Chapter 1

GET THE SCOOP ON...

The importance of the preconception exam ▪ Making healthy choices ▪ Fertility considerations for older men and women ▪ What you can do to preserve your fertility ▪ Pregnancy after cancer treatment

A Healthy Start

You and your partner most likely have spent a good deal of time discussing if you'd like to have children, and if so, when to start your family. Many couples believe that choosing when to start trying to become pregnant is the most difficult decision they will make, and in some ways, they're right. But deciding to have children is just the beginning; there are many other key choices you should make now that can help improve your chances of conceiving, having a healthy pregnancy, and most importantly, a healthy baby.

The preconception checkup

Everyone is aware of the importance of prenatal checkups, but a preconception checkup is equally important. Both partners should be in good physical condition before starting a family. Therefore, it makes sense for both of you to get a physical exam before attempting a pregnancy. The main purpose of the preconception exam is to rule out diseases that can interfere with your chances of conceiving and carrying a healthy baby to full term. A routine

physical exam might turn up a condition or conditions that can reduce your fertility, such as diabetes, thyroid disorders, or sexually transmitted diseases (STDs). Although the woman is the one who becomes pregnant and gives birth, both parents can pass on genetic disorders. And because medical conditions, both past and present, affect the development of sperm and their ability to fertilize eggs and produce a healthy embryo, men must ensure that they too are healthy.

The preconception exam goes well beyond specific reproductive issues and encompasses general health and lifestyle considerations that can affect you before, during, and long after a pregnancy. Most primary care providers—such as family physicians, general practitioners, internists, physician assistants, and nurse practitioners—can conduct preconception exams on both men and women. Because many women use their OB/GYN (obstetrician/gynecologist) as their primary care physician, they may want to see him or her for the preconception exam as well. But not all OB/GYNS will fill the role of a primary care physician, since they are trained specifically in female reproduction. Be sure to ask your OB/GYN if he or she is willing to act in this capacity and screen you for nonreproductive health problems that can also interfere with your becoming pregnant and carrying a healthy baby to term.

You'll want to bring your partner along when you go for a preconception checkup. It's important for both partners to be aware of the medical issues related to conception, pregnancy, and childbearing. The preconception checkup should take place at least three months before you start trying to conceive.

Watch Out!

Women who take birth control pills should stop taking them at least three months before trying to conceive. It might take at least that long for a woman's reproductive hormones to get back to normal.

If you need certain immunizations, you will have to postpone attempting a pregnancy for at least three months.

Reproductive health

Obviously, reproductive health is of prime importance. Before a woman even attempts to become pregnant, her doctor should be aware of her reproductive history, including menstrual disorders; past and current contraceptive use; past pregnancies, abortions, and miscarriages; and past and current STDs.

Sexually transmitted diseases (STDs)

It's essential that both partners be screened for STDs before attempting to become pregnant. STDs have been on the increase and can have serious adverse effects on fertility, pregnancy, delivery, and offspring. STDs can lead to pelvic inflammatory disease (PID), which is the major cause of infertility.

The most common STDs—and those most responsible for PID and its aftermath, infertility or ectopic pregnancy—are chlamydia and gonorrhea (which we'll discuss in more detail in a moment). When recognized and treated promptly, these infections are usually easily treated with appropriate antibiotics. If left unchecked, these organisms can travel from the vagina and cervix up the reproductive tract. However, the organisms are not found in nearly one third of women with PID, although they might have been present in the early stages of the infection.

Because STDs often don't cause symptoms, they can be passed unknowingly countless times between partners, causing extensive damage. It's often not until you're trying to conceive or you suffer an ectopic pregnancy that their damage is discovered. Although a history of STDs or multiple sexual partners increases the chances of having a current STD, virtually any sexually active man or woman can be infected. It's therefore important that both partners are tested for the following STDs prior to attempting a pregnancy.

Moneysaver

A preconception dental exam might spare you the cost and pain of expensive dental work after pregnancy. Pregnancy can cause or exacerbate dental problems, so a visit to the dentist before you conceive may help preserve your teeth and gums.

Chlamydia

Chlamydia is one of the most prevalent STDs in the United States, with almost three million new cases every year. Because it rarely produces symptoms in either men or women, it's known as the "silent infection." If untreated, chlamydia can cause PID and damage the reproductive system. Not only can chlamydia interfere with conception and pregnancy, it can also have serious consequences for newborns. Babies born to women with active chlamydial infection are subject to infection during passage through the birth canal. If they pick up the organism, it can cause serious eye infection and pneumonia. Chlamydia does not affect men as seriously as it does women, although some severe cases can lead to sterility. Antibiotics can easily and inexpensively cure chlamydial infection in both men and women.

Gonorrhea

Approximately 700,000 men and women contract gonorrhea, a bacterial infection, each year. Gonorrhea can cause tubal damage in women and scarring and obstruction of the epididymis—the long tube attached to the testicle in which sperm mature before being released—in men. Gonorrhea often does not produce symptoms in men and women, but can cause pain, burning when urinating, and vaginal or penile discharge. If untreated, gonorrhea can cause infertility in men and PID in women, thus increasing a woman's risk of infertility, ectopic pregnancy, and miscarriage. Babies born to mothers infected with gonorrhea can be born blind, with serious joint infections, or with life-threatening blood infections.

HIV/AIDS

STD screening would be incomplete without testing for HIV/AIDS. Indeed, the American College of Obstetricians and Gynecologists (ACOG) recommends that the HIV antibody test be offered to all women seeking preconception care. It's critical to make sure you and your partner do not carry the AIDS virus not only for your own sakes, but also for the sake of your future child. Having AIDS is no longer the death sentence it once was, thanks to antiviral agents that can successfully control the virus. But without proper treatment and special precautions during pregnancy and childbirth, the AIDs virus can be passed from the mother to the fetus.

HPV

Human papillomavirus (HPV) is the most common STD in the United States, with more than six million new cases each year. An astonishing 80 percent of American women will have acquired the virus by the time they reach 50. Although some people get genital warts from the virus, most have no symptoms. Although HPV has not been directly linked to infertility, genital warts, if large, can cause problems during pregnancy and delivery. The virus can also be transmitted to a baby during childbirth, and there is a small chance that the infant can develop a rare but serious condition called laryngeal papillomatosis (warts on the throat).

One of the biggest concerns about HPV is that it can cause cervical cancer. In fact, virtually all women with cervical cancer have HPV. The good news is that only one in a thousand women with the virus develops invasive cervical cancer. HPV is typically diagnosed by a Pap smear in women, but there is no test yet

Watch Out!

Don't douche when you're trying to conceive. Douching kills sperm and it may increase your risk of PID.

available for men. When abnormal cervical cells are found, it's recommended that women undergo treatment to remove the precancerous cells. Unfortunately, the treatments themselves occasionally impair fertility or prevent the woman from carrying a baby to term. If left untreated, however, a woman can develop cervical cancer and need a hysterectomy.

HPV can also cause other cancers in the female and male reproductive systems, such as cancer of the vulva, vagina, and penis. Cancer treatment can result in infertility or sterility, a topic discussed later in this chapter. Although there is no known cure for HPV, it can—and should—be treated.

Genital herpes

Genital herpes is caused by the herpes simplex virus (HSV). While one form of herpes, HSV-1, typically causes blisters or cold sores around the lips, the other form (HSV-2) usually causes blisters or sores in the genital region. Approximately 45 million Americans (20 percent) over the age of 12 are infected with HSV-2. It's more common in women than men; one in four women has this virus compared with one in five men. Most of the time people have no symptoms and they may be unaware of having the virus until they break out in painful blisters or sores. Although genital herpes doesn't normally interfere with conception, it increases the risk of premature delivery. HSV can also be transmitted to the fetus during pregnancy or the baby during delivery. Half of the babies who are infected either die or suffer nerve damage. If a woman has an active case of genital herpes at the time of delivery, a Caesarian section is usually performed to protect the baby. Although the painful symptoms of HSV can be treated, there is no cure for the virus. Unfortunately, HSV increases the risk of acquiring HIV and AIDS.

General health issues

It's important for your health-care professional to know if you or your partner has now or has had in the past any illness that could

have serious reproductive consequences. A variety of disorders can cause fertility problems, miscarriages, or other problems during pregnancy or delivery, and even birth defects. In the following section we discuss just a few of the more common conditions that may be of concern, and that are easily screened for during a preconception exam.

High blood pressure

High blood pressure (hypertension) can cause serious medical and pregnancy complications for both mother and fetus. A blood pressure reading of greater than 140/90 mmHg should alert you and your health-care provider. If you're already being treated for high (or low) blood pressure, consult your doctor to make certain the drug or drugs you're taking are safe to use during pregnancy and breastfeeding.

Diabetes

If you or your partner have diabetes and you are thinking about trying to conceive, be certain to get your blood sugar (glucose) under control. Uncontrolled diabetes can have serious adverse effects on fertility in both men and women. For example, diabetes in women can prevent ovulation or implantation. And women whose blood sugar is not under control have an increased risk of miscarriage, stillbirth, and giving birth to a baby with birth defects. Men with diabetes may suffer from erectile dysfunction (impotence) as well as a condition called *retrograde ejaculation,* the backward movement of semen into the bladder instead of forward out the urethra.

Bright Idea

If you have any medical problem, make sure you get treated before attempting to get pregnant. But because your condition may cause problems with conception, pregnancy, or your future child, it's a good idea to also consult a fertility specialist before attempting a pregnancy.

Moneysaver

Make sure you get and keep copies of your preconception exam and test results. If you see a fertility specialist, he or she will need the information. Having your own records can help you avoid repeating costly tests. Be sure to bring them to your first appointment.

Thyroid disease

Both hypo- and hyperthyroidism can lead to infertility and miscarriage. If you are being treated for thyroid disease, check with your doctor to make sure your medication is safe to use during pregnancy and nursing.

Other medical considerations

A pregnant woman may contract any number of diseases that can adversely affect her pregnancy or cause birth defects. A preconception exam should include testing for immunity against the following diseases. (There's some controversy about how long you should wait to conceive after vaccinations, ranging from a minimum of one month to three months. To be on the safe side, it would be prudent to wait.)

Rubella (German measles)

Even if a woman has had German measles or was previously vaccinated, she should be tested for her current immune status. If she is not immune, she should receive a rubella vaccination at least three months before attempting a pregnancy. Contracting German measles early in a pregnancy can be devastating to the fetus. It can cause deafness and serious eye, heart, and neurological problems; it can also lead to fetal death, miscarriage, or premature delivery.

Chickenpox

Women who never had chickenpox are probably not immune and should be immunized against this disease. As with rubella, pregnancy should be postponed for three months after the vaccination. If a pregnant woman gets chickenpox in the first or

early second trimester of pregnancy, the fetus is at risk for serious neurological and eye problems or limb deformities.

Toxoplasmosis

Women should be screened for toxoplasmosis, a mild, common parasitic infection that can cause serious birth defects, especially during the first trimester. The infection is commonly transmitted through undercooked meat and animal feces, and there is no immunization available. Women who are found not to be immune should make sure any meat they eat is well done and wear rubber gloves when emptying cat litter or working in the garden, where animal feces may be hidden.

Hepatitis B

This liver infection can be contracted through sexual contact or exposure to infected feces, or blood, urine, saliva, or other bodily fluids. It is the only form of hepatitis that can cause serious harm to newborns. Women should be screened for hepatitis B and those found not immune should be vaccinated at least three months before attempting to conceive.

Rh incompatibility

It's important for you and your partner to know both your blood type and Rh or *Rhesus* factor before you become pregnant. This information is, of course, necessary in the event a blood transfusion is needed. But there are other reasons for couples to have this information before they attempt a pregnancy. Of special concern for a future pregnancy is Rh incompatibility.

> "One must judge the majority from ages of 15 to 40 to be fit for conception, if not mannish, compact, and oversturdy, or too flabby and very moist."
>
> —Soranus, Roman physician, 2nd century AD

There are four blood types (A, B, AB, or O) and each blood type can have one of two Rh factors (Rh positive or Rh negative). Rh is a protein that

coats the surface of red blood cells. Most people—85 percent of white Americans and an even larger percentage of African-Americans and Asians—are Rh positive. The remaining 15 percent are Rh negative. Having a different blood type from your partner isn't a problem. Nor is there a problem if the mother is Rh positive and the father Rh negative. But if the future mother is Rh negative and the future father is Rh positive there could be a problem. To be more precise, if the woman is A-, B-, AB-, or O- and her male partner is A+, B+, AB+, or O+, the baby has a 50 percent chance of being Rh positive, and your pregnancy would be Rh incompatible. If, however, the mother is Rh positive and the father Rh negative, there would be no problem.

Rh incompatibility is not usually a problem in a first pregnancy, but can be deadly to the fetus in a subsequent pregnancy. When a pregnant Rh negative mother carries an Rh positive fetus, the baby's blood can leak into the mother's circulatory system. Her immune system may react to the baby's blood as if it were a foreign substance, and to protect itself, creates antibodies to destroy the baby's blood.

The good news is that this problem is entirely preventable when proper precautions are taken. If an Rh negative woman has ever had a pregnancy, abortion, miscarriage, amniocentesis, or blood transfusion, there is a possibility that she has been exposed to Rh positive blood and will be sensitized. If your partner (or sperm donor) is Rh negative and you become pregnant with an Rh negative baby, you must receive a RhoGAM (Rh immune globulin) injection in the 28th week of pregnancy. To ensure that your next pregnancy will not be a problem, you must also get another RhoGAM shot within 72 hours of giving birth, having a miscarriage, or stillbirth.

Genetic disorders

In addition to the Rh factor, there are some other serious, often deadly, genetic conditions that run in families and can be passed on to your offspring. These diseases include cystic fibrosis, Thalassemia, Tay-Sachs, sickle cell anemia, Huntington's

disease, and hemophilia. If you or your partner have any family members with these or other genetic diseases you both should go for genetic counseling and screening before attempting a pregnancy. Also, some genetic disorders tend to occur more often in certain nationalities or racial groups. For example, cystic fibrosis is most prevalent among people of Irish and Northern European descent; Tay-Sachs, a fatal brain disorder, primarily affects Eastern European Jews and French Canadians; Thalassemia, a serious blood disorder, primarily affects those of Mediterranean, South Asian, or African descent; and sickle cell anemia, another serious blood disease, predominately affects African-Americans. It's important to know what your chances are of passing on a serious genetic disorder to your future child and what impact that will have on his or her life—and yours. There are ways to screen for certain genetic disorders prior to conception as well as during pregnancy (see Chapter 9 and Appendix D).

> "When we finally made up our minds to get pregnant, we were roaring to go. But we had to put everything on hold for over a month because I had to get a rubella shot and had to go for genetic testing. When we discovered that I was a Tay-Sachs carrier, we were not only devastated, we had to put everything on hold again while my husband got tested. Luckily everything turned out okay, but the waiting had been very hard on us."
>
> —Susan, 35

Bright Idea

If you or your partner were adopted and/or don't know your biological families' medical histories, you may be at risk for passing on certain genetic disorders. It makes good sense, therefore, to go for genetic screening prior to trying to get pregnant.

Healthy choices

Although your immediate goal is getting pregnant, we assume that your ultimate goal is parenthood and that you want to be there for your children as they grow up. The same health issues that apply to all adults are especially salient when it comes to pregnancy and parenthood. Choosing to live a healthy lifestyle is one of the best things you can do to maximize your chances of having a healthy pregnancy and baby. Most of the following lifestyle choices apply to both women and men. But because women are the ones who become pregnant and give birth, it's especially important that they choose a healthy lifestyle and avoid hazardous substances and behaviors.

A previous pregnancy doesn't mean a woman will easily conceive again—or at all. And just because a man previously got a woman—or even his current partner—pregnant doesn't guarantee he can impregnate her now. Many things can cause a previously fertile man or woman to experience infertility. Secondary infertility, as this is known, can be the result of many of the same factors that cause primary infertility. The causes of fertility problems are discussed in Chapters 4 and 6.

Avoid smoking and tobacco smoke

More than one in four women of reproductive age smoke. If you're one of those women, now is the time to stop! It's fairly well known that cigarette smoking increases the risk of spontaneous abortion and low-birth-weight babies. But did you know that smoking can increase the time to conception as well? Researchers aren't sure why, but they think that cigarette smoking reduces some types of estrogen production and depletes egg supply.

Moneysaver

Make sure you and your future family are not only covered by health insurance, but that you are covered for pre- and postnatal care, childbirth, and fertility treatments, should you need them.

Smoking interferes with Fallopian tube motility (movement), embryo cleavage, blastocyst formation, and implantation, which we'll discuss in Chapter 2; it has also been linked to a whole host of problems from ectopic pregnancies to miscarriages. Smoking can also cause premature menopause, thus shortening the amount of time you have to conceive.

If you do conceive, stopping smoking is one of the best things you can do to help ensure having a healthy pregnancy and baby. Astonishingly, 17 percent of pregnant women continue to smoke! They are putting not only themselves and their pregnancies at risk, but their babies as well. Babies born to mothers who smoke are at increased risk of being born prematurely, having low birth weight, having birth defects, and dying from Sudden Infant Death Syndrome (SIDS). Pregnant women should also make every effort to avoid secondhand smoke; research has shown that the chemicals in the smoke can reach the mother's blood and be passed on to her unborn child. It goes without saying that once the baby is born, it should be protected from exposure to all tobacco smoke.

Smoking also interferes with male fertility. It can decrease sperm production, motility, and morphology (shape). Men who smoke have sperm counts that are 15 percent lower than those of nonsmokers. Indeed, a small study published in the journal *Fertility and Sterility* found that sperm counts rose dramatically—at least 50 percent and as high as 800 percent—in men who stopped smoking. The sperm of smokers are also more likely to be abnormal and less likely to be able to fertilize an egg. Other studies confirm that quitting smoking appears to improve the sperm of men who have low sperm counts or poor quality sperm.

Avoid alcohol

Most people know by now that it's important to avoid alcohol during pregnancy because it can cause fetal alcohol syndrome. Drinking during pregnancy can also cause miscarriages, stillbirths, and preterm deliveries.

But drinking while trying to conceive can also be risky. In fact, the Surgeon General, the U.S. Department of Agriculture, the U.S. Department of Health and Human Services, the American College of Obstetricians and Gynecologists, and the American Academy of Pediatrics all recommend that women not only abstain from drinking alcohol during pregnancy but while trying to conceive as well. Some studies have found that the chances of conceiving in any given cycle decrease with increasing alcohol consumption. In one recent study in Denmark, women who drank 10 alcoholic drinks a week took significantly longer to conceive than those who drank from 1 to 5 drinks a week. Another Danish study, however, found that moderate drinking did not affect the time it takes to conceive. Moderate drinking is defined as no more than one glass of alcohol a day for women and no more than two glasses a day for men. A drink is typically defined as 5 ounces of wine, 12 ounces of beer, or 1.5 ounces of spirits.

If you do decide to drink while trying to conceive, fertility experts recommend that you drink no more than four drinks a week. Also, only drink in the first part of your menstrual cycle before you ovulate and abstain from alcohol during the second part until you menstruate. Because most women don't know precisely when they conceive, if they do drink when trying to become pregnant, they may unknowingly be putting their pregnancies and babies at risk.

Alcohol can interfere with male fertility as well. Heavy drinking in men can cause a reduction in testosterone and a decrease in the volume and density of sperm. In addition, men who drink excessively often suffer from reduced libido and erectile dysfunction. Moderate drinking, however, has not been shown to negatively affect fertility.

Do not use illicit drugs

Everyone is aware that illicit drugs such as marijuana, cocaine, amphetamines, and LSD can be dangerous to both the mother and her developing fetus. But you may not be aware that many

Watch Out!

It is estimated that as many as 60 percent of pregnant women do not discover that they are pregnant until after the first trimester. That means they are unwittingly exposing their fetuses to harm if they smoke, drink, and use certain drugs.

illicit drugs can also interfere with fertility. Marijuana, for example, can shorten a woman's menstrual cycle, thus decreasing the chances of conception.

In men, marijuana and other illicit drugs can lower sperm counts and impair sperm quality, upset hormonal balance, and even cause impotence. Anabolic steroids, especially when used nonmedically, can have serious negative effects on male fertility, causing a decrease in sperm production and sperm quality.

Limit caffeine

Most American adults consume approximately 200 mg of caffeine a day in the form of coffee, tea, soft drinks, or chocolate. There is some evidence that more than 250 mg of caffeine a day increases a woman's risk of endometriosis and tubal-factor infertility. (There are approximately 300 mg of caffeine in three cups of coffee.) Women who consume more than 500 mg of caffeine take longer to conceive than women who don't. And an intake of more than 500 mg of caffeine has also been reported to increase the risk of miscarriage. Fertility experts recommend that women who are trying to conceive limit their caffeine intake to a maximum of 250 mg a day; that is, fewer than about three 8-ounce cups of coffee a day. A cup of black or green tea typically contains less caffeine than coffee. Black tea contains the most caffeine—from 40 to 100 milligrams per cup if you steep it for five minutes—but if you steep it for three minutes it contains about half that amount. Drinking tea in moderation may actually help a woman conceive; a recent California study of 210 women found that drinking a half a cup or more of black or green tea a day doubled the rate of conception per cycle.

Bright Idea

If you steep the tea for 45 minutes, discard the water and add fresh boiling water to eliminate most of the caffeine.

Caffeine has not been found to have a detrimental effect on male fertility. On the contrary, there is some evidence that caffeine may increase sperm motility, thus increasing the chance of conception.

Be cautious when taking prescription or over-the-counter (OTC) drugs

You may have heard the horrible story of thalidomide—a sleeping pill that was also prescribed for morning sickness that caused severe birth defects in the 1960s. Other drugs also caused serious problems for pregnant women and women trying to conceive.

Diethylstilbestrol (DES), a synthetic estrogen, was prescribed until 1971 to prevent miscarriages in women who were prone to them. Some daughters of women who took DES developed vaginal or cervical cancer, and some of their sons also developed various cancers. Ironically, both the male and female offspring of DES mothers are also at increased risk of having fertility problems themselves. Some DES daughters have suffered from a wide range of cervical, uterine, and tubal abnormalities. Any one of these can prevent conception or lead to ectopic pregnancy, miscarriage, or premature labor. And some DES sons have had undescended testes, a condition in which the testes have not descended normally into the scrotum during fetal development. They have also had diminished sperm production, and cysts and obstructions in their reproductive organs that cause fertility problems. If you think your mother may have taken DES while pregnant, be sure to tell your doctor.

Some currently used drugs have been linked to severe birth defects; these include Accutane, an acne medicine; Tegison;

and Soriatane. The last two drugs—which are used to treat psoriasis—can even be harmful in women if taken up to three years *before* conception.

Many of the drugs used to treat hypertension—including calcium channel blockers and beta-blockers—can have a negative impact on male fertility, causing a decrease in sperm production, libido, and erectile function. Other prescription drugs, especially those used to treat depression, other psychiatric problems, and seizures—such as lithium, Compazine, and Dilantin—have also caused erectile and ejaculatory problems, or other fertility problems. If these or any other drugs are prescribed to you, be sure to tell your doctor that you are trying to start a family. With your doctor's assistance, you can weigh the risks and benefits of the prescribed medication.

OTC drugs may also be risky to take if you're trying to conceive (or are pregnant). Drugs such as NoDoz, Excedrin, and Anacin contain caffeine, and as mentioned earlier, caffeine can cause problems with conception and pregnancy. Since there are many other drugs that can be risky to take, be sure to read the labels and patient materials carefully. Be sure to tell your doctor at your preconception exam what prescription and OTC drugs you are taking.

Be careful about using herbal teas or supplements

Plants and herbs form the basis of many of the traditional prescription and over-the-counter medicines. But just because they're natural doesn't mean they're safe. Some of these plants or herbs—which are also sold as herbal teas and supplements—have been found to interfere with conception and/or be harmful to a pregnancy or developing fetus. Herbal supplements and medicines are not tested for safety nor regulated in the same way as prescription and over-the-counter drugs. Nor are the doses and formulations standardized. And while you may assume herbal teas are safe and better for you than black tea,

that's not always true. Drinking a lot of peppermint or red raspberry leaf tea, for example, may cause miscarriages and other problems, while black tea may actually enhance fertility.

A recent study found evidence that taking large amounts of gingko biloba, echinacea, and St. John's Wort could cause damage to reproductive cells and hinder the ability of sperm to fertilize eggs. Also, St. John's Wort was shown to cause mutations in sperm cells.

In addition, more than 500 plants have been linked to miscarriages or birth defects. Approximately 50 are commonly consumed in the United States. Some of the more popular ones that have been linked to problems in pregnancy include the following (for a more complete list, check the March of Dimes website at: www.modimes.org):

Barberry	Golden seal
Black cohosh	Juniper
Blue cohosh	Mandrake
Donq quai	Pennyroyal
Ephedra	Peppermint
Feverfew	Senna
Kava kava	Uva-ursi
Ginseng	Wormwood

Unfortunately, the precise amounts of these herbs that cause problems are either unknown or unavailable. So, to be on the safe side, it's probably best to avoid them altogether. If you do want to take herbs or drink herbal tea, be sure to discuss it with your doctor first—and definitely avoid taking or drinking large amounts.

Bright Idea

Make a list of all prescription drugs, over-the-counter drugs, herbal teas, and supplements you are taking or would like to take. Bring the list to your doctor and write down his or her comments about each drug.

Eat a healthy diet

Two of the key ingredients in disease prevention are eating a healthy diet and maintaining a healthy weight. The U.S. government has just issued new dietary guidelines. Following these guidelines can help ensure that you eat nutritious meals and either maintain or achieve a healthy weight.

Maintain a healthy weight

Being either overweight or underweight can interfere with fertility. One of the best ways to determine if you are over- or underweight is by evaluating your Body Mass Index (BMI). BMI is your weight in kilograms divided by your height in meters squared (kg/m^2). If math is not your thing, don't panic! Check out the BMI tables at www.asrm.org/Patients/FactSheets/weightfertility.pdf and www.consumer.gov/weightloss/bmi.htm; they've already done the math and metric conversions for you.

Another good measure is body fat or skinfold thickness, but it requires the use of a caliper by a health-care provider or in a gym. Body fat is measured in percentages; normal body fat is between 22 and 25 percent for women, and 15 to 18 percent for men.

If you're overweight, lose weight

Extra weight in a woman can increase insulin levels, which may cause the ovaries to overproduce male hormones and stop releasing eggs. Being overweight also contributes to the development of diabetes, a risk factor for infertility. Fat can also

Table 1.1: Interpreting BMI

BMI	Weight Status
Below 18.5 kg/m^2	Underweight
18.5 - 24.9 kg/m^2	Normal
25.0 - 29.9 kg/m^2	Overweight
30.0 and above kg/m^2	Obese

Dietary Guidelines for Americans, 2005

- Consume a sufficient amount of fruits and vegetables while staying within energy needs. Two cups of fruit and 2½ cups of vegetables per day are recommended for a reference 2,000-calorie intake, with higher or lower amounts depending on the calorie level.
- Choose a variety of fruits and vegetables each day. In particular, select from all five vegetable subgroups (dark green, orange, legumes, starchy vegetables, and other vegetables) several times a week.
- Consume three or more ounce-equivalents of whole-grain products per day, with the rest of the recommended grains coming from enriched or whole-grain products. In general, at least half the grains should come from whole grains.
- Consume three cups per day of fat-free or low-fat milk or equivalent milk products.

FATS

- Consume less than 10 percent of calories from saturated fatty acids and less than 300 mg/day of cholesterol, and keep trans fatty acid consumption as low as possible.

produce hormone changes, which can affect ovulation in women and sperm production in men.

Women with a BMI over 27 kg/m^2 or those whose body fat levels are 10 to 15 percent above normal may be at increased risk of anovulatory infertility and miscarriage. Those with a BMI of over 30 may have polycystic ovarian syndrome, a serious risk factor for infertility. Obese women are at high risk for many serious pregnancy complications such as gestational diabetes

- Keep total fat intake between 20 and 35 percent of calories, with most fats coming from sources of polyunsaturated and monounsaturated fatty acids, such as fish, nuts, and vegetable oils.
- When selecting and preparing meat, poultry, dry beans, and milk or milk products, make choices that are lean, low-fat, or fat-free.
- Limit intake of fats and oils high in saturated and/or trans fatty acids, and choose products low in such fats and oils.

CARBOHYDRATES

- Choose fiber-rich fruits, vegetables, and whole grains often.
- Choose and prepare foods and beverages with few added sugars or caloric sweeteners, such as amounts suggested by the USDA Food Guide and the DASH Eating Plan.
- Reduce the incidence of dental caries by practicing good oral hygiene and consuming sugar- and starch-containing foods and beverages less frequently.

and preeclampsia, a potentially deadly condition that is one of the leading causes of maternal and infant mortality. Obesity during pregnancy can also increase the risk of miscarriage and birth defects in babies. Do not, however, crash diet! Sudden weight loss can cause hormonal imbalances, which may in turn cause infertility.

A recent study found that men who have high BMIs (over 25) are at increased risk of infertility due to DNA fragmentation in

their sperm. The higher the weight, the greater the reduction in sperm quality. The study found that the partners of overweight men not only had a decreased chance of conception, those who did become pregnant were at increased risk of miscarriage. The problems were most pronounced in men with a BMI of over 30.

If you're underweight, try to put on some weight

Women with BMIs under 17 kg/m^2 or whose body fat levels are 10 to 15 percent below normal are at increased risk of anovulatory infertility. Anorectic and bulimic women are at especially high risk of having fertility problems.

Exercise in moderation

Everyone knows that exercise and being physically fit is good for you. Exercise and maintaining a healthy weight go hand in hand. As we've seen, being overweight can hinder your chance of conceiving, and exercise is one of the best ways to keep weight down. While exercise itself won't help you conceive, it will keep your heart healthy and your blood pressure down, both especially important for a healthy pregnancy.

On the other hand, too much exercise can interfere with fertility. For example, women athletes and women who engage in very vigorous sports or activities such as marathon running are predisposed to menstrual irregularities and may have trouble conceiving.

Take appropriate vitamins and supplements

Folic acid—one of the B vitamins—is not only important for the health of the mother, it is essential to the health of the developing fetus. Folic acid contributes to the neural tube development in early pregnancy and inadequate amounts can lead to serious neurological and spinal birth defects. It's recommended, therefore, that women of childbearing age have a minimum of 400 micrograms (.4mg) of folic acid daily. Although many foods

contain folic acid—such as whole wheat grains, brown rice, fortified cereals, oranges, spinach, and beans—it's often difficult to get an adequate amount through diet. To be safe, it's recommended that all women who are planning to conceive start talking folic acid supplements three months before they start trying to conceive and for at least the first three months of pregnancy.

Other essential vitamins and minerals include iron and vitamin A. But make certain you do not take more that 5,000 units of vitamin A each day.

Vegetarians should be especially careful to make certain they are receiving adequate nutrition from their diet or supplements. If they don't have adequate amounts of zinc, iron, vitamin B-12, and folic acid, they may have trouble conceiving or increase their chances of having a baby with birth defects. A recent pilot study, published in the *Journal of Reproductive Medicine,* found a nutritional supplement containing green tea extracts, chasteberry, folic acid, and other vitamins and minerals to be promising in improving fertility in women. Larger studies are needed to definitively determine if this supplement does indeed enhance fertility.

Men should also consider taking vitamin supplements, especially zinc. However, too much zinc can be toxic. Between 15 and 30 mg is considered safe for both men and women; anything above that amount can be dangerous.

Moneysaver

Rather than take separate supplements, look for a multivitamin that contains all you need in one pill. Some companies make prenatal vitamins, which may or may not be less expensive than regular multivitamins. Compare prices and ingredients. You might also think about buying these at warehouse stores that usually have cheaper prices.

Watch Out!

Men should avoid wearing jockey shorts and tight pants because they can overheat the testes and interfere with sperm production. Boxer shorts and loose-fitting pants are better choices for future fathers.

Avoid hot tubs, saunas, and Jacuzzis

Excessively high temperatures can cause neural tube defects in the developing fetus during the first trimester, when many women don't realize they're pregnant. The high temperatures can also interfere with sperm production. STDs have also been linked to hot tubs, saunas, and Jacuzzis.

Avoid hazardous chemicals and radiation

There are many toxic chemicals and environmental hazards in the home and workplace that can interfere with fertility, as well as cause miscarriages and birth defects. Solvents, pesticides, and heavy metals (such as lead and cadmium) have all been linked to reproductive problems in men and women. Exposure to these substances should be avoided if possible. Nurses who mix chemotherapeutic agents, for example, have almost a twofold increase in the chance of having a miscarriage. If you must use chemicals, make certain you're in a well-ventilated area. Exposure to radiation can also reduce fertility in both sexes and can be hazardous to a growing fetus. If you must have dental or any other X-rays, be sure to tell your doctor, dentist, or radiologist that you're trying to conceive. Make sure he or she gives you a lead apron to wear to protect your reproductive organs.

Age and fertility

Age has adverse effects on fertility in both sexes, but more so in women. In general, the longer a woman waits to try to become pregnant, the longer it will take her. The optimal time for a woman to conceive is from her mid to late 20s. However, many women in their 20s may not be married, or they may be busy

pursuing their education or careers, or they just may not yet feel ready to start their families.

Fertility in older women

Fertility in women starts declining significantly after age 30, and even more rapidly after 35. A woman under 30 has about a 20 percent chance of conceiving each month. By the time she reaches 40, her chances of conceiving drop to only 5 percent each month.

Approximately one in three women aged 35 or older will have a fertility problem. By age 40, two out of three women will be infertile. Older women are also significantly more likely to have miscarriages, as well as babies with birth defects.

Why is this? After age 30, hormone levels start declining and egg production starts to deteriorate. At birth, a female has as many eggs as she will ever have in her lifetime—over a million. By the time a girl reaches puberty, she has about 300,000 left, and only 300 of those will ever be ovulated. The older a woman is, the older her eggs, and older eggs are not as fertilizable as young eggs. Because they've been around for a lifetime, they've had decades of exposure to various adverse elements—viruses, X-rays, drugs, and environmental toxins. As a result, older eggs are much more likely to carry chromosomal abnormalities that can cause such disorders as Down syndrome. In addition, older

Table 1.2: How Maternal Age Affects Pregnancy Rate

Age	Cumulative Pregnancy Rate	Monthly Pregnancy Rate
Under 30	74	10.5
31 to 35	61	9.1
Over 35	54	6.5

Source: E. H. Illinions, M. T. Valley, and A. M. Kaunitz, "Infertility: A Clinical Guide For The Internist." *Med Clin N. Am.* 1998; 82(2): 271-291.

Table 1.3: Percentage of Pregnancies Ending in Miscarriage, by Age

Age of Woman at Pregnancy	Percentage Ending In Miscarriage
Under 35 years	10 to 12
Between 35 and 39	18
Between 40 and 44	34
45 or over	>50

Source: P. R. Gindoff and R. Jewelewicz. "Reproductive Potential in the Older Woman." *Fertility and Sterility*. 1986; 46: 989.

women may not be in as good physical health as younger women. The older you are, the greater the chance that you've had a serious illness—such as an STD, diabetes, thyroid disease, or hypertension—that can interfere with your fertility and your ability to carry the child to full term.

Fertility in older men

Fertility in men also decreases with age, although not as dramatically as for women. Starting at about age 25, sperm cell production starts decreasing. And the sperm that are produced tend to have decreased mobility, thus hindering their ability to reach and fertilize an egg. Men over the age of 35 are twice as likely as men under 25 to take more than a year to impregnate their partners.

One reason may be that older couples tend to have sex less often than younger couples. As men grow older, they tend to have lower levels of testosterone. This in turn affects their sexual drive as well as their ability to achieve and maintain an erection, which, of course, can affect their ability to impregnate their partners. Older men are also more likely to have medical conditions, such as atherosclerosis (hardening of the arteries) or diabetes, which can impair sexual ability.

Age and problem pregnancies

Aging can cause genetic mutations in the sperm cells, potentially leading to genetic defects in their offspring as well as miscarriages. Indeed, pregnant women who are 35 or older with male partners over the age of 40 have a significantly increased risk of miscarriages.

> "One of the reasons for getting married was because we both wanted to have children...but it was very important for me...to really have my career in place. It was a question of priorities and doing things that I felt were very important before I really became serious about being a mother."
>
> —Diane, 38

Regardless of the age of the father, if conception does occur, the age of the mother has serious implications for the outcome of a pregnancy. Not only does the chance of conceiving decrease the older one gets, the chance of miscarriage increases as well. This may be due to the various medical conditions such as those mentioned earlier, or to genetic problems in the embryo. Miscarriage is a relatively common occurrence, as you can see from the previous table.

Older women are also at increased risk of having stillborn babies, low-birth-weight babies, premature deliveries, and Caesarian sections. As a result, their babies are at increased risk for serious health problems. Babies of older women are also at risk for having genetic or congenital problems. But if you're older, don't despair. The good news is that the majority of older women who do carry a pregnancy to full term give birth to healthy babies.

Bright Idea

If you're over 35, you and your partner should make appointments as soon as possible for your preconception checkups. You should also start your search for an OB/GYN who is experienced in working with older pregnant women.

Preserving your fertility

If you're in your 20s or 30s and for some reason you must delay childbearing, you need to do everything you can now to preserve your fertility. Doing so involves following all the earlier advice in this chapter about being screened for medical disorders, being immunized against potentially serious diseases, and choosing a healthy lifestyle. There are also other options available such as embryo freezing, which we'll touch on in an upcoming section.

Cancer and fertility preservation

Approximately 100,000 women and men of reproductive age are diagnosed with cancer each year. Many of these men and women want to start families or have more children. They may be concerned that their cancer and cancer treatment will affect their ability to procreate. The bad news is that chemotherapy, radiation therapy, and some surgical treatments for cancer (and some other serious medical conditions) can cause temporary infertility or permanent sterility. Even if their fertility is unaffected by cancer or its treatment, especially chemotherapy, women may be advised to delay getting pregnant for several years, when the greatest chance of recurrence will have passed. The good news is that there are steps that can be taken prior to and even after treatment to enhance a cancer patient's chance of becoming a biological mother or father.

If you have been diagnosed with cancer and will be undergoing surgery, chemotherapy, or radiation, talk to your oncologist about your concerns regarding your future fertility. Also, make an appointment with a reproductive endocrinologist or fertility specialist (also called an "infertility specialist"; see Chapter 5) who can work with you and your oncologist and other doctors you will be seeing over the course of your treatment.

There are many things both men and women can do to preserve their fertility.

Moneysaver

If you have to have extensive abdominal surgery for any reason, consider harvesting your eggs for use at a future time. It may save you the cost of infertility treatment.

Embryo freezing (cryopreservation)

Before cancer treatment, a woman can undergo *in-vitro fertilization* (IVF); this involves removing her eggs and having them fertilized by her partner's or donor's sperm. The resulting embryos are then frozen and stored until the woman is ready to have them implanted in her, or in a surrogate's uterus, if necessary.

Oocyte (egg) freezing

Still considered experimental, oocyte (egg) freezing is similar to embryo freezing except that the eggs are frozen before they're fertilized. Theoretically, the frozen unfertilized eggs can be thawed at a later date and subsequently fertilized by a partner's or donor's sperm. Unfortunately, previously frozen and thawed eggs are not easily fertilizable and, to date, very few pregnancies have resulted from this technology.

Ovarian transplantation

The only other option currently available for women who want to preserve their eggs before cancer or other medical treatment involving surgery, chemotherapy, or radiation therapy is ovarian transplantation. This is a new but experimental technology in which ovarian tissue is transplanted to another part of the body. Recently, the *Journal of the American Medical Association* (JAMA) reported a study of two women; one had to undergo pelvic radiation and the other had to have her ovaries removed. Prior to treatment, they both had strips of their ovarian tissue removed and transplanted to their forearms! Ten weeks after the transplants, these women resumed production of ovarian hormones and development of egg follicles in their forearms. Indeed, one

of the women actually ovulated from her upper arm! This past year, the journal *Cancer* reported another successful case of ovarian autotransplantation to the upper arm. And in June 2005, *JAMA* reported the first successful case of a woman who gave birth after receiving an ovarian tissue transplant from her identical twin sister.

Sperm freezing

Cancer or its treatment can cause infertility or sterility in men. Unlike eggs, sperm can be successfully frozen and thawed for future use. Any man undergoing cancer treatment who wants to father a child should have his sperm frozen unless there is some medical, personal, or religious reason not to do so.

Laparoscopic radical vaginal trachelectomy (LRVT)

This is a new fertility-preserving technique for women with early-stage cervical cancer who have very small tumors confined to the cervix. In LRVT, only part of the cervix is removed, thus increasing the woman's chances of conceiving. However, the surgeon can't determine which women are appropriate candidates for LRVT until surgery is underway. Also, this technique is not available in all medical centers. Still, LRVT holds great promise for young women with cervical cancer. Previously the only options for these women were hysterectomies, radiation, and/or chemotherapy—all of which have typically resulted in sterility.

Some of these techniques, which are also used to treat infertile patients who do not have cancer, and how to find a fertility specialist are described in greater detail in upcoming chapters.

If you have or had cancer, you may want to check out www.fertilehope.org. Fertile Hope is a nonprofit organization that provides information about issues related to fertility and cancer. The American Society for Reproductive Medicine (ASRM) at www.asrm.org and the American Cancer Society (ACS) at www.cancer.org are also good sources of information about cancer treatment and pregnancy.

Moneysaver

Check to see if either of your employers offers pregnancy and adoption benefits such as maternity and paternity leave. Also, it's a good idea that you both have life and disability insurance, and a will.

Pursuing pregnancy after cancer treatment

Many cancer patients also fear that if they do conceive, it will cause the cancer to recur or even spread. Most studies, however, demonstrate that pregnancy after cancer treatment is not detrimental to the mother. Indeed, one study published in *The American Journal of Obstetrics and Gynecology* found the risk of death for women under the age of 40 treated for breast cancer was almost five times *lower* in women who became pregnant compared with cancer patients who did *not* become pregnant. The researchers attributed these results to the "healthy mother effect," a phenomenon in which only the healthiest breast cancer survivors become pregnant and give birth. Other more recent studies published in *The Journal of Clinical Oncology* and *Cancer* also found increased survival rates and a reduced risk of breast cancer recurrence in women who had become pregnant compared with those who did not experience a pregnancy. Some of the researchers speculated these results may not only reflect "healthy mother effect," but also the protective, antitumor effect that pregnancy is believed to confer.

Cancer patients may also be worried that if they have their own biological child, they may have a problem pregnancy or their child will be born with serious problems, including cancer. Breast cancer survivors, in fact, do have an increased risk of miscarriage. This may be the result of hormonal changes caused by the cancer treatment rather than the cancer. However, the good news is there appears to be no increase in birth defects in the children of male or female cancer patients who have undergone treatment for cancer.

If there are any reasons why a cancer patient should avoid a pregnancy, she always has the option of pursuing third-party reproduction including embryo-, egg-, and sperm donation as well as surrogacy and adoption. These options are discussed in Chapters 11 and 12.

The road to pregnancy

Starting a family is a big decision. As with many things in life, taking the time to prepare will be enormously worthwhile in the end. These have been just a few of the steps you should take on the road to pregnancy and a healthy baby. Now the fun—or some may say work—begins. The next chapter explains what is physiologically necessary for conception to take place, and what some of the hurdles are that you and your partner might encounter along the way.

Just the facts

- Both women and men should have preconception exams at least three months before trying to conceive.
- Commit to a healthy lifestyle before you try and conceive a baby.
- Men as well as women become less fertile as they grow older.
- Older women who are able to conceive have a higher risk of miscarriages and other problems.
- There are several options available to men and women who wish to preserve their fertility.
- Many cancer patients can have healthy pregnancies and babies following treatment.