Part I

Pregnancy Month by Month
Congratulations! You’ve decided to have a baby. Welcome to the first part of a journey that will transform your life forever. But before you try to get pregnant, there are some important things you need to do to give yourself the best chance of having a healthy pregnancy and a healthy baby.

By planning ahead and making needed changes before you become pregnant, you are more likely to be prepared. That is why preconception care is so important.

**The Preconception Visit**

A preconception care checkup is the first step in planning a healthy pregnancy. The goal of this checkup is to find things that could affect your pregnancy. Identifying these factors before you become pregnant gives you time to make any necessary changes in your health. During a preconception care visit, your health care provider will ask about your diet and lifestyle, your medical and family history, medications you take, and any past pregnancies. You’ll review your immunizations to be sure that you have all of the vaccines that are recommended for you. The preconception care visit also is a great time to ask questions.

**Infections and Immunizations**

Certain infections during pregnancy can cause *birth defects* or illness in a *fetus*. Some also can cause pregnancy complications. Many infections can be prevented with proper immunization. You should get all of the vaccines
recommended for your age group before you try to get pregnant (see the “Resources” section in this chapter for more information).

Some vaccines, known as live attenuated vaccines, should not be given during pregnancy. These vaccines are made from live viruses that have been weakened so they do not cause disease. They pose a very small risk to the fetus if given during pregnancy. Live vaccines include the measles-mumps-rubella (MMR) vaccine, the flu nasal spray vaccine (but not the flu shot), and the chickenpox (varicella) vaccine. If you need the MMR vaccine or the varicella vaccine, get these immunizations at least 1 month before becoming pregnant. 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 additional immunizations before you become pregnant.

Other vaccines contain inactivated or killed versions of the germs that cause disease. For example, the flu shot is made from killed flu viruses. The pneumonia vaccine is made with parts of the bacteria that cause pneumonia. Others, such as the tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) vaccine, are made with the inactivated toxin made by the disease-causing organisms. None of these things can cause the disease itself when given as a vaccine. These vaccines 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 for her and her fetus. The flu shot helps protect her and her unborn baby from the flu and its complications. Another important vaccine for pregnant women is the Tdap vaccine. It’s now recommended that all pregnant women receive a dose of this vaccine during the third trimester of each pregnancy to protect their infants against pertussis (whooping cough).

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

- 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 STI. A woman who is not using these forms of birth control (for instance, if she is trying to become pregnant) is at higher risk of getting an STI if she has sex with more than one partner or if her partner has sex with someone else. STIs such as herpes, HIV, and hepatitis B have no known cures. Many STIs have no symptoms in the early stages.

Getting tested for STIs before pregnancy gives you and your partner the opportunity to be treated promptly and avoid potential complications that many of these infections may cause during pregnancy. Preconception testing for the following STIs is recommended:

- You should be tested for chlamydia if you are aged 25 years or younger or if you are older than 25 years with risk factors (for example, you have a new sex partner or have multiple sex partners).

- You should be tested for gonorrhea if you are aged 25 years or younger and you have certain risk factors—you’ve had a previous case of gonorrhea or another STI, you have new or multiple sex partners and have not used condoms consistently, you live in an area where gonorrhea rates are high, or your lifestyle puts you at risk.

- All women should be tested for HIV. Knowing your HIV status allows you to make important decisions about whether to become pregnant and to familiarize yourself with treatment options that may make it less likely that you will pass the infection on to your baby.

**Your Family Health 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 one of these medical conditions, you or your baby could be at greater risk of having it, too. During your preconception visit, your health care provider may ask you to complete a family history questionnaire (see “Resources” in this chapter). This form helps identify whether you and your partner are at risk of having a child with an inherited medical condition. It asks for information such as your and your family’s medical history, your race and ethnicity, and any problems that you had in past pregnancies.

In some situations, your health care provider may recommend that you and your partner undergo genetic counseling. A *genetic counselor* is a specially trained health care professional who can help couples understand their chances of having a baby with an inherited disorder. Genetic counseling involves taking a detailed family history and sometimes doing physical exams and lab tests.
Preconception Carrier Screening

For some disorders, carrier screening may be available (see Table 1-1). This screening test allows you and your partner to find out if you are carriers of certain genetic disorders, even if you do not have any signs or symptoms. Carrier screening involves testing a sample of blood or saliva.

Carrier screening has traditionally been recommended for people who are at higher risk of certain genetic disorders because of their family history, ethnicity, or race:

- People of Eastern European Jewish descent (Ashkenazi Jews) are offered screening for Tay–Sachs disease, Canavan disease, familial dysautonomia, and cystic fibrosis. Individuals can ask about screening for other disorders. Carrier screening is available for mucolipidosis IV, Niemann–Pick disease type A, Fanconi anemia group C, Bloom syndrome, and Gaucher disease.

- Individuals of French Canadian and Cajun descent are offered screening for Tay–Sachs disease.

- Individuals of African, African American, and African Caribbean descent are offered carrier screening for sickle cell disease and for the blood disorders beta-thalassemia and alpha-thalassemia.

### Table 1-1 Some Genetic Disorders for Which Carrier Screening Tests Are Available*

<table>
<thead>
<tr>
<th>Disorder</th>
<th>What it Means</th>
<th>Who is at Risk?</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cystic fibrosis</td>
<td>Causes problems with digestion and breathing. Symptoms appear in childhood, sometimes right after birth. Some people have milder symptoms than others. Over time the problems tend to become worse and harder to treat.</td>
<td>White individuals of Northern European descent</td>
<td>Carrier screening is offered to all women.</td>
</tr>
<tr>
<td>Sickle cell disease</td>
<td>Red blood cells have a crescent or “sickle” shape rather than the normal doughnut shape. The sickle cells can get caught in the blood vessels and prevent oxygen from reaching organs and tissues.</td>
<td>African Americans or individuals of African descent, Greeks, Italians (particularly Sicilians), Turks, Arabs, Southern Iranians, and Asian Indians</td>
<td>Carrier screening should be offered to people of African, Mediterranean, and Southeast Asian descent.</td>
</tr>
</tbody>
</table>
Table 1-1 Some Genetic Disorders for Which Carrier Screening Tests Are Available, continued

<table>
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</thead>
<tbody>
<tr>
<td>Thalassemias</td>
<td>Several types of blood disorders that cause anemia; some types are more severe than others and can cause early death if not treated.</td>
<td>Depends on the type of disorder; individuals who are of Mediterranean, African, and Southeast Asian descent</td>
<td>Carrier screening should be offered to people of Mediterranean, African, and Southeast Asian descent.</td>
</tr>
<tr>
<td>Tay–Sachs disease</td>
<td>Causes severe intellectual disability, blindness, and seizures. Symptoms first occur at about 6 months of age. Death usually occurs by age 5 years.</td>
<td>Individuals of Ashkenazi Jewish, French Canadian, and Cajun descent</td>
<td>Carrier screening is recommended for individuals of Ashkenazi Jewish, French Canadian, and Cajun descent.</td>
</tr>
<tr>
<td>Fragile X syndrome</td>
<td>Causes varying degrees of intellectual disability or learning disabilities and behavioral or emotional problems. Affects males and females, but males usually are affected more severely.</td>
<td>Males and females</td>
<td>Carrier screening is recommended for those who have a family history of fragile X-related disorders, unexplained intellectual disability or developmental delay, autism, or premature ovarian insufficiency (a condition in which the ovaries stop working before age 40 years).</td>
</tr>
<tr>
<td>Hemophilia</td>
<td>A disorder caused by the lack of a substance in the blood that helps it clot. Affected individuals are treated with factors that help the blood clot to help prevent excessive bleeding.</td>
<td>Males</td>
<td>Women with a family history of hemophilia may request carrier screening.</td>
</tr>
<tr>
<td>Spinal muscular atrophy (SMA)</td>
<td>Causes breakdown of the muscles and overall weakness; in one type (type 1), death occurs by age 2 years.</td>
<td></td>
<td>Genetic counseling and carrier screening should be offered to those with a family history of SMA or SMA-like disease.</td>
</tr>
</tbody>
</table>

*The tests that are available and who they should be offered to frequently change as a result of new research.*
Individuals of Southeast Asian descent are offered screening for beta-thalassemia and alpha-thalassemia.

Individuals of Mediterranean descent are offered screening for beta-thalassemia.

In recent years, it has become increasingly difficult to assign an individual to one particular ethnic group or race. Carrier testing based on ethnicity or race may not be as useful as it was in the past. For this reason, all individuals are offered carrier screening for cystic fibrosis, which is one of the most common genetic disorders. Many health care providers now offer expanded carrier screening, in which an individual is offered many different screening tests using a single sample. If you are interested in this type of screening, talk to your health care provider or genetic counselor. For more information about carrier screening, see Chapter 25, “Screening and Diagnostic Testing for Genetic Disorders.”

You can have carrier screening before pregnancy or during pregnancy. If you had carrier testing in a previous pregnancy, testing does not have to be repeated. If it is done before pregnancy, you have a broader range of options and more time to make decisions. You may decide not to have children, or you may decide to adopt. You may want to explore the option of assisted reproductive technology. You also can find out whether prenatal genetic testing is available for the condition you’re concerned about. Once you are pregnant, there are diagnostic tests that can tell whether a fetus has certain genetic disorders. It usually takes a long time to get the results of these tests. The pregnancy may be fairly advanced before the results are known. Because of this, your options are more limited.

**Preexisting Health Conditions**

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 mellitus, 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 may need to make in order to bring your condition under control before you try to get pregnant. For example, women with diabetes usually are 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). The first 8 weeks of pregnancy is the time when major fetal organ systems develop. If you are having trouble with glucose control, it is best to make the necessary changes in your medication, diet, and exercise program to bring your levels into the healthy range before you become pregnant.

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.

**Medications and Supplements**

Some medications, including over-the-counter medications and herbal supplements, can be harmful to a fetus 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. Some multivitamin supplements contain high levels of vitamin A, which has been shown to cause severe birth defects if taken in large doses during pregnancy. If you are taking two or three multivitamin supplements daily, you could potentially expose your fetus to harmful levels of vitamin A.

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

The preconception period is the ideal time to evaluate all of the medications, alternative remedies (such as herbal supplements), and vitamin supplements that you take with your health care provider to determine their safety during pregnancy. 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 a 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 have had. Some problems may increase the risk of
having the same problem in a later pregnancy. These problems include pre-term birth, high blood pressure, preeclampsia, and gestational diabetes mellitus. Getting proper care before and during pregnancy may decrease the chances of these problems happening again.

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

A Healthy Lifestyle

The weeks and months before you become pregnant are the best time to take a close look at your lifestyle and take any necessary steps to be healthier. These steps include eating right, getting regular exercise, reaching and maintaining a healthy weight, quitting the use of unhealthy substances, and keeping your environment safe.

Eat Right

A healthy diet is important at all times in your life, but it is especially so when you are preparing to become pregnant and during your pregnancy. The food you eat is the main source of nutrients and energy for you and your baby. As the baby grows and places new demands on your body, you will need more calories and nutrients. But simply doubling up on the amount that you eat—or “eating for two”—is no longer recommended as a healthy nutritional strategy for pregnancy. Experts now stress the importance of eating healthy, nutrient-rich foods; gaining an appropriate amount of weight; and staying active to maximize your chances of having a healthy pregnancy and a healthy baby. Putting these things into practice before you become pregnant ensures that you and your baby will get the best possible start.

Before your preconception visit, you may want to think about any special dietary needs that you have and make a note to discuss them with your health care provider. Some of the questions you can ask yourself include the following:

- 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?
• Do you have celiac disease?

If you are new to eating in a healthy way, or if you just want help planning a healthy diet, a great place to start is the U.S. Department of Agriculture’s “MyPlate” food-planning guide at www.choosemyplate.gov. The MyPlate web site helps everyone from dieters to children to pregnant women learn how to make healthy food choices at every meal. MyPlate makes it easy to remember the key principles of a healthy diet:

• Make one half of your plate fruits and vegetables. The other half should be grains and protein foods.

• Vary your proteins. Protein foods include meat, fish, beans and peas, nuts and seeds, and eggs.

• Eat a small amount of dairy foods, such as milk, cheese, or yogurt, at each meal. Drink 1% milk instead of full-fat milk.

• Try to make at least one half of the grains you eat whole grains. Whole grains contain the entire grain kernel, as opposed to refined grains, which have been processed to remove certain parts that provide dietary fiber. Whole-grain foods include brown rice, bulgur, and oatmeal. Whole grains also are used as ingredients in breads and pastas. Read the labels on these foods carefully.

• Limit your intake of fats, oils, sugars, and salty foods.

Get Regular Exercise

Good health at any time in your life involves getting plenty of exercise—and that includes during pregnancy. Experts recommend that most pregnant women get at least 30 minutes of moderate exercise on most, if not all, days of the week. The type and amount of exercise that you can do safely during pregnancy depends on your health and how active you were before you were pregnant.

It is best to have an exercise routine in place before getting pregnant. If you are just starting out, good exercises to begin with are those you probably have done before—walking, swimming, or bicycling. Brisk walking is an easy and inexpensive way to be physically active. It also is a good way to lose weight. 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.
Take Folic Acid

Taking a folic acid (also known as folate) supplement is crucial before and during pregnancy. Research confirms that getting 400 micrograms (0.4 mg) of this B vitamin for at least 1 month before pregnancy and during pregnancy decreases the risk of having a baby with birth defects of the brain and spine called neural tube defects. Although folic acid is found in many foods and is added to breads, pastas, and cereals, it may be difficult to get the recommended 400 micrograms per day from food alone. For this reason, women capable of becoming pregnant should take a supplement containing 400 micrograms of folic acid every day. You can get the recommended amount in a folic acid supplement or by taking a prenatal vitamin that contains the recommended amount.

Reach and Maintain a Healthy Weight

To stay healthy, you should keep your weight at the level that is best for your height. Your body mass index (BMI) is a number calculated from height and weight that is used to determine whether you are underweight, normal weight, overweight, or obese. You can find out your BMI by using an online calculator at web sites such as www.nhlbi.nih.gov/health/educational/lose_wt/BMI/ or use the BMI chart provided in Appendix A.

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. Being underweight or overweight can cause problems during pregnancy, so the goal is to reach the normal range.

If you are underweight, you should try to gain weight by taking in more calories each day than you use up. Add healthy high-calorie snacks to your daily meal plan. Some good choices are nuts, granola bars, meal replacement shakes, fruit smoothies, and yogurt.

Overweight and obese women should lose weight by cutting back on the number of daily calories they consume and becoming more physically active. Two easy ways to cut calories are to avoid sugary drinks and foods that are high in fat and to pay attention to the amount of food you eat. Portion control is key.

Exercise burns calories and helps you lose weight. Most people who have lost weight and kept it off get 60–90 minutes of moderate-intensity activity on most days of the week. A moderate-intensity activity is one in which you can carry on a conversation, but you cannot sing. Brisk walking and raking leaves are examples of moderate-intensity activities. You may be able to reduce the minutes you exercise by adding vigorous activity. A vigorous
activity is one that raises your heart rate and that makes it difficult to talk. Examples are jogging or running, jumping rope, or swimming laps. You do not have to do all of the recommended minutes at once. For instance, you can do 20–30 minutes of exercise three times a day.

Make sure you get your health care provider’s approval before starting an exercise program if you are overweight or obese. It also may be a good idea to consult a physical trainer at your local gym or health club for help with an exercise program.

For some people, it may be hard to lose weight through diet and exercise alone. If you have a BMI of 30 or greater, or a BMI of at least 27 with certain medical conditions, such as diabetes or heart disease, medications may be able to help you lose weight. These medications should be combined with a healthy eating plan and regular physical activity.

**Bariatric surgery**, or weight-loss surgery, may be an option for people who are very obese (a BMI of 40 or greater) or who have a BMI between 35 and 39 and also have major health problems caused by obesity. Bariatric surgery can result in significant weight loss. This may decrease the risk of the serious health problems associated with obesity. See Chapter 20, “Obesity and Eating Disorders,” for more information about this option.

**Quit Using Unhealthy Substances**

Smoking, drinking alcohol, and using other unhealthy substances during pregnancy can have serious, long-lasting effects for your baby, such as birth defects, a lower-than-average birth weight, and premature birth. Substance abuse includes using illegal drugs (such as heroin, cocaine, methamphetamine, and marijuana) as well as using prescription medications, such as oxycodone, for nonmedical reasons.

When should you stop using these substances? It is best to quit smoking completely before pregnancy. Experts recommend that you completely avoid alcohol while trying to become pregnant and throughout your pregnancy. You should stop using other harmful substances before you become pregnant as well. If you need help stopping these behaviors, tell your health care provider. He or she often can suggest ways to get through the early stages or put you in touch with addiction treatment counselors and programs. For quitting smoking, the National Cancer Institute’s Smoking Quitline (1-877-44U-QUIT or 1-877-448-7848) is a great place to start your journey to being a nonsmoker.

Your partner also should give up these harmful substances. Many studies have shown that smoking and using drugs also can lower his fertility and damage his **sperm** (see box “Tips for Future Dads”). Living with someone who smokes means that you are likely to breathe in harmful amounts of
secondhand smoke. Secondhand smoke contains chemicals that are harmful to both your health and that of your growing baby. Being around secondhand smoke while you are pregnant has been linked to a higher risk of sudden infant death syndrome and to having a smaller-than-average baby. If your partner or coworkers are not willing to quit, ask them to smoke outside, and do not allow anyone to smoke in your car or your home.

**Tips for Future Dads**

When a couple decides to have a baby, a lot of attention is given to the mother-to-be. The role of the future father, however, is just as important. Male partners who are preparing to enter fatherhood should be aware of a few things to make sure they are as healthy as possible for their new responsibilities:

- Get healthier, too—Join your partner in eating healthier and exercising every day. For instance, she’ll have to cut back on caffeine and junk food, so make it easier on her by cutting back as well.

- STIs—Get tested and treated for any STIs. Continue to protect yourself and your partner from STIs when she becomes pregnant. While a woman is pregnant, she and the unborn baby have no protection against these diseases. If she becomes infected with an STI while pregnant, the results could be very serious, even life threatening, for her and the baby.

- Give up smoking and substance use—Cigarette smoking and alcohol and illegal drug use can decrease the number of sperm a man produces (your sperm count) and how well the sperm moves. Secondhand smoke is also dangerous for pregnant women.

- Check your fertility—For about 40% of couples that have difficulty getting pregnant, the problem can be traced to male problems, such as low sperm count. Male infertility has many possible causes, including disease, certain medications, and steroid use. If you have difficulty getting pregnant, visit a urologist for a fertility test.

- Be supportive—Trying to get pregnant or going through a pregnancy can be an emotional rollercoaster. When the time comes, try to make it to at least some of your partner’s many prenatal care appointments, and ask questions. Let her know you’re enjoying seeing her belly grow. Be a strong shoulder to lean on if she has difficult days.
Keep Your Environment Safe

Chemicals are all around us—in the air, water, soil, the food we eat, and products we use. Before you become pregnant and during your pregnancy, you may be exposed to these agents at work, at home, or in your community.

A few chemicals are known to have harmful effects on a developing fetus. The effects of many chemicals on pregnancy are not known. Some substances found in the home or the workplace may make it harder for you to get pregnant.

Take a close look at your home and workplace. Women who work in farming, factories, dry cleaners, electronics, or printing or who have hobbies such as painting or pottery glazing should be sure to talk about possible harmful agents with their health care providers.

Getting Pregnant

Knowing how pregnancy happens will help you find out when you are most fertile—that is, when you are most likely to get pregnant. To have a better chance of getting pregnant, sex has to happen around the time of ovulation.

The Menstrual Cycle

The changes that occur during the menstrual cycle are caused by changing levels of hormones called estrogen and progesterone. Each month, hormones signal your uterus to build up a blood-rich lining called the 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 ready, it is released from the ovary and moves into a fallopian tube, one of a pair of tubes that connects the ovaries to the uterus. This process is called ovulation. Signs that you may be ovulating include a cramp in your lower abdomen or back. You also may notice some breast tenderness, an increase in 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 21 days to as many as 35 days are normal.

In an average 28-day menstrual cycle, ovulation occurs on day 14. The number of days from ovulation to the start of the menstrual period is the most consistent time period in a menstrual cycle. This time period is 14 days in a menstrual cycle of 28 days.
If pregnancy does not occur, your body absorbs the egg and the hormone levels decrease. This decrease signals the lining of the uterus to shed. The shedding is your monthly menstrual period.

The Menstrual Cycle

Day 1
The first day of your menstrual period is considered day 1 of your menstrual cycle.

Day 5
Estrogen levels start to increase. Estrogen causes the endometrium (the lining of the uterus) to grow and thicken.

Day 14
An egg is released from the ovary and moves into one of the two fallopian tubes (ovulation). After ovulation, progesterone levels begin to increase, while estrogen levels decrease.

Day 28
If the egg is not fertilized, progesterone and estrogen levels decrease, and the endometrium is shed during menstruation.
When Are You Most Fertile?

For pregnancy to occur, sperm must be present in the fallopian tubes and must join with an egg. When a man climaxes during sex and ejaculates, millions of sperm are deposited in a woman’s vagina. After ejaculation, the sperm move through the cervix into the uterus and 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 much shorter—just 12–24 hours. Therefore, pregnancy can occur if an egg is already present in the fallopian tubes when you have sex, or it can occur if you ovulate within a day or two after you have sex. This means that you are fertile anywhere from 5 days before ovulation until 1 day after ovulation.

Fertility Awareness

There is no foolproof way to calculate your fertile days. There are, however, a number of methods that can help you predict when these days occur in your menstrual cycle. A variety of smartphone apps also are available to help you keep track of your fertility. Many of these apps incorporate one or more of the fertility awareness-based methods discussed below.

Chart your cycle. An easy way to spot your fertile days is to keep a menstrual calendar to figure out how long your cycles tend to last. If your cycle is between

How pregnancy 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).
26 days and 32 days long, day 8 through day 19 are the days when you are most likely to become pregnant. To promote pregnancy, you should try to have intercourse between day 8 and day 19 either every day or every other day.

**Use an ovulation predictor kit.** These are sold over the counter at drug stores or pharmacies and test the level of *luteinizing hormone* in your urine. When your levels rise, it means that one of your ovaries is about to release an egg.

**Monitor your cervical mucus.** Noticing changes in your cervical mucus can help you recognize when ovulation nears. This method involves checking the mucus at the opening of the vagina each time you urinate and assessing it for changes starting with the first day after menstrual bleeding has stopped.

Just before ovulation, the amount of mucus made by the cervix increases, and the mucus becomes thin and slippery. The last day this thin and slippery mucus is present is called the Peak Day. Ovulation occurs within 24 to 48 hours of the Peak Day. Just after ovulation, the amount of mucus decreases, and it becomes thicker and less noticeable. To promote pregnancy, you should time intercourse to occur every day or every other day when cervical mucus is present.
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 days or 30 days long). You also may 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. Smartphone apps also are available to help you chart your cycle.

| 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 |
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| 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 |
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’ll need a thermometer that measures by tenths of degrees. Chart the temperature on a graph that also shows the days you menstruate. Your temperature will go up 24–48 hours after you ovulate.

By itself, tracking your temperature is not a good way to time intercourse to promote pregnancy. It shows only when ovulation has occurred, not when it is going to occur. Combining methods may work best. For example, a cervical mucus method can be used to find out when your fertile time begins, and the temperature method can be used to find out when your fertile time ends.

Stopping Birth Control

You can start trying to conceive right 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 methods, such as birth control pills, the patch, and the hormonal intrauterine device (IUD), ovulation can occur within 2 weeks of stopping. This also is true for the copper IUD. If you use the birth control injection, however, it may take up to 10 months or longer to resume normal ovulation.
If you become pregnant while using a hormonal birth control method, 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 immediately. Rarely, pregnancy may occur with the IUD. If it does, the IUD should be removed if it is possible to do so without surgery.

RESOURCES

The following resources offer more information about some of the topics discussed in this chapter:

**Immunization & Pregnancy**
Centers for Disease Control and Prevention (CDC)
Easy-to-read chart that shows the immunizations that you should have before, during, and after pregnancy.

**Immunization for Women: Pregnancy**
Immunization for Women
www.immunizationforwomen.org/patients/Pregnancy/pregnancy.php
Page devoted to immunizations and women’s health that details the immunizations that women need before and during pregnancy.

**Know Your Family Health History**
Talk Health History Campaign
www.talkhealthhistory.org
Offers tools and resources on collecting and sharing family health history with health care providers and relatives.

**My Family Health Portrait Tool**
National Institutes of Health/Department of Health and Human Services
Helps you create a personalized family health history report. Generates a drawing of your family tree and a health history chart based on the information you enter.

**Preconception Health and Health Care**
Centers for Disease Control and Prevention (CDC)
www.cdc.gov/preconception
Trusted site with tips for women who are planning a pregnancy and men who will become future fathers. Also includes information on making a “reproductive life plan”—a worksheet for how to achieve the goals for having or not having children.
The following full-color illustrations show fetal development and the changes that occur in a woman’s body throughout pregnancy. Seeing them all together gives an idea of how a woman’s body adjusts to accommodate the growth of a baby. These illustrations also are found in each month-to-month chapter.
The first 8 weeks of pregnancy are a time of rapid growth for your baby. At the end of 8 weeks, most of the organ systems have begun to form. The baby is about ½ inch long and weighs about ¼ ounce.
At this point, the baby weighs about ½ ounce and is about 2 inches long.
Mother and baby: Weeks 13–16.

The baby weighs about 5 ounces and is now about 5 inches long.
The baby may weigh close to 1 pound and is about 10 inches long. You may be able to feel your baby move this month.
By the end of this month, the baby weighs just more than 1 pound and is almost 12 inches long.

By the end of this month, the baby weighs approximately 2 ½ pounds and is about 14 inches long.
By the end of this month, the baby weighs between 4½ pounds and 5 pounds and is about 18 inches long.
Mother and baby: Weeks 33–36.

By the end of this month, the baby weighs 6–7 pounds and is almost 20 inches long.
Most babies are now about 7½ pounds and are 20 inches long. The baby is now ready to be born.