



Dr. Warwick Carter

PREGNANCY A to Z

*A simple guide to
pregnancy,
its investigations, stages,
complications, anatomy,
terminology and conclusion*

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***The pregnant woman
has the amazing ability
to turn hamburgers and vegetables
into a baby.***

***The most important
thing you ever do in life
is choose your parents.***

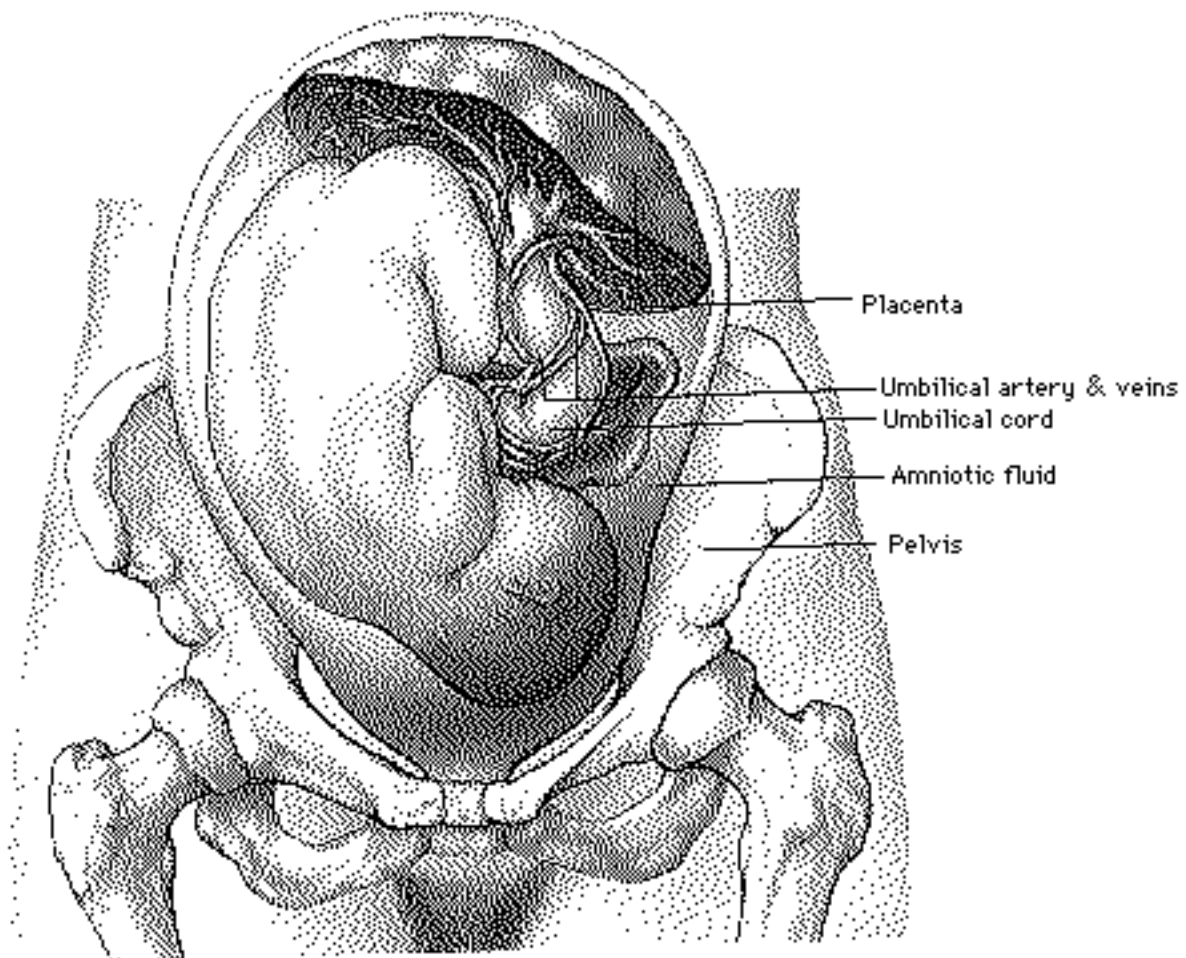
PREGNANCY

The first sign that a woman may be pregnant is that she fails to have a menstrual period when one is normally due. At about the same time as the period is missed, the woman may feel unwell, unduly tired, and her breasts may become swollen and uncomfortable.

A pregnant woman should not smoke because smoking adversely affects the baby's growth, and smaller babies have more problems in the early months of life. The chemicals inhaled from cigarette smoke are absorbed into the bloodstream and pass through the placenta into the baby's bloodstream, so that when the mother has a smoke, so does the baby.

Alcohol should be avoided especially during the first three months of pregnancy when the vital organs of the foetus are developing. Later in pregnancy it is advisable to have no more than one drink every day with a meal.

Early in the pregnancy the breasts start to prepare for the task of feeding the baby, and one of the first things the woman notices is enlarged tender breasts and a tingling in the nipples. With a first pregnancy, the skin around the nipple (the areola) will darken, and the small lubricating glands may become more prominent to create small bumps. This darkening may also occur with the oral contraceptive pill.



Hormonal changes cause the woman to urinate more frequently. This settles down after about three months, but later in pregnancy the size of the uterus puts pressure on the bladder, and frequent urination again occurs.

Some women develop dark patches on the forehead and cheeks called chloasma, which are caused by hormonal changes affecting the pigment cells in the skin. This can also be a side effect of the contraceptive pill. The navel and a line down the centre of the woman's belly may also darken. These pigment changes fade somewhat after the pregnancy but will always remain darker than before.

After the pregnancy has been diagnosed, the woman should see her doctor at about ten weeks of pregnancy for the first antenatal check-up and referral to an obstetrician. At this check-up she is given a thorough examination (including an internal one), and blood and urine tests will be ordered to exclude any medical problems and to give the doctor a baseline for later comparison.

Routine antenatal checks are then performed by the midwife, general practitioner or obstetrician at monthly

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intervals until about 34 weeks pregnant, when the frequency will increase to fortnightly or weekly. Blood pressure and weight measurement and a quick physical check are normally performed. A small ultrasound instrument may be used to listen for the baby's heart from quite an early stage. Further blood tests will be performed once or twice during this period, and a simple test will be carried out on a urine sample at every visit. An ultrasound scan is usually performed to check on the size and development of the foetus.

Most women are advised to take tablets containing iron and folic acid throughout pregnancy and breastfeeding, in order to prevent both the mild anaemia that often accompanies pregnancy, and nerve developmental abnormalities in the foetus.

As the skin of the belly stretches to accommodate the growing baby, and in other areas where fat may be found in the skin (such as breasts and buttocks), stretch marks in the form of reddish/purple streaks may develop. These will fade to a white/silver colour after the baby is born, but unfortunately they will not normally disappear completely.

About the fourth or fifth month, the thickening waistline will turn into a bulge, and by the sixth month, the swollen belly is unmistakable. The increased bulk will change the woman's sense of balance, and this can cause muscles to become fatigued unless she can make a conscious effort to maintain a good upright posture. Care of the back is vitally important in later pregnancy, as the ligaments become slightly softer and slacker with the hormonal changes, and movement between the vertebrae in the back can lead to severe and disabling pain if a nerve is pinched.

During pregnancy, the mother must supply all the food and oxygen for the developing baby and eliminate its waste materials. Because of these demands, the mother's metabolism changes, and increasing demands are made on several organs. In particular, the heart has to pump harder, and the lungs have more work to do supplying the needs of the enlarged uterus and the placenta. Circulation to the breasts, kidneys, skin and even gums also increases. Towards the end of the pregnancy, the mother's heart is working 40% harder than normal. The lungs must keep the increased blood circulation adequately supplied with oxygen.

As the mother is the baby's sole source of nourishment during pregnancy, she should pay attention to her diet. A balanced and varied diet containing plenty of fresh fruit and vegetables, as well as dairy products (calcium is required for the bones of both mother and baby), meat and cereals, is appropriate.

During the last three months of the pregnancy, antenatal classes are very beneficial. Women are taught exercises to strengthen the back and abdominal muscles, breathing exercises to help with the various stages of labour, and strategies to cope with them. Women who attend these classes generally do far better in labour than those who do not.

In the month or so before delivery, it will be difficult for the mother to get comfortable in any position, sleeplessness will be common, and the pressure of the baby's head will make passing urine a far too regular event. Aches and pains will develop in unusual areas as muscles that are not normally used are called into play to support the extra weight, normally between 7 and 12 kg (baby + fluid + placenta + enlarged uterus + enlarged breasts), that the mother is carrying around.

Attending lectures run by the Nursing Mothers' Association (or similar organisations) to learn about breastfeeding, how to prepare for it and how to avoid problems, is useful in the last few weeks of pregnancy and for a time after the baby is born.

Visiting the hospital or birthing centre that you have booked into for the confinement can be helpful, so that the facilities and the labour ward will not appear cold and impersonal when they are used.

After the baby is born, visits to a physiotherapist to get the tone back into your abdominal muscles and to strengthen the stretched muscles around the uterus and pelvis will help the woman regain her former figure.

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ABDOMINAL PREGNANCY

Rarely a woman's egg is fertilised in the abdominal cavity or the fertilised egg comes out of the Fallopian tube and the pregnancy progresses in the abdominal cavity with the placenta and attached embryo implanting onto structures within the abdomen. This is the most extreme form of an ectopic pregnancy.

The pregnancy may continue for many weeks but in due course the placenta is unable to supply the growing foetus with adequate nutrition as it is not implanted into the normal site in the uterus but attaches to whatever structures and organs it comes into contact with in the abdomen.

The woman may be aware that she is pregnant, and her belly swells in a similar way to pregnancy, but the swelling is higher and more irregular than the smooth feeling of a pregnancy in the uterus. When the placenta starts to fail, usually at about 20 weeks of pregnancy, it separates from the structures in the abdomen to which it has been attached, bleeding into the abdomen occurs, and the woman experiences severe pain. At this stage the diagnosis is usually made, and as a result it is very rare for a foetus to survive an abdominal pregnancy.

An operation is necessary to remove the usually dead foetus from the mother's belly, but a lot of the placenta is often left behind to shrink naturally as attempts to remove it from the structures in which it is embedded can cause serious bleeding.

See also ECTOPIC PREGNANCY

ALPHA-FETOPROTEIN

Alpha-fetoprotein is a protein that is made in the liver, yolk sac of an embryo and the intestinal tract of a foetus.

The level of alpha-fetoprotein (AFP) in the amniotic fluid surrounding the foetus in the uterus can be measured to monitor the progress of a pregnancy. The normal values are: -

<u>Weeks of pregnancy</u>	<u>Lower limit</u>	<u>Upper limit</u>
14	14	55
15	15	61
16	17	69
17	20	81
18	23	94
19	26	106
20	30	122
21	36	143
Term	>50	

A slow decrease in values indicates a normal pregnancy. On the other hand, a steady rise indicates foetal distress, defect of spinal development (neural tube defect), kidney disease (eg. nephrotic syndrome), or twins. Very low levels may be found if the foetus has Down syndrome.

Alpha-fetoprotein levels can also be measured in blood for the same reasons as above, plus assessment of liver diseases and cancer of the ovary and testes. The normal level starts at less than 12 µg/L. and rises throughout pregnancy up to 50 µg/L or more at full term.

Very high blood levels may indicate Down syndrome (trisomy 21) or a neural tube (spinal cord) defect in the foetus.

A high level can occur with liver cancer (hepatic carcinoma), bowel cancer (colon carcinoma), stomach cancer, hepatitis, liver cirrhosis, other liver diseases, ovary cancer (teratoma) or testicular cancer. A steady rise occurs throughout a normal pregnancy, but a drop in levels late pregnancy indicates foetal distress. Excess blood levels in a non-pregnant adult indicates serious disease.

See also PREGNANCY-ASSOCIATED PLASMA PROTEIN-A

AMNIOTIC FLUID

Amniotic fluid (liquor amnii) is the liquid surrounding a foetus in the uterus of a pregnant woman. It is contained within the fibrous amniotic sac. A sample may be obtained in a process called amniocentesis by putting a needle through the skin of the lower abdomen and into the uterus and drawing off a small amount of amniotic fluid.

The amniotic fluid is created by the urine and faeces of the foetus, and by secretions from the placenta. The foetus is constantly swallowing and processing the fluid from about 15 weeks onwards, and it aids the growth and nutrition of the foetus.

It is normally a pale yellow colour, but may be darker if the foetus is distressed. The dark colouration may only be noticed at the beginning of labour when the waters break with the rupture of the amniotic sac in which the fluid and foetus are contained.

The volume of amniotic fluid steadily increases throughout pregnancy until about 36 weeks, after which it slowly decreases. At its peak, between 600 and 800 mLs of fluid are present.

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The amniotic fluid acts as a cushion for the foetus, protecting it from external bumps, jarring and shocks. It also allows the foetus to move relatively freely, and allows equal growth in all directions. It contains protein, sugars, fats and electrolytes (sodium, potassium, salt etc.). Hormones and waste produced by the foetus are also present as these are excreted in the urine of the foetus.

See also ALPHA-FETOPROTEIN; AMNIOCENTESIS; LECETHIN-SPHINGOMYELIN RATIO; OLIGOHYDRAMNIOS; PHOSPHATIDYL GLYCEROL; PLACENTA; POLYHYDRAMNIOS

AMNIOTIC SAC

The amniotic sac is the thin walled fibrous membrane in the form of a sac that surrounds the foetus and contains amniotic fluid during pregnancy. It is attached to the edges of the placenta and otherwise is pushed against, but not attached to, the inside of the uterus. The sac ruptures to release the fluid within it during labour.

See also AMNIOTIC FLUID; CAUL; CHORION

AMNIOTOMY

An amniotomy is the artificial rupturing of the membranes (ARM), the amniotic sac around the foetus, in order to induce labour at a late stage of pregnancy. The procedure is usually performed through the vagina and cervix with a pair of toothed forceps that are used to grasp and tear the membrane. It is uncomfortable but not painful for the mother.

See also AMNIOTIC SAC; INDUCTION OF LABOUR

ANAESTHETIC

See also EPIDURAL ANAESTHETIC; GENERAL ANAESTHETIC; SPINAL ANAESTHETIC

ANTENATAL

The term antenatal means before birth. It is derived from the Latin words for before, *ante*, and birth, *natalis*.

Antenatal care involves regular visits to a doctor or nurse from the third month of pregnancy onwards. The visits become steadily more frequent as the pregnancy progresses. During these visits appropriate blood and ultrasound tests will be ordered when necessary, and the mother's urine will be tested. Other checks on the mother and baby's health will also be performed depending on the stage of pregnancy, and may include weight, blood pressure, checking for swollen ankles and feet, checking the size of the uterus, listening for the baby's heart beat, checking the baby's position and feeling the baby's movements. Any questions about the pregnancy and the accompanying bodily changes will also be answered.

Regular antenatal care is essential for the well-being of both mother and baby.

APGAR SCORE

The Apgar score is a number that is given by doctors or midwives to a baby immediately after birth, and again five minutes later. The score gives a rough assessment of the baby's general health. The name is taken from Dr Virginia Apgar, an American anaesthetist, who devised the system in 1953. The score is derived by giving a value of 0, 1 or 2 to each of five variables - heart rate, breathing, muscle tone, reflexes and colour. The maximum score is 10.

	APGAR SCORE			
<u>SIGN</u>	<u>0</u>	<u>1</u>	<u>2</u>	
Heart Rate	Absent	Below 100	Above 100	
Breathing	Absent	Weak	Good	
Muscle tone	Limp	Poor	Good	
Reflexes	Nil	Poor	Good	
Colour	Blue/pale	Blue hands and feet	Pink	

When estimated at birth, a baby is considered to be seriously distressed if the Apgar score is 5, and critical if the score is 3, when urgent resuscitation is necessary. The situation becomes critical if the score remains below 5 at five minutes after birth. A score of 7 or above is considered normal.

BABIES

A child grows faster during babyhood than at any other stage of its life, including adolescence. By the age of 18 months a girl is usually half her adult height, and a boy is by the age of two years. There is little correlation between the rate of growth in childhood and eventual height. Many children grow quickly and then stop early so that they are short, whereas others seem to grow at a slower pace but continue until they outstrip everyone else. The most significant factor in determining height is heredity - the children of tall parents will usually also be tall. Nutrition is also significant, and a child who is poorly nourished is likely to be shorter than one who is well nourished. Advances in nutrition are the main reason for an overall increase in the height of populations of the developed world.

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Body proportions of babies and children are markedly different from those in adults. A baby's head is disproportionately large compared with that of an adult, and its legs are disproportionately short. A baby's head is about a quarter of its length, but an adult's head is about one eighth of their height. Between birth and adulthood, a person's head just about doubles in size, the trunk trebles in length, the arms increase their length by four times, and the legs grow to about five times their original length.

At birth, babies have almost no ability to control their movements. At the age of about four weeks, a baby placed on its stomach can usually hold its head up. At about four months, the baby will usually be able to sit up with support, and at the age of seven months should be able to sit alone. At around eight months, most babies can stand with assistance, and will start to crawl at ten months. They can probably put one leg after the other if they are led at about 11 months, and pull themselves up on the furniture by one year. At about 14 months a baby can usually stand alone, and the major milestone of walking will probably occur around 15 months. These are average figures and many children will reach them much earlier and others much later. Physical development does not equate with mental development, and parents should not be concerned if their child takes its time about reaching the various stages - Einstein was so slow in learning to talk that his parents feared he was retarded.

Most newborn babies sleep most of the time - although there are wide variations and some babies seem to stay awake most of the day and night, to the distress of their parents. As they grow, a baby's need for sleep diminishes until a toddler requires about ten or twelve hours of sleep a night, with a nap in the daytime.

BABY FEEDING

A baby will normally be introduced to solids at about four months. These will consist of strained vegetables and fruits. At the beginning they are not a substitute for milk but are simply to get the baby used to them. Gradually solids become an integral part of the diet, and by six months the amount of milk can usually be reduced in proportion to solids in each meal.

Breast milk is the best possible food for a baby from birth, and no other milk is needed until one year of age, when cow's milk may be introduced. If the baby is not breast fed, infant formula is recommended for most of the first year, although many babies cope with ordinary cow's milk from six months. From the age of about six months it is safe to stop sterilising the bottles. Many babies are able to master the art of drinking out of a cup at about nine months. By the time a baby is a toddler, they should be eating much the same meals as the rest of the family, assuming these are nutritious and well balanced. It is important that food is attractively prepared and presented so that it looks appetising.

Some parents become excessively anxious because their child seems to be a fussy eater, and they worry that the child will not receive adequate nutrition. This is usually because meals have become a battleground with a parent insisting on every last scrap being consumed. Once mealtimes become unpleasant, the child not unnaturally tries to avoid them. Children are like adults. Sometimes they are hungrier than other times, and they like some foods and dislike others. If you allow your child some individual choice in what and how much they eat, it is unlikely that problems will arise. If a child goes off a particular food for a period, respect their wish - it will usually be short-lived. It is unknown for a child voluntarily to starve itself to death.

There is growing evidence that children should not be overfed. A chubby child has long been regarded as desirably healthy and a tribute to its mother. No-one would suggest that children ought to be thin and that a little extra fat does not provide the necessary fuel for a growing and energetic youngster, but increasingly it is being realised that fat children grow into overweight adults.

See also BOTTLE FEEDING; BREASTFEEDING

BIRTH CENTRE

A birth centre is a facility in which a mother who has a very low risk of complications during her labour can give birth, usually with the assistance of a midwife but minimal medical intervention. They are often fitted with comfortable beds, pleasant surroundings, music and facilities for the father and other supporters. Ideally they should be attached to, or close to, a more sophisticated maternity hospital so that if necessary appropriate assistance is rapidly available for both mother and child.

See also LABOUR

BIRTHING CHAIR

In some societies today, and in medieval Europe, it was normal for a woman to give birth while seated. A specially designed chair is used for the purpose with a U shaped seat open to the front, supportive arms, and a back that slopes backwards. The actual structure, degree of padding and comfort depends on the individual design and expectations of the mother and midwife. Lights, mirrors and collecting basins may be installed below the chair.

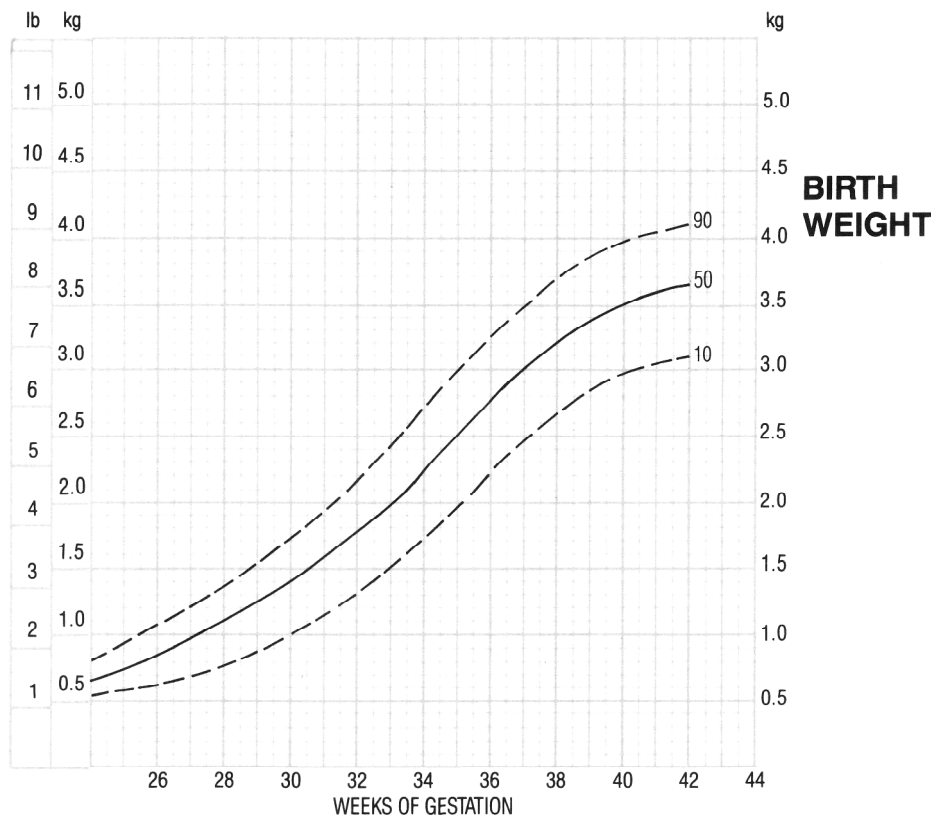
See also LABOUR

BIRTH WEIGHT

The weight of a baby at birth varies with many factors including number of weeks of pregnancy (ie. is the baby premature), the size of the parents, the racial background of the parents, smoking by the mother and illness in the

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mother. The range of weights for the average Caucasian baby in developed nations is shown on the following graph.



BLASTOCYST

The hollow ball of stem cells that forms from a zygote and morula soon after conception is called a blastocyst. The blastocyst travels down the Fallopian tube to the uterus where it implants in the wall, seven days after fertilisation. Once implanted it becomes an embryo.

See also EMBRYO; ZYGOTE

BOTTLE FEEDING

Although cow's milk is part of the normal diet of most Western nations, it is not suitable for young babies. The naturally intended food for babies is breast milk, and a baby who is not being breastfed must be fed with special formulas developed to approximate breast milk, which has more sugar and less protein than cow's milk.

Provided the manufacturer's instructions are followed exactly, most babies will thrive on formula. It is quite wrong to think that a slightly stronger formula might give the baby more nourishment. If the mixture is made stronger than the manufacturer recommends, the baby will get too much fat, protein, minerals and salt, and not enough water.

Milk, especially when at room temperature, is an ideal breeding ground for bacteria, and it is therefore essential that formula is prepared in a sterile environment. Bottles, utensils, measuring implements, teats and anything used in the preparation of a baby's food must be boiled and stored in one of the commercially available sterilising solutions. Carers should also wash their hands before embarking on preparation. Made-up formula must be stored in the refrigerator. If these precautions are not followed, the baby may develop gastroenteritis and require hospitalisation.

The baby should be allowed some say in how much food s/he needs. Carers will generally be advised by the hospital or baby health clinic how much to offer the baby (calculated according to weight), but just as breastfed babies have different needs that can vary from feed to feed, so too do bottle-fed babies. Mothers often feel that the baby should finish the last drop in the bottle. But within reason, babies can generally be relied upon to assess their own needs quite satisfactorily.

Just as with breastfed babies, it is generally considered best to feed a baby as and when they are hungry. In the first few weeks this may be at irregular and frequent intervals. It takes about three or four hours for a feed to be digested, and as the baby's digestive system matures, signs of hunger will normally settle down into a regular pattern.

The rate at which babies feed also varies. Some like to gulp down their formula, while others like to take things

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easy. The rate of feed can upset a baby if it is too fast or slow for its liking. Teats with different hole sizes can be purchased, and a small hole can be enlarged with a hot needle. Frequent breaks from the bottle during a feed in order to let a burp come up and the milk go down can also smooth the progress of the feed and avoid stomach discomfort afterwards.

See also BREASTFEEDING

BRAXTON HICKS CONTRACTIONS

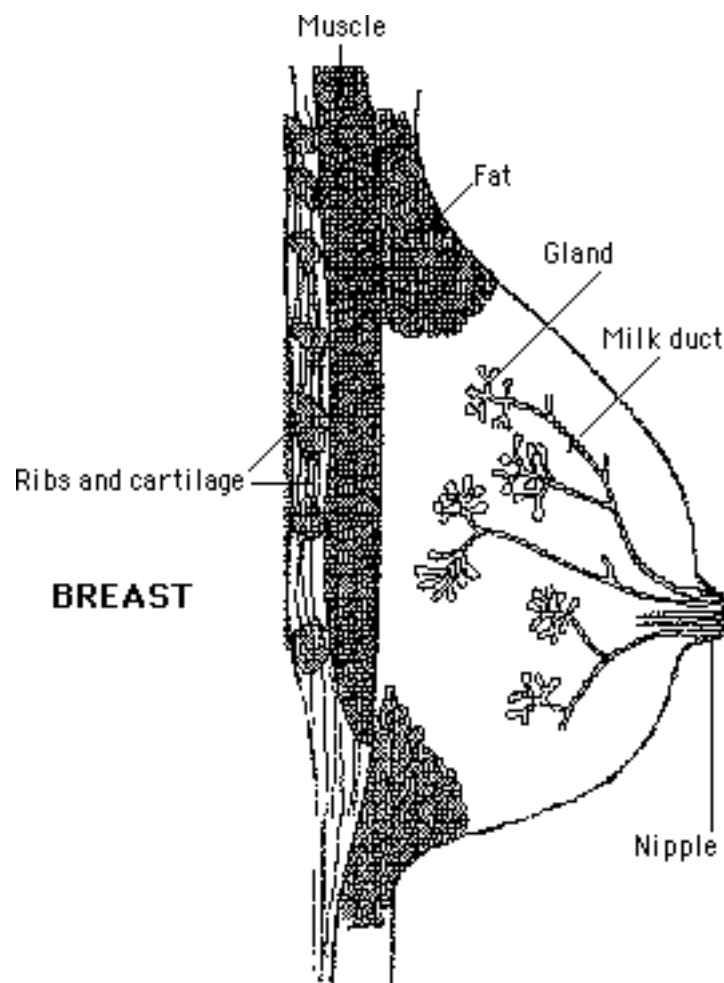
All pregnant women have a sudden scare with their first Braxton Hicks contractions as they fear that they are coming into early labour, but these contractions of the uterus that can occur at any time in the last four months of pregnancy, but are very common in the last month of the pregnancy, are completely normal and harmless.

The woman feels a tightening of the uterus that may last from a few seconds to a couple of minutes, but there is usually no pain associated with the phenomenon, although the more intense Braxton Hicks contractions may be difficult to differentiate from the onset of labour late in pregnancy. They are responsible for many false labour alarms resulting in a rush to hospital.

They are named after the English physician John Braxton Hicks (1823-1897).

See also LABOUR

BREAST



Also known as the mammary glands, the breasts are glands that develop on the chest wall of women at puberty. Some women have breasts that are higher or lower on the chest, but when kneeling on all fours so the breast is hanging down, the nipple is usually over the fourth to sixth rib on each side. Some women have round breasts, while others have a more tubular shape. The size, shape and position of the breast is determined genetically, so women are likely to have a similar shaped and sized breasts to that of their mother and both maternal and paternal grandmothers.

The primary function of breasts is to produce milk to feed babies, but they also have a very important role to play as secondary sexual characteristics and thereby to attract a suitable male partner.

The milk glands are arranged into 15 to 20 groups (lobes), each of which drains separately through ducts in the nipple. The amount of milk producing glandular tissue is similar in all breasts, regardless of their size. Larger breasts merely have more fat in them.

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During pregnancy the glandular tissue increases to enlarge the breasts, and make them tender at times. The same phenomenon occurs to a minor extent just before a period in many women due to the increased level of oestrogen (sex hormone produced by the ovaries) in the bloodstream.

The breast also contains fibrous tissue to give it some support. The stretching of these fibres causes the breast to sag after breastfeeding and with age.

When stimulated by suckling, muscles in the nipple contract to harden and enlarge it so that the baby can grip and suck on it. A similar response occurs with sexual activity, cold or emotional excitement.

See also BREASTFEEDING; WITCH'S MILK

BREAST ABSCESS

A breast abscess is a collection of pus in the breast that forms due to infection. The usual cause is untreated mastitis during breastfeeding, when a milk duct becomes blocked and the trapped milk and surrounding tissue becomes infected and breaks down to form pus.

It is treated with antibiotics and surgical drainage of the pus.

See also BREASTFEEDING; MASTITIS

BREASTFEEDING

Breastfeeding is technically known as lactation.

After birth, a woman's breasts automatically start to produce milk to feed the baby. The admonition "breast is best" features prominently on cans of infant formula and on advertising for breast milk substitutes in many third-world countries, and there is little doubt that it is true. Because of poverty, poor hygiene and poorly prepared formula, bottle-feeding should be actively discouraged in disadvantaged areas.

Unfortunately, for a variety of reasons, not all mothers are capable of breastfeeding. Those who can't should not feel guilty, but should accept that this is a problem that can occur through no fault of theirs, and be grateful that there are excellent feeding formulas available for their child.

Breastfeeding protects the baby from some childhood infections and the stimulation it also helps the mother by stimulating the uterus to contract to its pre-pregnant size more rapidly.

Babies don't consume much food for the first three or four days of life. Nevertheless, they are usually put to the breast shortly after birth. For the first few days the breasts produce colostrum, a very watery, sweet milk, which is specifically designed to nourish the newborn. It contains antibodies from the mother, which help prevent infections.

Breastfeeding may be started immediately after birth in the labour ward. All babies are born with a sucking reflex, and will turn towards the side on which their cheek is stroked. Moving the baby's cheek gently against the nipple will cause most babies to turn towards the nipple and start sucking. Suckling at this early stage gives comfort to both mother and child. In the next few days, relatively frequent feeds should be the rule to give stimulation to the breast and build up the milk supply. The breast milk slowly becomes thicker and heavier over the next week, naturally compensating for the infant's increasing demands.

After the first week, the frequency of feeding should be determined by the mother and child's needs, not laid down by any arbitrary authority. Each will work out what is best for them, with the number of feeds varying between five and ten a day.

Like other beings, babies feed better if they are in a relaxed comfortable environment, with a relaxed comfortable mother. A baby who is upset will not be able to concentrate on feeding, and if the mother is tense and anxious, the baby will sense this and react, and she will not be able to produce the "let-down reflex" which allows the milk to flow. The milk supply is a natural supply and demand system. If the baby drinks a lot, the breasts will manufacture more milk in response to the vigorous stimulation. Mothers of twins can produce enough milk to feed both babies because of this mechanism.

While milk is being produced, a woman's reproductive hormones are suppressed and she may not have any periods. This varies greatly from woman to woman, and some have regular periods while feeding, some have irregular bleeds, and most have none. Breastfeeding is sometimes relied upon as a form of contraception, but this is not safe. The chances of pregnancy are only reduced, not eliminated. The mini contraceptive pill, condoms, and the intrauterine device can all be used during breastfeeding to prevent pregnancy.

It is important for the mother to have a nourishing diet throughout pregnancy and lactation. The mother's daily protein intake should be increased, and extra fresh fruit and vegetables should be eaten. Extra iron can be obtained from egg yolk, dark green vegetables (eg. spinach), as well as from red meat and liver. Extra fluid is also needed.

See also BOTTLE FEEDING; MASTITIS; NIPPLE CRACKED; NIPPLE DISCHARGE; NIPPLE INVERTED

BREECH BIRTH

Babies normally come into the world head first, but occasionally the wrong end fits into the mother's pelvis and cannot be dislodged. About 3% of babies are in the breech position at birth. They are normally delivered by a caesarean section, but may be delivered normally with the assistance of forceps to protect the head.

Breech labours tend to take longer than head first ones, and there can be more problems for the baby, as the

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cord will be compressed during the delivery before the head is free to start breathing. Even so, the vast majority of breech births result in no long-term complications to the mother or child.

CAESAREAN SECTION

Julius Caesar was purportedly delivered from his dead mother, alive and well, after her belly was cut open immediately upon her demise, giving rise to the common name for the operative delivery of a baby. In fact it is unlikely this scenario occurred, but *caedere* means “to cut” in Latin, and those delivered immediately after the death of a mother in childbirth by being cut from the mother’s womb were called *caesones*. It is far more likely that Julius Caesar was a descendent from such a *caesones* and his family adopted that title as their surname. The man was probably named for the operation and not the reverse.

In the last 2000 years the operation has been considerably refined to the point where about a quarter of all babies are now delivered in this manner.

There are obvious situations where a caesarean section is the only choice for the obstetrician. These include a baby that is presenting side on instead of head-first, a placenta (afterbirth) that is over the birth canal, a severely ill mother, a distressed infant that may not survive the rigours of the passage through the birth canal, and the woman who has been labouring for many hours with no success.

Caesarean sections may also be performed if the mother has had a previous operative birth, if she is very small, if previous children have had birth injuries or required forceps delivery, for a baby presenting bottom first, if the baby is very premature or delicate, in multiple pregnancies where the two or more babies may become entangled, and in a host of other combinations and permutations of circumstances that cannot be imagined in advance. The decision to undertake the operation is often difficult, but it will always have to be up to the judgement and clinical acumen of the obstetrician, in consultation with the mother if possible, to make the final decision.

In developed countries the rate at which Caesarean sections are performed is steadily rising. The reasons for this include the convenience of the mother, the convenience of the doctor, the legal risks associated with natural labour and the medical risks. The rate now exceeds a quarter of all deliveries in many areas, and up to 28% in some countries, an increase from less than 20% ten years ago.



Normal Caesarean section scar

The operation is extremely safe to both mother and child. A spinal or epidural anaesthetic is given to the mother, and the baby is usually delivered within five minutes. A general anaesthetic is these days only given in some specific circumstances. After delivery the longer and more complex task of repairing the womb and abdominal muscles is undertaken. In most cases, the scar of a caesarean is low and horizontal, below the bikini line, to avoid any disfigurement.

With epidural or spinal anaesthesia, a needle is placed in the middle of the mother's back, and through this an anaesthetic is introduced. The woman feels nothing below the waist, and although sedated is quite awake and able to participate in the birth of her baby, seeing it only seconds after it is delivered by the surgeon. Some doctors and hospitals allow the woman's partner to be present during these deliveries.

Recovery from a caesarean is slower than for normal childbirth, but most women leave hospital within seven days. It does not affect breastfeeding or the chances of future pregnancies, and does not increase the risk of miscarriage.

See also EPIDURAL ANAESTHETIC; KERR CAESAREAN INCISION; LABOUR; PFANNENSTIEL INCISION; SPINAL ANAESTHETIC

CAUL

The amniotic sac or membrane surrounds the foetus and amniotic fluid in the uterus. During labour the membrane ruptures and allows the baby to be born. A caul is a small part of the membrane that sticks to the baby's head after birth. It has no medical meaning and can be easily peeled from the baby's head, but superstitious people believe that a baby born with a caul will never die by drowning.

See also AMNIOTIC SAC

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CERVIX

The cervix (often abbreviated in medical notes to Cx) is the narrow passage at the lower end of the uterus, which connects with the vagina. It allows blood to flow out of the uterus during the menstrual period, and sperm to enter after intercourse for possible fertilisation of an egg. The cervix is normally filled with mucus, the composition of which changes at different stages of the menstrual cycle. It is usually thick to stop bacteria and other infections from entering the uterus, but when an egg is released (ovulation) it becomes thinner so as to make it easier for sperm to enter and fertilise the egg. Some forms of birth control are based on a woman analysing the consistency of the cervical mucus she produces, since it is an obvious indicator of when an egg is about to be released.

When a baby is due to be born and the mother goes into labour, the canal through the centre of the cervix expands in a few hours to many times its normal diameter of about 3 millimetres up to about 10 centimetres to allow the baby out. The first stage of labour is when the muscles of the wall of the uterus start contracting while at the same time the muscle fibres of the cervix relax to allow expansion.

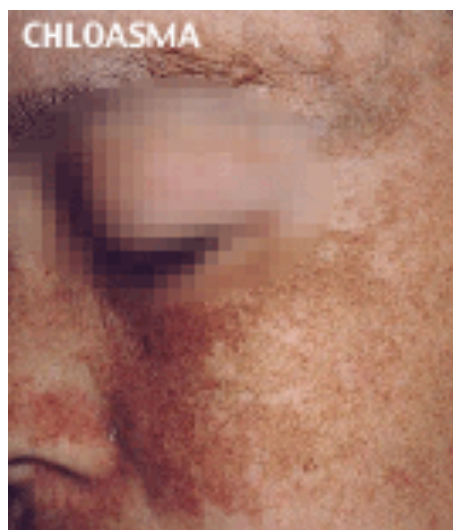
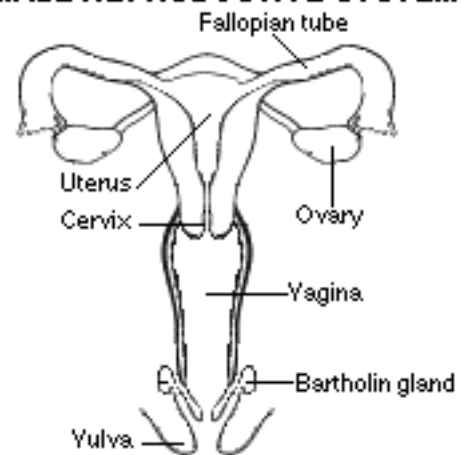
If the cervix opens abnormally during pregnancy, the foetus may escape and the woman will have a miscarriage. Some women have a cervix that is prone to weakness (an incompetent cervix), and if detected early enough, the cervix can be held closed by stitches, a procedure generally carried out under general anaesthetic. The stitches are removed when labour begins or at about the thirty-eighth week of pregnancy.

Sometimes the delicate cells forming the inner lining of the cervix spread to cover the tip and replace the stronger tissue normally occurring there. This is called cervical erosion and makes the cervix more vulnerable to infection. It may cause a heavy discharge and bleeding after intercourse. Generally the treatment for cervical erosion is to destroy the unwanted cells by heat (cauterisation) or laser. This is painless and usually only requires attendance at a clinic or hospital as an outpatient.

The most serious condition affecting the cervix is cervical cancer. Like most cancers, this can be effectively treated if it is detected early. The method of detection is a Pap smear, and all women should have one every two years. Deaths from cervical cancer are second only to deaths from breast cancer, but the death rate could be dramatically reduced if all women had regular Pap smears.

See also UTERUS; VAGINA

FEMALE REPRODUCTIVE SYSTEM



CHLOASMA

Chloasma (melasma) is a pigmentation disorder of the skin that occurs almost invariably in women, and more commonly in those with a dark complexion. The deposits of pigment on the forehead, cheeks, upper lip, nose and nipples are often triggered by pregnancy or starting the oral contraceptive pill.

Treatment is unsatisfactory. Numerous blanching agents have been tried with minimal success, but the pigmentation usually fades slowly over several years.

See also NIPPLE PIGMENTATION

CHORION

The chorion is the outermost layer of the amniotic sac, the membranes that surround the foetus during pregnancy. The placenta forms from the chorion in the first few weeks of pregnancy.

See also AMNIOTIC SAC; CHORIONIC VILLUS SAMPLING, HUMAN; PLACENTA

CHORIONIC GONADOTROPHIN, HUMAN

Beta human chorionic gonadotrophin (beta HCG or HCG) is secreted by the placenta. The blood level rises to a peak at 10 weeks of pregnancy, and then slowly declines. Its presence can be used as a diagnostic test for pregnancy, but can only be detected at least ten days after conception. Its presence also acts as a reliable marker for certain cancers of the ovary and testes. The interpretation of blood levels are as follows:-

Less than 10 IU/L. - normal non-pregnant.

20 to 100 IU/L - 1 to 2 weeks after pregnancy commences, or menopause

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100 to 6000 IU/L - 3 to 4 weeks of pregnancy, or after 6 months of pregnancy, or cancers of ovary or testicle (embryonal carcinoma or choriocarcinoma).

6000 to 30,000 IU/L - increases between weeks 7 and 30 of pregnancy, and then slowly decreases.

Over 30,000 IU/L - increased risk of Down syndrome (mongolism).

Most HCG tests for pregnancy are performed on urine. The tests indicate whether the HCG is over a threshold level of HCG and merely indicate a positive or negative result. False positive results can occur with cancers of ovary or testes (seminomas, choriocarcinoma) or placental tumour (hydatidiform mole). False negatives are far more common and can occur with very dilute urine, if the pregnancy has not progressed far enough to produce sufficient HCG or with kidney diseases. The peak level of urine HCG is reached at 10 weeks pregnancy, after which it declines, so a urine pregnancy test after about 20 weeks of pregnancy may be negative.

Chorionic gonadotrophin can also be injected as a medication in the treatment of infertility in women, delayed puberty in girls, failure of testicular development and failure of sperm production. It may result in multiple pregnancies and may cause fluid retention. It must not be used by patients suffering from some types of cancer affecting the sex organs.

Although chorionic gonadotropin has been prescribed to help some patients lose weight, it should never be used this way. When used improperly, chorionic gonadotropin can cause serious problems.

See also PREGNANCY ASSOCIATED PLASMA PROTEIN-A; PREGNANCY TEST

CONCEPTION

Conception occurs when as a result of sexual intercourse (or by an some medical procedure), a female egg is fertilised by a male sperm. Once a month, 14 days before the beginning of the next menstrual period, a microscopically small egg (ova) is released from one of a woman's ovaries, and travels down a Fallopian tube towards the womb (uterus). During this journey, the egg may encounter sperm released by the woman's male partner during intercourse.

If one sperm penetrates the egg, the egg is fertilised, in a process called conception, and if the fertilised egg successfully implants into the wall of the uterus, the woman becomes pregnant. Once an egg has been fertilised by one sperm, it immediately becomes impenetrable to other sperm, even though millions of sperm are deposited as a result of any single ejaculation.

If, perchance, two eggs are released and fertilised, there will be two babies or twins

See also FALLOPIAN TUBE; ZYGOTE

CONSTIPATION IN PREGNANCY

Constipation is common in pregnancy and is thought to be due to a loosening of the muscles of the digestive tract caused by hormonal changes. In late pregnancy the enlarging womb presses on the intestines and aggravates the condition. It is not dangerous, but if worrying, a faecal softener can be used. No medications, including laxatives, should be used during pregnancy without discussing them with a doctor.

CORPUS LUTEUM

The corpus luteum is a yellowish collection of cells that develops on the surface of the ovary at the point where an ovum (egg) is released at the middle of a woman's normal menstrual cycle. The corpus luteum grows to one or two centimetres in diameter, and if a pregnancy occurs, may increase to three centimetres. It produces the hormone progesterone, which nurtures the lining of the uterus (the endometrium) so that it is suitable for the implantation of a fertilised egg (zygote). After implantation the corpus luteum continues to grow slowly until three months of pregnancy, then slowly degenerates, and the amount of progesterone it produces decreases, until it disappears at about the sixth month of pregnancy.

If no pregnancy occurs, the corpus luteum rapidly degenerates after about ten days, progesterone levels drop, and a menstrual period occurs 14 days after ovulation.

See also ENDOMETRIUM; OVARY

DIABETES IN PREGNANCY

Pregnancy may trigger gestational (pregnancy) diabetes in a woman who was previously well but predisposed towards this disease. One of the reasons for regular antenatal visits to doctors and the urine tests taken at each visit is to detect diabetes at an early stage. If diabetes develops, the woman can be treated and controlled by diet, but often regular injections of insulin are required. In some cases, the diabetes will disappear after the pregnancy, but it often recurs in later years.

If the diabetes is not adequately controlled, serious consequences can result. In mild cases, the child may be born grossly overweight but otherwise be healthy. In more severe cases, the diabetes can cause a miscarriage, eclampsia, malformations of the foetus, urinary and kidney infections, fungal infections (thrush) of the vagina, premature labour, difficult labour, breathing problems in the baby after birth, or death of the baby within the womb.

Diabetic women tend to have difficulty in falling pregnant, unless their diabetes is very well controlled.

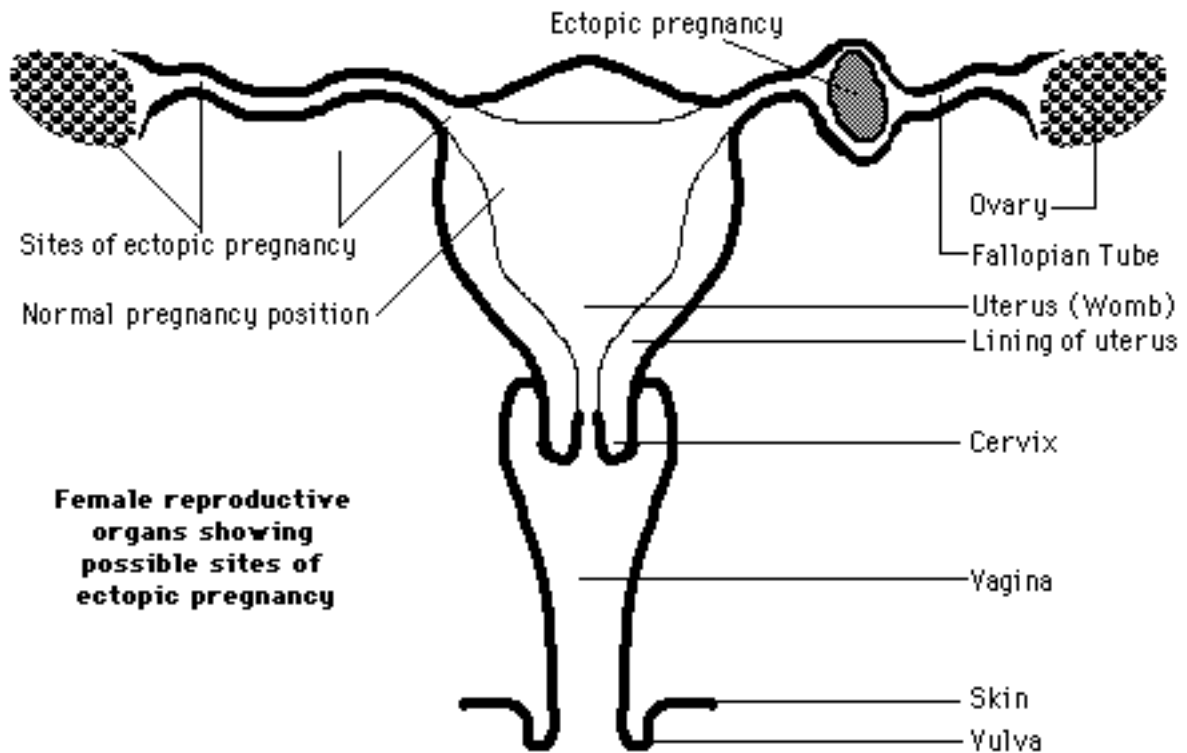
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ECTOPIC PREGNANCY

A foetus normally grows within the womb (uterus). An ectopic pregnancy is one that starts and continues to develop outside the uterus. About one in every 200 pregnancies is ectopic. Conditions such as pelvic inflammatory disease and salpingitis increase the risk of ectopic pregnancies, as they cause damage to the Fallopian tubes. Other infections in the pelvis (eg. severe appendicitis) may also be responsible for tube damage.

Symptoms of an ectopic pregnancy may be minimal until a sudden crisis from rupture of blood vessels occurs, but most women have abnormal vaginal bleeding or pains low in the abdomen in the early part of the pregnancy. Many ectopic pregnancies fail to develop past an early stage, and appear to be a normal miscarriage. Serious problems can occur if the ectopic pregnancy does continue to grow.

The most common site for an ectopic pregnancy is the Fallopian tube, which leads from the ovary to the top corner of the womb. A pregnancy in the tube will slowly dilate the tube until it eventually bursts. This will cause severe bleeding into the abdomen and is an urgent, life-threatening situation for the mother. Other possible sites for an ectopic pregnancy include on or around the ovary, in the abdomen or pelvis, or in the narrow angle where the Fallopian tube enters the uterus.



If an ectopic pregnancy is suspected, an ultrasound scan can be performed to confirm the exact position of any pregnancy. If the pregnancy is found to be ectopic, the woman must be treated in a major hospital. Surgery to save the mother's life is essential, as a ruptured ectopic pregnancy can cause the woman very rapidly to bleed to death internally. If the ectopic site is the Fallopian tube, the tube on that side is usually removed during the operation. With early diagnosis and improved surgical techniques, the tube may not have to be removed. Even if it is lost, the woman can fall pregnant again from the tube and ovary on the other side.

It is rare for a foetus to survive any ectopic pregnancy.

See also ABDOMINAL PREGNANCY

EMBRYO

Once a month, a microscopically small egg (ova) is released from one of a woman's ovaries and travels down the Fallopian tube towards the uterus. If during this journey the egg encounters sperm released by the woman's partner, the egg may be fertilised, and the woman becomes pregnant. Once penetrated by the sperm, the egg starts multiplying, from one cell to two, then four, eight, 16, and so on, doubling in size with each division.

Initially the fertilised cell mass is called a zygote. As the cells continue to multiply the ball of cells is called a morula, and then as a hollow develops in the centre of the ball, a blastocyst. After ten days, the growing embryo consists of a fluid-filled ball, only a couple of millimetres across. At this point it implants into the endometrium lining the inside of the uterus (a process called nidation) and continues to grow, drawing all it needs from the mother through the placenta.

For the first 12 weeks, the developing baby is called an embryo. The growth of the embryo is rapid to start with, but slows down as maturity approaches. The embryo soon becomes the size of a grain of rice, and then a tadpole

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(both in size and appearance). By the end of the first month, it is about eight millimetres long, with four small swellings at the sides, called limb buds, which will develop into arms and legs.

5 WEEK OLD EMBRYO



At eight weeks of pregnancy, the embryo is 2 cm long, and the nose, ears, fingers and toes are identifiable. Most of the internal organs form in the next four weeks, and by 12 weeks when the baby is 5.5 centimetres long, a pumping heart can be detected, and the baby is moving, although too weakly yet to be detected by the mother. It is during the first three months that the embryo is most prone to the development of abnormalities caused by drugs (eg. thalidomide, isotretinoin) or infections (eg. german measles).

Once it is three months old the baby is called a foetus.

See also BLASTOCYST; FOETUS; ZYGOTE

ENDOMETRIUM

The endometrium is the innermost lining of the uterus in which a fertilised egg implants (nidation) to grow into a foetus. It is also the layer that peels away from the inside of the uterus and is shed during menstruation.

See also UTERUS

EPIDURAL ANAESTHETIC

An epidural anaesthetic is very similar to a spinal anaesthetic, but the injection into the back does not penetrate as deeply and does not enter the cerebrospinal fluid. The spinal cord is wrapped in three layers of fibrous material (the meninges), and this anaesthetic is given into the very small space between the outer two layers (dura mater and arachnoid mater). It is outside the dura - thus epidural. The procedure is technically more difficult than a spinal anaesthetic, but the side effects are less severe. Epidural anaesthetics are used most commonly to relieve the pain of childbirth.

See also SPINAL ANAESTHETIC

FACE PRESENTATION

Normally the baby presents the crown (top) of its head in the opening of the uterus during birth, with the neck bent and the chin on the chest. This lets the smallest diameter of the head pass through the birth canal. In a very small number of cases, the neck becomes extended (bent back) instead of flexed (bent forward), and the face presents itself to the outside. This is a significant problem, as in a face presentation the largest diameter of the head is trying to force its way through the birth canal. The result is a very long labour, and damage to both mother and baby is possible.

Obstetricians can sometimes disengage (push up) the head from the pelvis and bring it back down again with the crown of the head presenting, but in most cases a caesarean section is the treatment of choice.

See also FOETAL POSITION; PRESENTATION

FALLOPIAN TUBE

The two Fallopian tubes (oviducts) that make up part of a woman's reproductive system are named after Gabriello Fallopio, a 16th. Century Italian doctor and anatomist who lectured at the University of Padua.

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One Fallopian tube (Fallopian salpinx) leads from each ovary to the uterus. They are about 10-12.5 cm long and the end near the ovaries (called the infundibulum) is rather like a bent hand with its extended fingers encircling the ovary, although not actually touching it. At the other end the tube blends with the upper corner of the uterus.

Once a month, about halfway between menstrual periods, one ovary releases an egg (ova). The egg is swept into the Fallopian tube by the waving fingers and transported down to the uterus. If, on its passage through the tube, the egg is fertilised by a male sperm introduced during sexual intercourse, pregnancy will result when the fertilised egg implants in the wall of the uterus.

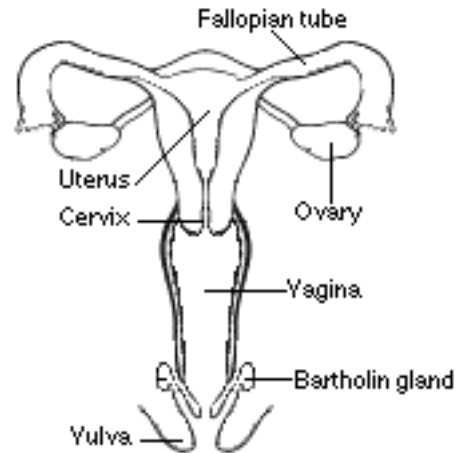
Occasionally, the fertilised egg becomes implanted in the wall of the Fallopian tube, in which case it is an ectopic pregnancy. This is a dangerous and usually very painful occurrence, as the fertilised egg rapidly becomes too large for the tube and can cause it to rupture. If an ectopic pregnancy happens, the tube will usually have to be removed by surgery, but provided the woman still has one tube, she can still become pregnant.

If the egg passes down the tube without being fertilised, it will simply pass out of the body when the woman has her period.

A woman who is certain she does not want any more children may elect to have her Fallopian tubes tied (tubal ligation). This involves an operation to close the Fallopian tubes so that the egg and the sperm cannot meet.

See also ECTOPIC PREGNANCY; OVARY; UTERUS

FEMALE REPRODUCTIVE SYSTEM



FOETAL POSITION

During labour, the position of the foetal head is described in a standard way by relating the lowest part of the foetal head to the four quadrants of the mother's pelvis (left, right, anterior, posterior). The presenting part of the baby may be the back of the head - occiput (O), when the baby is coming head first, or the back of the baby's pelvis - sacrum (S), when it is a breech birth. Thus a presentation of the baby's head may be described as right occipito-anterior (ROA) if the occiput of the baby is facing the posterior aspect of the mother's right side, or occipito-posterior (OP) if the baby's occiput is directly facing the posterior part of the mother's pelvis - this is the most desirable position. LSP would be left sacro-posterior in a breech birth.

Other less common presenting parts of the baby are possible including face, transverse lie, shoulder and leg. These usually require delivery by caesarean section.

See also FACE PRESENTATION

FOETOMATERNAL HAEMORRHAGE

During pregnancy, the blood circulation through the foetus (baby) and the placenta is totally separate to the blood circulation in the mother. The circulation in the foetus and placenta is maintained by the beating of the foetal heart. It is not unusual for a small amount of blood to leak from the circulation of the foetus into the circulation of the mother, particularly during delivery. This is known as foetomaternal haemorrhage.

Normally this haemorrhage causes no problems, but if the father's blood is rhesus positive, it is possible for the foetus to also have rhesus positive blood, and if this leaks into the circulation of a mother who is rhesus negative, antibodies against the foetus blood may develop.

The antibodies in the mother's blood may return to the blood of the foetus and start to attack and destroy the red blood cells, resulting in haemolytic disease of the newborn (HDN). The antibodies remain in the mother circulation, and although the first pregnancy with a rhesus positive baby is not usually a problem, almost certainly subsequent pregnancies will be.

For this reason, all women who are rhesus negative are given an injection of anti-D (rhesus D immunoglobulin) to prevent the formation of antibodies against the Rhesus factor. The injection is given twice during the pregnancy (usually at 28 and 34 weeks) or immediately after birth, or earlier in pregnancy if an amniocentesis is performed, or after a miscarriage, termination of pregnancy or ectopic pregnancy. A test for the presence of anti-D antibodies is usually performed before the injection of anti-D is given.

FOETUS

A baby in a mother's womb is called a foetus after three months of pregnancy, and appears like a perfectly formed but tiny baby. Before this it is referred to as an embryo.

The foetus floats in a fluid filled sack-like a water filled balloon. It drinks the fluid, and excretes into it through its kidneys and bowels.

One side of the balloon is a special outgrowth of the baby, which forms the placenta, while the rest is a fine but

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tough transparent membrane. The baby is connected to the placenta by the umbilical cord, which at birth is between 15 and 120 cm. long, and runs from the navel to the centre of the placenta. The arteries and veins in the placenta fan out and penetrate into the wall of the uterus to interact with the mother's circulatory system. This enables the baby to draw oxygen and food from the mother's system, and send waste products to the mother for removal.

At 16 weeks, the foetus is 12 cm long and its sex can be determined. The skin is bright red because it is transparent, and the blood can be seen through it. The kidneys are functioning and producing urine, which is passed into the amniotic fluid.

The "quickening" is the time when the mother becomes aware of the baby's movements. It occurs between 16 and 18 weeks (the latter in first pregnancies). The mother usually becomes quite elated at this time, as she realises that there really is a baby inside her. The movements become gradually stronger throughout pregnancy, until it is possible to trace the movement of a limb across the belly. Babies vary dramatically in how much they move - some are very active indeed, while others are relatively quiet. During the last couple of weeks of pregnancy the baby does not move as much, as the amount of space available becomes more restricted.

By 24 weeks, the skin is the normal colour. This is the earliest that a baby has a reasonable chance of surviving outside the mother, although infants are still at high risk if born before 32 weeks. By that stage, development is complete, and the last eight weeks are merely a growth stage.

By 38 weeks, the baby has settled upside down in the uterus. During this period, the head sinks down into the mother's pelvis and is said to "engage" ready for birth.

The miracle is completed when labour starts. The trigger for this is not accurately known, but a series of nervous and hormonal stimuli dilates the cervix that guards the opening into the womb, and starts the rhythmic contractions of the womb, which will bring another human being out into the world.

FOETUS IN FOETU

A very rare condition in which one foetus grows inside another. The two foetuses are effectively twins. Usually the internal foetus is deformed, incapable of independent existence and very small but may appear as a non-cancerous mass that causes symptoms at birth or later in life.

FOETUS SMALL

If during pregnancy a foetus is thought to be smaller than it should be for the length of the pregnancy, doctors may be referred to the problem as intrauterine growth retardation. This may be assessed both clinically and by ultrasound. This failure of foetus to achieve its full growth potential may be due to problems with the foetus, mother or placenta.

Factors due to the mother include high blood pressure (maternal hypertension), german measles (rubella), toxoplasmosis, Herpes infection, cytomegalovirus, cytotoxic medications, irradiation, diabetes, chronic renal disease, malnutrition, anaemia, family history, drug abuse, alcoholism, heavy smoker and high altitude.

Factors due to the foetus include congenital, genetic or chromosomal abnormalities, cerebral palsy, foetal infections and twins.

The usual factor due to the placenta is abruptio placentae (separation of the placenta from the uterus).

Investigations (eg. ultrasound scan, blood tests) will be undertaken to determine which cause is responsible.

FOLIC ACID

Folic acid is sometimes classed as vitamin B9 or vitamin M. It is essential for the basic functioning of the nucleus in cells, and extra amounts may be needed during pregnancy, breast feeding, and in the treatment of anaemia and alcoholism. It assists in the uptake and utilisation of iron. During pregnancy, supplements may prevent spinal cord defects in the baby. It is found naturally in liver, dark green leafy vegetables, peanuts, beans, whole grain wheat and yeast.

The level in blood can be measured and the normal range is 9.1 to 57 nmol/L (4 to 25 ng/mL). The amount in red blood cells can also be measured (normal range is a level greater than 318 nmol/L or 140 ng/mL), which gives a longer term picture than the normal folic acid level in blood which may be affected by recent changes in diet.

Low levels can be due to long-term alcoholism, oral contraceptive use, anticonvulsant medications, malnutrition, sprue (poor food absorption), sickle cell anaemia, cytotoxic drugs (used to treat cancer), pregnancy and food malabsorption syndromes.

On the other hand, a low intake in the diet can cause pernicious anaemia.

See also IRON

FORCEPS DELIVERY

Babies are sometimes reluctant to enter into the world and must be assisted out by a doctor. Forceps have been used for 150 years to help the baby's head through the pelvis. They can be used not just to help pull out the child, but to turn the head into a more appropriate position if the head is coming out at the wrong angle. In a breech birth (bottom first), the forceps actually protect the following head and prevent the cervix from clamping around the

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neck.

Forceps consist of two spoon-shaped stainless steel blades. They slide around the side of the baby's head and fit snugly between the wall of the vagina and the head. Once placed carefully in position, the doctor, in time with the contractions, will apply traction (and sometimes rotation) to deliver the head. The baby may be born with some red marks on its face and head from the forceps, but they disappear after a few weeks.

Another method of assisted delivery is vacuum extraction, in which a suction cap (ventouse) is attached to the baby's head, and traction is applied to the cap to help pull out the baby.

See also LABOUR; OBSTETRIC FORCEPS

GENERAL ANAESTHETIC

It is normal to admit a patient who is having an operation under general anaesthetic to hospital 6 to 24 hours before the operation is scheduled. During this time, routine tests and checks are performed, and the anaesthetist will check the heart, lungs and other vital systems. If the operation is an emergency one, these checks will be performed in the theatre to save time. If the surgeon is concerned about the patient, s/he may arrange for the patient to be seen in the anaesthetist's rooms several days before the operation so that any complications can be sorted out well in advance.

About an hour before an operation, the patient is changed into an easily removable gown and given an injection to dry up the saliva and induce relaxation. Shortly before the operation, s/he is put onto a trolley and wheeled into the theatre suite. In many hospitals, the normal bed is wheeled all the way.

In the theatre the patient is transferred to the operating table under a battery of powerful lights. While breathing oxygen through a mask a needle is placed in a vein and a medication is injected to induce sleep and relax the muscles (eg. vecuronium). This is not at all frightening, and is just like going to sleep naturally.

The drugs used last only a short time, and the anaesthesia is maintained by gases that are given through a mask or by a tube down the throat (endotracheal tube). The anaesthetist regularly checks the pulse, blood pressure, breathing and heart during the operation to ensure there is no variation from the normal. When the operation is finished, the anaesthetist turns off the gases and gives another injection to wake up the patient.

The first memory after the operation is of the recovery room where the patient stays under the care of specially trained nurses and the anaesthetist until fully awake.

Side effects of a general anaesthetic can include a sore throat (from the tube that was placed down the throat), headache, nausea, vomiting and excessive drowsiness (all side effects of the medication). A very rare complication of a general anaesthetic is malignant hyperthermia.

General anaesthetics are now extremely safe, and the risk of dying from the effects of a general anaesthetic are now no greater than one in 250,000.

See also EPIDURAL ANAESTHETIC; SPINAL ANAESTHETIC

GESTATION

Gestation is the term of a pregnancy from fertilisation to birth. Humans have a gestation period of about 38 weeks (although pregnancy is calculated as lasting 40 weeks from the last menstrual period).

GRAVIDA

Gravida is a term used in medicine to indicate the number of pregnancies a woman has had. A woman who is gravida 3 has had three pregnancies. The abbreviation G4P2M1 in medical notes would indicate a pregnancy history of a woman in her fourth pregnancy who had delivered two live babies and had one miscarriage (gravida four, parturition two, miscarriage one).

HEARTBURN IN PREGNANCY

Indigestion or heartburn affects about half of all pregnant women because during pregnancy the muscle that closes off the upper part of the stomach from the oesophagus (gullet) loosens and allows digestive juices from the stomach to flow back up the oesophagus and irritate it. In late pregnancy the enlarging uterus presses on the stomach and aggravates the condition.

Heartburn can be very uncomfortable but is not harmful. Symptoms may be reduced by eating small, frequent meals so that there is never too much food present but always enough to absorb the stomach acid. Antacids can usually be taken safely at most stages of pregnancy, and may be used to relieve more severe symptoms. The problem disappears when the baby is born.

HEGAR SIGN

Hegar sign is an old fashioned physical test for pregnancy. If a doctor examines the uterus through the vagina with one hand, while the other feels the uterus by pressure on the belly, an empty softened area can be felt between the firmer cervix and the globular uterus in a pregnant woman between the 6th and 10th weeks. The hormones of pregnancy cause softening of the uterus, but the foetus only occupies the upper part of the uterus in early stages

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HERPES GESTATIONIS

Herpes gestationis (pemphigoid gestationis) is a rare, generalised blistering rash that occurs in pregnancy between the fourth and seventh months, and sometimes after delivery. It occurs in less than one in ten thousand pregnancies, and is an autoimmune reaction that may be aggravated by oestrogen. It is not an infection, and not related to genital herpes.

Patients develop extremely itchy, fluid filled, scattered small lumps on the body, particularly the belly, sides of the trunk, palms and soles. These may enlarge to form large fluid filled blisters, before bursting and forming crusts. A biopsy of one spot is normally necessary before the diagnosis can be confirmed.

Prednisone tablets, starting at a high dose and gradually reducing are the usual treatment.

The prognosis is good and the condition usually does not affect the baby, but it tends to recur in subsequent pregnancies.

HORMONES

See SEX HORMONES

INDUCTION OF LABOUR

A pregnancy that goes beyond about 42 weeks can put the baby at risk because the placenta starts to degenerate. It is therefore sometimes necessary to start (induce) labour artificially. Labour may also be induced for a number of other reasons, including diseases of the mother (eg. pre-eclampsia, diabetes), and problems with the baby (eg. foetal distress from a twisted cord or separating placenta).

Labour can be induced in a number of ways, including rupturing the membranes that surround the baby through the vagina, stimulating the cervix, by tablets, vaginal gel (eg. dinoprostone) or by medication given through a drip into a vein in the arm. Using these methods, doctors can control the rate of labour quite accurately to ensure that there are no problems for either mother or baby.

There is some evidence that labour can be induced in the last week or two of pregnancy by an orgasm after sexual intercourse or by the constant stimulation of the nipples.

See also AMNIOTOMY

IRON

Iron (Fe) is essential in the diet and body in order for the blood's red oxygen carrying pigment haemoglobin to be manufactured. Iron is found in red meats (particularly liver) and green vegetables.

Iron is used as a medication in tablet, capsule, mixture or injection forms to treat or prevent iron deficiency and some types of anaemia. Pregnant women are at risk of iron deficiency because the developing baby to build muscle and blood cells. In medication, it is not pure iron that is used, but various salts (compounds) of iron such as ferrous gluconate, ferrous phosphate, ferrous sulfate, ferric ammonium citrate, ferric pyrophosphate, ferrous fumarate and iron amino acid chelate.

The normal dose of iron in treatment is one standard tablet or capsule a day on an empty stomach. Iron is absorbed from the gut at a set rate, and using higher doses is unlikely to have any clinical effect. Iron supplements may cause slight stomach upsets and dark coloured faeces. Constipation and stomach cramps are the only likely effects from an overdose. Iron should not be used if suffering from haemochromatosis, ulcerative colitis, ileostomy or colostomy, anaemia not due to iron deficiency.

The recommended daily intake in the diet is 3 mg. in infants, 8 mg. in children, 7 mg. in men, 12 mg. in women and up to 16 mg. during pregnancy and breastfeeding.

Iron supplements interact with many other drugs including tetracycline, penicillamine, antacids, calcium, methyl dopa, levodopa, chloramphenicol, cimetidine, thyroxine, phenytoin, cholestyramine and St.John's wort.

See also FOLIC ACID

KERR CAESAREAN INCISION

The normal incision into the uterus made by an obstetrician to deliver a baby during a caesarean section is across the lower part of the uterus a couple of centimetres above the cervix. This is called a Ker incision and causes fewer long-term problems to the woman than any other form of incision into the uterus as it heals very well.

See also CAESAREAN SECTION; PFANNENSTIEL INCISION

KIELLAND FORCEPS

Kielland forceps are a form of obstetric forceps that have a sliding hinge. They are used for difficult deliveries in which the head of the baby needs to be rotated. They are named after the Norwegian obstetrician Christian Kielland (1871-1941).

See also OBSTETRIC FORCEPS

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LABOUR

For weeks you have been waddling around uncomfortably. Every few hours you have Braxton-Hicks contractions that can be quite uncomfortable and sometimes wake you at night, but they always fade away. Your back aches, and you are going to the toilet every hour because your bladder has nowhere to expand. The long awaited date is due, and still nothing dramatic has occurred.

Suddenly you notice that you have lost some bloodstained fluid through the vagina, and the contractions are worse than usual. You have passed the mucus plug that seals the cervix during pregnancy, and if a lot of fluid is lost, you may have ruptured the membranes around the baby as well. Labour should start very soon after this "show".

Shortly afterwards you can feel the first contraction. It passes quickly, but every ten to fifteen minutes more contractions occur. Most are mild, but some make you stop in your tracks for a few seconds. When you find that two contractions have occurred only five to seven minutes apart, it is time to be taken to hospital or the birthing centre.

You are now in the first of the three stages of labour. This stage will last for about 12 hours with a first pregnancy, but will be much shorter (4 to 8 hours) with subsequent pregnancies. These times can vary significantly from one woman to another.

The hospital nurses fuss over you as you change into a nightie and answer questions. Soon afterwards, you may be given an enema. By the time the obstetrician calls in to see how you are progressing, the contractions are occurring every three or four minutes. The obstetrician examines you internally to check how far the cervix (the opening into the womb) has opened. This check will be performed several times during labour, and leads may be attached through the vagina to the baby's head to monitor its heart and general condition. The cervix steadily opens until it merges with the walls of the uterus. A fully dilated cervix is about 10 cm in diameter, and you may hear the doctors and nurses discussing the cervix dilation and measurement.

As the labour progresses, you are moved into the delivery room. In a typical hospital delivery room, white drapes hide bulky pieces of equipment, there are large lights on the ceiling, shiny sinks on one wall, and often a cheerful baby poster above them. The contractions become steadily more intense. If the pain in your abdomen doesn't attack you, the backache does, and your partner (who has hopefully attended one or two of your antenatal classes) massages your back between pains. You begin to wonder when it will all end. The breathing exercises you were taught at the antenatal classes should prove remarkably effective in helping you with the more severe contractions. Even so, the combined backache and sharp stabs of pain may need to be relieved by an injection offered by the nurse. Breathing nitrous oxide gas on a mask when the contractions start can also make them more bearable.

If you experience severe pain or require some intervention (eg. forceps), an epidural or spinal anaesthetic is given. This involves an injection into the spine, which numbs the body from the waist down. You feel nothing but remain quite conscious and alert, and you can assist in the birth process. Even a Caesarean section can be performed using this type of anaesthetic.

Eventually you develop an irresistible desire to start pushing with all your might. Your cervix will be fully dilated by this stage, and you are now entering the second stage of labour, which will last from only a few minutes to 60 minutes or more.

Suddenly there is action around you. The obstetrician has returned and is dressed in gown, gloves and mask. You are being urged to push, and even though it hurts, it doesn't seem to matter any more, and you labour with all your might to force the head of the baby out of your body. The contractions are much more intense than before, but you should push only at the time of a contraction, as pushing at other times is wasted effort.

Another push, and another, and another, and then a sudden sweeping, elating relief, followed by a healthy cry from your new baby.

Immediately after the delivery, you are given an injection to help contract the uterus. A minute or so after the baby is born the umbilical cord, which has been the lifeline between you and the baby for the last nine months, is clamped and cut. A small sample of cord blood is often taken from the cord to check for any problems in the baby.

About five minutes after the baby is born, the doctor will urge you to push again and help to expel the placenta (afterbirth). This is the third stage of labour.

If you have had an episiotomy (cut) to help open your passage for the baby's head, or if there has been a tear, the doctor will now repair this with a few sutures.

You should be allowed to nurse the baby for a while (on the breast if you wish) after the birth. Then both you and the baby will be washed and cleaned, and taken back to the ward for a good rest.

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Labour commences when the cervix starts to dilate and finishes with delivery of the baby and placenta.

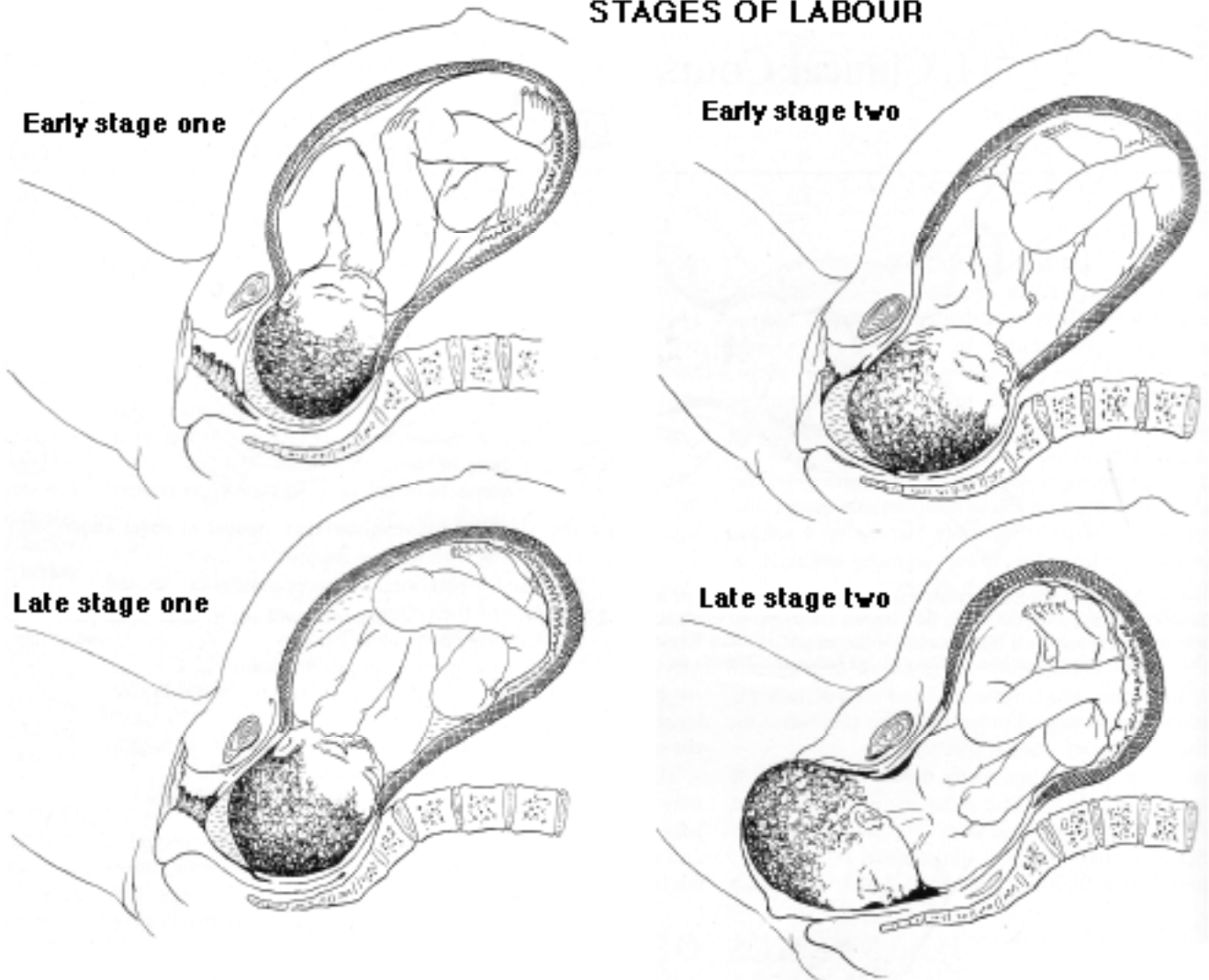
The exact triggers that start the labour of pregnancy are unknown, but the hormones responsible come from the pituitary gland in the brain. There is some evidence that labour can be induced in the last week or two of pregnancy by an orgasm after sexual intercourse or by the constant stimulation of the nipples.

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Labour proceeds through a number of stages that are identified by the movements of the baby's head. The vagina (birth canal) is a curved cylinder and the baby's head must move through various positions in order to pass through it. Labour is preceded by engagement, which is the fitting of the baby's head into the pelvis. This is followed by flexion of the head, descent of the head, internal rotation, extension of the neck, external rotation and finally expulsion. These movements will differ if the baby's head is in a different position to the normal one of coming out with the back of the head at the front of the mother.

The progress of labour is measured by the dilation of the cervix, which reaches a maximum of 10 cm. as the baby's head passes through it, and by the stations of labour that measure the descent of the top of the baby's head through the birth canal. A line between the spines on the ischial bone, which can be felt by a doctor when examining the vagina, is station zero. If the baby's head is above this line the station is negative, and if below the station is positive. A station of plus two (+2) indicates that the top of the baby's head is 2 cm. below the ischial spines.

STAGES OF LABOUR



Labour can also be measured by stages. In the first stage the cervix thins and starts to dilate. First stage ends with the full dilation of the cervix. It last on average 14 hours in a woman having her first baby and seven hours in a woman who has already had a baby. The first two-thirds of first stage labour is relatively quiet and comfortable in most women. In second stage the baby's head descends further into the pelvis and lasts until the birth of the baby with forceful contractions of the uterus lasting from 60 to 90 seconds every two to five minutes. The patient develops an almost unbearable urge to push, which should be resisted until it can be timed with a contraction. The second stage lasts on average one hour in a first time mother and twenty minutes in a second time mother. The third stage of labour lasts from the birth of the baby to the expulsion of the placenta (afterbirth), which takes ten to fifteen minutes.

The baby moves down through the vagina and is expelled from the uterus by the force exerted by the powerful muscle contractions in the uterus, and is assisted by contractions of the muscles in the wall of the abdomen and in the diaphragm as the mother voluntarily pushes.

After the baby is delivered further contractions of the uterus over the next few minutes cause the placenta to separate from the wall of the uterus and be expelled.

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See also APGAR SCORE; BABIES; BIRTHING CHAIR; BIRTH WEIGHT; BRAXTON HICKS CONTRACTIONS; BREECH BIRTH; CAESAREAN SECTION; FACE PRESENTATION; FOETAL POSITION; FORCEPS DELIVERY; INDUCTION OF LABOUR; LABOUR PROLONGED; LEBOYER METHOD; LOCHIA; MANUAL ROTATION; MECONIUM; MUCOUS PLUG; NATURAL CHILDBIRTH; PLACENTA; PLACENTAL RETENTION; PREMATURE BABY; PREMATURE LABOUR; PRESENTATION; PROLAPSED CORD; PUDENDAL BLOCK; PUERPERAL PERIOD; TRANSITION; TRIAL OF LABOUR; VENTOUSE

LABOUR PREMATURE

See PREMATURE LABOUR

LABOUR PROLONGED

Labour of pregnancy may be prolonged for several reasons. The muscles of the uterus may not produce sufficiently strong contractions, or may not contract regularly. Some women have uncoordinated contractions, which cause different parts of the uterine muscle to contract at different times. This can result in significant discomfort but minimal progress in labour. Injections may help the contractions, but sometimes a Caesarean section is necessary.

There may also be an obstruction to the passage of the baby through the birth canal (dystocia). This can be caused by the baby having a large head, having the head twisted in an awkward position, or having an abnormal part of the baby presenting (eg. shoulder or face instead of head); or the mother may have a narrow pelvis that does not allow sufficient room for the baby to pass. Sometimes forceps can be used to assist these situations, but often a Caesarean section is necessary for the wellbeing of the baby.

In some women, the cervix fails to dilate and remains as a thick fibrous ring that resists any progress of the baby down the birth canal. In an emergency the cervix may be cut, but in most cases doctors would again prefer to perform a Caesarean section.

LEBOYER METHOD

The Leboyer method is a method of childbirth named after the French obstetrician Frederick LeBoyer (b.1918). It involves four steps:-

- gentle controlled delivery in a quiet dark room
- avoiding any pulling on the baby's head
- avoiding over stimulating the baby in any way
- encouraging immediate bonding between mother and baby and breastfeeding.

The presence of the father in the delivery room, massaging of the baby's back after birth, not cutting the umbilical cord until it stops pulsating, and gentle bathing in warm water by the father may be other factors.

LECITHIN-SPHINGOMYELIN RATIO

The lecithin-sphingomyelin ratio (L-S Ratio) in the amniotic fluid surrounding the foetus in the uterus can be measured to assess foetal maturity and readiness for birth. If the ratio is high (greater than 2 to 1) the foetal lungs are mature. If the ratio is less than 2 to 1 the foetal lungs are not mature.

Lecithin is a fat from the foetal lung that is produced in increasing quantities in relation to another fat, sphingomyelin, after 34 weeks of pregnancy

See also AMNIOTIC FLUID

LISTERIOSIS

Listeriosis is a rare form of meningitis (infection of the membranes surrounding the brain) in newborn babies caused by the bacteria *Listeria monocytogenes* that can be caught from contaminated food, particularly soft cheeses (eg. brie, camembert), cold meats (eg. salami, paté), cold seafood (eg. sushi, prawns) and salads.

In adults and children, the bacteria usually causes no symptoms and is harmless, but if a pregnant woman is infected, the bacteria may spread through her bloodstream to the placenta and foetus, where it may cause widespread infection, miscarriage, or death of the foetus and a stillbirth.

Antibiotics can be used in newborn infants, but they are often not successful. Treatment is more successful if started during pregnancy, but the infection is rarely detected before the infant is born. Infants that survive birth suffer from a form of septicaemia (blood infection) that soon progresses to a form of meningitis that is frequently fatal.

LOCHIA

Lochia is the fluid lost from the vagina after childbirth. It starts as blood stained, but gradually becomes brown and then pale yellow, slowly disappearing over the next four to six weeks. Initially it consists of blood, amniotic fluid, lining of the uterus (endometrial tissue) and foetal skin cells, and has a rather unpleasant odour. After a couple of days the amount and odour reduces, and it consists mainly of mucus.

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MANUAL ROTATION

Manual rotation is a technique used in obstetrics to rotate a foetus within the womb in order to improve its position for delivery. If the baby is breech (sitting with the bottom down) or transverse in the uterus, a doctor may try by a series of pressure movements on the mother's belly, to push the baby's head around and down into the pelvis.

MASTITIS

Mastitis (milk fever) is an infection of the breast tissue, almost invariably in a breastfeeding woman. It usually occurs if one of the many lobes in the breast does not adequately empty its milk, and may spread from a sore, cracked nipple. Women nursing for the first time are more frequently affected.

The breast becomes painful, very tender, red and sore, and the woman may become feverish, and quite unwell. Antibiotic tablets such as penicillin or a cephalosporin usually cure the infection rapidly and the woman can continue breastfeeding, but if an abscess forms, an operation to drain away the accumulated pus is necessary. In recurrent cases, bromocriptine may be used to stop or reduce breast milk production.

See also BREAST; BREASTFEEDING

MECONIUM

Meconium is a thick, sticky, dark green to black substance accumulated in the intestine of a foetus during its life in its mother's uterus, and passed through the anus as the first few bowel motions after birth. The presence of meconium in the amniotic fluid surrounding the foetus before birth is a sign that the foetus is distressed and should be delivered as soon as possible.

The vomiting and subsequent inhalation (breathing in) of meconium by the baby immediately after birth, can cause serious breathing problems for the baby including pneumonia or asphyxiation.

Meconium ileus is a blockage of the small intestine caused by thick, sticky, dried meconium. The baby is unable to eat, develops abnormal biochemistry and the bowel may rupture. The blockage may resolve naturally, with the help of special fluids given by mouth and in a drip, or may need to be removed surgically. This complication most commonly occurs with the congenital condition cystic fibrosis.

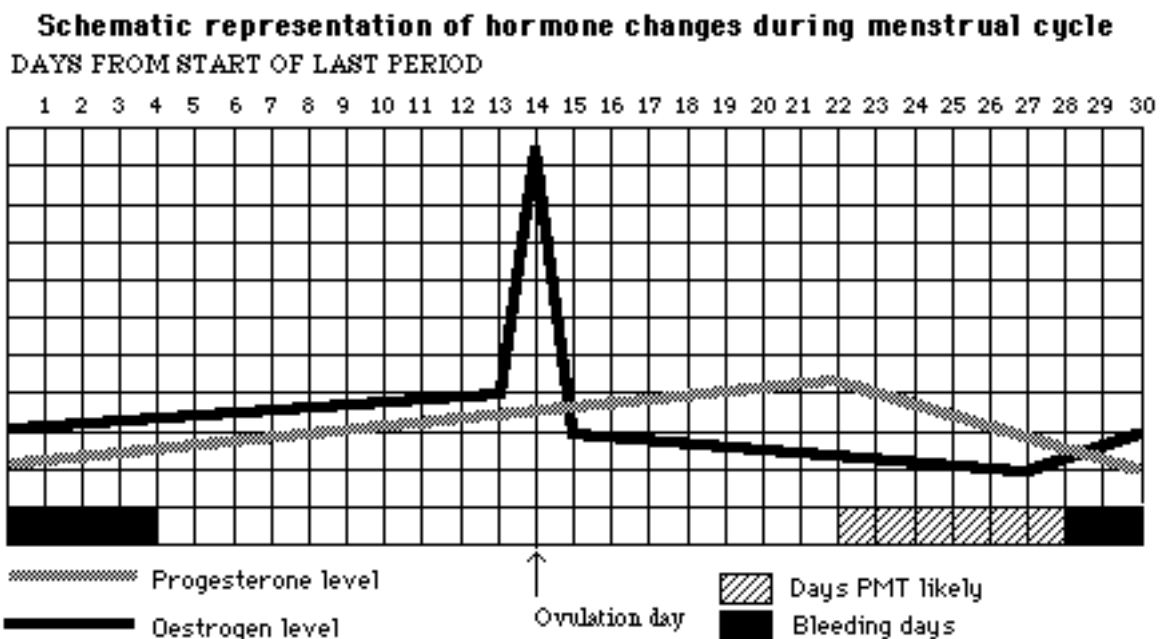
See also AMNIOTIC FLUID

MENSTRUAL PERIODS

Once a month, just after a woman releases the egg (at ovulation) from her ovary, the lining (endometrium) of the womb (uterus) is at its peak to allow the embedding of a fertilised egg.

If pregnancy does not occur, the endometrium starts to deteriorate as the hormones that sustain it in peak condition alter. After a few days, the lining breaks down completely, sloughs off the wall of the uterus, and is washed away by the blood released from the arteries that supplied it in a process known as menstruation or the menses. Contractions of the uterus help remove the debris.

After three to five days, the bleeding stops, and a new lining starts to develop ready for the next month's ovulation.



Women expect their menstrual periods to occur regularly every month, and become concerned when this does

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not happen. The obvious causes for periods to stop are pregnancy and menopause, and every woman between 15 and 50 who misses a period should be considered pregnant until proved otherwise. Breastfeeding will delay the return of regular menstrual periods. There are also a number of medical conditions that may be responsible for amenorrhoea (a lack of menstruation) or oligomenorrhoea (infrequent menstruation).

Any significant emotional trauma (eg. loss of job, death in family), physical stress (eg. vigorous athletic training), serious illness (eg. major infection) or poor nutrition (eg. lack of food, vomiting and diarrhoea) can affect the menstrual cycle. This is a very common phenomenon.

Significant weight loss as a result of deliberate dieting, disease (eg. cancer) or psychiatric disturbance (eg. anorexia nervosa) will also stop menstruation.

The oral contraceptive pill may cause menstrual periods to become lighter and lighter until they disappear completely. Some women take the pill constantly, without a monthly break off the pill or taking sugar tablets, and stop their periods for the sake of convenience. This practice is completely safe and causes no long-term harm.

Uncommon causes include tumours, cysts or cancer in an ovary that affect the regular cyclical production of oestrogen, a lack of thyroxine (hypothyroidism), Asherman syndrome, Addison's disease and the Stein-Leventhal syndrome.

MISCARRIAGE

A miscarriage (spontaneous abortion) is always most upsetting to the parents, particularly if the woman has had difficulty in falling pregnant in the first place. A miscarriage usually starts with a slight vaginal bleed, then period-type cramps low in the abdomen. The bleeding becomes heavier, and eventually clots and tissue may pass.

A miscarriage occurs when a pregnancy fails to progress, due to the death of the foetus, or a developmental abnormality in the foetus or placenta.

If the baby is lost before 20 weeks, it is considered to be a miscarriage. After 20 weeks, doctors consider it to be a premature birth, although the chances of the baby surviving if born before 28 weeks are very slim. Most miscarriages occur in the first twelve weeks of pregnancy, and many occur so early, that the woman may not even know that she has been pregnant and may dismiss the problem as an abnormal period.

In more than half the cases, the miscarriage occurs because there is no baby developing. What develops in the womb can be considered to be just placenta, without the presence of a foetus (a blighted ovum is the technical term). There is obviously no point in continuing with this type of pregnancy, and the body rejects the growth in a miscarriage.

Some women do not secrete sufficient hormones from their ovaries to sustain a pregnancy, and this can also result in a miscarriage. These women can be given additional hormones in subsequent pregnancies to prevent a recurrence of the problem.

Malformations of the womb are another, though rarer, cause. This problem may be surgically corrected to prevent the cervix from opening prematurely, or to remove fibrous growths that may be distorting the womb.

There are dozens of other reasons for a miscarriage, including stress (both mental and physical), other diseases of the mother (eg. diabetes, infections), injuries, inherited abnormalities (eg. factor V Leiden activated protein C resistance) and drugs taken in early pregnancy. Each case has to be considered individually.

Miscarriages are far more common than most women realise. Up to 15 percent of diagnosed pregnancies, and possibly 50 percent of all pregnancies, fail to reach 20 weeks. There is virtually no treatment for a threatened miscarriage except strict rest, sedatives and pain relievers. If the body has decided to reject the foetus, medical science is normally helpless to prevent it.

Once a miscarriage is inevitable, doctors usually perform a simple operation to clean out the womb, and ready it as soon as possible for the next pregnancy.

Heavy bleeding, that may lead to anaemia, infections in the uterus, and the retention of some tissue in the uterus are the most common complications. Retained tissue may make it difficult for a further pregnancy to occur.

In most cases, there is no reason why a subsequent pregnancy should not be successful. It is only if a woman has two miscarriages in succession that doctors become concerned, and investigate the situation further.

MORNING SICKNESS

The nausea and vomiting that affects some pregnant women between the sixth and fourteenth weeks of pregnancy is called morning sickness (hyperemesis gravidarum), but it can occur at any time of the day. Its severity varies markedly, with about one third of pregnant women having no morning sickness, one half having it badly enough to vomit at least once, and in 5% the condition is serious enough result in prolonged bed rest or even hospitalisation, when it is called hyperemesis gravidarum.

Morning sickness is caused by the unusually high levels of oestrogen present in the mother's bloodstream during the first three months of pregnancy. Although it usually ceases after about three months, it may persist for far longer in some unlucky women. Severe cases may be associated with twins, and it is usually worse in the first pregnancy.

Because morning sickness is a self-limiting condition, treatment is usually given only when absolutely necessary. A light diet, with small, frequent meals of dry fat-free foods, is often helpful. A concentrated

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carbohydrate solution (Emetrol) may be taken to help relieve the nausea. Supplements of vitamin B6 and ginger (either as pieces or capsules) have also been shown to help. Only in severe cases, and with some reluctance, will doctors prescribe more potent medications. In rare cases, fluids given by a drip into a vein are necessary for a woman hospitalised because of continued vomiting.

Morning sickness has no effect upon the development of the baby.

MUCOUS PLUG

The cervix forms the opening of the uterus into the vagina. There is a canal through the centre of the cervix that is normally only a couple of millimetres in diameter. During pregnancy this canal is filled with a mucous plug to protect the growing foetus from anything entering the uterus through the vagina. As the cervix starts to dilate in the early stages of labour, this mucous plug becomes dislodged, and may be noticed as a slightly blood stained vaginal discharge (a show) by the mother.

MULTIGRAVID

A woman who has had more than one pregnancy is described as multigravid.

NATURAL CHILDBIRTH

Giving birth with no medical intervention is the ideal of many mothers, and is considered the best way in which to give birth. Provided medical care is readily available, it is probably the perfect solution to childbirth for both mother and child, but because critical problems can arise very rapidly during childbirth (eg. massive haemorrhage, obstructed labour, foetal distress, retained placenta etc.) it is essential that medical assistance is immediately available. The mother may also require pain relief, particularly in a first birth, and the baby may require resuscitation. Birthing rooms, which have a homely ambience, but are attached to a maternity hospital, are ideal. Home births can be very risky, as even with a woman who has had no problems in previous births, unexpected problems may occur.

NIPPLE

The nipple is located at the apex of the breast and over the space between the fourth and fifth ribs in men.

In both sexes it is an erogenous area in that stimulation of the nipple is sexually stimulating, but in men it serves no other purpose. The nipple contains numerous small muscles that contract to make the nipple erect when stimulated by suckling, plucking, cold or anxiety. These muscles are more numerous in women as the nipple is considerably larger.

In women, 15 to 20 ducts from the milk glands in the breast open through the nipple.

The nipple is surrounded by pigmented skin called the areola, which enlarges at puberty, and may darken further (chloasma) after pregnancy or hormonal medication use (eg. contraceptive pill). The areola contains sebaceous (oil) glands (Montgomery glands) that give it a bumpy appearance, particularly around its edge.

Cancer of the breast (Paget's disease of the nipple) can develop solely in the nipple.

See also BREAST; NIPPLE CRACKED; NIPPLE DISCHARGE; NIPPLE INVERTED; NIPPLE PIGMENTATION

NIPPLE CRACKED

A common complaint, especially in breastfeeding first-time mothers, is a cracked nipple. It usually starts a few days after the baby starts feeding and can be excruciatingly painful. Preparing the nipples for breastfeeding should lessen the likelihood of this problem. If a crack does appear, soothing creams are available from chemists or doctors to settle the problem, and often the baby will have to be fed from the other breast for a few days or with the aid of a nipple shield until the worst of the discomfort passes.

See also BREASTFEEDING; NIPPLE SHIELD

NIPPLE DISCHARGE

The nipple of the breast will obviously discharge milk in a woman who is breastfeeding, and will often leak milk between feeds, particularly when the breast is engorged with milk some hours after a feed. At other times a discharge will indicate some medical problem.

Sex hormone imbalances are the most common cause of abnormal nipple discharges. At almost any time during pregnancy, but particularly late in pregnancy, the higher levels of hormones in the body may stimulate premature breast milk production.

Hormones in the oral contraceptive pill, or hormone replacement therapy after the menopause, may over stimulate breast tissue to cause a discharge if the dose is too high.

The pituitary gland under the brain sends signals to the ovaries to increase or decrease sex hormone (oestrogen) production. A tumour or cancer of the pituitary gland or ovaries may result in excessive hormone levels and breast milk production.

Newborn infants of both sexes sometimes produce "witch's milk", which is a discharge from the nipples in the first few days of life due to high levels of sex hormone passing over to the child from the mother through the

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placenta during birth. It is a harmless condition that settles quickly.

Other causes of an abnormal nipple discharge include breast cancer that involves the milk ducts (brown or blood stained discharge), kidney failure (may prevent the excretion of the normal amount of oestrogen and the levels of hormone increase), under or over active thyroid gland (hypothyroidism and hyperthyroidism), Cushing syndrome (over production of steroids, or taking large doses of cortisone) and excessive stimulation of a woman's nipples for a prolonged period of time may result in a reflex which increases oestrogen levels and results in milk production.

Some non-hormonal medications may increase sex hormone production as a side effect. Examples include methyldopa and reserpine (used for serious high blood pressure) and tricyclic antidepressants.

See also BREAST; BREASTFEEDING; NIPPLE

NIPPLE INVERTED

Some women have flat or inverted nipples. The nipple is also inverted if it retreats when the woman tries to express milk by hand. If a woman intends to breastfeed, the doctor will examine the breasts during an antenatal visit, and if the nipples are flat or inverted, a nipple shield may be worn to correct the problem. The shield fits over the nipple drawing it out gently, making it protrude enough for the baby to feed. Stimulating the nipple by rolling it between finger and thumb, and exposing the breasts to fresh air (but not direct sunlight) may also help.

See also BREASTFEEDING

NIPPLE PIGMENTATION

Increased pigmentation of the areola (dark area around the nipple) is a form of chloasma (facial skin pigmentation) and is a sign of past or present pregnancy or hormone therapy (eg. contraceptive pill). It may also be an inherited or racial characteristic. Girls often have some degree of darkening of the areola at puberty.

See also CHLOASMA

NIPPLE SHIELD

A nipple shield is made from soft moulded latex. It is a shallow dish shape, has a tab handle on one edge and a hole in the centre through which the nipple partly protrudes. It allows a baby to continue feeding from a cracked or sore nipple.

NUCHAL TRANSLUCENCY SCAN

The nuchal cord is the cord of primitive nervous tissue along the length of a foetus that forms into the spinal cord. A nuchal translucency scan is a form of ultrasound scan that measures the amount of fluid in the nuchal cord in the neck of a foetus between weeks 11 and 14 of pregnancy. An abnormal result indicates a higher risk of the foetus having Down syndrome or other spinal cord defects (eg. spina bifida). It is usually combined with a blood test (triple tests) to measure hormone levels that may also be abnormal in women with a Down syndrome pregnancy. These tests are only indicative and an amniocentesis or chorionic villus sampling is necessary to confirm the diagnosis.

These tests are more commonly performed on older mothers.

Unfortunately, if an abnormality is found, there is no treatment available for the foetus, but the mother is given the option of an abortion.

OBSTETRIC FORCEPS

Obstetric forceps are designed to aid the delivery of a baby's head during a complicated childbirth. They consist of a pair of blades with handles at one end for the doctor to grip, an open cup shape at the other end to encompass the baby's head and a joint in the middle that enables the forceps to be either manipulated together or separated.

Wrigley obstetric forceps



They come in many shapes and sizes depending on their purpose, the size of the baby, how far the baby has progressed through the birth canal and the position of the head.

Wrigley obstetric forceps are the smallest, and most commonly used as an aid to lift out the head in the very last stage of labour.

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See also FORCEPS; KIELLAND FORCEPS

OESTROGEN

See SEX HORMONES

OLIGOHYDRAMNIOS

In the womb, the baby is surrounded by, and floats in, a sac filled with amniotic fluid. This fluid acts to protect the foetus from bumps and jarring, recirculates waste, and acts as a fluid for the baby to drink. If insufficient of fluid is present, the condition is called oligohydramnios.

Normally there is about a litre (1000 mL) of amniotic fluid at birth. A volume of less than 200 mL is considered to be diagnostic of oligohydramnios. It may be caused by abnormal development of the foetus, or abnormal function of the placenta, but in most cases, there is no reason for the problem.

The condition is diagnosed by an ultrasound scan, and if proved, further investigations to determine the cause of the condition follow. Treatment will depend upon the result of these tests, but often none is necessary.

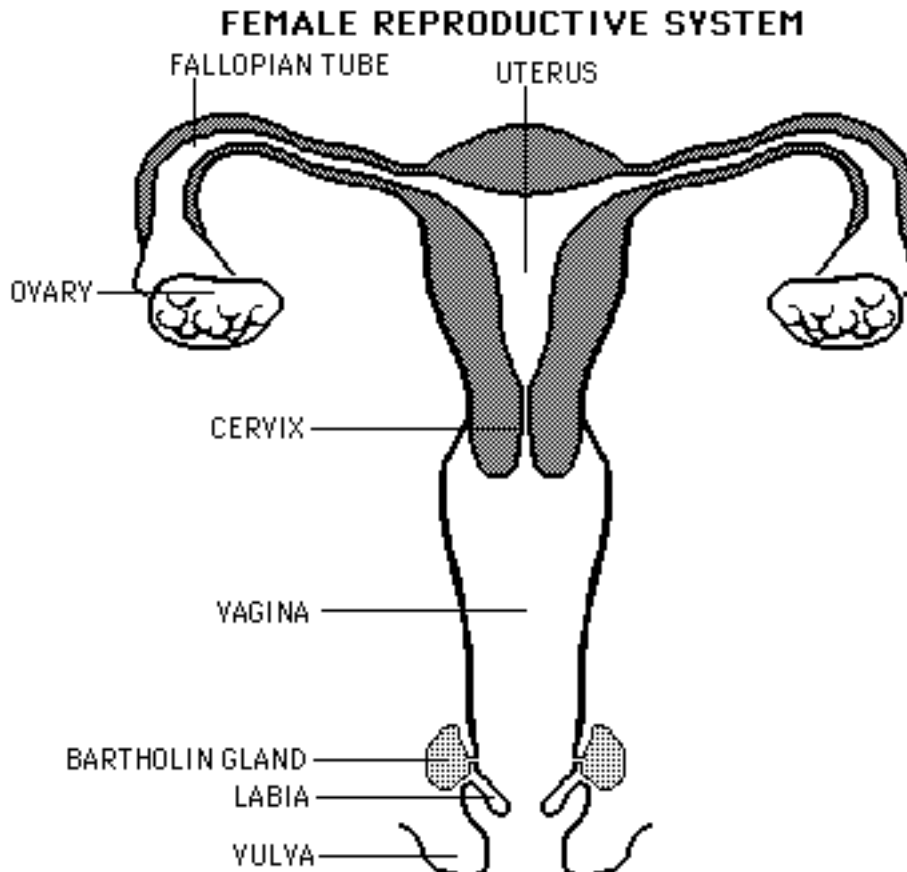
See also POLYHYDRAMNIOS

OVARY

The two ovaries are the main female reproductive organs. Shaped like an almond, each ovary is about 3 cm long, 1.5 cm wide and 1 cm thick. They lie in the pelvis, one on either side of the uterus. The ovaries have two functions - the development and release of eggs, and the production of hormones. All the eggs (ova) a woman will ever have - and considerably more than she will ever need - are contained in her ovaries when she is born. At birth, there are about two million immature eggs in each ovary. By puberty these are reduced to about 300,000, and only about 400 will be released during the childbearing years. The number of ova in the ovaries steadily decreases during middle life, and at by the time menopause starts only 25,000 are left. The ovum (egg) is the largest single cell in the body, but still needs a powerful microscope to be seen.

Each egg (ovum) is surrounded by a small sac called a follicle. When puberty is reached, a cycle is established in which a few of the egg cells develop each month, with one reaching full maturity. When this happens the follicle bursts and releases the egg in the process called ovulation. A woman is fertile and can become pregnant a day or two either side of ovulation - and not at other times.

When an egg is released, it is swept into the adjacent Fallopian tube, the other end of which connects with the uterus.



The ovaries also produce the hormones oestrogen and progesterone. Oestrogen predominates during the

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ripening of the egg, which takes about two weeks. It is this hormone that causes the lining of the uterus to thicken and the body to prepare for pregnancy. When the egg is released, the production of the second hormone, progesterone, increases, preparing the lining (endometrium) still further and bringing it to total readiness for a fertilised egg. If there is no conception, the oestrogen and progesterone levels fall suddenly and the uterine lining is shed during menstruation. The whole process then begins again. The monthly cycle continues throughout a woman's childbearing years from puberty to the menopause.

It is the female hormones that also give a woman her secondary sexual characteristics, for instance her broader hips than the male, her breasts, pubic and armpit hair, and her rounder, more feminine shape.

See also CORPUS LUTEUM; FALLOPIAN TUBE; SEX HORMONES; UTERUS

PARTURITION

Parturition is a term derived from the Latin and used in medicine for childbirth.

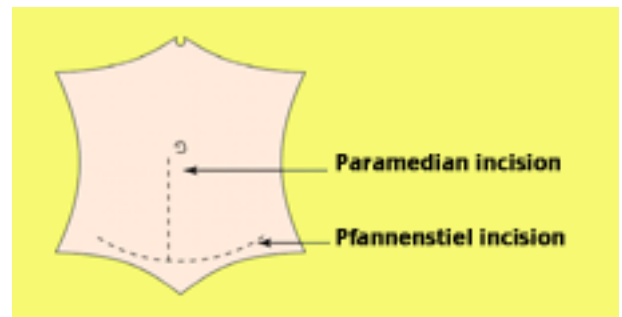
PERINEUM

The area between the base of the penis and anus in the man, and the vulva and anus in a woman, is called the perineum.

PFANNENSTIEL INCISION

A Pfannenstiel incision is one made across the lower abdomen just above the pubic bone in order to gain surgical access to the uterus (eg. for a Caesarean section) and bladder. The underlying muscles are separated in the direction of their fibres with minimal cutting.

See also CAESAREAN SECTION; KERR CAESAREAN INCISION



PHOSPHATIDYL GLYCEROL

The presence of phosphatidyl glycerol in the amniotic fluid surrounding the foetus in the uterus can be detected in order to assess foetal lung maturity. If it is absent, the foetal lungs are not mature. If it is present, the foetal lungs are mature and the baby is ready to be born. This test is more reliable than the usually performed lecithin-sphingomyelin ratio in diabetic mothers.

See also LECETHIN-SPHINGOMYELIN RATIO

PLACENTA

The placenta is a special outgrowth of the foetus that is firmly attached to the inside of the mother's uterus (womb). It has blood vessels that penetrate into the wall of the uterus and interact with the mother's arteries and veins to enable the foetus to draw oxygen and food from the mother's system and send waste products to the mother for removal.

As the foetus grows, it floats in a fluid-filled sac like a water-filled balloon (the amniotic sac), and the foetus drinks the amniotic fluid and excretes into it through the kidneys. The amniotic sac and its fluid act as a very effective shock absorber so that the foetus can survive unharmed quite serious injuries to its mother (eg. a car crash). One side of the sac is especially modified into the placenta, while the rest is a fine but tough transparent membrane.

The foetus is connected to the placenta by the umbilical cord, which contains three intertwined blood vessels (a vein and two arteries), which convey nourishment from the mother to the foetus and waste products the other way. At birth, this is between 15 and 120 cm long and runs from the navel to the placenta, where the artery and veins it contains fan out to interact with the mother's circulatory system.

The mother's and baby's blood streams remain separate and do not mingle. Doctors will check the cord after birth, and if only one vein is present instead of two, it is probable that the baby will have some hidden birth defect.

The placenta is a flat, circular organ consisting of a spongy network of blood vessels. It acts as a combined lung, liver, kidney and digestive tract for the developing foetus. Oxygen, nutrients, waste products and other substances (eg. alcohol and some drugs) can pass freely through the placenta from the bloodstream of the mother to the bloodstream of the foetus. Infections (particularly viruses such as German measles) may also pass to the foetus through the placenta.

Several minutes after the birth, the placenta (the afterbirth) is expelled by further contractions of the uterus, assisted by gentle traction on the cord by the doctor or midwife. Occasionally the placenta may not be expelled, which leads to intervention by a doctor.

PLACENTA ACCRETA

Placenta accreta is a rare condition that occurs when the placenta attaches itself too firmly to the wall of the uterus and cannot be removed after birth. Heavy bleeding often occurs after the delivery of the baby, and the usual

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treatment is removal of the uterus (a hysterectomy) as an emergency procedure.

This complication of pregnancy is more common in women who have had a previous caesarean section as the placenta tends to attach abnormally to the caesarean scar in the uterus.

See also PLACENTA

PLACENTAL ABRUPTION

Placental abruption (or abruptio placentae) is the term used for a partial separation of one portion of the placenta from the wall of the uterus. It usually causes some vaginal bleeding, but usually no pain. Abruption may be caused by high blood pressure in the mother, or injury to the mother, but in the vast majority of cases, no specific cause can be found. Mild cases cause no long-term problems, but if a large portion of the placenta separates from the uterus, the blood supply to the foetus may be reduced and cause reduced growth or, in severe cases, death of the foetus.

No treatment is available or necessary in most cases, but if there is significant bleeding, the mother may need a transfusion. In the rare cases where the foetus dies, an operation to remove it is necessary.

See also PLACENTA; PREGNANCY BLEEDING

PLACENTAL INSUFFICIENCY

If the placenta is damaged (eg. by a blood clot), stressed (eg. by twins), diseased or partially separates from the wall of the uterus it may not be able to fulfil all the demands of the foetus for nutrition and oxygen. This situation is called placental insufficiency, and results in retarded growth and development of the foetus. In the later stages of pregnancy it is an indication for the induction of labour or a caesarean section and delivery of the baby as soon as possible.

See also PLACENTA

PLACENTAL LACTOGEN

The amount of placental lactogen in a mother's blood may be used to check the health of the placenta, and therefore the foetus, in pregnancy. There should be a steady rise during normal pregnancy, but very high levels may be present with a choriocarcinoma (cancer of placenta) or small cell cancer of the lung. A level that drops is a sinister sign.

See also PLACENTA

PLACENTA PRAEVIA

Normally the placenta attaches to the front, back or side of the uterus, but if it attaches to the lower part, it may cover the opening of the uterus, through the cervix to the outside. This is placenta praevia. It is more common in women who have had several pregnancies, and much more common in those who have had a caesarean section. Overall it occurs in one in every 150 pregnancies.

In the later stages of pregnancy, the cervix starts to dilate to allow the head of the baby to drop, prior to labour starting. If the placenta is over the opening, it will be damaged by the dilation of the cervix and the pressure from the baby's head, and heavy bleeding may occur suddenly.

Placenta praevia may be suspected by the presence of a baby that is unusually high in the womb, and the position of the placenta can be seen accurately on an ultrasound scan. When diagnosed, the mother will be watched carefully, often in hospital, and about a month before the due date, a Caesarean section will be performed to remove both baby and placenta safely.

A bleeding placenta praevia can be a medical emergency, as quite torrential bleeding can occur which may threaten the lives of both mother and baby. The only treatment is an urgent Caesarean section.

See also CAESAREAN SECTION; PLACENTA

PLACENTAL RETENTION

After the delivery of the baby, the placenta normally separates away from the wall of the uterus and is expelled by the contractions of the uterus within a few minutes. The process may be assisted by a doctor using injections to improve the uterine contractions and manoeuvres to assist the separation of the placenta. If it fails to separate from the uterus and remains retained within the uterus, it is necessary to perform a simple procedure to remove the retained placenta. Without this procedure, the mother would continue to bleed, and this could threaten her life.

Under a general anaesthetic, the doctor slides his hand into the uterus, and uses his fingers to separate the placenta from the uterus and lift it away from the wall of the uterus, so that it can be drawn to the outside of the body through the vagina.

See also LABOUR; PLACENTA

POLYHYDRAMNIOS

In the womb, the baby is surrounded by and floats in a sac filled with amniotic fluid. This fluid acts to protect the foetus from bumps and jarring, recirculates waste, and acts as a fluid for the baby to drink. If an excessive amount

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of fluid is present, the condition is called polyhydramnios.

Normally there is about a litre (1000 mL) of amniotic fluid at birth. A volume greater than 1500 mL is considered to be diagnostic of polyhydramnios, but it may not become apparent until 2500 mL or more is present.

Polyhydramnios occurs in about one in every 100 pregnancies, and it may be a sign that the foetus has a significant abnormality that prevents it from drinking or causes the excess production of urine. Other causes include a twin pregnancy, and diabetes or heart disease in the mother. In over half the cases no specific cause for the excess fluid can ever be found.

The condition is diagnosed by an ultrasound scan, and if proved, further investigations to determine the cause of the condition must follow. The treatment will depend upon the result of these tests, but often none is necessary.

There is an increased risk to the mother of amniotic fluid embolism, a potentially fatal complication that occurs when some of the fluid enters the mother's blood stream, but most pregnancies proceed relatively normally, although there is an increased risk of foetal abnormality.

See also OLIGOHYDRAMNIOS

POSTMATURE PREGNANCY

A pregnancy that lasts for more than two weeks beyond the expected date of delivery is referred to as a postmature pregnancy, while the baby is also referred to as postmature. These babies have specific characteristics including dry peeling skin, abnormal folds of skin, and long finger and toenails. These babies are also at increased risk of complications including low blood sugar, low blood potassium, seizures and weight loss.

POSTNATAL DEPRESSION

Postnatal depression (PND, postpartum depression or the baby blues) is a spontaneous form of depression that occurs in some women just before, or soon after childbirth, and is a response to the effect on the brain of sudden changes in hormone levels.

In its mildest form most women have some feelings of up and down emotions with teary episodes in the first week after delivery. This is normal and passes within a few days.

Women with true postnatal depression experience constant unhappiness for which there is no reason. They are unable to sleep, lose appetite and weight, and feel there is no purpose in living. They may feel unnecessarily guilty, have a very poor opinion of themselves, feel life is hopeless, find it difficult to think or concentrate, worry excessively about their infant or neglect the child. Rarely it may lead to attempted or actual suicide. It is diagnosed after careful psychiatric assessment.

Emotional and practical support from the partner, family and friends are vital in assisting an affected woman in her recovery. Counselling and support groups may also be beneficial. If necessary medications are prescribed to control the production of depressing chemicals in the brain (eg. fluvoxamine, moclobemide, nefazodone, paroxetine, venlafaxine) while hospitalised or given intensive home support. About one in every 500 mothers are hospitalised for postnatal depression. Shock therapy (electroconvulsive therapy - ECT) may be used as a last resort for those women whose depression is prolonged and life threatening. Virtually all cases settle with support and medication in a few weeks.

PRE-ECLAMPSIA AND ECLAMPSIA

Eclampsia (toxaemia of pregnancy) is a rare but very serious disease that occurs only in pregnancy. In developed countries it is very uncommon, because most women undertake regular antenatal visits and checks. Pre-eclampsia is a condition that precedes eclampsia, and this is detected in about 10% of all pregnant women. The correct treatment of pre-eclampsia prevents eclampsia.

The exact cause of pre-eclampsia is unknown, but it is thought to be due to the production of abnormal quantities of hormones by the placenta. This in turn may be due to a poor blood supply to the placenta, or mother's kidneys liver or brain. It is more common in first pregnancies, twins and diabetes. Pre-eclampsia normally develops in the last three months of pregnancy, but may not develop until labour commences, when it may progress rapidly to eclampsia if not detected.

The early detection of pre-eclampsia is essential for the good health of both mother and baby. Doctors diagnose the condition by noting high blood pressure, swollen ankles, abnormalities (excess protein) in the urine due to poor kidney function and excessive weight gain (fluid retention). Blood tests may show a low level of platelets (thrombocytopenia) that are used in blood clot formation. Not until the condition is well established does the patient develop the symptoms of headache, nausea, vomiting, abdominal pain and disturbances of vision.

If no treatment is given, the mother may develop eclampsia. This causes convulsions, coma, strokes, heart attacks, death of the baby and possibly death of the mother.

Pre-eclampsia is treated by strict rest (which can be very effective), drugs to lower blood pressure and remove excess fluid, sedatives, and in severe cases, early delivery of the baby. An infusion of magnesium sulphate into a vein may be used while waiting for an emergency delivery if the mother is at high risk of fitting. The correct treatment of pre-eclampsia prevents eclampsia, and the prognosis is very good if detected early and treated correctly.

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In subsequent pregnancies, the risk of recurrence is 15%. Unfortunately there is no regime that will prevent pre-eclampsia or a recurrence, although low dose aspirin is being used experimentally for prevention in high risk mothers.

PREGNANCY-ASSOCIATED PLASMA PROTEIN-A

The amount of pregnancy-associated plasma protein-A (PAPP-A) can be measured in the blood of a pregnant woman. It is normally performed in conjunction with a blood test for human chorionic gonadotrophin (HCG) and a nuchal translucency ultrasound scan between 10 and 14 weeks of pregnancy in more mature mothers. The normal range of values for this test varies with the pregnancy duration

A low level of PAPP-A is associated with an increased risk of Down syndrome, stillbirth, pre-eclampsia, other chromosomal abnormalities and intrauterine growth retardation. In non-pregnant patients, a high level has been found to be associated with heart disease such as the acute coronary syndrome

PAPP-A is normally involved in wound healing

See also ALPHA-FETOPROTEIN; CHORIONIC GONADOTROPHIN, HUMAN; NUCHAL TRANSLUCENCY SCAN

PREGNANCY BACKACHE

A pregnant woman's pelvis has to expand at the time of birth to allow the baby through. To facilitate this expansion, the ligaments that normally hold the joints of the pelvis (and other parts of the body) together become slightly softer and more elastic which makes them more susceptible to strain. The joints of the spine are particularly at risk because the expanding uterus shifts the centre of balance and changes posture. Standing for any length of time is likely to impose unusual stresses on the back, and this strains the supporting ligaments and results in backache.

Slight movements of the vertebrae, one on the other, can cause nerves to be pinched and result in pain such as sciatica. This nerve pinching is further aggravated by the retention of fluid in the whole body, which causes the nerves to be slightly swollen and therefore more easily pinched.

The best way to reduce the likelihood of backache is not to gain weight excessively and to avoid all heavy lifting. At antenatal classes, physiotherapists show the correct way to lift, and teach exercises to help relieve the backache.

PREGNANCY BLEEDING

Extensive studies have not shown any increase in infant abnormalities after bleeding in early pregnancy. The bleeding may be due to a slight separation of the placenta from the wall of the womb as it grows, and it almost certainly does not involve the baby directly. About 30% of all pregnant women suffer from some degree of bleeding during pregnancy, and some have quite severe bleeds without losing the baby.

Bleeding in early pregnancy may also be a sign of an impending miscarriage. Unfortunately nothing except rest can help the mother in this situation. Doctors cannot usually prevent miscarriages once bleeding has started.

Other causes of bleeding in pregnancy include an ectopic pregnancy, significant separation of the placenta from the wall of the uterus (placental abruption), vaginal ulcers or erosions or hormonal imbalances.

See also ECTOPIC PREGNANCY; MISCARRIAGE; PLACENTAL ABRUPTION

PREGNANCY DATES

The date a pregnant woman is due to deliver (estimated date of confinement - EDC) can be calculated in the following way. Add 7 days to the day the woman's last period started, and 9 months to the month of her last period. For example, if the last period started on 5 January 2003, she will be due to deliver on 12 October 2003. This is also known as Nägele's rule, after the German obstetrician who first calculated it.

A pregnancy lasts 40 weeks (280 days) from the beginning of the woman's last period, but only 38 weeks from conception, because she ovulates two weeks after her period starts. It is not unusual for the pregnancy to be one or two weeks shorter or longer than this.

See also FOETUS SMALL; PREGNANCY ULTRASOUND

PREGNANCY PAIN

Many pregnant women suffer varying degrees of pain, which may be exceedingly uncomfortable but not medically significant. The most common types of pain are lower abdominal pain due to expansion of the uterus and its attached ligaments, backache and heartburn. Abdominal pain early in pregnancy may also signal significant complications, such as a miscarriage or an ectopic pregnancy.

See also ECTOPIC PREGNANCY; MISCARRIAGE

PREGNANCY TEST

From the 1920s to the 1960s, a pregnancy test was performed by injecting the woman's urine into an African clawed frog. If the woman was pregnant, the frog would ovulate and spawned eggs would become visible around

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its pelvis within a few hours. Millions of these frogs were specifically bred for this test in laboratories around the world.

Modern pregnancy tests are based on the detection of a hormone called human chorionic gonadotrophin (HCG), which is produced in the first few months of pregnancy by the placenta and can be detected in blood or urine as early as 12 days after conception (ie. before a period is even missed). At this early stage, a false negative result is possible, and the tests are more reliable if carried out a couple of days after the missed period. A negative test may mean that the pregnancy is not far enough advanced to be detected, rather than that the woman is not pregnant, while a positive test is almost invariably correct.

The pregnancy test consists of mixing a few drops of the woman's urine with specific chemicals. If HCG is present, a chemical reaction will take place. In a test carried out in a test tube, the mix of urine and chemicals will form a characteristic deposit; but more often the urine is added to one side of a small flat plastic container and as the urine moves across this it interacts with chemicals that will change colour if the test is positive. To ensure a reliable result, the test is generally carried out 2-7 days after the first missed period (ie. 16-21 days after conception).

A pregnancy test can be carried out at home with a kit purchased from the chemist, but more reliable tests are performed by doctors using a sample of blood.

Although pregnancy actually occurs about two weeks after a woman had her last period, for convenience doctors always date a pregnancy from the first day of that last menstrual period.

See also CHORIONIC GONADOTROPHIN, HUMAN; PREGNANCY DATES



PREGNANCY ULTRASOUND

The most useful aspect of ultrasound is its ability to examine the foetus of a pregnant woman without the risks associated with X-rays. The size, position, maturity, age and sometimes sex of the foetus can all be seen, and some of the internal organs of the baby, particularly the heart, can be checked. Abnormalities such as spina bifida (split spinal cord), hydrocephalus (excess fluid in the brain) and certain other congenital disorders can be identified.



A routine scan may be performed between the sixteenth and eighteenth week of pregnancy when the foetus can easily be seen and transformed into an image. Another scan is sometimes performed later in the pregnancy, after about 32 weeks.

See also FOETUS

PREMATURE BABY

The survival of a baby born before 37 weeks of pregnancy depends more upon the weight of the baby than the actual number of weeks of pregnancy. Babies under 500g have only a 40% chance of survival, under 1000g a 65% chance, and over 1500g a nearly 100% chance of survival. These figures are for the best hospitals in developed countries, but babies born prematurely in remote areas will have a far lower survival rate.

The problems that very premature babies face include liver failure and jaundice, inability to maintain body

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temperature, immature lungs, inability to maintain the correct balance of chemicals in the blood, patent ductus arteriosus, increased risk of infection due to an immature defence system, bleeding excessively, and eye problems including blindness. The smaller the baby, the greater the problems, and the more intensive the care required from specialised units in major hospitals.

The activity and processes of immature babies must be monitored carefully. Tubes and leads to and from the infant may appear to overwhelm it but are necessary to monitor the heart and breathing, supply oxygen, assist breathing in some cases, feed the baby, drain away urine, keep the temperature at the correct level, and maintain the correct chemical balance in the blood.

Even some of the treatments to help these babies can have serious complications. Many require oxygen to allow them to breathe, but too much oxygen can cause a condition called retrolental fibroplasia that damages the retina (light sensitive area) at the back of the eye to cause permanent blindness. Premature babies also progress better if their intensive care nursery is darkened and quietened for the twelve night hours.

A baby born prematurely will be a little later in reaching the milestones of infancy and should have routine immunisations in the first six months slightly delayed. The delay is roughly the number of weeks of prematurity before 37 weeks (ie. a baby born at 31 weeks is 6 weeks before 37 weeks, and can expect its milestones and vaccinations to be delayed by 6 weeks). The delay is halved by the time the child reaches six months of age, and disappears completely by one year of age.

See also FOETUS SMALL; PREMATURE LABOUR

PREMATURE LABOUR

A pregnancy normally lasts 40 weeks from the last menstrual period. A birth that occurs at less than 37 weeks is considered to be premature. Before 20 weeks, any birth that occurs is considered to be a miscarriage. It is rare for an infant born before 24 weeks to survive, and only after 30 weeks are the chances of survival considered to be good.

Premature labour occurs in about 7% of pregnancies. There is no apparent cause in over half the cases, but in others, high blood pressure, diabetes, two or more babies, more than six previous pregnancies, foetal abnormalities, polyhydramnios and abnormalities of the uterus may be responsible.

Premature labour may now be prevented or controlled in some cases by injections of drugs such as atobisan, ritodrine (Yutopar) or salbutamol (Ventolin, which is also used to treat asthma). Strict bed rest is the only other form of treatment.

See also LABOUR

PRESENTATION

In pregnancy the presenting part is the part of the baby that is coming out first. Usually this is the back of the head (occiput), but it may be the buttocks (breech), front of the head (brow) or face. The presentation of the baby during labour is very important, as it will determine the ease of labour and its complications.

PRIMIGRAVID

A woman who is pregnant for the first time is described as primigravid.

PRIMIPAROUS

A woman who has given birth to only one child is described as primiparous.

PROLAPSED CORD

Very rarely, when the waters break during pregnancy at the start of labour, the umbilical cord slips down into the birth canal (a prolapsed cord). This is a medical emergency, as the start of labour usually follows soon after the waters break, and the cord will be compressed as the baby moves down into the birth canal, cutting off its oxygen supply. This problem is more common with breech births, as the smaller bottom is more likely than the larger head to allow the cord to slip past it into the birth canal.

The only treatment for a prolapsed cord is a Caesarean section as soon as possible. In the meantime, the mother may be placed in a kneeling position, with her head down on the bed and her bottom in the air. Drugs may be given to stop labour as well.

PSEUDOCYESIS

When a woman believes, sometimes to the point of it becoming a psychotic delusion, that she is pregnant when she is not pregnant, she is said to be suffering from a pseudocyesis. An understandable mistake due to abnormal or missed menstrual periods which lead a woman to be misled into believing she is in early pregnancy is not normally described as a pseudocyesis. Only when a woman does not accept a rational medical explanation that she is not pregnant is the term commonly used. Affected women may actually put on weight (due to overeating) and retain fluid in order to reinforce their false belief, and some criminal cases of baby abduction have been due to

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a woman's desperation to prove her delusion was real.

PUDENDAL BLOCK

A pudendal block is an effective form of local anaesthetic that numbs the perineum and external genitals. An injection of a local anaesthetic such as lignocaine is given through the lower part of the vagina into the wall of the pelvis around the pudendal nerves that supply the perineum. It is usually given to women during childbirth.

PUERPERAL PERIOD

The time from immediately after childbirth until about six weeks afterwards when the woman is fully recovered is known as the puerperal period or puerperium.

SEX HORMONES

Sex hormones are produced by the ovaries in the woman and the testes in the man, to give each sex its characteristic appearance. In men, they are responsible for the enlargement of the penis and scrotum at puberty, the development of facial hair and the ability to produce sperm and ejaculate. In women, the sex hormones that are produced for the first time at puberty cause breast enlargement, hair growth in the armpit and groin, ovulation, the start of menstrual periods, and later act to maintain a pregnancy.

If the sex hormones are reduced or lacking, these characteristics disappear. This happens naturally during the female menopause and the male andropause. During the transition from normal sex hormone production to no production in the menopause, there may be some irregular or inappropriate release of these hormones, causing the symptoms commonly associated with menopause such as irregular periods, irritability and hot flushes. After the menopause, the breasts sag, pubic and armpit hair becomes scanty, and the periods cease due to the lack of sex hormones. Men also go through a form of menopause, the andropause, but more gradually and at a later age, so the effects are far less obvious than in the female.

Sex hormones, and many synthesised drugs that act artificially as sex hormones, are used in medicine in two main areas - to correct natural deficiencies in sex hormone production; and to alter the balance between the two female hormones (oestrogen and progestogen) that cause ovulation, to prevent ovulation, and therefore act as a contraceptive.

It is now well recognised that hormone replacement therapy (HRT) in middle-aged women who have entered the menopause significantly improves their quality of life by not only controlling the symptoms of the menopause itself, but by preventing osteoporosis (bone weakening), reducing the apparent rate of ageing, reducing the risk of dementia, and possibly reducing the risk of cardiovascular disease (ie. heart attacks and strokes) after the menopause. Women who have both their ovaries removed surgically at a time before their natural menopause, will also require sex hormones to be given regularly by mouth, patch or implant.

Female sex hormones can also be used to control some forms of recurrent miscarriage and prolong a pregnancy until a baby is mature enough to deliver, to control a disease called endometriosis, and to treat certain types of cancer.

The female sex hormone oestrogen can be given as a tablet, patch, vaginal or skin cream, implantable capsule that is placed under the skin or as an injection.

If the woman has not had a hysterectomy, she will need to take progestogen as a pill or patch in a cyclical manner every month or two. This may result in a bleed similar to that of a natural menstrual period (but usually much lighter), but gives the added benefit of protecting the woman against uterine cancer.

The common sex hormones fall into the categories of oestrogens, progestogens and androgens (male sex hormones).

OESTROGENS

Oestrogens include diennoestrol, ethinyloestradiol (Estigyn), oestradiol, oestriol (Ovestin), etonogestrel (active ingredient in the implantable contraceptive Implanon), conjugated oestrogen (Premarin), stilboestrol and piperazine oestrone (Ogen). They are used in contraceptive pills, for hormone replacement therapy during and after the menopause, and are usually combined with a progestogen unless the woman has had a hysterectomy. Side effects may include abnormal menstrual bleeding, vaginal thrush, nausea, fluid retention, breast tenderness, bloating and skin pigmentation. These side effects can usually be overcome by adjusting the dosage. They should not be used in pregnancy, breastfeeding, children, and patients with liver diseases or a bad history of blood clots. Care must be used in patients with breast cancer, epilepsy and hypertension.

PROGESTOGENS

Progestogens include dydrogesterone (Duphaston), medroxyprogesterone (Provera), progesterone, gestrinone, norelgestren and norethisterone (Primolut-N, Micronor, Noriday). They are used to control abnormal menstrual bleeds, endometriosis, for preventive contraception, "morning-after" contraception, hormone replacement therapy and premenstrual tension. Medroxyprogesterone is an injectable progesterone that may be used for contraception, to treat certain types of cancer and endometriosis. As a contraceptive it is given every three months. Side effects include the cessation of menstrual periods, breakthrough vaginal bleeding, headaches, and possibly a prolonged contraceptive action (up to 15 months). The other progestogens usually have minimal side effects, but they may

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include headache, abnormal vaginal bleeding, insomnia, breast tenderness, nausea and sweats. They should not be used in pregnancy, liver disease, and patients with blood clots or breast lumps. Care must be used in patients with hypertension and diabetes.

Danazol (Danocrine) is a special type of sex hormone that acts against oestrogen and is used to treat endometriosis, severe menstrual period pain and severe breast pain. Side effects are common and may include acne, weight gain, excess body hair, retained fluid, dry vagina, sweats and the development of a deep voice. It must never be used in pregnancy, or in patients with pelvic infection, liver disease, blood clots or heart failure.

ANDROGENS

The androgen (male sex hormone), testosterone, is available in synthetic form as a tablets, as an injection (Sustanon), and as implants. They are used to treat conditions such as failure of puberty to occur, pituitary gland dysfunction, impotence, decreased libido (in both sexes), and male osteoporosis. Side effects are unusual, but the prostate gland must be checked regularly for enlargement. They are used in women to treat breast cancer and in both sexes for severe anaemia. Natural lack of the male sex hormone testosterone will cause the man to be impotent and sterile. Synthetic testosterone include fluoxymestron (Halotestin), mesterolone (Proviron), and oxandrolone (Lonavar). Fluoxymestron is used to treat breast cancer, osteoporosis and aplastic anaemia. Mesterolone and testosterone are used for male infertility and impotence. Oxandrolone aids short stature, male puberty failure and aplastic anaemia. Side effects may include penis enlargement, infertility, fluid retention, increased body hair and nausea in men, and if used in women irregular periods, deep voice and an enlarged clitoris may develop. They must not be used in pregnancy, heart, liver or prostate disease.

Antiandrogens counteract the action of testosterone. The only common hormone in this group is androcur. It is used to treat excess body hair, severe acne and loss of scalp hair in women, and prostate cancer in men. Side effects may include reduced libido, tiredness, nausea, weight increase and irregular menstrual periods. They must not be used in pregnancy, and patients with blood clots or liver disease.

See also OVARY

SEX IN PREGNANCY

Unless a doctor has recommended otherwise, it is perfectly safe to engage in sex during pregnancy if both partners desire it. It is a fallacy that sex during pregnancy causes a miscarriage. Some women find that their sex drive decreases at certain stages of pregnancy, while other women are the opposite. A man may also be affected, being more attracted to his pregnant wife, or deterred by the new life within her. As a general rule, the foetus will not be affected by intercourse. In the last couple of months, only certain positions will be comfortable for the woman (eg. woman sits atop lying man).

There is some evidence that an orgasm in the last week or two of pregnancy will induce labour.

SMOKING IN PREGNANCY

If beetroot and rhubarb, just for instance, were found not only to cause cancer in 10% of their heavy consumers, but eventually to bring 25% to an early death, no-one would consume them, and the government would long ago have legislated against growing them. Sadly, this is just what cigarette smoking does, but the sale of cigarettes is permitted, cigarettes have been heavily promoted by advertising, and large profits are made from their sale.

Over the centuries, since the introduction of tobacco to Europe in the 1590s, more and more people have become addicted to nicotine. Women started smoking in public only during the First World War, and the habit reached a peak during the Second World War when 75% of the adult population of most western countries were smokers. When today's grandparents were children, they were warned against smoking because "it stunts the growth" (something it only does to the babies of smoking mothers), but generally it was not regarded as harmful, at least for adults. Cigarettes, cigars, lighters, pipes, ashtrays, etc., were standard gifts at Christmas and birthday for a generation. Vast factories poured out billions of cigarettes that were made, packed, wrapped and boxed untouched by human hand. Multinational tobacco corporations gained enormous profits, and became powerful friends of government as tax payers and revenue earners. Governments even subsidised the growth of tobacco in some areas.

Then came the crunch. It was found that smoking tobacco killed people. There was a long delay, and more than half the smokers escaped, but there was little doubt about it - for many people smoking was lethal.

Nicotine is a very powerful and toxic substance, which acts initially as a stimulant on the central nervous system, but this effect is followed by a reduction of brain and nervous system activity. Nicotine causes narrowing of blood vessels, which then affects the circulation and causes blood pressure to rise. This is why regular absorption of nicotine through smoking can cause chronic heart problems and increases the possibility of heart attacks. In addition



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to nicotine, tobacco smoke contains many other chemicals, which are harmful, including tar and carbon monoxide. Tar released in the form of particles in the smoke is the main cause of lung and throat cancer in smokers and also aggravates bronchial and respiratory disease.

We now know that 11% of smokers will get lung cancer, and 90% of these patients will die. Coronary heart disease will kill many prematurely. Chronic lung disease will cripple a large proportion of the remainder. Women smokers have an increased risk of cancer of the cervix.

Smoking is known to increase the incidence of a wide range of medical problems including:-

lung cancer
heart attacks
angina
emphysema
chronic bronchitis
asthma
cancer of the cervix
depression
strokes
high blood pressure
bladder cancer
throat cancer
tongue cancer
oesophageal cancer
kidney cancer
pancreatic cancer
small and sicker babies of pregnant women
sinusitis
viral and bacterial infections of the throat and lungs (eg. influenza, tonsillitis)
poor circulation to feet and hands (Buerger disease)
pneumothorax
mouth ulcers
peptic ulcers
reflux oesophagitis
suicide

It also alters the actions of many medications from beta-blockers to asthma inhalers. Many of the effects above may affect not only the smoker, but also those who live and work with smokers (passive smokers).

Cigarette smoke contains hundreds of chemicals. Amongst the worst are:-

<u>CHEMICAL</u>	<u>MAY CAUSE</u>
Tar	Cancer
Carbon monoxide	Suffocates and blocks oxygen uptake
Nicotine	Stimulation and addiction
Aromatic hydrocarbons	Cancer
Phenol	Tissue irritant
Arsenic	Poison
Carbazole	Accelerates cancer growth
Hydrocyanic acid	Cancer
Acetaldehyde	Slows function of cilia (fine hairs) in airways
Ammonia	Tissue irritant
Nitrosamine	Cancer
Formaldehyde	Stops phlegm clearance from airways
Indole dyes	Accelerates cancer growth
Vinyl chloride	Cancer

If governments actually recorded these substances officially, they would have to ban the sale of cigarettes, as no other product that contained these substances would be allowed on the market.

The medical facts are conclusive - smoking is the biggest health problem in the Western world. It contributes to more deaths than alcohol and illicit drugs together, and costs the economies of these countries millions of dollars a year. If nobody smoked, there would be 30% less cancer.

There is no doubt that the babies of mothers who smoke are smaller (by 200 g on average) than those of non-smoking mothers. There is also an increased rate of premature labour (delivering the baby too early), miscarriage

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and stillbirth in these women. After birth, babies of smoking mothers continue to suffer both directly and indirectly from their mother's smoking. The smoking by the mother appears to reduce their resistance to disease, in particular to infection, so that babies born to smoking mothers die in infancy more often than average. By inhaling the smoke from either of their parents, these infants have more colds, bronchitis and other respiratory problems than babies in non-smoking homes.

Any woman who smokes should ideally cease before she falls pregnant, but certainly should do so when the pregnancy is diagnosed. This is far easier said than done, but if her partner stops at the same time, support and encouragement is given by family and friends, and assistance is obtained from the family doctor, women who are motivated to give their baby the best possible chance in life will succeed in kicking this very addictive habit.

SPINAL ANAESTHETIC

A spinal anaesthetic can be administered when operations below the waist are being performed. The patient remains awake, but is often sedated, while an anaesthetist or surgeon places a needle into the lower back. The needle is inserted between the vertebrae so that the tip enters the spinal canal, which contains cerebrospinal fluid and surrounds the spinal cord. The spinal cord carries all the nerve messages to and from the brain, and runs through the centre of the 24 vertebrae that form the backbone. A small amount of anaesthetic is injected into the spinal canal, so that the nerves below the level of injection no longer work and pain from the operation cannot be felt. The patient is often tilted slightly to prevent the anaesthetic from flowing further up the spine and affecting nerves above the level required for adequate anaesthesia.

The side effects of a spinal anaesthetic include low blood pressure, a headache for several days, and a slow heart rate. Nausea and vomiting are less common complications.

This type of anaesthetic is usually given when the patient is not well enough to stand a general anaesthetic, for Caesarean sections, and in other circumstances when it is desirable for the patient to be awake.

See also EPIDURAL ANAESTHETIC; GENERAL ANAESTHETIC



STRETCH MARKS

Stretch marks (striae or stria gravidarum) are the curse of pregnant women, when they develop on their belly and breasts, and overweight people whose stretch marks persist after they have lost weight. The tendency to develop striae is one that may be inherited.

They are caused by a break down and stretching of the elastic fibres in the skin by changes in the body's hormone levels as well as direct stretching of the skin. Once they form they usually remain permanently unless removed by plastic surgery or reduced by creams containing retinoic acids.

Cushing syndrome is caused by an over production of steroids such as cortisone in the body, or taking large doses of cortisone. Headache, obesity, thirst, easy bruising, impotence, menstrual period irregularities, stretch marks, acne, high blood pressure, bone pain and muscle weakness are common symptoms of this syndrome.

TERATOGEN

Any substance, infection, chemical or drug that damages or adversely affects the development of an unborn foetus is called a teratogen. Thalidomide, irradiation, syphilis and isotretinoin are all teratogens. Some teratogens (eg. german measles - rubella) are only dangerous at specific stages of the foetal development. The most dangerous stage for the action of a teratogen is from three to twelve weeks of pregnancy.

Other commonly recognised teratogens include ACE inhibitors, alcohol in excess, androgens, cytomegalovirus, diethylstilboestrol, hydrantoin, mercury, methotrexate, parvovirus, penicillamine, phenylketonuria, polychlorobiphenyls, systemic lupus erythematosus, tetracyclines, toxoplasmosis, valproic acid and warfarin.

There are many other teratogens that have not been listed.

TOXOPLASMOSIS

Toxoplasma gondii is a single-celled animal that is found world-wide as a parasite of cats, other animals and birds, from whom it may spread to humans. The eggs pass out in the faeces of the animal and may then enter a human mouth (eg. after careless handling of cat litters or soil contamination of fingers or food). Undercooked meat that has been contaminated may also be a source. Once in the gut, the microscopic egg hatches and multiplies into millions of single-celled animals.

In many patients, the symptoms are so mild that they are ignored, but in severe cases the patient complains of a low-grade fever, tiredness, muscle aches, joint pains, headache, sore throat, a mild rash and enlarged glands. In

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the rare severe cases, the liver, spleen, lungs, eye, heart and brain may be involved.

Patients usually recover without treatment in four to eight weeks. If symptoms are significant or complications develop, medications are available (e.g. pyrimethamine) to destroy the infection.

The worst complication of toxoplasmosis occurs in women who are pregnant. The infection may cause miscarriages, still birth, and deformities in the baby (eg. small head, hydrocephalus, mental retardation, fits, blindness). The disease can be detected by a specific immunoglobulin blood test, and this test is often routinely performed during antenatal blood examinations. If toxoplasmosis is detected in pregnancy, treatment will be given to cure the disease. Unfortunately, because the disease has already occurred, there may still be some damage to the foetus.

There is no vaccination or other form of prevention available. Pregnant women should not associate closely with cats.

TRIMESTER

Pregnancy lasts for nine months, and is commonly divided into three trimesters, each covering a period of three months. During the first trimester (the first three months) the structure and form of the foetus are developed. This is the most critical stage of the pregnancy. The second trimester is involved with the growth of the foetus while the third trimester is the maturity of the foetus. A baby born at any time in the third trimester has a chance of survival, but the later the better.

TRANSITION

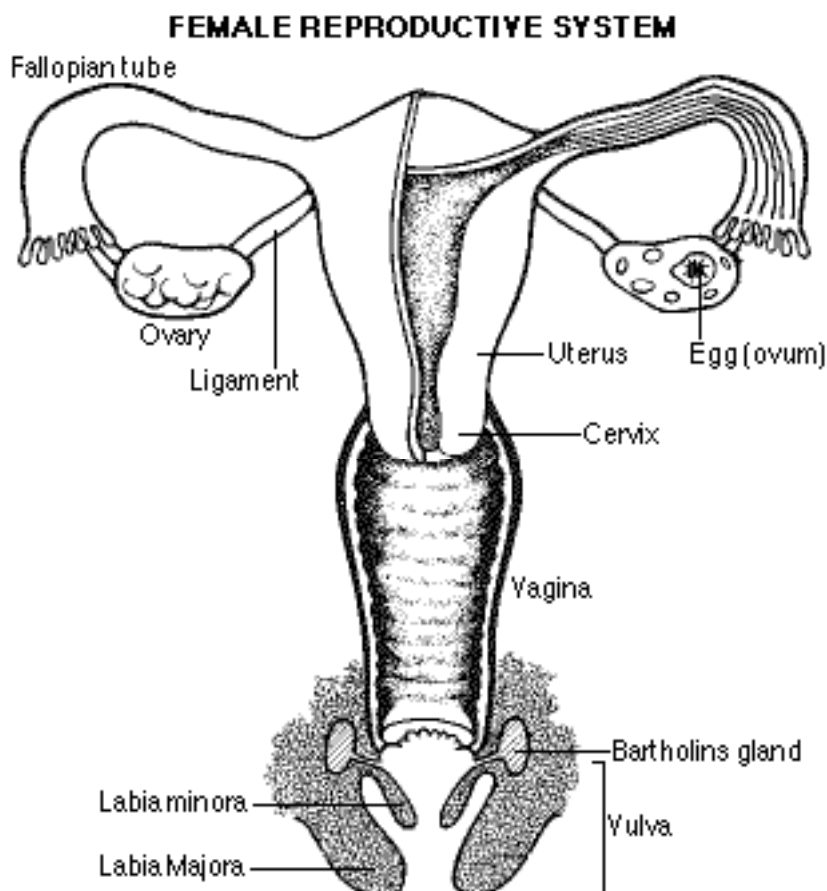
In medicine, transition refers to the change from the first to second stage of labour in pregnancy as the cervix dilates to its full diameter and the baby's head starts to move down the birth canal (vagina).

TRIAL OF LABOUR

In patients who have a large baby, small pelvis, a previous Caesarean section, unusual lie of the baby or some other slight abnormality of pregnancy, a trial of labour may be undertaken. This allows a woman to attempt a natural vaginal delivery while a medical team is readily available to intervene with forceps or surgery if necessary for the health of the mother or baby.

See also LABOUR

UTERUS



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The uterus or womb is the hollow muscular organ in women in which a baby grows. It is located in the pelvis and is loosely tethered to the pelvic walls by two ligaments on each side, the round and broad ligaments, giving it a high degree of mobility. It leans forwards when the rectum is full and backwards when the bladder is full. During pregnancy it expands upwards as far as the ribs. In a non-pregnant woman the uterus looks something like an upside-down pear. It is about 7.5 cm. long and 5 cm. wide. The cavity of a non-pregnant uterus is small and narrow, virtually a slit.

The upper part of the uterus is called the body, and is attached to the two egg-conducting Fallopian tubes. It narrows at the lower end to form the cervix, or neck, which protrudes into the vagina and provides a passage for sperm to enter and menstrual blood to flow out.

The wall of the uterus is made up of three separate layers. The outer layer is a tough protective covering called the perimetrium. In the middle is a thick layer of muscle called the myometrium, while the inner lining consists of a blood enriched mucous membrane called the endometrium.

Each month the endometrium thickens to prepare for the implantation of a fertilised egg. If this does not eventuate, all but the deepest part of the endometrium is discarded, leading to the monthly menstrual period. This takes place about 14 days after an egg has been released. The menstrual flow consists of the liquefied dead endometrium together with some blood lost in the process. If fertilisation, or pregnancy, does occur, the embryo is implanted in the endometrium and nourished by the mother's blood supply. The mother's and the embryo's blood circulations interact through the placenta.

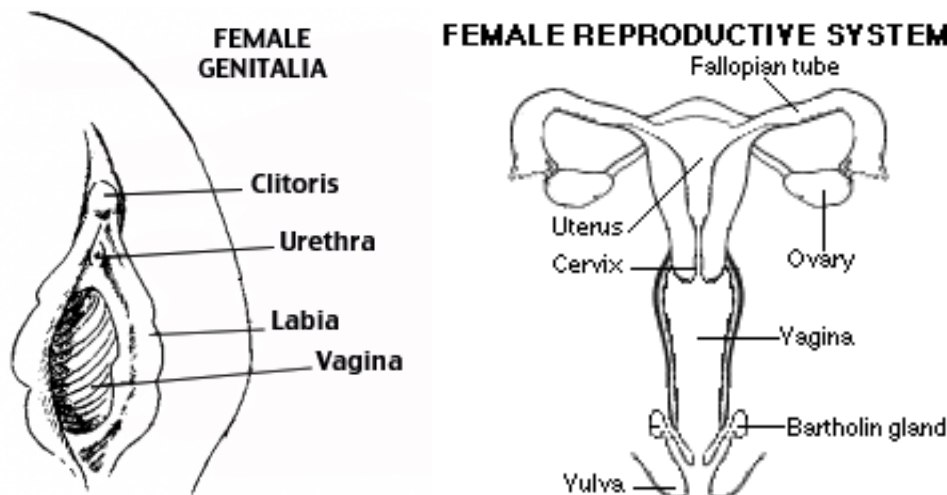
The muscles in the myometrium are among the strongest in the human body. They expand to accommodate the growing foetus, and when the time comes for the baby to be born they engage in a series of contractions, helping the hitherto tightly closed cervix to open and propelling the baby into the vagina during labour. About six weeks after pregnancy, the muscles have shrunk again and the uterus has returned to its normal size.

See also CERVIX; FALLOPIAN TUBE; VAGINA.

VAGINA

The vagina is the passage (birth canal) connecting the uterus (womb) to the outside of the body. Usually about 8 cm long, it is joined to the uterus at the cervix, and passes through the lower part of the woman's body behind the urethra and bladder and in front of the rectum. It is the passage into which the male penis is inserted during sexual intercourse. Vaginal secretions are released during sexual arousal and it can expand to facilitate intercourse. Sperm ejaculated during intercourse travel through the cervix and into the uterus and Fallopian tubes to fertilise an egg if one has been released.

The lining of the vaginal wall is made up of a moist mucous membrane arranged in folds, which enable its muscular tissue to expand for the purposes of sexual intercourse and childbirth. The muscles in the wall of the vagina will also contract in spasms when a woman has an orgasm during intercourse. This rhythmic contraction aids the movement of the ejaculated sperm towards the cervix and uterus.



In children the external opening to the vagina is partly covered by a thin mucous membrane called the hymen. This will be broken at the time of first sexual intercourse, or it may break spontaneously earlier than this.

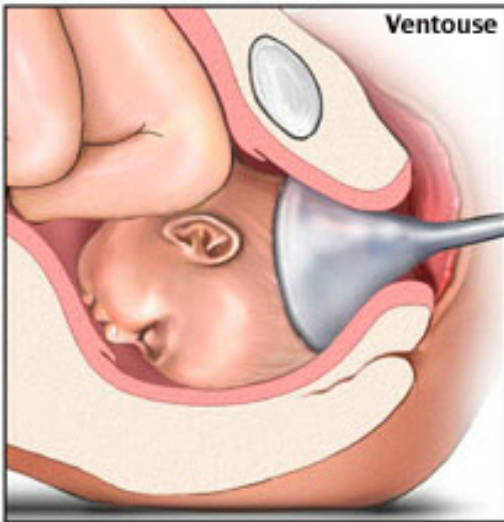
See also CERVIX; UTERUS; VULVA

VENTOUSE

A ventouse is a suction device that can be used instead of forceps to assist in the delivery of a baby during labour.

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The equipment consists of a small rubber cup about 8 cm. in diameter to which is attached a tube and a chain. The tube leads to a suction device, which can create a vacuum, and the chain is attached to a handle that is held by the doctor.



The rubber suction cap is placed on the baby's head as it emerges from the dilated cervix of the mother, and the vacuum pump is turned on to firmly attach the cup to the baby's scalp. The doctor can then pull on the chain and therefore the baby to assist the mother who is pushing the baby out. The vacuum pressure is adjusted so that if the doctor pulls too hard on the chain the suction cap detaches from the baby's head.

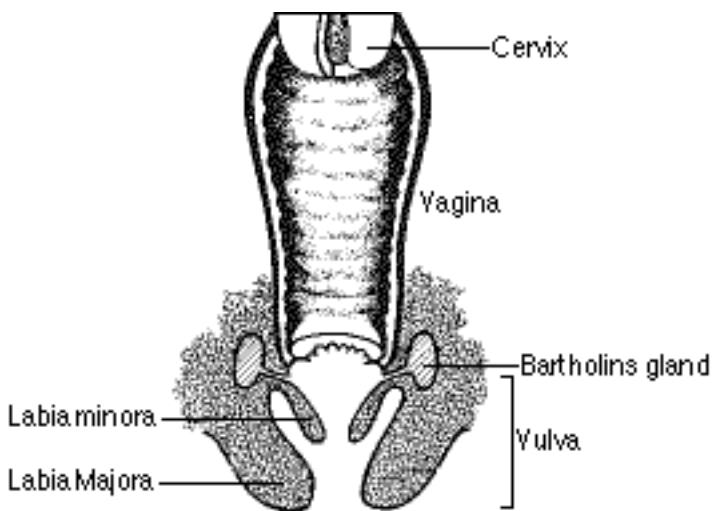
Because there is no increase in the diameter of the cervix the use of a ventouse is more comfortable for the mother (not that labour itself is comfortable!) than using forceps, which further stretch the cervix, and because no artificial twisting forces are applied to the baby's head it is safer for the baby. Forceps are still essential if the baby's head is not in the correct position or rapid delivery is essential.

Most babies who have a ventouse applied develop a lump on their scalp from the vacuum suction. This settles over the next week or two and has no lasting effect.

VULVA

The external female genitals are the area of sexual arousal. The vulva (female pudenda) consists of two pairs of fleshy folds or lips, and a small highly sensitive organ, called the clitoris. The outer of the two pairs of lips is called the labia majora (Latin for larger lips) and the inner pair the labia minora (Latin for smaller lips). The labia minora are sometimes hidden by the labia majora and sometimes protrude beyond them. The space surrounded by the lips is called the vestibule and contains the entrance to the vagina and the opening of the urethra - the tube through which urine is passed from the bladder.

The clitoris is located at the front junction of the labia minora and is the main centre of female sexual sensation.



It contains erectile tissue and when stimulated enlarges in much the same way as the male penis.

Situated on each side of the vaginal opening are small Bartholin glands, which are stimulated by sexual arousal and release a mucous-like secretion to provide lubrication for intercourse.

The pad of fat covered by pubic hair at the front of the vulva is called the mons veneris (mound of Venus), or sometimes the mons pubis (pubic mound). The area extending from the back of the vulva to the anus is the perineum. The perineum is sometimes cut by the doctor during childbirth (an episiotomy) to avoid tissues being torn, and then repaired immediately afterwards.

See also UTERUS; VAGINA

WITCH'S MILK

Babies of both sexes sometimes produce milk from their nipples in the first few weeks of their life. Witch's milk is the rather off-putting term used for this rather common problem. Babies can be influenced by the hormones in their mother's milk, or may be affected immediately before birth by these same hormones. It is in no way detrimental to their health.

No treatment is needed and the milk production is usually very slight and disappears in a few weeks. Interestingly, any woman or man can be made to produce breast milk if they are given the correct hormone cocktail at almost any time in their lives.

See also BREAST

ZYGOTE

A woman's fertilised egg (ova) is called a zygote. The zygote divides quickly into two cells and then into four, eight, 16, 32 and so on to form a morula and then a blastocyst.

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See also BLASTOCYST; EMBRYO

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