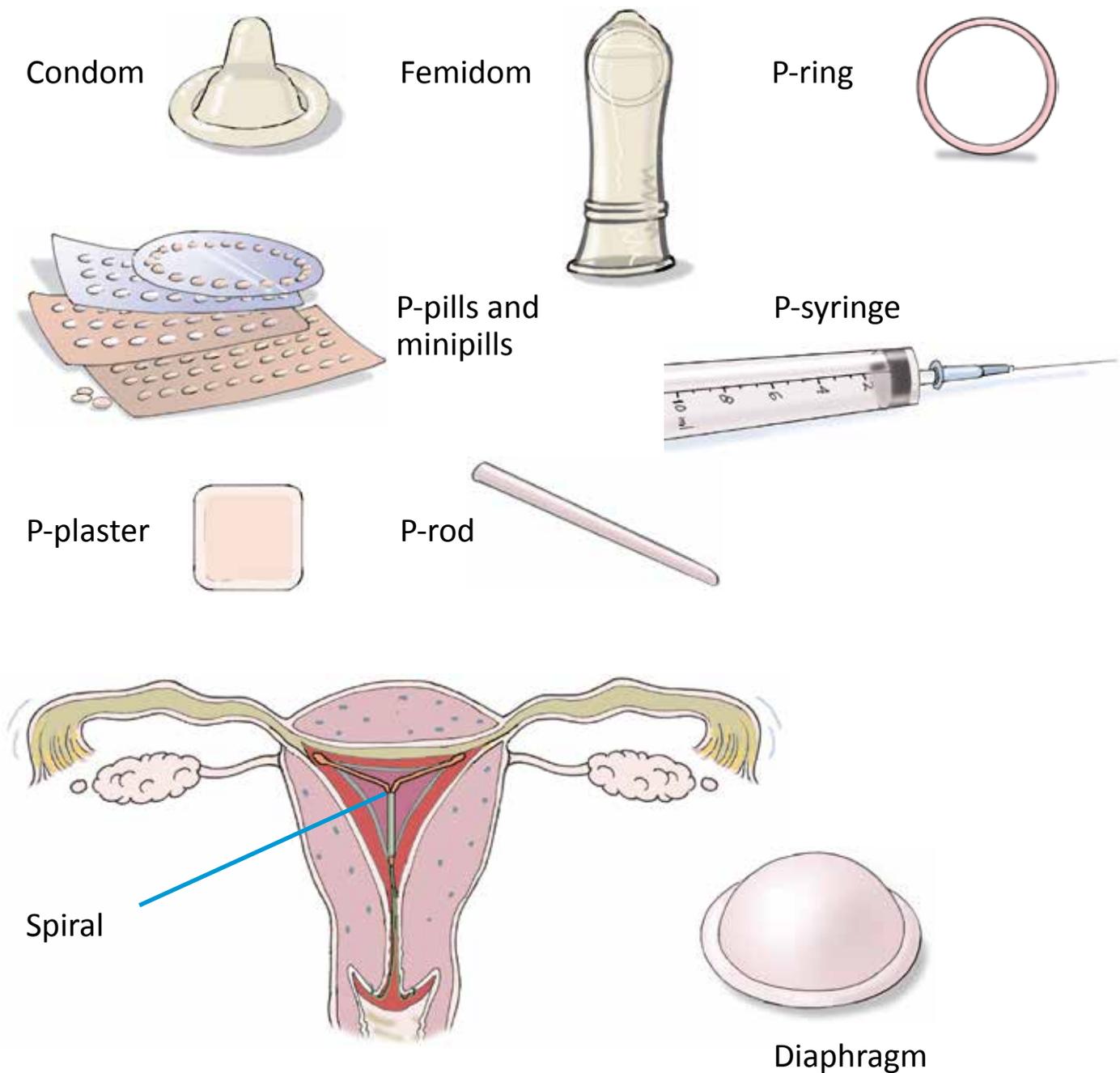
Problems commonly occur with menstruation and infections of the urinary tract as well as with pain during intercourse and difficulties when giving birth.

Figure 3

Infibulation (also called "pharaonic circumcision") is the operation which involves the greatest change. The clitoris, inner labia and parts of the outer labia are cut away, the skin is sewn together and a small hole is left so that menstrual blood and urine can pass thorough. Infibulation leads to many serious physical and mental consequences for the victims.

Male circumcision is an operation on boys and men which means that all or a part of the foreskin is removed from the penis.

The Act (2001:499) on the circumcision of boys includes the following
3§ Circumcision may be carried out at the request of or with the consent of the boy's parent/guardian and after the parent/guardian has been informed of what the operation involves. If the boy is in the care of two parents/guardians, that which has here been said shall apply to them both.



Contraceptives

A contraceptive is a means of preventing pregnancy

A condom is a device which a man draws over the penis before intercourse to stop semen entering the vagina and provide protection from venereal diseases and pregnancy.

A femidom is a condom for women. It covers the inside of the vagina, and is 17 cm long, the same as most condoms. The femidom is placed in the vagina before intercourse. It prevents both pregnancy and the spread of venereal diseases.

A combined pill contains two hormones, oestrogen and progesterone. The hormones prevent ovulation and make the secretion in the cervix thick and viscous preventing sperm from entering the uterus.

A mini-pill contains only one hormone, progestogen, which affects the secretion in the cervix in the same way as in the combined pill. It also affects the environment in the uterus so that a fertilized egg cannot become attached and develop.

An acute or morning-after pill is a hormone tablet intended as an emergency measure after unprotected sexual intercourse.

A p-ring is a soft plastic hormone-containing ring which the woman places in the vagina as with a tampon. The ring stays in place for three weeks, with a delay of one week before a new ring is placed in position.

A contraceptive patch is a thin plaster containing hormones which is stuck on the skin. It is replaced each week for three weeks and thereafter there is a delay of one week.

An implant is a three centimetre long plastic rod placed under the skin, often on the inside of the upper arm. It contains about the same dose of progestogen as a mini-pill. The rod prevents ovulation and thickens the secretion in the uterus. It can stay in position for about 3 years.

An injection is given every third month. The injection stops ovulation completely and thickens the mucous in the uterus.

A spiral is inserted by medical staff. It is a few centimetres long, made of plastic and T-shaped. A copper spiral affects the mucous in the uterus so that sperm cannot fertilize the egg. A hormone spiral has a similar effect, preventing pregnancy by thickening the secretion in the cervix so that sperm cannot enter the uterus. In some but not all women it also prevents ovulation.

A diaphragm is a cap of rubber or silicone which covers the cervix and prevents sperm from reaching the egg. The woman places it in her vagina herself.

The "Red Ribbon" has been an international symbol for AIDS since 1991. The red ribbon is worn to show support for those who live with HIV or are suffering from AIDS. Its purpose is also to challenge prejudice and discrimination, which are threats to the global combat against HIV and AID. Source: www.worldaidsday.org



HBT is recognized in Sweden as a name for homosexual, bisexual and transgender persons. Homosexual persons are attracted romantically and/or sexually to others of the same sex as themselves, while a bisexual person is attracted to both of the established sexes. A transgender person is a rather loosely defined term used to describe persons who have a sexual identity and/or use sexual expressions that are considered not to conform to traditional sexual norms.

In Sweden, persons of the same sex are allowed to marry each other.

The rainbow flag, sometimes called the Pride flag, is a popular symbol within the HBT- movement. It represents pride and multiplicity among homosexual, bisexual and transgender persons. The rainbow flag also stands for respect for fellow humans and tolerance.



Important legislation

The Contagious Diseases Act

In Sweden there is a special law, the Contagious Diseases Act (SFS 2004: 168), which describes what the medical services, the society and each individual shall do to reduce the risk that contagious disease will spread. Several important diseases mentioned in the Act are gonorrhoea, hepatitis (infectious jaundice), HIV, chlamydia, syphilis and tuberculosis (TB). Medical services shall give persons with a contagious disease support and treatment and protect others from contracting such diseases.

Sexual age of consent

In Sweden, the age of consent to intercourse or a comparable sexual act is 15 years. The legal text is in the Penal Code Chapter 6 paragraphs four to ten and paragraph fourteen.

Abortion legislation

The currently valid Abortion Act came into force in 1975 (1974:595). All women in Sweden are entitled to an abortion, regardless of whether or not they are Swedish citizens, and regardless of whether or not they are resident in Sweden. If Swedish is not one's native language, one is entitled to choose an authorized interpreter in connection with the abortion.

Incest

Persons subjecting their own children or their descendants to a sexual act can be sentenced to imprisonment for up to two years (The Penal Code Chapter 6 Section 7). For sexual acts between siblings, the sentence is imprisonment for up to one year. Sexual acts between half-siblings are not a crime in Sweden.

Corporal punishment of children

A parent's right to beat their children was abolished in 1966. A prohibition written into the Parental Code on 15 March 1979 became law on 1 July 1979.

Violence in close relationships

Rape within marriage was made a criminal offence in 1965. In 1980, Sweden ratified the UN convention outlawing all discrimination against women.

Strong protection against forced marriage and child marriage

From 1 July 2014, changes have been made in both the Marital Code and the Penal Code. A person under 18 years may not enter into marriage, and the protection against forced marriage and child marriage is strengthened. Two new crimes are included in the Penal Code. It is not possible for a child to be given special permission to marry. The rules for foreign marriages are made more strict.

Department of Communicable Disease Control and Prevention

Protection against infection in Västmanland is a county-wide authority, which plans, organizes and leads the work to control and prevent communicable diseases. The aim of the activities is to prevent and reduce the risks of communicable diseases spreading to and between people. The work involves surveillance, contact tracing, preventive action, information, education, etc.

Asylum and Integration Health Department

The Asylum and Integration Health Department is a health centre for those seeking asylum, hidden and unregistered persons, and those with a new residence permit. The clinic has a county-wide responsibility and is placed centrally in Västerås with subsidiaries in Arboga and Fagersta as well as a comprehensive mobile activity to all the larger communities in the county. The clinic offers a suitable introduction to Swedish health and sickness care. The work includes health examinations, visits to doctors and nurses, maternity and child care, talks with a social worker and psychotherapist, a special reception for unaccompanied children, and health and sickness information to new arrivals.

Useful homepages:

www.folkhalsomyndigheten.se

www.1177.se

www.hivaidsbok.se

www.hiv-sverige.se

www.lafa.nu

www.noaksark.org

www.posithivagruppen.se

www.rfsu.se

www.sakraresex.se

www.umo.se



www.regionvastmanland.se