AIMS For a better birth...

How accurate is my 'due date'?

What is a 'due date'?

Most pregnancies last between 37 and 42 weeks, and this period is referred to as "term pregnancy". According to the NICE Guideline 'Inducing Labour'[1] about 8% of spontaneous labours (those that start without medical induction) occur prematurely (defined as before 37 weeks) and 99% have started by the end of the 41st week of pregnancy.

It is common to be given a single 'estimated due date' (EDD) which corresponds to the point at which it is estimated that your pregnancy will have lasted 40 weeks. Only about 5% of babies will arrive on their 'due date'[2] and focusing on this single date can make the end of pregnancy quite stressful. It may be more helpful to be prepared for your baby to arrive at some point after 37 weeks, and to focus on 42 weeks as the time by which you are likely to have given birth.

How is a 'due date' estimated?

There are two methods that doctors and midwives rely on to decide the EDD:

- counting 280 days from the first day of your last menstrual period
- estimating your baby's size from various measurements made by a sonographer during an ultrasound scan

Nowadays it is common to be offered a 'dating scan' at around 10 to 14 weeks of pregnancy. This will be used to calculate your EDD, unless you decide to decline the scan.

You may have your own information about when you became pregnant. This could be because you have been checking the date on which you ovulated (released an egg from your ovary), either by charting your temperature and/or monitoring mucus or by using a test kit. You may know that there were only specific dates on which you could have conceived. If you conceived through IVF, you will know when your egg was fertilised.

Why does the 'due date' matter?

One reason is that as soon as you reach your due date you are likely to be bombarded with enquiries about whether you have had your baby yet!

In addition, the EDD will be used by your midwives and doctors to try to work out whether your baby seems to be growing too fast or slow, or when to offer you an induction of labour (to prevent a long pregnancy or for some medical reason), so it may be helpful to understand how firm a prediction it is. There is sometimes a tendency for midwives and doctors to talk as though the EDD written in your maternity notes is something definite, rather than an estimate which may or may not be accurate.

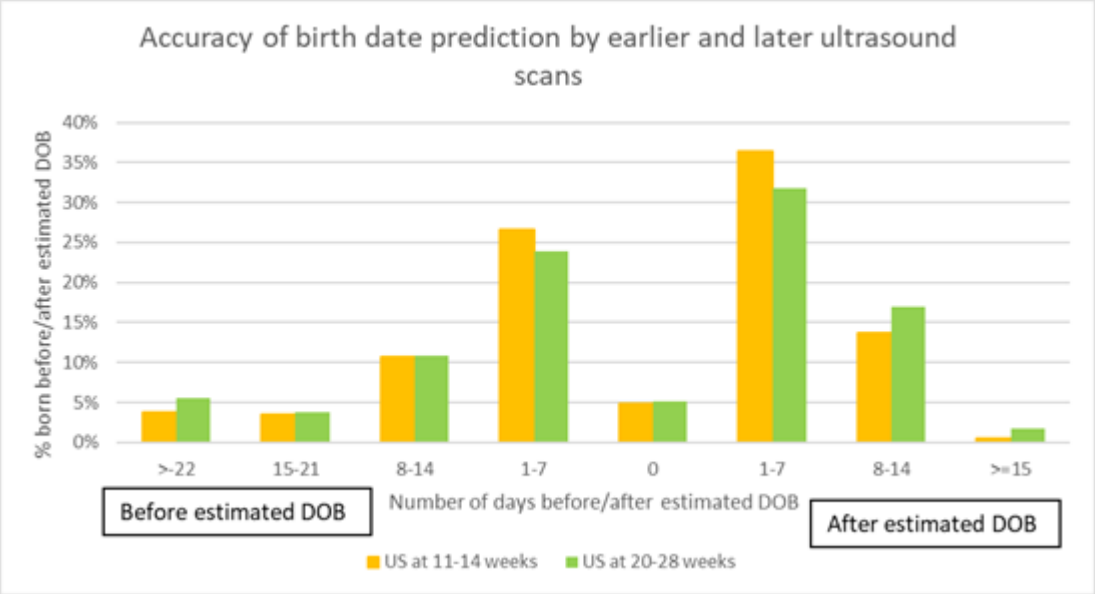
If the EDD you have been given is too early, this could mean that you are offered induction unnecessarily and potentially before your baby is fully prepared for life outside the womb. Alternatively, there might be a medical reason (such as pre-eclampsia) which means it would be better for your baby to be born as soon as they reach 37 weeks of pregnancy. In that case, if the EDD is later than it should be that could mean that the birth is delayed inappropriately.

Bringing forward the time of birth rather than waiting for labour to start may be the right decision for you, but it is always your decision whether to do this, and if so, at what point in your pregnancy. For information about the situations in which you may be offered induction, and to help you decide about whether and when to accept the offer you might like to have a look at our birth information page Induction of Labour or the "AIMS Guide to Induction of Labour'', which is available fromthe shop. The NICE Guideline 'Inducing Labour'[1] also gives details of the information which your midwife or doctor should give you in order to help you make your decision.

Is ultrasound dating accurate?

There is evidence to suggest that when an ultrasound scan in the first trimester is used for the estimate, instead of calculating from the last menstrual period, the number of apparently "post-term" births (those which occur 15 days or more after the estimated date) is reduced. This suggests that in general ultrasound dating is more accurate in predicting the birth date than counting from the last menstrual period[3],[4] but it is still only an estimate and may not always be accurate. A recent study[5] of women who conceived by IVF and therefore knew when their egg was fertilised, found that the routine ultrasound dating scan consistently put their estimated birth date earlier than it should have been by an average of 3 days.

In any case, ultrasound does not give an accurate prediction of the actual birth date. A study[2] of women in Australia who went into labour spontaneouslyfound that when the birth date was estimated from an ultrasound scan carried out between 11 and 14 weeks of pregnancy, only about 5% of women gave birth on the estimated date, and about 68% of women within a week either side of it – that's quite a wide range of dates, and about a third of mothers gave birth even earlier or later than this.



The same study[2] showed that dating from ultrasound scans done later than 20 weeks is increasingly less accurate. As the chart shows, a scan at 20-28 weeks compared to one at 11-14 weeks resulted in more babies being born apparently "post-term" *and* more being born apparently premature (22 days or more before the estimated date). If the date in your notes has been changed because of a late scan, you might want to question how accurate that is likely to be, especially if it is being used to suggest the timing of an intervention. If a late scan predicts a date that is too early, this could make it appear that your pregnancy has lasted beyond 41 weeks (the point at which induction is frequently offered), when in fact this is not the case. Similarly, if it predicts a date that is too late, this could mean that an early birth is not offered in a situation where it should have been, such as when a baby is not growing as well as s/he should.

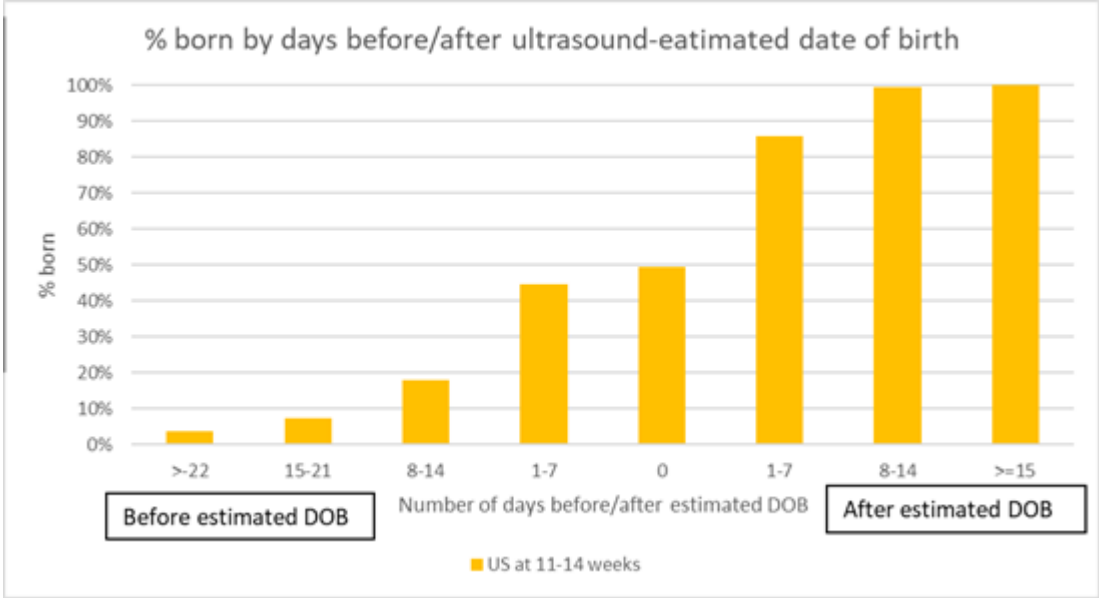
Dating with ultrasound is a skilled procedure, so the accuracy of the EDD will also vary according to the experience of the person doing the measurement. Oddly, even if you have good reason to know when you became pregnant you may find that your midwives and doctors put more faith in the ultrasound measurement if the two dates are different. If you believe that your estimate of your due date is more accurate, you may find it is quite hard to convince people of this. You may want to use your own knowledge about the length of your pregnancy when making decisions, rather than the figure written in your notes, and perhaps record your own EDD in your notes.

How meaningful is a 'due date'?

The concept of "being overdue" implies that all babies are "due" after the same length of pregnancy. We know that not all babies teethe or learn to walk at the same time, so why should all babies be ready to be born after the same number of weeks in the womb? In fact, there is plenty of evidence that there is variation in this, as in anything else to do with human beings. In the study described above[2] when mothers went into spontaneous labour only 5% of their babies were born on the estimated date of birth,

and around half were born after it.

Other studies have suggested that the average length of pregnancy is 40 weeks plus 3-5 days after the date of the last menstrual period, with birth tending to be a couple of days later, on average, for first babies than for subsequent ones[6],[7].



Recommendations about when to offer induction of labour to reduce a potential risk are based on data about how these risks appear to change through pregnancy across a whole population. This doesn't mean that the risk increases at the same point or by the same amount for all babies. The difficulty is that there's no way to tell which babies are at higher risk beyond a certain length of pregnancy – nor whether there might be some for whom the risk increases earlier. It may therefore be helpful to consider whether there are reasons for you to expect a longer or shorter pregnancy than the average.

There is growing evidence[8] that labour normally starts when the baby sends chemical signals to the mother's body to say that s/he is ready to be born. It's possible that if your labour hasn't started, this is because your baby is one that needs a bit longer to develop in the womb.

The length of pregnancy can be affected by many factors including genetics, ethnicity and length of the menstrual cycle. These are discussed below, but there may be other unknown factors which affect it.

How might genetics affect the length of your pregnancy?

It seems that some people are genetically programmed to have longer than average pregnancies, and some to have shorter ones. Recent research has identified several genes which are associated with length of pregnancy and the likelihood of a pre-term birth[9] and so underpin this natural variation.

The genetic heritage of both parents seems to affect the length of pregnancy. In a study[10] which looked

at parents in Norway for whom birth data was available, fathers who were born at 42 weeks themselves had babies who were born, on average, 2 days later than those of fathers born at 37 weeks. For mothers, the effect was even greater. Those born at 42 weeks birthed their babies, on average, 4 days later than those born at 37 weeks. This suggests that if you know the number of weeks of pregnancy at which you and your baby's father were born that should give you an idea of whether your pregnancy is likely to be a bit longer or shorter than average.

It's been estimated that half your chance of having a longer pregnancy is accounted for by your genetic heritage[11] and that if your mother or sister had longer than average pregnancies it's more likely that you will also do so[11]'[12]. Similarly, if you have had a longer pregnancy before, there's more chance that any further pregnancies will be of similar length[7]'[11]. It's also more likely that you will have a repeat of a longer than average pregnancy if your baby has the same father as the previous one, demonstrating again the contribution that the father's genes make[11].

All of this means that a longer pregnancy may be normal for some people, and that their babies just need a bit longer than others to get ready for the world outside. Similarly, for others it may be normal to have a shorter pregnancy.

How might your ethnicity affect the length of your pregnancy?

As it is linked to genetic heritage, it is to be expected that the typical length of pregnancy will also vary for people of different ethnicities, and there is some evidence that this is the case. For example, those of Black or Asian ethnicity appear to have slightly shorter pregnancies on average than those of white ethnicity[13]. However, this is only "on average." There will be a wide range of pregnancy lengths within any one ethnic group as well as considerable overlap between different groups.

How might your menstrual cycle affect the length of your pregnancy?

One reason dating from the last menstrual period may be less accurate than ultrasound is the fact that not everyone's cycles are the same length.

In one interesting study[7] the researchers followed a group of mothers from before they became pregnant and measured their hormones daily. This meant that they knew exactly when each woman ovulated, when their egg was fertilised, and when the embryo implanted in the womb. This showed that the date when a mother went into labour spontaneously was affected both by the length of time from the first day of her last menstrual period until she ovulated, and by how long it then took for the embryo to implant.

If your menstrual cycle is longer than the average of 28 days, you are likely to have pregnancies that appear to be a bit longer than average and vice versa. The time it takes from fertilisation until the embryo implants also seems to vary a bit and that too could affect how long it is until your baby is ready to be born.

If you know when you ovulated or when you conceived, then counting from there may give a more accurate measurement than counting from the start of your last period. In this study, the average time from ovulation to birth was 267 days (38 weeks and 1 day) and 90% of the mothers had given birth by 40 weeks after they ovulated.

What else might affect the length of your pregnancy?

The same study[7] also found that each year of a mother's age added one day on average to the length of her pregnancy, and that her own birth weight also made a difference of 1 day for every 100g.

Summary

The 'due date' is only a rough estimate of when your baby is likely to be born. It may be more helpful to think about the range of dates from 37 to 42 weeks when it is likely that you will give birth.

Your family history, ethnicity and other personal factors can all affect how long your pregnancy will last.

References

[1] NICE Guideline "Inducing Labour" November 2021 www.nice.org.uk/guidance/ng207

[2] Khambalia A.Z. et al "Predicting date of birth and examining the best time to date a pregnancy." Int J Gynaecol Obstet. 2013 Nov;123(2):105-9 www.ncbi.nlm.nih.gov/pubmed/23932061

[3] Taipale P. and Hiilesmaa V. "Predicting delivery date by ultrasound and last menstrual period in early gestation." Obstet Gynecol. 2001 Feb;97(2):189-94. www.ncbi.nlm.nih.gov/pubmed/11165580

[4] Whitworth M. et al Cochrane Review: "Routine compared with selective ultrasound in early pregnancy" (2015) www.cochrane.org/CD007058/PREG_routine-compared-selective-ultrasound-early-pregnancy

[5] Knight B. et al "Assessing the accuracy of ultrasound estimation of gestational age during routine antenatal care in in vitro fertilization (IVF) pregnancies" BMUS Volume: 26 (1): 49-53 2018. journals.sagepub.com/doi/full/10.1177/1742271X17751

[6] Smith G.C.S. “Use of time to event analysis to estimate the normal duration of human pregnancy” Human Reproduction, Volume 16, Issue 7, 1 July 2001, Pages 1497–1500 academic.oup.com/humrep/article/16/7/1497/693431

[7] Jukic A.M. et al “Length of human pregnancy and contributors to its natural variation” Hum Reprod. 2013 Oct; 28(10): 2848–2855. www.ncbi.nlm.nih.gov/pmc/articles/PMC3777570

[8] Gao L. et al “Steroid receptor coactivators 1 and 2 mediate fetal-to-maternal signalling that initiates parturition” *J Clin Invest. 125(7)*:2808-24 2015 www.jci.org/articles/view/78544

[9] Zhang G. et al “Genetic Associations with Gestational Duration and Spontaneous Preterm Birth.” N Engl J Med 2017; 377:1156-1167 www.nejm.org/doi/full/10.1056/NEJMoa1612665?query=featured_home

[10] Lie R.T. et al “Maternal and paternal influences on length of pregnancy. “Obstetrics & Gynecology. 107(4):880-885, APR 2006” journals.lww.com/greenjournal/fulltext/2006/04000/Maternal_and_Paternal_Influences_on_Length_of.22.aspx

[11] Oberg A.S. et al “Maternal and Fetal Genetic Contributions to Postterm Birth: Familial Clustering in a Population-Based Sample of 475,429 Swedish Births” American Journal of Epidemiology, Volume 177, Issue 6, 15 March 2013, Pages 531–537 academic.oup.com/aje/article/177/6/531/160108

[12] Mogren I. et al “Recurrence of prolonged pregnancy.” International Journal of Epidemiology, Volume 28, Issue 2, 1 April 1999, Pages 253–257 academic.oup.com/ije/article/28/2/253/655234

[13] Patel R.R. et al “Does gestation vary by ethnic group? A London-based study of over 122,000 pregnancies with spontaneous onset of labour.” Int J Epidemiol. 2004 Feb;33(1):107-13. academic.oup.com/ije/article/33/1/107/66810