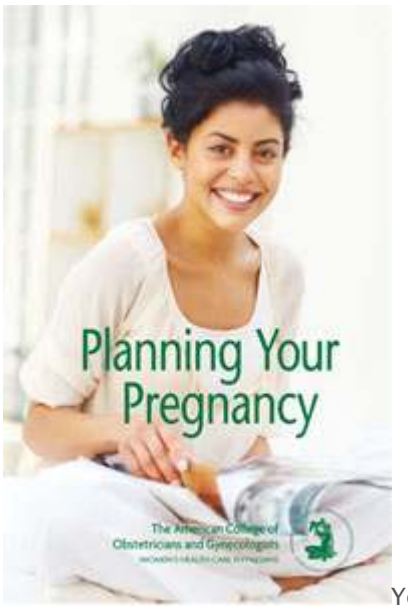
Planning Your Pregnancy



You have decided to have a baby. Congratulations! Welcome to the first part of a journey that will transform your life. By planning ahead and making needed changes before you become pregnant—during the preconception period—you are more likely to be prepared. A key part of planning a pregnancy is preconception care.

Preconception care provides a chance to focus on healthy lifestyle options that may benefit you and your baby. It also can identify medical conditions, environmental factors, and lifestyle choices that may be harmful to you or your baby. Educating yourself and taking steps to become as healthy as you can before pregnancy can increase your chances of having a healthy baby.

Before You Become Pregnant

If you plan for your pregnancy, you can make choices that are good for your baby. Also, if you are prepared, it will help your body adjust to the stress of pregnancy, labor, and delivery.

Many women do not know they are pregnant until they are several weeks into their pregnancies. These early weeks are key for the baby growing inside you. The first 8 weeks of pregnancy are a time of rapid growth for your baby. At the end of 8 weeks, most of the major organs and body systems have begun to form. Poor health, smoking, drinking alcohol, and using certain drugs can harm normal growth. A healthy body and lifestyle helps your baby grow and develop, which is why getting proper health care before you even begin trying to get pregnant is so important.

The Preconception Care Checkup

If you are planning to become pregnant, it is a good idea to plan a preconception care checkup. During this visit, your health care provider will ask about your medical and family history, medications you take, any past pregnancies, and your diet and lifestyle. Be open and honest when you respond to these

questions. Your answers will help your health care provider decide whether you need special care during pregnancy.

This also is a time for you to ask questions. You can seek advice or discuss concerns you might have. Your health care team is there to inform and guide you.

Medical History

Your health care provider will ask about the diseases that you have had in the past and any chronic (long-lasting) conditions that you may have now. Some medical conditions—such as ***diabetes***, high blood pressure, ***depression***, and seizure disorders—can cause problems during pregnancy. Some may increase the risk of problems for the baby, such as birth defects. Others may increase the risk of health problems for you. Having one of these conditions does not mean that you cannot have a healthy pregnancy or baby. However, proper management before pregnancy may reduce pregnancy-related risks.

If you have a medical condition, your health care provider will discuss with you the changes that you need to make in order to bring your condition under control before you try to get pregnant. For example, women with diabetes are usually advised to keep their glucose levels in the normal range for some time before they become pregnant (if it is not already in the normal range). Having a normal glucose level is important because some of the birth defects caused by high glucose levels happen when the baby's organs are developing in the first 8 weeks of pregnancy. Controlling glucose levels may require changing medications or diet and exercise plans.

Even if a health problem is well managed, the demands of pregnancy can cause it to worsen. To keep such conditions in check, you may need to make lifestyle changes, see your health care provider more often, or get other special care during pregnancy.

Family History

Some health conditions occur more often in certain families or ethnic groups. These conditions are called genetic or inherited disorders. If a close relative has a certain condition, you or your baby could be at greater risk of having it. A family medical history helps identify whether you and your partner are at risk of having a child with an inherited medical condition. Your health care provider will ask whether your and your partner's family members have conditions such as birth defects, developmental disabilities, diabetes, or seizure disorders. You also will discuss your and your partner's ethnic backgrounds and any pregnancy complications that you have had in the past (see Box "Risk Factors for Genetic Disorders").

Risk Factors for Genetic Disorders

Answer the following questions about risk factors. If you answer yes to any of them, you may be at increased risk of having a baby with a genetic disorder:

___Will you be age 35 years or older when your baby is due?

___Will the baby's father be age 50 years or older when your baby is due?

___Is there a family history of ***neural tube defects (NTDs)***?

___Have you or the baby's father ever had a child with an NTD?

___Is there a family history of congenital heart defects?

___Is there a family history of ***Down syndrome***?

___Have you or the baby's father ever had a child with Down syndrome?

___If you or the baby's father is of Eastern European Jewish, French Canadian, or Cajun descent, is there a family history of Tay–Sachs disease?

___If you or your partner is of Eastern European Jewish descent, is there a family history of Canavan disease or any other genetic disorders?

___If you or your partner is African American, is there a family history of sickle cell disease or sickle cell trait?

___If you or the baby's father is of Mediterranean or Asian descent, do either of you or anyone in your families have thalassemia?

___Is there a family history of hemophilia?

___Is there a family history of muscular dystrophy?

___Is there a family history of Huntington disease?

___Does anyone in your family or the family of the baby's father have cystic fibrosis?

___Does anyone in your family or the baby's father's family have a developmental or intellectual disability?

___If so, was that person tested for fragile X syndrome?

___Do you, the baby's father, anyone in your families, or any of your children have any other genetic diseases, chromosomal

disorders, or birth defects?

___Do you have a metabolic disorder such as diabetes mellitus or phenylketonuria?

___Do you have a history of pregnancy issues (miscarriage or stillbirth)?

A genetic counselor is a specially trained health care professional who can help couples assess the risk of having a baby with an inherited disorder. Genetic counseling involves taking a detailed family history and sometimes doing a physical exam and lab tests. For some disorders, ***carrier*** testing may be available. Carrier testing shows whether you have a ***gene*** for a particular disorder even if you show no signs of having the disorder yourself. A genetic counselor can help you decide whether to be tested and which tests to have.

The preconception period is the ideal time to find out about these risks. Genetic counseling before pregnancy allows you a broader range of options and more time to make decisions. If you are at increased risk of passing on an inherited disorder, you may decide not to have children. You can decide to adopt or to use ***in vitro fertilization (IVF)*** with donor sperm or eggs. Another testing option, called ***preimplantation genetic diagnosis***, may be available if you and your partner choose IVF.

Medications and Supplements

Some medications, including over-the-counter medications and herbal supplements, can be harmful to a developing baby and should not be taken while you are pregnant. For example, isotretinoin is a prescription medication used to treat severe acne. It can cause severe birth defects if used during pregnancy. Even common nutritional supplements could be harmful. For instance, some multivitamins contain high levels of vitamin A, which has been shown to cause severe birth defects if taken in large doses during pregnancy.

For other medications, there may not be enough information available to determine whether it is harmful during pregnancy. Studies of a drug may only have been performed on animals, or studies may be incomplete.

It is important to tell your health care provider about all of the medications you are taking. Better yet, take the bottles along with you to your preconception care checkup. You may need to stop using a certain medication or switch to another before you try to get pregnant. Do not stop taking prescription medication, however, until you have talked with your health care provider. Although some medications may increase the risk of birth defects, the benefits of continuing to take the medication during pregnancy may outweigh the risks to your baby.

Past Pregnancies

During your preconception care checkup, your health care provider will review your obstetric history. You will be asked about any previous pregnancies and any problems you may have had. Some problems may

increase the risk of having the same problem in a later pregnancy. These problems include ***preterm*** birth, high blood pressure, ***preeclampsia***, and ***gestational diabetes***. However, just because you had one of these problems in a past pregnancy does not mean it will happen again—especially if you receive proper care before and during your pregnancy.

Women who have had a ***miscarriage*** or ***stillbirth*** often fear that it will happen again. Most women who miscarry once go on to have normal pregnancies and healthy babies the next time around. It is important, however, to allow enough time for physical and emotional healing before trying to get pregnant again.

Your Lifestyle

The preconception period is the ideal time to maximize your health in preparation for pregnancy. Taking advantage of the time before conception to make any necessary changes in your life is one of the best things you can do to ensure a healthy pregnancy and a healthy baby.

Diet

A balanced diet is important at all times in your life, but it is vital during pregnancy. The food you eat is the main source of ***nutrients*** and energy for your baby. As the baby grows and places new demands on your body, you will need more ***calories*** and nutrients. You and your baby will start out with all of the nutrients you both need if you eat a healthy diet before you are pregnant.

Your health care provider will want to know about your diet, so think about the following questions before your checkup:

- Are you a vegetarian? If so, do you eat dairy products
- Do you have any food allergies?
- Do you have trouble digesting milk and other dairy products?
- Do you ever fast?
- Are you overweight?
- Are you underweight?
- Do you think you may have an eating disorder, such as ***anorexia nervosa*** or ***bulimia***?

Designing a Healthy Diet

A well-balanced diet is crucial to good health. Your body needs a regular supply of nutrients to grow, replace worn-out tissue, and provide energy. How much of each nutrient you need each day is called the dietary reference intake. You can get your dietary reference intake of nutrients from food as well as from supplements. However, most of the nutrients you need should come from the foods you eat.

To be sure that your diet gives you enough nutrients, you need to know which ones are in the foods you eat. The U.S. Department of Agriculture's food-planning guide called MyPlate (www.choosemy plate.gov) can help you make healthy food choices. MyPlate takes into account your age, sex, and how much you exercise every day. It shows the number of servings you should have each day from each of these five food groups:

1. Grains
2. Vegetables
3. Fruits
4. Protein foods
5. Dairy foods

MyPlate lists a variety of foods in each food group and offers a sample weekly menu to help you get the most nutrients out of the foods you eat.

Vitamin Supplements

Although most of your nutrients should come from the foods you eat, it is a good idea to start taking a prenatal vitamin supplement before pregnancy. These vitamin supplements are available without a prescription. They contain all the recommended daily vitamins and minerals you will need before and during your pregnancy, such as vitamins A, C, and D; folic acid; and minerals, such as iron, zinc, and copper. Should you become pregnant, taking prenatal vitamins can ensure that you are getting all of the important nutrients, especially if you are battling nausea and finding it hard to keep food down. Remember to tell your health care provider that you are taking prenatal vitamins. You may want to bring the bottle with you to your preconception health care visit. It is important to tell your health care provider that you are taking vitamins because excess amounts of some vitamins can be harmful.

Folic Acid: The Vital Vitamin

Folic acid is a B vitamin that helps prevent NTDs when taken before pregnancy and for the first 3 months of pregnancy. It is recommended that all women (even if they are not trying to get pregnant) consume 0.4 milligrams (400 micrograms) of folic acid a day. Taking folic acid before pregnancy ensures that you are getting the recommended amount even if an unplanned pregnancy occurs or if you do not realize you are pregnant until you are several weeks along. Although folic acid is found in many foods and is added as a supplement to breads, cereals, and pastas, it is difficult to eat enough of these foods to meet the requirement. For this reason, health care providers advise women to take a daily vitamin supplement that contains this vitamin. Most prenatal vitamins contain 0.4–0.6 milligrams of folic acid.

If you have had a previous child with an NTD, are taking certain medications (such as antiseizure medications), or if you have certain health conditions (such as sickle cell disease), you have a higher-than-average risk of having a child with an NTD. It is recommended that you take 4 mg of folic acid daily—10 times the amount normally recommended—for 1 month before conception and during the first 3 months of pregnancy. This amount of folic acid should be taken as a separate supplement, rather than as part of a multivitamin. That way, you will avoid taking excess amounts of the other vitamins contained in multivitamin formulas.

Iron

Iron is used by your body to make a protein in red blood cells that carries oxygen to your organs and tissues. During pregnancy, your body makes more blood to supply oxygen to your baby. It is best to start pregnancy with enough iron stored in your body to meet this extra need. Not getting enough iron can be a problem for some women. Before pregnancy, try to choose foods that have a specific kind of iron called

heme iron. Heme iron is found in animal foods, such as red meat, poultry, and fish. This type of iron is more easily absorbed by the body. Iron also can be absorbed more easily if iron-rich foods are eaten with vitamin C-rich foods, such as citrus fruits. If a blood test shows that you are low in iron, it may be recommended that you take an iron supplement. If you are already taking a prenatal vitamin supplement, an extra iron supplement only should be taken if your health care provider recommends it. Excess amounts of iron can be harmful.

Weight

Keeping your weight in a normal range before and during pregnancy is good for your health and your baby's health. Fertility problems often resolve when overweight or obese women lose excess weight or underweight women gain needed pounds.

If you are overweight or obese

Obesity is a major health problem in the United States. About one fourth of reproductive-aged women are obese (have a ***body mass index (BMI)*** of 30 or greater). Excess weight during pregnancy is associated with several pregnancy and childbirth complications, including high blood pressure, preeclampsia, preterm birth, and gestational diabetes. Obesity during pregnancy also is associated with macrosomia (defined as a larger than normal baby) as well as an increased risk of birth injury and cesarean delivery. It also increases the risk of birth defects, especially NTDs. Having too much body fat may make it more difficult for your health care provider to monitor your baby with ***ultrasound*** and to hear the baby's heartbeat.

The best course of action is to lose weight before becoming pregnant if you are overweight or obese (see Box "Evaluating Your Weight"). To lose weight, you need to use up more calories than you take in. To maintain a healthy weight, you need to balance the number of calories you eat with the number of calories you use up in physical activity. The following are some guidelines for safe and effective weight loss:

- The best way to lose weight is by making a few changes in your diet and by being more physically active.
- Cutting back on the number of calories you consume is a good first step.
- To lose weight, The Centers for Disease Control and Prevention recommends 150 minutes of moderate physical activity each week (a little more than 20 minutes a day) or 75 minutes of vigorous intensity activity a week (about 10 minutes a day). Most people who have lost weight and kept it off get 60-90 minutes of moderate intensity activity on most days of the week. You do not have to do this amount all at once. For instance, you can do 20-30 minutes of exercise three times a day.

Your health care provider can refer you to a nutrition specialist who can show you how to eat healthy foods for weight loss.

Evaluating Your Weight

To stay healthy, you should keep your weight at the level that is

best for your height. A person's BMI is a number calculated from height and weight that is used to determine whether a person is underweight, normal weight, overweight, or obese. You can find out your BMI by using an online calculator at web sites such as www.nhlbisupport.com/bmi). Having a BMI of less than 18.5 is underweight; 18.5–24.9 is normal; and 25–29.9 is overweight. A person with a BMI of 30 or higher is obese.

If you are unable to lose weight through diet and exercise, and your BMI is higher than 30 (or higher than 27 and you have health problems caused by your weight), your health care provider may recommend medication to help with weight loss. If your BMI is higher than 40 or between 35 and 39 and you have major health problems caused by your weight, bariatric ("weight loss") surgery may be an option.

For most women, having weight-loss surgery does not affect pregnancy in any harmful way. Some women do have complications from surgery that can affect their pregnancies. These complications can include vitamin deficiencies, ***anemia***, nausea and vomiting, and eating difficulties. Your health care provider should monitor you for these problems throughout your pregnancy. Overall, however, if you have had bariatric surgery and have lost weight, you are less likely to have certain problems during pregnancy, such as gestational diabetes and high blood pressure, than obese women who have not had surgery. Bariatric surgery also should not affect your labor and delivery.

If you are considering bariatric surgery or if you have already had it done, you should delay getting pregnant for 12–24 months after surgery, when you will have the most rapid weight loss. If you had problems with lack of ***ovulation*** or irregular menstrual periods before surgery, these problems may resolve on their own as you rapidly lose the excess weight. It is important to be aware of this possibility because the increase in fertility may lead to an unintended pregnancy. Also, be aware that if you have had gastric bypass surgery, it may affect how the body absorbs medications, including oral contraceptives. You may need to switch to another form of birth control.

If you are underweight

Being too thin also poses risks during pregnancy. Being underweight may raise the odds of giving birth to a low birth weight baby. These babies are at risk of problems during labor and after birth. It also increases the risk of preterm birth. It is a good idea to reach a healthy weight before you get pregnant. Your health care provider can give you advice on the best way to gain weight or refer you to a nutrition specialist if needed.

Exercise

Good health at any time in your life involves getting plenty of exercise. The type and amount you can do safely during pregnancy depends on your health and how active you are before you are pregnant.

It is best to have an exercise routine in place before getting pregnant. If you are just starting out, decide on your goals—Do you want to improve your heart and lung function, strengthen your muscles, or both?—then choose the exercises that will help you meet your goals. Good exercises to start with are those you

have probably already done before—walking, swimming, or bicycling. If you are not used to a lot of exercise, discuss safety guidelines with your health care provider ahead of time and take it slow at first. Your target heart rate is a good guide to tell how hard you are exercising (see Box "Target Heart Rate for Nonpregnant Women").

Substance Abuse

Substance abuse by pregnant women is one of the leading causes of problems during pregnancy. Smoking, drinking, and drug use during pregnancy can have harmful effects on a baby's health. If you smoke cigarettes, drink alcohol, or take drugs, now is the time to quit. Many women do not know that they are pregnant until they have missed one or even two menstrual periods. However, the time when the ***fetus*** is most vulnerable to the harmful effects of substances is during the first trimester of pregnancy. Stopping this behavior before pregnancy may reduce or even eliminate the risks of some birth defects that occur early in pregnancy. It also can give you time to seek help if you have issues with substance abuse or dependence.

Your partner also should give up these harmful substances. There is growing evidence that if your partner smokes, drinks, or uses drugs, it can lower his fertility, damage his sperm, and have a harmful effect on the fetus. At the very least, living with someone who smokes means that you are likely to breathe in harmful amounts of secondhand smoke. In turn, your developing baby is exposed to toxic chemicals. Secondhand smoke also has been linked to an increased risk of ***sudden infant death syndrome (SIDS)***.

Quitting harmful behavior takes patience and plenty of support. Do not be afraid or ashamed to ask for help. Your doctor can suggest ways to get through the early stages as well as refer you to support groups.

Target Heart Rate for Nonpregnant Women

To check your heart rate, locate the pulse on the inside of your wrist. Count your pulse for the first 10 seconds after you stop exercising. Multiply this number by 6 to calculate how many times a minute your heart is beating. To find your target heart rate as well as the heart rate it may be unsafe to exceed, find the age category closest to yours on the table below and read across.

Age (years)	**Target heart rate (beats per minute)**	**Maximum heart rate (beats per minute)**
20	100–170	200
25	98–166	195
30	95–162	190
35	93–157	185
40	90–153	180
45	88–149	175
50	85–145	170

55	83–140	165
60	80–136	160
65	78–132	155
70	75–128	150
Data from Centers for Disease Control and Prevention. Target heart rate and estimated maximum heart rate. Available at http://www.cdc.gov/physicalactivity/everyone/measuring/heartrate.html. Retrieved July 20, 2010.		

Your Environment

Some substances found in the home or the workplace may make it harder for a woman to conceive or could harm her fetus. If you are planning to get pregnant, look closely at your home and workplace. Think about the chemicals you use in your home or garden. Some hobbies, such as stained glass and darkroom work, might expose you to harmful substances. Find out from your employer whether you might be exposed at work to toxic substances such as lead or mercury, chemicals such as pesticides or solvents, or radiation. Discuss your level of exposure with your health care provider as well as your employee health division, personnel office, or union representative. If you do come into regular contact with a substance that may be harmful, take steps to avoid it.

Radiation, a form of energy sent out in invisible waves, is used in certain medical and industrial jobs. It also is used to take X-rays to diagnose disease. The amount of radiation used to take a chest X-ray or single dental film will not affect fertility or harm a fetus. Nevertheless, it is wise to avoid being exposed as much as you can and to wear abdominal shields if you have an X-ray done. However, high levels of radiation used to treat diseases such as cancer can be harmful during pregnancy.

You may not think of your home environment as harmful, but if you are dealing with domestic violence, it can be, both for you and your children. Your health care provider may ask whether you are in an abusive relationship during your preconception care visit. It is important to get help if you are in this situation. Your health care
provider can help you find resources in your state that offer aid. You also can call the toll-free, 24-hour National Domestic Violence hotline at 1-800-799-SAFE (7233) and 1-800-787-3224 (TDD).

Infections

Certain infections during pregnancy can cause severe birth defects or illness in a fetus. Some of these infections may be prevented with proper immunization. You should get all of the recommended vaccines for your age group before you try to get pregnant (see Box “Are Your Immunizations Up-to-Date?”).

Some vaccines, known as “live vaccines,” are not safe to have during pregnancy. These vaccines are made from live viruses that have been changed in some way so they do not cause disease. The live vaccines are the measles-mumps-rubella vaccine, the flu nasal spray vaccine (but not the flu shot), and the chickenpox vaccine. If you need these vaccines, get them at least 1 month before trying to conceive. During this time, keep using birth control. If you are planning a trip to a country where you might come into contact with diseases that are not common in the United States, you may need other vaccines.

Vaccines that contain killed viruses are safe to get during pregnancy. It is especially important for pregnant women to get a flu shot. A pregnant woman who gets the flu is at high risk of serious complications.

Other infections that can be harmful during pregnancy are those passed on by sexual contact—***sexually transmitted diseases (STDs)***. These diseases can affect your ability to become pregnant and can infect and harm your baby. The following are the most common STDs:

- Chlamydia
- Gonorrhea
- Genital herpes
- Human papillomavirus
- Trichomoniasis
- Hepatitis B virus
- Syphilis
- Human immunodeficiency virus (HIV)

Using a male or female condom regularly will decrease your risk of getting an STD. A woman who is not using these forms of birth control (for instance, if she is trying to conceive) is at a higher risk of getting an STD if she has sex with more than one partner or if her partner has sex with someone else. STDs such as herpes, HIV, and hepatitis B have no known cures. Many STDs have no symptoms in the early stages.

It is a good idea to be tested for HIV during your preconception care checkup even if you do not think you have HIV. If you suspect that you may have been exposed to an STD, see your health care provider right away to be tested and treated. Your partner also should be treated. Neither of you should have sex until treatment is finished. The earlier an STD is found and treated, the lower the long-term risk. If you have one of these conditions, steps can be taken during your pregnancy and during delivery to decrease the risk of your baby being harmed by the disease or catching it from you.

Are Your Immunizations Up-to-Date?

Before you become pregnant, make sure you have all of the recommended adult vaccines for your age and risk factors. Live vaccines should be given a month or more before trying to conceive. Although inactivated vaccines are safe to have during pregnancy, it is best to have all of your immunizations before you become pregnant. These vaccines can be given 1 month before pregnancy:

- Live attenuated influenza vaccine (the nasal spray)
- Measles-mumps-rubella vaccine*
- Varicella vaccine*

These vaccines are safe during pregnancy:

- Hepatitis A vaccine*
- Hepatitis B vaccine*
- Influenza vaccine†
- Meningococcal vaccine*
- Pneumococcal vaccine*
- Tetanus–diphtheria booster (tetanus–diphtheria–pertussis preferred)

*These immunizations are given based on risk factors. If you do not know whether you need one, check with your health care provider.

†Flu shots change every year. If you are pregnant when a new flu season occurs, you will need to get that season's flu shot.

Later Childbearing

These days, women are more commonly becoming mothers later in life than in prior generations. Older moms often worry that their age will affect their fertility and the health of their babies. There is no set age that is unsafe for women to become pregnant. For women older than 35 years, the chances of having a normal pregnancy and healthy baby are great, especially if they get good preconception care and ***prenatal care***.

Older mothers often have concerns about pregnancy that do not apply to younger mothers. These concerns include the following:

- Infertility—A woman's fertility slowly declines starting in her early 30s. After that time, it may take longer to get pregnant. Infertility usually is defined as not conceiving after 1 year of unprotected intercourse. However, if you are 35 years or older, you may want to undergo infertility evaluation sooner. An infertility evaluation involves testing of both partners for factors that prevent conception. Treatment can make it possible for some women to become pregnant even if they have fertility problems.
- Medical and obstetric problems—As women age, conditions such as high blood pressure and diabetes tend to occur more often. Because pregnancy puts new demands on a woman's body, the risk of complications may be higher for expectant mothers with these problems. They are more likely to need to visit their health care providers more often, need special tests, stay in the hospital before the baby's birth, and require special care during labor and delivery.
- Birth defects—The risk of certain birth defects caused by problems with ***chromosomes*** increases with age. The risk of Down syndrome, for instance, is 1 in 1,000 at age 30 years and 1 in 400 at age 35 years. Screening tests can be done to assess the risk that your baby has certain birth defects. Diagnostic tests are available for certain birth defects that show whether the baby has that specific disorder.

If you are in your 30s or 40s and are planning a pregnancy, preconception care can help you find out if you are at risk of certain problems. Prevention or treatment before pregnancy can help minimize the risks to you or your baby.

Planning Your Pregnancy Care

Finding a health care provider for your pregnancy is probably one of the most important choices that you will have to make. Talk to your regular health care provider for recommendations, or ask women you know to share their opinions about the health care providers who delivered their babies. You also can find a pregnancy health care provider through your health insurance provider (see Box "Questions to Ask When Interviewing Health Care Providers").

Questions to Ask When Interviewing Health Care Providers

Before you decide who will care for you during your pregnancy, visit different health care providers until you find one that you like and trust. Call the practice ahead of time to get basic questions about location, hours, and insurance out of the way before you meet with the health care provider. During the interview, feel free to discuss anything that is of concern to you or your partner. Here are some questions to think about:

- How close is the practice to your home or work?
- Does the practice accept your insurance plan?
- What are the health care provider's fees and how is payment handled?
- Where does the health care provider have hospital privileges?
- How are urgent questions or emergency care handled?
- What are the health care provider's beliefs about pain relief during labor, fetal monitoring, ***episiotomy***, ***cesarean birth***, breastfeeding, and other issues that interest you?
- Is it likely that your health care provider will deliver the baby?
- What is the health care provider's cesarean birth rate and how does it compare with the hospital's rate of cesarean births?

Types of Health Care Providers

The types of health care providers who offer medical care for pregnancy and birth are obstetrician-gynecologists (ob-gyns), maternal-fetal medicine subspecialists, family practitioners, certified nurse-midwives (CNMs), and certified midwives.

- Obstetrician-gynecologists (ob-gyns)—Ob-gyns are doctors who specialize in the reproductive care of women. After graduating from medical school, ob-gyns complete a 4-year course of specialized training in obstetrics and gynecology. To be certified, a physician must pass written and oral tests to show that he or she has obtained the knowledge and skills required for the medical and surgical care of women. A certified ob-gyn can become a Fellow of the American Congress of Obstetricians and Gynecologists (a companion organization of the American College of Obstetricians and Gynecologists). Maintenance of certification also is required to remain certified. Maintenance of certification involves continuing education and practice evaluation.
- Maternal-fetal medicine subspecialists—These doctors, who are also called perinatologists, have completed 4 years of training in obstetrics and gynecology and then received further training in high-risk obstetrics for 2-3 years. Maternal-fetal medicine subspecialists must pass written exams and oral exams to become certified. Women who have high-risk pregnancies may be referred to maternal-fetal medicine subspecialists for care.
- Family physicians—Doctors in family practice provide general care for most conditions, including pregnancy. After completing medical school, family physicians complete 3 years of advanced training in family medicine (including obstetrics) and become certified by passing an exam. They are able to care for women with normal pregnancies and deliveries.
- Certified nurse-midwives and certified midwives—CNMs are registered nurses who have been specially trained to provide care for women with low-risk pregnancies and their babies from early pregnancy through labor, delivery, and the weeks after birth. They have completed an accredited nursing program and have a graduate degree in midwifery. To be certified, they must pass a national written exam administered by the American Midwifery Certification Board and must maintain an active nursing license. Certified midwives have graduated from a midwifery education program accredited by the American College of Nurse-Midwives Division of Accreditation. They have successfully completed the same requirements, have passed the same American Midwifery Certification Board national certification exam, and adhere to the same professional standards as CNMs. Both CNMs and certified midwives generally work with a qualified physician who will provide backup support.

Types of Practices

Another factor to think about is whether a pregnancy health care provider is in a group, collaborative, or solo practice. In a group practice, two or more health care providers provide constant coverage. You may have a primary health care provider but receive care from the other group members from time to time. In a solo practice, one health care provider works alone but may have help from other health care providers to cover deliveries. A collaborative practice brings together a team of health care professionals, such as nurses, CNMs or certified midwives, laborists (a health care provider who manages the care of women during labor and delivery), nurse practitioners, physician assistants, and childbirth educators, with different knowledge and skills. The contribution of each member is key to the health care of the patient.

Your Baby's Birthplace

The setting in which you give birth can have a major effect on your experience. Many hospitals offer a range of settings; in others, the choice may be limited. There also are freestanding birthing centers that are not in a hospital. The safest places to give birth are thought to be a hospital, a birthing center within the hospital complex that meets the standards jointly outlined by the American Academy of Pediatrics and the American Congress of Obstetricians and Gynecologists, or an accredited freestanding birth center that meets the standards of the Accreditation Association for Ambulatory Health Care, the Joint Commission, or the American Association of Birth Centers.

Depending on where you live, the following options may be available at the hospital:

- Labor and delivery—You go through labor in one room and give birth in another room. You will be transferred to a recovery room and then to a hospital room for the rest of your stay.
- Labor–delivery–recovery—You will be in the same room throughout labor, delivery, and recovery and then transferred to a hospital room for the rest of your stay.
- Labor–delivery–recovery–postpartum—You are in the same room throughout your stay at the hospital.

Your choice will depend on what your area offers, where your health care provider performs deliveries, and what your health insurance will cover. Your health care provider will let you know about the choices available. You can tour the hospitals in your area to see which settings appeal to you (see Box "Evaluating Birth Sites").

Evaluating Birth Sites

When you tour a facility, be sure to come with a list of questions about certain policies. Here are some sample questions to ask:

- Who is allowed to be present at the birth?
- Are there a limited number of birthing rooms (meaning you may be booked into a traditional delivery room if they are full)?
- Does the hospital have set rules about the use of medical procedures (such as fetal monitoring and intravenous lines during labor) or does it leave such decisions up to individual health care providers?
- Are women in labor allowed to move about freely or are they required to stay in bed?
- What special care (such as a neonatal intensive care unit) can the hospital provide if your baby is born with a medical problem?
- Will your baby be allowed to room with you after birth, or will he or she need to stay in the newborn nursery?
- Does the hospital or birthing center employ a lactation consultant or provide other services to help new mothers breastfeed?

- Does the hospital have an anesthesiologist on site full time?
- Does the hospital or birthing center offer the type of birth control or sterilization you would like to use after your baby is born?

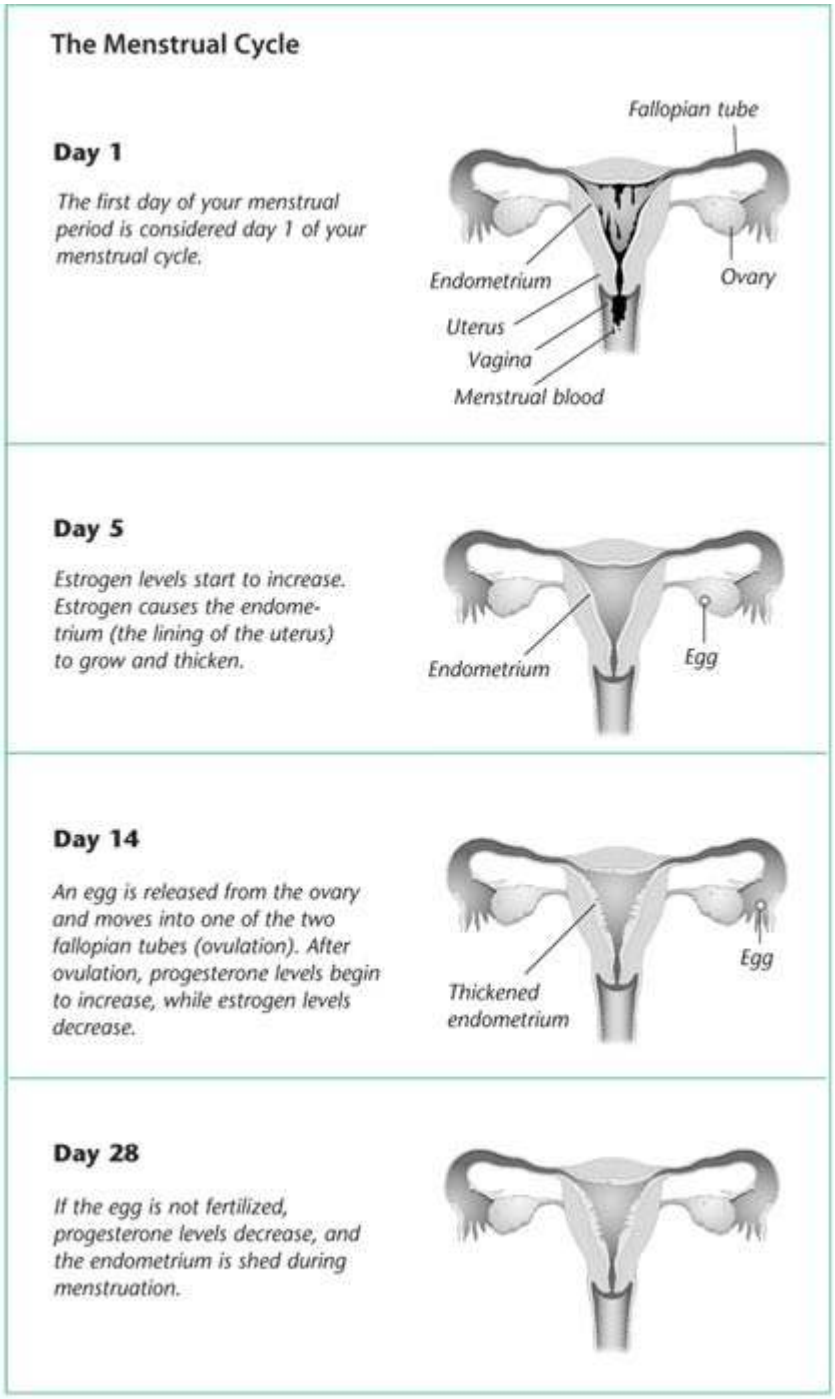
What about giving birth at home? Although some women choose this option, you should be aware that even the healthiest pregnancies could have complications that arise with little or no warning during labor and delivery. For this reason, the American Congress of Obstetricians and Gynecologists believes that hospitals and hospital-associated birthing centers are the safest settings for birth.

Getting Pregnant

Knowing how pregnancy occurs will help you find out when you are most fertile—in other words, when you are most likely to get pregnant. To increase the chance of getting pregnant, sex has to happen during a small window of time near ovulation.

The Menstrual Cycle

The changes that occur during the menstrual cycle are caused by ***hormones***—substances made by your body to control certain functions (see Box "Hormones: Key Players in Menstruation and Pregnancy"). Each month, hormones signal your ***uterus*** to build up a lining of blood-rich tissue **(*endometrium*).** These hormones also send a signal to an egg to ripen in a ***follicle***—tiny, fluid-filled clusters of cells in your ***ovaries***. When the egg is ripe, it is released from the ovary and moves into a fallopian tube, one of a pair of ducts that connects the ovaries to the uterus. This process is called ovulation. Signs that you may be ovulating include a twinge or cramp—called mittelschmerz, for "middle pain"—in your lower abdomen or back. You also may notice some breast tenderness, an increase in cervical mucus (vaginal discharge), or an increase in sexual desire around the time an egg is released.



The average menstrual cycle lasts about 28 days, counting from the first day of one period (day 1) to the first day of the next. Cycles ranging from as few as 23 days to as many as 35 days are normal. Your own cycle may vary somewhat from month to month. By keeping a menstrual calendar for a few months, you can get an idea of what is normal for you (see Box “Keeping a Menstrual Calendar”). When you become pregnant, the calendar will make it easier to figure out your baby’s due date.

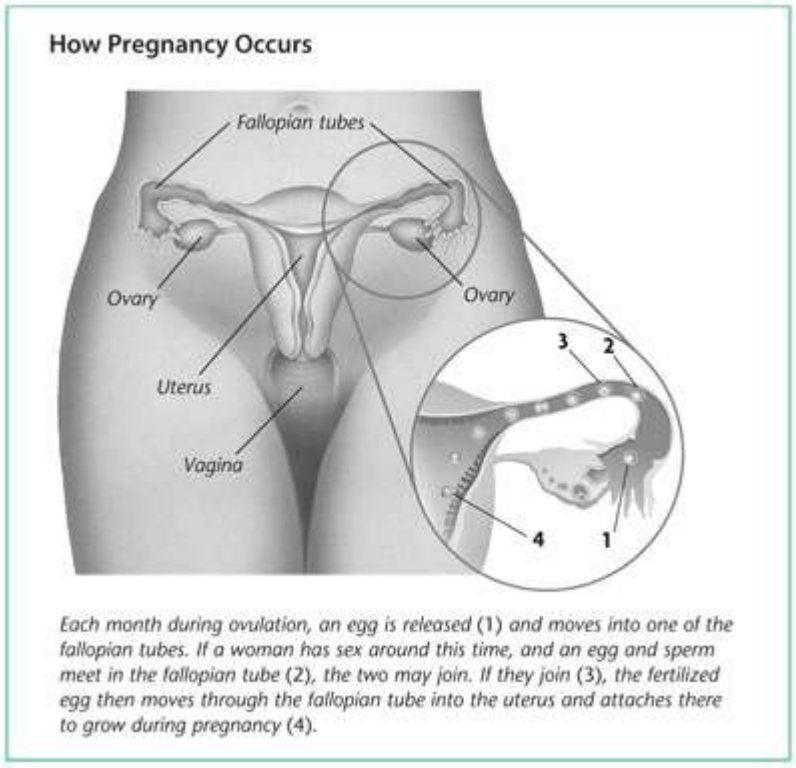
In an average menstrual cycle of 28 days, ovulation occurs on day 14. After you have ovulated, the egg moves through one of the fallopian tubes toward your uterus. If pregnancy does not occur, your body absorbs it, and the levels of hormones decrease. This decrease signals the lining of the uterus to shed. This shedding is your monthly menstrual period.

Fertilization

Fertilization is the joining of an egg and a sperm in the fallopian tube. Each sperm and egg contain one half of a fetus's genetic makeup.

Sperm are tiny cells made by a man's testes in the sac (***scrotum***) below his penis. When sperm cells mature, they leave the testes through small tubes called the vas deferens. The vas deferens transport the sperm to the seminal vesicles and the prostate gland, small organs located near the bladder. There, the sperm mix with seminal fluid to create ***semen***.

When a man climaxes during sex, semen is released from his penis through a tube called the ***urethra***, a process called ejaculation. During ejaculation, millions of sperm are deposited in a woman's ***vagina***. After ejaculation, the sperm "swim" up through the ***cervix***, into the uterus, and out into the fallopian tubes. Sperm can live inside a woman's body for 3 days and sometimes up to 5 days. An egg's life span is short—12–24 hours. Therefore, you can become pregnant if you have sex anywhere from 5 days before ovulation until 1 day after ovulation. If an egg is present in a fallopian tube when a man ejaculates, or if one is released during the next few days, the egg and sperm may join. If they join, fertilization occurs.



Each month during ovulation, an egg is released (1) and moves into one of the fallopian tubes. If a woman has sex around this time, and an egg and sperm meet in the fallopian tube (2), the two may join. If they join (3), the fertilized egg then moves through the fallopian tube into the uterus and attaches there to grow during pregnancy (4).

The joined egg and sperm form a single cell. This cell divides, forming two cells. These cells then divide, forming four cells, and then eight cells, and so on. At the same time, the dividing cells move down the fallopian tube toward the uterus.

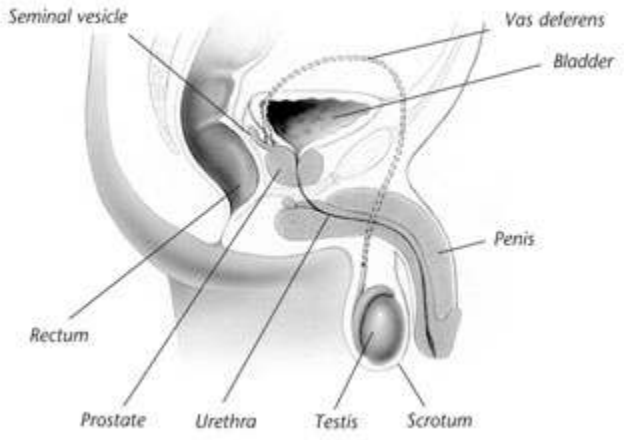
Approximately 7 days after fertilization, the rapidly dividing ball of cells enters the uterus. It burrows deep into the uterine lining, a process called implantation. The fertilized egg is called an ***embryo*** until the end of the eighth week of pregnancy. From the ninth week until birth, it is called a fetus.

Some couples worry that having sex every day will reduce the number of sperm from a man's body and make it harder for him to get his partner pregnant. Healthy testes produce new sperm all the time, so daily sex should not be a problem as long as a man's sperm count is normal. The sperm count is the number of active sperm in one milliliter (less than one half teaspoon) of semen. A normal sperm count—one of the first things health care providers check if a couple is having trouble conceiving—is between 20 million and 250 million per milliliter.

Detecting Ovulation

There is no foolproof method to make sure that an ovary has released an egg, but there are a number of methods that are useful. One method is to note changes in your body. Look for telltale signs of ovulation: cramps, tender breasts, cervical mucus, or an increased desire to have sex. Other methods—especially when they are used in combination—can give you a pretty good idea:

The Male Reproductive System



- Chart your cycle. The simplest way to spot your fertile days is to check the menstrual calendar you have been keeping. First, figure out how long your cycles tend to last. If your cycle is between 26 days and 32 days long, days 8 through 19 are the days of your cycle when you are most likely to become pregnant.
- Check your cervical mucus. You also can detect ovulation by watching for changes in your cervical mucus. A few days after your menstrual period ends, increasing estrogen levels trigger the production of cervical mucus. As your body prepares to release an egg, this mucus increases in volume and becomes thicker. (To get a good look at your cervical mucus, gently wipe your vaginal opening with a clean finger or a piece of toilet tissue before you urinate.) Just before ovulation, you produce more cervical mucus. It becomes clear, slippery, and stretchy—it looks and feels like a raw egg white. This kind of mucus smoothes the way for sperm to enter the uterus and swim up the fallopian tubes. Your fertile period begins with the first signs of slippery mucus and continues

through the day you ovulate. After ovulation, an increase in progesterone makes cervical mucus sparse and dense. This makes it harder for sperm to swim through the cervix.

- Track your temperature. Most women's ***basal body temperature*** increases slightly—about one half of a degree—after they ovulate. To use this method, take your temperature at the same time every morning, before you get out of bed. You will need a thermometer that measures temperature by tenths of degrees. Chart the temperature on a graph that also shows the days you menstruate. After you have done this for a few months, you will begin to spot a pattern that will help you predict when you will ovulate. Your temperature will go up 24–48 hours after you ovulate.
- Use an ovulation-predictor kit. Ovulation-predictor kits are home tests that you can buy without a prescription. They measure the level of luteinizing hormone in your urine. When levels increase, it means that one of your ovaries is about to release an egg.

Keeping a Menstrual Calendar

When you are thinking of becoming pregnant, you may want to keep track of your menstrual cycle. By charting your menstrual periods on a calendar for a few months, you can spot patterns in your cycle (how many days your menstrual periods last, for instance, and whether your cycle is typically 25 or 30 days long). You may also be able to pinpoint the days that you are most fertile. To use the calendar, simply circle the days that you menstruate each month. If you can, chart your cycle for a few months and bring the calendar along with you to your preconception care checkup.

Jan.	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Feb.	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29
March	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
April	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
May	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
June	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
July	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Aug.	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Sept.	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Oct.	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Nov.	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Dec.	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

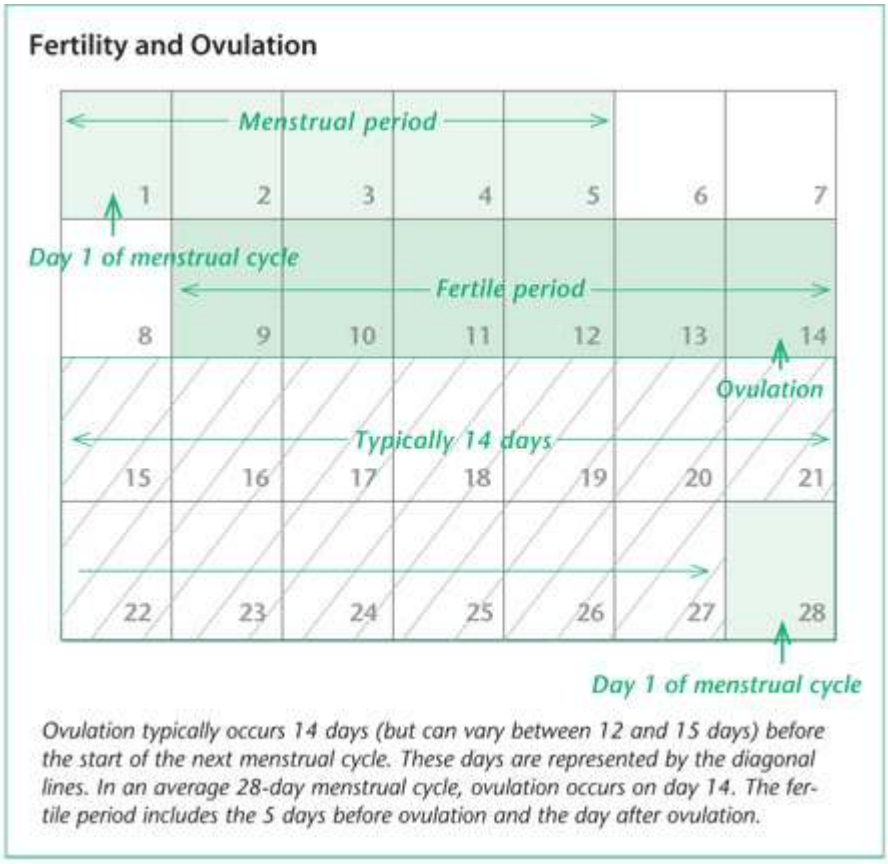
Stopping Birth Control

You can start trying to conceive immediately after stopping hormonal birth control. There is no increased risk of pregnancy problems if you become pregnant soon after stopping these methods. With most hormonal birth control methods, such as birth control pills, the patch, vaginal ring, implant, and the hormonal ***intrauterine device (IUD),*** ovulation can occur within 2 weeks of stopping the method. This also

is true for the copper IUD. However, if you are using the birth control injection, it may take up to 10 months to resume normal ovulation. For some women, it may take much longer.

Some health care providers do recommend that women wait until they have had at least one normal menstrual period after stopping hormonal methods of birth control before trying to conceive. Establishing normal menstrual cycles makes it easier to keep track of when you are fertile. If you do conceive, knowing the date of your last menstrual period makes it easier to calculate your due date.

If you become pregnant while using a birth control method that contains hormones, do not worry. It does not increase the risk of birth defects as once believed. However, once you know that you are pregnant, you should stop using your method right away. Rarely, pregnancy may occur with the IUD. If pregnancy occurs and you want to continue the pregnancy, the IUD should be removed if it is possible to do so without surgery.



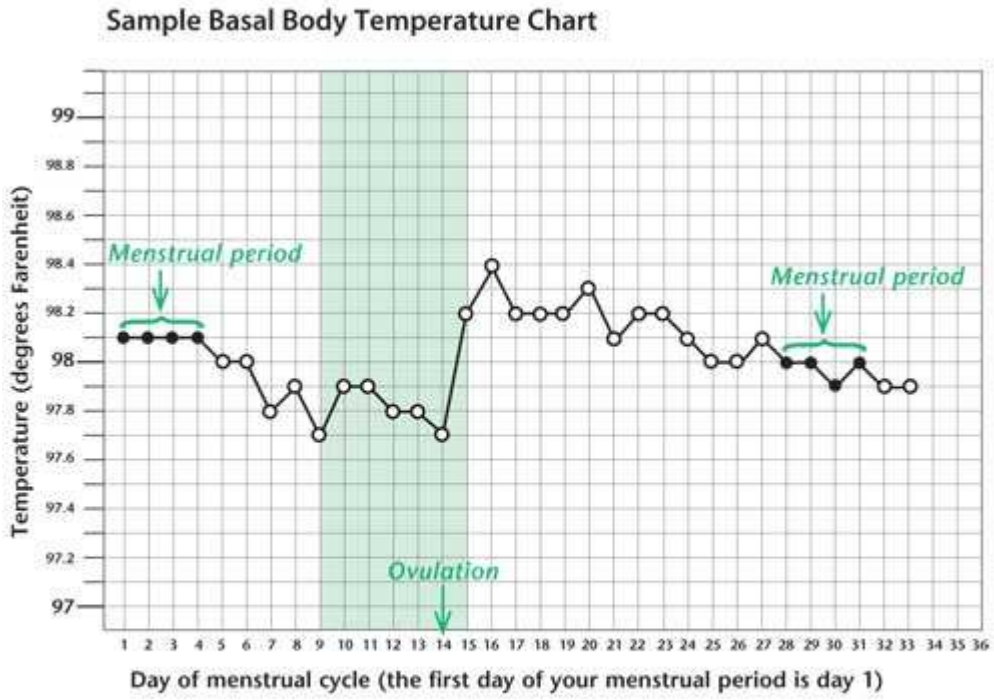
Ovulation typically occurs 14 days (but can vary between 12 and 15 days) before the start of the next menstrual cycle. These days are represented by the diagonal lines. In an average 28-day menstrual cycle, ovulation occurs on day 14. The fertile period includes the 5 days before ovulation and the day after ovulation.

Fertility

How long will it take before you become pregnant? That depends on a number of factors—your age, your health, and how often you have sex, for instance. Most couples are able to conceive within 6 months of having regular sex without birth control. Almost all (85 out of 100) are pregnant within a year. The remaining 15% face fertility problems, which means they have tried to get pregnant but cannot.

Couples who have not been able to conceive after 12 months of having regular sex should discuss it with their health care providers. Many of these couples eventually have children without medical help. Women older than 35 years, whose natural fertility has begun to decline and whose reproductive time is more limited, may want to consult a health care provider earlier.

A fertility evaluation begins with a medical history and general physical checkup for the woman and the man. The medical history includes questions about past pelvic surgery or illness, such as appendicitis or STDs, which can harm the reproductive organs. Questions about the couple's sexual habits are asked to find out if infertility may be tied to the timing or frequency of sex. In that case, they may simply need advice on their sexual practices. Also, possible physical causes of infertility, such as diabetes or being overweight or underweight, are ruled out.



Keeping a basal body temperature chart for several months may help you predict when you will ovulate. Body temperature starts to increase 24–48 hours after ovulation and stays high for at least 3 days.

Hormones: Key Players in Menstruation and Pregnancy

Each step in the creation of new life—from menstruation to ovulation to implantation—is led by these hormones:

- ***Estrogen and progesterone***—Produced by the ovaries, these

hormones trigger the lining of the uterus to thicken during each menstrual cycle and to be shed if pregnancy does not occur. After an egg is fertilized, a sharp increase in estrogen and progesterone levels prevents further ovulation.

- ***Follicle-stimulating hormone and luteinizing hormone***—These hormones are made by the pituitary gland, a small organ at the base of the brain. Follicle-stimulating hormone causes eggs to ripen in the ovaries. Luteinizing hormone triggers their release.
- ***Gonadotropin-releasing hormone***—This hormone, also made in the brain, tells the pituitary gland when to produce follicle-stimulating hormone and luteinizing hormone.
- ***Human chorionic gonadotropin***—Made by certain cells from the fertilized and quickly dividing egg, this hormone spurs increased estrogen and progesterone production during pregnancy. It is the hormone that pregnancy tests are designed to detect.

If the medical histories and physical exams do not turn up any clues, more in-depth testing will be needed to find the cause of the problem and to find out whether it can be treated. An infertility workup often includes the following:

- Semen analysis—A sample of a man's semen is examined under a microscope. This is done to count sperm and to see whether they are formed correctly and move the way they should.
- Hormone screening—The levels of the hormones that allow ovulation and implantation to take place are measured in a woman's blood and urine.
- Evaluation of reproductive organs—A health care provider examines the uterus, fallopian tubes, or ovaries using an X-ray, ultrasound, or a laparoscope (a device like a telescope that is inserted into the body to view the pelvic organs or perform surgery). The purpose is to see whether these organs are normal.

In some cases, the reason for a couple's infertility remains un-known. If a cause can be found, it often can be corrected. Even when a cause is not found, treatment may help a couple become pregnant. Treatment options include the following:

- Medications to induce ovulation
- Intrauterine insemination (in which sperm is placed into the uterus with a flexible tube) with sperm from the partner or a donor
- IVF
- Surgery to open blocked fallopian tubes or correct other problems

Your health care provider can tell you more about these methods and help you figure out which of them may be worth trying. Keep in mind that fertility treatment may take a lot of time, effort, and expense.

The Months Ahead

Preparing for pregnancy will ensure that you give your baby the best possible start. Preconception care involves eating right, keeping fit, avoiding unhealthy substances, and creating a healthy environment for your pregnancy. You also may want to find a pregnancy health care provider and explore where you want to have your baby. Beginning the pregnancy journey fully prepared allows you to focus on the future and the joys ahead.

Glossary

Anemia: Abnormally low levels of blood or red blood cells in the bloodstream. Most cases are caused by iron deficiency, or lack of iron.

Anorexia Nervosa: An eating disorder in which distorted body image leads a person to diet excessively.

Basal Body Temperature: Body temperature when taken at its lowest point (in most cases, before getting out of bed in the morning) used to predict ovulation.

Body Mass Index (BMI): A number calculated from height and weight that is used to determine whether a person is underweight, overweight, obese, or a normal weight.

Bulimia: An eating disorder in which a person binges on food and then forces vomiting or uses laxatives.

Calories: Units of heat used to express the fuel or energy value of food.

Carrier: A person who shows no signs of a particular disorder but could pass the gene on to his or her children.

Cervix: The opening of the uterus at the top of the vagina.

Cesarean Birth: Delivery of a baby through incisions made in the mother's abdomen and uterus.

Chlamydia: A sexually transmitted disease that can cause pelvic inflammatory disease, infertility, and problems during pregnancy.

Chromosomes: Structures that are located inside each cell in the body and contain the genes that determine a person's physical makeup.

Depression: Feelings of sadness for periods of at least 2 weeks.

Diabetes: A condition in which the levels of sugar in the blood are too high.

Down Syndrome: A genetic disorder in which intellectual disability, abnormal features of the face and body, and medical problems such as heart defects occur.

Embryo: The developing fertilized egg from the time it implants in the uterus up to 8 completed weeks of pregnancy.

Endometrium: The lining of the uterus.

Episiotomy: A surgical incision made into the perineum (the region between the vagina and the anus) to widen the vaginal opening for delivery.

Estrogen: A female hormone produced in the ovaries.

Fertilization: Joining of the egg and sperm.

Fetus: The developing offspring in the uterus from the ninth week of pregnancy until the end of pregnancy.

Follicle: The sac-like structure that forms inside an ovary when an egg is produced.

Follicle-Stimulating Hormone: A hormone produced by the pituitary gland that helps an egg to mature.

Gene: A DNA "blueprint" that codes for specific traits, such as hair and eye color.

Genital Herpes: A sexually transmitted disease caused by a virus that produces painful, highly infectious sores on or around the sex organs.

Gestational Diabetes: Diabetes that arises during pregnancy.

Gonadotropin-Releasing Hormone: A hormone that tells the pituitary gland when to produce follicle-stimulating hormone and luteinizing hormone.

Gonorrhea: A sexually transmitted disease that may lead to pelvic inflammatory disease, infertility, and arthritis.

Hepatitis B Virus: A virus that attacks and damages the liver, causing inflammation, cirrhosis, and chronic hepatitis that can lead to cancer.

Hormones: Substances produced by the body to control the functions of various organs.

Human Chorionic Gonadotropin: A hormone produced during pregnancy; its detection is the basis for most pregnancy tests.

Human Immunodeficiency Virus (HIV): A virus that attacks certain cells in the body's immune system and causes acquired immunodeficiency syndrome (AIDS).

Human Papillomavirus: The name for a group of related viruses, some of which cause genital warts and some of which are linked to cervical changes and cancer of the cervix, vulva, vagina, penis, anus, and throat.

In Vitro Fertilization (IVF): A procedure in which an egg is removed from a woman's ovary, fertilized in a dish in a laboratory with the man's sperm, and then reintroduced into the woman's uterus to achieve a pregnancy.

Intrauterine Device (IUD): A small device that is inserted and left inside the uterus to prevent pregnancy.

Luteinizing Hormone: A hormone produced by the pituitary gland that helps an egg to mature and be released.

Menstruation: The discharge of blood and tissue from the uterus that occurs when an egg is not fertilized.

Miscarriage: The spontaneous loss of a pregnancy before the fetus can survive outside the uterus.

Neural Tube Defects (NTDs): Birth defects that result from incomplete development of the brain, spinal cord, or their
coverings.

Nutrients: Nourishing substances supplied through food, such as vitamins and minerals.

Ovaries: Two glands, located on either side of the uterus, that contain the eggs released at ovulation and produce hormones.

Ovulation: The release of an egg from one of the ovaries.

Pituitary Gland: A gland located near the brain that controls growth and other changes in the body.

Preeclampsia: A condition of pregnancy in which there is high blood pressure and protein in the urine.

Preimplantation Genetic Diagnosis: A type of genetic testing that can be done during in vitro fertilization. Tests are performed on the fertilized egg before it is transferred to the uterus.

Prenatal Care: A program of care for a pregnant woman before the birth of her baby.

Preterm: Born before 37 weeks of pregnancy.

Progesterone: A female hormone that is produced in the ovaries and matures the lining of the uterus. When its level decreases, menstruation occurs.

Scrotum: The external genital sac in the male that contains the testes.

Semen: The fluid made by male sex glands that contains sperm.

Sexually Transmitted Diseases (STDs): Diseases that are spread by sexual contact, including chlamydia, gonorrhea, genital warts, herpes, syphilis, and infection with human immunodeficiency virus (HIV, the cause of acquired immunodeficiency syndrome [AIDS]).

Stillbirth: Delivery of a dead baby.

Sudden Infant Death Syndrome (SIDS): The unexpected death of an infant in which the cause is unknown.

Syphilis: A sexually transmitted disease that is caused by an organism called Treponema pallidum; it may cause major health problems or death in its later stages.

Trichomoniasis: A type of vaginal infection caused by a one-celled organism that is usually transmitted through sex.

Ultrasound: A test in which sound waves are used to examine internal structures. During pregnancy, it can be used to examine the fetus.

Urethra: A tube-like structure through which urine flows from the bladder to the outside of the body.

Uterus: A muscular organ located in the female pelvis that contains and nourishes the developing fetus during pregnancy.

Vagina: A tube-like structure surrounded by muscles leading from the uterus to the outside of the body.

This Patient Education Booklet was developed by the American College of Obstetricians and Gynecologists. Designed as an aid to patients, it sets forth current information and opinions on subjects related to women's health. The average readability level of the series, based on the Fry formula, is grade 6–8. The Suitability Assessment of Materials (SAM) instrument rates the booklets as "superior." To ensure the information is current and accurate, the booklets are reviewed every 18 months. The information in this booklet does not dictate an exclusive course of treatment or procedure to be followed and should not be construed as excluding other acceptable methods of practice. Variations, taking into account the needs of the individual patient, resources, and limitations unique to the institution or type of practice, may be appropriate.

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The American College of Obstetricians and Gynecologists
409 12th Street, SW
PO Box 96920
Washington, DC 20090-6920

12345/65432