Ultrasound scans – what you need to know for women

Having an ultrasound scan in early pregnancy can be exciting as it means you may be able to ‘see’ your baby for the very first time.
This publication is designed to help you make the right choices for you and your baby.

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Doctors and midwives use ultrasound to help assess the progress of your pregnancy and to identify whether there are any possible problems. If you have a scan and a potential problem is found you may have to make some difficult decisions.
It is up to you whether or not you choose to have a scan but most pregnant women are offered one at about 12 weeks to accurately estimate their baby’s due date – this is called a ‘dating scan’. You will also be offered a second scan at around 20 weeks of pregnancy. This scan is used to check the appearance, growth and development of your baby. It is your choice whether you have any scans, but it is essential that you are given sufficient information about these tests in order to make an informed choice about whether or not to have them.

What is an ultrasound scan?

An ultrasound scan is a screening test (see the glossary at the end of this leaflet) that can look ‘inside’ the uterus (womb) and produce a picture of your baby on a computer screen and as a printed photo. The image of your baby is quite fuzzy, but the scan can be used to measure key parts of the baby to assess their development and growth as well as pick up certain abnormalities. Screening tests can only give you information about something that might be present; it is not a test that can give you information that is 100% reliable. Because there is always some uncertainty about the results of screening tests, this means you might be told that there may be a problem when there is not or, the opposite, where you are told there is no problem, and it turns out that there is.

Ultrasound scans – what you need to know

Ultrasounds are valuable as part of your antenatal care as they can provide reasonably accurate information on the following:

- a date for when your baby is likely to be full term (40 weeks). This is abbreviated to the EDD or EDC (expected date of delivery or confinement)
- whether you are carrying twins, triplets or more!
- the position of the placenta
- the position of your baby’s heart and that it is beating normally (but not heart problems)
- problems with the bony structure of your baby, particularly the detection of an abnormality of the spine, called spina bifida, and for some abnormalities of the skull. For further information see the Informed Choice leaflet Is my baby alright?

Many other problems, including some congenital heart defects and all chromosomal and genetic abnormalities, for example Down’s syndrome, cannot be accurately diagnosed with a scan and further tests are always necessary to make a firm diagnosis.

When will I be offered a scan?

It is likely you will be offered a scan at about 12 weeks and 20 weeks into your pregnancy. The scan at 12 weeks (during the first three months – called the first trimester) is recommended particularly if you want to have an initial screening test for Down’s syndrome (see the Informed Choice leaflet Is my baby alright?).

The scan at 20 weeks is a detailed scan of your baby’s body. This means that the scan will look at your baby’s appearance, the structure of its bones, and whether it is growing and developing as expected.
Ultrasound scans – what you need to know

What are the benefits and limitations of the first scan at 12 weeks? (the first trimester scan)

Ultrasound scans are performed in the first trimester primarily to:

- confirm that you are pregnant and that your baby is alive (referred to as confirming viability)
- see if there is anything wrong with the way your baby is developing
- date your pregnancy and check when your baby is due
- count the number of babies eg twins, triplets or more
- assess the risk or chance (from now on, we will use the word chance) of Down’s syndrome by measuring fluid at the back of the baby’s neck (nuchal translucency (NT) scan).
Confirming you are pregnant

This is done by finding your baby’s heartbeat. It can be seen on a scan as early as six weeks; however, if it is not seen, it could be because you are less than six weeks pregnant and you will probably be offered an appointment for another scan in one or two weeks’ time.

If there is no heartbeat present when the pregnancy should be developing (as above, this is from the sixth week) then it is very likely that the embryo is no longer alive and your pregnancy has ended. Sometimes the scan can show that the womb has nothing in it, even though you might have had all the signs of early pregnancy (this is called a blighted ovum (empty sac)). The womb might also be empty because you have had a miscarriage which you were not aware of. Both of these conditions can be confirmed with a scan via the vagina (called a transvaginal scan) and/or by repeating the scan in one to two weeks. Transvaginal scans are where the tiny scanning probe is inserted into the vagina to give a clearer image of the womb – this is especially useful in early pregnancy as they can look straight into the lower part of the womb. They provide a better image where the womb is very low in the pelvis or tilted backwards, or for women who are very overweight, around the lower abdomen. The majority of women do not find this to be an uncomfortable experience and this method of scanning is considered to be safe as research studies have shown that vaginal scans do not increase the chance of having a miscarriage.

Dating pregnancies

An ultrasound measurement of your baby gives a better estimate of your baby’s due date than calculations that are based on the date of your last menstrual period (LMP). This is true even for assisted fertility (IVF) pregnancies where the date of fertilisation is always known.

Accurate estimation of when your baby will have reached term (40 weeks) will reduce the likelihood of your pregnancy being induced for being ‘overdue’ when it is not (for further information on this topic see the Informed Choice leaflet When your baby is overdue). It is also important to have an accurate time frame for your pregnancy as some screening tests, especially the one for Down’s syndrome, are related to fetal age.

The optimum time to perform a dating scan is between 10 and 13 weeks of pregnancy.

Number of babies

The discovery of more than one baby in early pregnancy will allow you more time to get used to the idea and to set in place the more practical preparations needed for a multiple birth. It is also the best time to see whether the babies have their own placentas (afterbirths) or share the same placenta. Diagnosis of identical twins (chorionicity) in the first trimester also enables close monitoring for any signs of potential problems. If you are found to be expecting more babies than you had planned, and that this might be a problem for you, your obstetrician, GP or midwife will talk to you about this and give you information that should be helpful to you.
Nuchal translucency (NT) scan

Every baby has a collection of fluid under their skin at the back of the neck known as nuchal translucency (NT). This can be measured between 11 and 13 weeks six days of pregnancy, after which time the fluid is no longer present. A large study has found that babies with Down's syndrome often have more fluid than other babies and so if this applies to your baby, it means there is a possible chance of your baby having Down's syndrome, or another chromosomal abnormality.

Combining the NT scan measurement and the measurement of your baby's size with your age will detect 75% of babies with Down's syndrome. It is recommended that NT scans are combined with a test that measures levels of certain chemicals in the blood and that these should be offered to all women, but this might not yet be available where you live as until recently this test has only been available privately.

Despite high detection rates, screening tests cannot give a certain result, they can only indicate a possible chance. Therefore, where information suggests that an abnormality is present this will, in most cases, lead to the offer of further tests that will confirm the presence of an abnormality (a diagnosis). However, it is important to understand that information from the screening tests may mean that a few women will be told they are at high chance of an affected baby, when there is nothing actually wrong. In these circumstances it is likely that they will be encouraged to choose further tests so that they can get a reliable answer. These further tests are called diagnostic tests and include chorionic villus sampling (CVS), which examines a small piece of the placenta and amniocentesis, which examines the fluid around the baby. Both of these procedures carry a small chance of miscarrying a normal healthy baby.
Abnormalities

Scans can often pick up early signs that a baby is not developing as it should be. With advances in technology, scan machines are now able to see the baby in even more detail. Therefore it is now possible to detect some major defects from as early as 11 weeks of pregnancy.

Ultrasound scans – what you need to know

What are the benefits and limitations of a second trimester scan?

Other problems cannot be identified until later in your pregnancy. This is why you will be offered a second scan between 18-22 weeks of pregnancy (called the second trimester). The second scan will also confirm the earlier details from your first scan for the gestational age of your baby, the location of your placenta, and the amount of fluid (liquor) that is around the baby.

The sonographer will take measurements of your baby's head, thigh bones and abdomen to see if it is growing as it should. They will also examine the structures inside your baby's head, as well as looking at their spine, heart, stomach, kidneys, bladder, abdomen, limbs, hands and feet. The most common abnormalities detected by scans include spina bifida (an abnormality of the spine and spinal cord), and some defects in the development of the baby's brain, kidneys, abdominal wall and limbs.

It is now also possible to have what's known as a four dimensional scan, which allows you to see your baby's facial expressions and movements over a period of time. These are only available privately from 26 weeks of pregnancy as they are not thought to have any medical benefit although they are thought to help with increasing the attachment you feel for your baby during pregnancy.

The results from your scan are also dependent on factors such as the quality of the ultrasound machine, the experience of the sonographer, the length of time your scan takes, the position of your baby during the scan and your weight (being very overweight can make it harder to see your baby). Also, some abnormalities are easier to see than others, and some problems may not be visible on a scan at 20 weeks.
Ultrasound scans – what you need to know

Ultrasound scans in pregnancy can help to identify problems with the baby’s development. They can also offer you options about what action to take in the face of these problems. This could include planning surgery that may be required immediately after your baby’s birth, as well as access to specialist counselling services which can help to reduce your anxiety by giving you more information about the condition. Some specific fetal abnormalities can even be treated while the baby is still inside your womb (uterus). Where a major birth abnormality is diagnosed, it can also help you decide whether or not to continue with the pregnancy.

If an abnormal finding is diagnosed or suspected, your midwife or doctor will refer you to a Fetal Medicine Specialist within 72 hours. These units are able to offer parents specialist help, information and support to make whichever decisions are needed.

Is an ultrasound safe?

Ultrasound is easy, painless and safe and has been used for nearly three decades with no association between ultrasound exposure and a baby’s birth weight, the incidence of childhood leukaemia or other cancers, eyesight, hearing, dyslexia or intellect problems.

To find out more about your options, please discuss this leaflet and any questions you may have with your midwife or doctor. For more detailed information, see the professionals’ version of this leaflet.

Placental position

A scan will also show the position of the placenta (afterbirth). This is important when your placenta is positioned lower in the uterus than it should be (also called ‘placenta praevia’). If a placenta is low-lying, it can block your baby’s passage out of the womb or cause serious bleeding. For this reason, a further follow-up scan should be performed at 36 weeks to check whether, as your uterus has grown, the placenta has moved up.
Glossary

Alpha-fetoprotein (AFP)

AFP is a product of the yolk sac and fetal liver and is used as a screening tool with human chorionic gonadotrophic hormone (hCG) when screening for Down's syndrome in pregnancy, and also for neural tube defects (NTD) such as anencephaly and spina bifida. The optimum time for this test is at 16 weeks’ gestation.

Levels of AFP are usually low in pregnancies affected by Down’s syndrome, and high (2.5 multiples of the median or above) in pregnancies affected by NTDS. AFP will also be raised in multiple pregnancies.

Amniocentesis

A diagnostic procedure which is carried out from 16 weeks’ gestation, usually as follow-up to an abnormal screening test result. Using a fine needle, a small sample of amniotic fluid is taken from the uterus through the abdominal wall under direct ultrasound guidance.

The possible risks associated with the procedure, which include miscarriage, should be fully discussed with your midwife before undertaking the procedure.

Atresia

An abnormal condition, in which a normal opening or tube in the body (as in the oesophagus, or anus), is closed or absent.

Beta hCG (human chorionic gonadotrophic hormone)

Beta hCG, ‘the pregnancy hormone’, is produced by the early developing placenta but can still be produced in the absence of an embryo. hCG levels tend to be higher in pregnancies affected by Down’s syndrome.
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Chorionic villus sampling (CVS)
A diagnostic procedure to obtain genetic material that can be carried out from ten to 13 weeks. A small sample of the early placental tissue is taken either using a fine needle through the uterus (transabdominally) or with a plastic catheter or biopsy forceps through the uterine cervix (transcervically) under direct ultrasound guidance. The possible risks associated with the procedure, which include miscarriage, should be fully discussed prior to undertaking the procedure.

Crown rump length (CRL)
This is a measurement taken from the crown of the head to the rump (bottom) of the fetus either using transvaginal or transabdominal ultrasound. This is commonly used to ascertain gestational age before the 13th week of pregnancy when the CRL is most accurate.

Diagnostic test
A test, which is offered as a follow-up to a screening test, which has indicated a possible abnormal condition. Diagnostic tests such as chorionic villus sampling (CVS) and amniocentesis are offered to provide definitive results for the confirmation of chromosomal or genetic abnormalities.

Down’s syndrome
A chromosomal abnormality that affects chromosome 21
Down’s syndrome can occur in three ways:

- Trisomy 21 – in which all the cells in the body have an extra chromosome 21. About 94% of people with Down’s syndrome have this type.
- Translocation – in which extra chromosome 21 material is attached to another chromosome. Around 4% of people with Down’s syndrome have this type.
- Mosaic – in which only some of the cells have extra chromosome 21 material. About 2% of people with Down’s syndrome have this type.

The type of genetic variation that children experience does not significantly alter the effect of Down’s syndrome. Infants affected by Down’s syndrome have distinctive facial features accompanied by varying levels of learning disability. The condition is often associated with lung and heart problems. For further information visit the Down’s Syndrome Association website [www.downs-syndrome.org.uk](http://www.downs-syndrome.org.uk)

False negative
In the context of ultrasound antenatal screening, this is where the fetus does have the condition (is affected), but the test results do not show this (ie negative test results).

False positives
In the context of ultrasound antenatal screening, this is where the fetus does not have the condition (is unaffected), but the test results suggest it does (ie positive test results).

Fetus
This is the medical term used for your baby before it is born.
Hydrocephaly

An abnormal increase in the amount of cerebrospinal fluid (CSF) within the cranial cavity, which causes an enlargement of the skull, especially the forehead.

Microcephaly

An abnormality of fetal development characterised by a smaller than normal brain enclosed within a skull of reduced size.

Screening test

Screening is offered to women to determine their chance of being affected by a range of conditions, most of which can be identified in the early stages of fetal development. This means that the test is available to those where there is no pre-existing awareness of risk, or knowledge of being affected, as well as those who are already affected by a condition or complications, or who have known risk factors for these.

Ultrasound

This is where high frequency sound waves greater than that of the upper limit of the human audible range (more than 20 kHz) are used to project an image of the developing fetus in the womb (uterus).

High frequency sound waves, directed at the body, are able to pass through liquid and soft tissues, but not solid objects. When the ultrasound hits a dense or solid object, such as a heart valve, its deflection produces an echo. The varying strengths of these echoes are reflected according to the density of the object. A computer is used to translate this reflected ultrasound into an image.
Questions you may want to ask

After reading this leaflet there may be some things you are still not sure about. You can use this space to write down any questions you may have and any things you would like to discuss with your midwife or doctor.

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