

Core knowledge content

Female Anatomy

Breasts

The breasts of both females and males contain glandular tissue. After puberty this glandular tissue, called **mammary glands** begin to develop in response to estrogen. In females this is the gland responsible for lactation/milk production. These mammary glands only produce milk after childbirth. Breast feeding is a natural and healthy way to feed our babies.

Because large breasts get attention (media, magazines, TV, or movies), some females may worry if their breasts are small or if they mature more slowly. Females with large breasts may be unhappy, too, because their shape attracts attention they don't want. The truth is that beauty doesn't come in just one bra size. There are all sorts of female shapes and sizes in the world, and all are beautiful. In females, breasts stop developing when you are completely mature, maybe as late as 22 years of age. It is normal for one breast to be slightly larger than the other. Some females experience a bit of discomfort and or tenderness as their breasts develop. Females may find it more comfortable to wear a bra or camisole as their breasts get bigger.

Males may also notice some minor breast development. This is a result of hormones as they go through the process of establishing and regulating themselves.

Ovaries

One ovary on each side of the lower abdomen, size and shape of an almond. These reproductive glands have two functions which include the production of **estrogen** and **progesterone**, and storage of **ova** (eggs).

Ovum

Also called an egg cell, not like a chicken egg but instead about the size of a period (dot) or the head of a pin. It is a special cell, the largest cell in a female's body, which when united with a male sperm cell can create a baby (fertilization). According to teachingsexualhealth.ca a female is born with a supply of about 250,000 immature ova. During puberty she begins to release usually one ovum, once a month which is called **ovulation**.

Fallopian Tubes

Two narrow hollow tubes on either side of the uterus with a diameter about the size of strand of spaghetti. Sexualityandu.ca states that the passageway from the ovary to the uterus is about 8 – 10 cm long and is where the egg travels when released from the ovary.

Uterus

Also called the womb, it is very low in the abdomen, nowhere near the stomach. In an adult female the uterus is the size and shape of a clenched fist. It is the place where the unborn baby grows. It prepares for a pregnancy each month by forming a thick, nutrient-rich lining of blood and tissue.

Cervix

The lower part of the uterus. It is normally in a nearly closed or collapsed state but opens/dilates to 10cm during labour to allow the baby to be born vaginally and also opens a tiny bit to allow for menstrual flow.

Vagina

Is a warm, moist flexible passageway between the uterus and the outside of the body. It is lined with mucous membrane. It is able to expand to accommodate the delivery of a baby. Passageway through which baby leaves mother's body (birth canal); menstrual blood and lining leaves the body and sperm is deposited in the vagina to travel towards an ovum (egg).

Vulva

The area of soft skin between a female's legs. Consists of the **labia majora** and **labia minora** (outer and inner folds of skin) that function to protect the internal reproductive organs.

Urethra

The tube through which urine (liquid waste or pee) leaves the body. It is the opening just above the vagina. It is not part of the reproductive system, but the urinary system.

Anus

The opening at the end of the digestive tract where feces (solid waste or poo) leaves the body. It is not part of the reproductive system, but instead is part of the digestive system.

Changes in the female reproductive organs at puberty

Discharge

Once puberty begins, a female may notice some discharge/fluid from her vagina on her underwear or on toilet paper. It varies from a whitish colour to clear. This means a female's body is starting to mature and is a sign that her period may be starting sometime soon. It is normal and keeps the vagina clean and healthy. If the discharge smells bad or the area is itchy, it could signal infection and requires medical treatment. Normal vaginal discharge is odorless, cloudy white, and is an indication that a female's body is preparing for menstruation.

Ovulation

Once the ovaries start producing hormones, the message is given to start maturing and releasing one ovum, once a month from one ovary into the fallopian tube. Is a natural process that she usually doesn't feel, but it is the time of the month she may get pregnant. Once the egg is in the fallopian tube it is possible for a sperm, if present, to fertilize it. If the egg is not fertilized in approximately 24 – 48 hours it dissolves. Ovulation happens in between a female's menstrual periods, approximately 14 days before the start of her next period.

Menstruation

Females are born with about 250,000 tiny, immature eggs, called ova in each ovary (teachingsexualhealth.ca). At puberty, hormones tell the ovaries it is time to start the process of maturing and releasing ova. Usually one egg (ovum) at a time matures and is released from an ovary. This process is called **ovulation**.

At the same time, hormones from the ovaries send messages to the uterus to grow a thick, soft lining of tissue and blood on the inside wall in preparation for a possible pregnancy. The lining, which is called the **endometrium** has lots of tiny blood vessels and is there to protect and feed an egg that has been fertilized by a sperm. If an egg is not fertilized by a sperm, then the lining is not needed to nourish a baby. A hormonal message from the ovary tells the uterus to shed the lining and so it breaks up and comes away from the walls of the uterus, flowing through the cervix and then out of the body through the vagina.

It usually takes about 5-7 days to shed the lining of the uterus – this is called **menstruation** or “having a period”. The amount of blood lost can be anywhere from a few tablespoons to about half a cup. Once the lining is completely shed, a new one begins to grow (Sexualityandu.ca).

Next month another ovum is released and if fertilization does not occur, the egg dissolves and that lining is shed. This continues to happen over and over again, hence the name **menstrual cycle**. This usually happens in intervals of 4 weeks, but can vary, particularly during first 2 years of

menstruation. No one can tell exactly when menstruation will start but usually acne, pubic hair, breast development and vaginal discharge tend to happen before menstruation begins.

At first there may not be any pattern to when you get your next period (e.g. may even skip a month or two between periods). Eventually most females have a regular cycle so they know approximately when their next period will happen. The length of a cycle is from the first day of bleeding one month to the first day of bleeding the next time it happens. Each person is different so some females may have a period every 23 days, some every 28 days and some every 35 days. Females can keep a calendar to help them keep track when they have their period and how long it lasts or they can search for an app to use as well.

Some females may experience **P.M.S. – pre-menstrual syndrome**. Symptoms of P.M.S. may appear after ovulation and can include lower abdominal cramping, backache and bloating. These symptoms can be relieved by limiting salt intake, drinking plenty of water, participating in light exercise (stretching or walking), applying heat through a hot water bottle or heating pad, or taking a pain reliever. Remind your students that they should always ask their parents before taking any medication.

The menstrual cycle stops temporarily during a pregnancy - lack of a period is an early sign of pregnancy. Stops permanently between the ages of 45 & 60 years, this is called **menopause**. Once stopped – not able to become pregnant any longer.

Personal Care during Menstruation

Menstruation is a normal change of puberty. It is not a sickness or a reason to stop regular daily activities. Personal hygiene (i.e. bathing, washing hair) are even more important at this time due to an increase in hormone production and to prevent bacterial growth. No one will know that a female is having her period unless they are told. The fluid usually comes out a bit at a time and is something you have no control over, it will start and stop at different times no matter whether you are sitting, standing or lying down.

Pads or Sanitary Napkins

Made of material that absorbs the fluid. Most have a sticky strip on one side to hold the pad to the underwear, come in a variety of sizes and shapes. Different size pads are chosen to meet the needs of varying menstrual flow. Need to wear 24 hours a day while menstruating, change pads frequently, about every 3-4 hours while awake, even if flow isn't heavy because regular changing prevents buildup of bacteria and eliminates odour. Dispose of pads in wastebasket/container

rather than the toilet, NOT flushable. Panty-liners are similar to pads and are used to catch light menstrual flow or vaginal discharge. Keep pads in a backpack, locker or bag.

Tampons

Are a small plug of material that fits inside the vagina to absorb the blood and lining. Held in place by the muscles in the vagina – cannot get lost or fall out. String used to remove tampon – very strong so no fear of breakage. Some females like to use tampons, especially if they are doing physical activities (i.e. swimming, dance, and gymnastics) but it is personal choice. Tampons are rarely used by females when they first start having periods. Not practicing good hand and body hygiene and/or not changing tampons regularly could cause **Toxic Shock Syndrome (TSS)**, a rare but serious and sometimes life-threatening infection. Hand washing is important both before and after changing tampons. They need to be changed regularly, every 4-6 hours and should never be worn overnight. Used tampons should be wrapped up in toilet paper and put in the garbage. They are not to be flushed down the toilet. Read the instruction booklet in the tampon package to learn more about insertion and disposal instructions. Females wanting to use tampons should talk to a parent or trusted adult first.

Fertilization and Conception

Fertilization is the union of one sperm and one ovum (egg). The process takes place in the fallopian tube and happens when a mature egg cell meets with a sperm cell. Although there are millions of sperm in this semen only around 1,000 make it as far as the fallopian tubes. The semen containing sperm travel from the vagina, through the cervix, the uterus and finally into the fallopian tube in search of the ovum. If this happens around the time of ovulation there is, or soon will be, an ovum (egg) in the fallopian tube. One sperm will penetrate it. This is the moment of **fertilization**. The remaining sperm cells will die off and dissolve.

These two cells then become one cell which is neither a sperm nor an ovum (egg), but is called a **zygote** (ball of cells). This zygote spends the next few days traveling down the fallopian tube. As it travels, it begins to divide within itself into two identical cells, and those two into four, and those four into eight and so on. This zygote is now called a **blastocyst**. The blastocyst is made up of an inner group of cells and an outer group of cells. The inner group of cells will become the baby (**embryo**) and the outer group of cells will become structures which nourish and protect the baby. Once inside the uterus and securely attached to the wall of the uterus then the process of **implantation** is complete and the **placenta** begins to form. It is at this point that the process of **conception** is complete.

Sometimes the process of conception can result in more than one baby being created. Twins can either be identical or fraternal. Identical twins may or may not share the same amniotic sac, depending on how early the single fertilized egg divides into 2. Fraternal twins are 2 separate fertilized eggs; they usually develop 2 separate amniotic sacs, placentas, and supporting structures.

The baby, called an embryo is not able to eat or breathe on its own so all functions are assisted by a structure called the **placenta**. The food the mother eats and the oxygen she breathes go into her bloodstream as very tiny pieces (molecules). These nutrients and oxygen travel through the mother's bloodstream to her placenta, through the **umbilical cord** and into the baby's body. The baby eats and breathes inside the uterus. After the baby is born, the umbilical cord is clamped, cut, dries up and falls off, leaving the umbilicus/belly button.

The **amniotic sac** is a bag of fluid inside the uterus where the embryo grows and develops. It is filled with fluid, in which the embryo floats and moves. The **amniotic fluid** helps to cushion the embryo from bumps and injury, as well as providing them with fluids that they can breathe and swallow.

The mother's lifestyle is very important when she is pregnant. Alcohol, nicotine and other drugs can cross the placenta and cause damage to the unborn baby.

The female does not menstruate while she is pregnant because the lining is needed to support the pregnancy. The lining nourishes the developing embryo. An early sign of a pregnancy is a missed period. It is only when fertilization does not occur that the lining is shed resulting in a period.

The process of pregnancy takes about 9 months or 40 weeks to complete. This time period is divided into 3 stages called trimesters. Trimester one includes the first three months, trimester two includes months 4-6 and trimester three includes months 7-9.

The first trimester is a critical time in the baby's life. It is the period of rapid growth and development. By the end of these 3 months, all of the baby's organs will be formed and functioning and its bones and teeth will begin to form. The baby moves around in the amniotic fluid but these movements cannot be felt by the mother yet. The baby's heart beat may be heard with an electronic listening device.

During the second trimester the brain develops a lot. The fetus cannot live outside of the mom's body because its lungs, heart and blood systems have not developed enough yet. By 20 weeks the mom is able to feel her baby's movements. By the end of the 5th month the baby is about ½ the

length of a newborn. The baby's outline may be felt through the abdomen. Its eyes may be open now.

During the third trimester the baby could survive if born before it is full term, but would need special care. The closer to full term, the more ready the baby is to cope with the birth process and life outside the uterus. The baby can hear and respond to sounds. Its pupils can react to light and fat forms underneath the baby's skin.

In order to provide the baby with the best possible conditions to develop in, mothers should avoid smoking and second hand smoke; avoid alcohol and drugs; eat a well-balanced diet; get lots of rest and exercise and see her doctor early and through the rest of her pregnancy. In fact, many females see their doctor before they get pregnant and to have a check-up to make sure they are in the best health possible.

The pregnant female will need a lot of help/support from her partner, family members, friends, etc. Some of the roles include attending health care provider appointments, prenatal classes, helping with housework/chores and cooking healthy meals to help the baby have the healthiest environment possible in which to grow.

NOTE: for more information please refer to the supplemental content section.

Supplemental Content

The supplemental information has been included to ensure that the teacher has all the information he/she may need to teach puberty classes. It is not mandatory to introduce students to the information found here but it may help the teacher answer some questions that may arise. Overall, it is most important to discuss the reproductive anatomy and functioning that will help students understand the changes of puberty.

Female Reproductive System

External Organs

Clitoris

Located above urinary opening, where inner folds of skin (labia minora) come together. Very sensitive, provides pleasure to the female when touched/stimulated.

Hymen

A thin membrane that surrounds the vaginal opening. It may not be noticeable.

Mons Pubis

The area where fat under the skin covers the pubic bone. Hair grows in this area during puberty.

Toxic Shock Syndrome (TSS)

TSS is caused by a toxin (a poisonous substance) that builds up in the body. According to the www.sexualityandu.ca, signs of TSS include sudden high fever, nausea and vomiting, diarrhea, headache, generalized aches and pains, dizziness and feeling faint (especially when rising from a lying or sitting position), disorientation, a rash like a sunburn on the palms of the hands and the soles of the feet and extremely low blood pressure and rapid weak pulse (shock).

Pregnancy, Labour and Child Birth

After months of growing in the uterus, a mother will begin to feel the start of *labour*. Labour is the work the uterus does to help the baby come out. The uterus contracts (tightens) and relaxes during labour, which makes the cervix (opening of the uterus) thin and open wider. For a first baby, labour may last 12-20 hours.

Contractions will continue throughout labour and become stronger and stronger. The mother will begin to feel the need to push. Once the cervix opens to 10 cm, contractions and the mother's pushing will move the baby down the birth canal (vagina) and the baby will be born. The placenta will detach and come out of the uterus approximately 30 minutes after the baby has been born. Mild contractions will continue and help the uterus shrink back to its normal size.

Mothers can hold their babies skin to skin and breastfeed immediately after baby is born. Breastfeeding is one of the best things you can do for your baby and yourself. Breast milk is all your baby needs for about the first 6 months. Around 6 months, you can add other foods while breastfeeding to 2 years or more. Breastfeeding is the best food for your baby and is always ready. Breast milk protects babies from illnesses and allergies and promotes good health in other ways (helps prevent upset tummies, may reduce the risk of Sudden Infant Death Syndrome, and helps brain development). Breastfeeding is healthy for mothers because it helps the uterus return to its

normal size more quickly, uses up the extra weight gained during pregnancy, can protect from cancer and saves time and money.

In the first year of life, parenting is about comforting your baby and making sure they are safe. Since new mothers experience changing hormones, lack of sleep and other new feelings, they need healthy relationships to help them adjust to becoming a parent. Fathers, partners, friends and family can help a new mother get the care and support she needs.

Resources

Kids Help Phone. (visit <https://kidshelpphone.ca/> or call 1-800-668-6868)

Physical & Health Education Canada. *Always Changing*. (Retrieved from: https://phecanada.ca/programs/always-changing_.)

References

Alberta Health Services. *Teaching Sexual Health*. (Retrieved from: www.teachingsexualhealth.ca)

Society of Obstetricians and Gynaecologists of Canada, Sex & U. *Puberty*. (Retrieved from: <http://www.sexandu.ca/your-body/puberty/>)