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Obstetrics & Gynecology

INFORMATIONAL

BOOKLET

Table of Contents

Your Pregnancy Test – Before and After.....	1
Assigning Your Due Date.....	4
Your Pelvis and Pregnancy.....	5
Ultrasound in Pregnancy.....	6
HIV Testing in Pregnancy.....	7
Infections in Pregnancy.....	8
Alpha fetoprotein, Triple Screening and Amniocentesis.....	13
Skin Changes in Pregnancy.....	15
Multiple Pregnancies.....	17
Blood Types.....	19
Medications in Pregnancy.....	21
Sex and Pregnancy.....	23
Exercising During Pregnancy.....	24
Nutrition in Pregnancy.....	25
Travel During Pregnancy.....	30
The Kidneys in Pregnancy.....	31
Choosing a Doctor for Your Newborn.....	33
Insurance.....	34
Shopping for You and Your Baby.....	35
Pregnancy Month by Month.....	37
Analgesia.....	46
Breech Pregnancy.....	48
Labor and Delivery.....	50
Vaginal Birth After Cesarean Section (VBAC).....	54
Cesarean Section.....	55
Forceps and Vacuum Extraction.....	56
Circumcision.....	57
Breastfeeding.....	58
From Delivery Onward – The Postpartum Period.....	60

YOUR PREGNANCY TEST – BEFORE AND AFTER

When you are thinking about becoming pregnant, you should contact me. I will then provide you with important information concerning nutrition, weight loss, vitamins, exercise, and avoidable risks. I will also screen for medical conditions that might need special attention prior to conception – conditions such as epilepsy, diabetes, high blood pressure, etc. You should obtain family history concerning conditions such as birth defects, Down syndrome, cystic fibrosis, anemia, bleeding disorders, Sickle cell disease, or mental retardation. If possible, ask your mother if she took any medications during her pregnancy with you, specifically Diethylstilbestrol (DES). This medication was used to help prevent pregnancy loss in women with bleeding.

When your test turns positive

During a normal menstrual cycle, hormones prepare your ovaries to release an egg (a process called ovulation) and prepare the uterus for the possible arrival of the fertilized egg. If you count the first day of your last normal period as day one, ovulation generally occurs around day fourteen. The day of ovulation cannot always be so precisely determined, however.

If the sperm from recent intercourse comes into contact with the ovulated egg, fertilization occurs. This most often occurs within the fallopian tube, a hollow tubular organ about the length of your finger. It is less than a millimeter in diameter at one end. At the other end, its opening is about the size of your fingertip. This tube connects the uterus to the area where eggs are released from the ovaries. You have two ovaries, one on each side of your pelvic. Likewise, you have two fallopian tubes.

The fertilized egg spends the next week passing through the fallopian tube and into the cavity of the uterus, where it attaches to the lining of the uterus (this process is called implantation and can be associated with slight spotting).

The placenta develops on the spot where the pregnancy implants. It is a fascinating and complex disc-shaped organ. The umbilical cord arises from the middle of the placenta. The umbilical cord is about one half inch in diameter and about twenty inches long when fully developed. A vein coursing through the umbilical cord carries blood from the placenta to the fetus. Two arteries also run through the umbilical cord. They return blood from the baby to the placenta.

The placenta serves to regulate the flow of oxygen and nutrients from your blood to your baby's blood. As well, it defends the developing pregnancy from harmful substances such as infections and toxins.

The location of the placenta is important. Most often the placenta is located on the front, top or back of the uterine cavity. Rarely it may be found over the cervical opening of the uterus. This is called a placenta previa. Fortunately, the location of most previas is corrected as the pregnancy advances. Some, however, remain over the cervix. These can be associated with dangerous bleeding and can require delivery by Cesarean section.

By what is now approximately day twenty-one of this menstrual cycle, the pregnancy has implanted. Within three days after implantation, it will produce a pregnancy hormone which can be detected in your blood. The detection of this hormone, known as beta-HCG, is the basis for serum (blood) pregnancy tests. The beta-HCG levels continue to rise for about ten weeks and are detectable for the remainder of the pregnancy. Withdrawing a sample of your blood and measuring the level of beta-HCG performs the blood pregnancy test. A blood test will return positive about three days after implantation, even before your next expected period. A urine test, which measures beta-HCG in your urine, will be positive when the beta-HCG levels are moderately higher, corresponding to the time of your missed period. If you do a urine test when you miss your period and it is clearly negative, you might repeat it in one week. If your urine test is difficult to interpret, this might be because hormone levels are not quite high enough yet to return a distinctly positive result. If you have difficulty interpreting your test, you might want to call our office for advice. You should also call our office if your test is clearly positive, as an appointment will be necessary in the near future.

It is particularly important that you call us if you should experience any bleeding after your missed period and positive pregnancy test. This situation can be further evaluated using specific blood tests, including blood levels of beta-HCG, and ultrasonography (sonogram, also known as an ultrasound). The beta-HCG levels are drawn on different days and the levels are compared to each other and compared to normal levels for the expected stage of your pregnancy. They are considered abnormal if they are rising too slowly, are not rising, or are decreasing. Ultrasound can sometimes provide additional

information concerning the source of the bleeding, how far advanced the pregnancy is, and whether or not the pregnancy is progressing normally. After fertilization, as many as fifty or sixty percent of pregnancies are lost very early in their development. Many women who have losses this early in pregnancy experience only a minor irregularity in their menstrual period. They often do not even test for pregnancy and thus are unaware of the event that has occurred. During the first two months, the risk for pregnancy loss is lower. During this period, it is about fifteen percent, or one in six pregnancies. The rate of miscarriage continues to drop as the pregnancy advances until it is less than one percent near the due date. Interestingly, the chance that a pregnancy will miscarry after the heart is seen beating on an early sonogram is three to four percent. Thus, in the absence of any complications such as bleeding, this is a reassuring milestone.

Bleeding from the uterus precedes miscarriages, and often severe cramping sometimes described as similar to severe menstrual cramping. If you have bleeding, be aware however that it does not necessarily mean that you will miscarry your pregnancy. Your blood tests and your ultrasound results should better determine the immediate future of your pregnancy.

A complication occurs about once in one hundred pregnancies when the fertilized egg implants not in the lining of the uterus, but rather in the lining of the fallopian tube. This is called an ectopic pregnancy, meaning that it is not in the normal location. It is also referred to as a tubal pregnancy. These pregnancies cannot develop normally and eventually cause bleeding into the fallopian tube. They can be associated with the sudden onset of severe, sharp pain on one side or the other of the lower abdomen or pelvic area. This condition must receive immediate attention so that dangerous internal bleeding can be avoided. It is treated sometimes with an injection of medicine, which causes the pregnancy tissue to stop developing. More commonly this involves a surgical procedure which results in the removal of the pregnancy tissue or the fallopian tube in which the pregnancy tissue resides. Circumstances which increase the likelihood of a tubal pregnancy include a history of previous ectopic pregnancy, a history of pelvic infection involving the fallopian tubes (called pelvic inflammatory disease or PIO for short), previous use of an IUD (an intrauterine device used for contraception), previous pelvic surgery, or a history of elective abortion. It is extremely important for you to report any sudden pelvic pain and/or spotting, even as early as the time of your missed period. While this pain is much more frequently caused by mild uterine cramping or a normal structure on your ovary (called a corpus luteum) important to the hormonal support of a normal pregnancy, this symptom should not be ignored by you or your physician.

Very rare is a kind of ectopic pregnancy known as a heterotopic pregnancy. This consists of a pregnancy in the uterus combined with an ectopic pregnancy. The incidence of such a condition is one in 30,000 pregnancies. It occurs more frequently if fertility medications are used. The diagnosis must be considered in any pregnancy where pelvic pain persists in spite of identification of an intrauterine pregnancy.

ASSIGNING YOUR DUE DATE

One of the first things that you want to know after you know that you are pregnant is when you are due to deliver. First of all, even before we assign the due date, some misconceptions must be set straight. Your due date is not the date on which you will deliver. It is not even the date by which you will be delivered. It is simply a "bookkeeping" device that we use during the course of your pregnancy to describe in which stage of pregnancy that you are. For instance, when one doctor talks to another doctor about your pregnancy, he/she can discuss your pregnancy based on the given due date.

The easiest way to assign your due date is to ask when your last period occurred. The first day of this menstrual period is designated day one. Forty weeks, or two hundred and eighty days later, is your due date. A quick way to approximate your due date is to take the first day of your last period, subtract three months and then add 7 days. If, for instance, your first period started on January 1, 1994, three months earlier would be October 1, 1993. Adding seven days would give you a due date of October 11, 1994.

Unfortunately, we can't always be sure of the date of your last menstrual period. This date can be misleading if your periods were irregular, if you have used birth control pills within three months or your last menstrual period, or if you have had any vaginal bleeding since your last period.

Even if none of these factors is present to confuse the issue, and if you remember your last period correctly, the accuracy of the determination of your due date based on your last menstrual period is about two weeks, plus or minus. That wouldn't seem to be very accurate. In fact, while it won't be accurate to the day, it will be accurate enough to manage an uncomplicated pregnancy.

Sometimes it is very important to have more accurate dating of your pregnancy. For instance, you might come in for your first visit expecting to be about 8 weeks based on your last menstrual period. After your examination, however, it might seem to us that you are further along. Your uterus, for example, could be the size of a 12-week pregnancy. In that case, it is important to determine whether you are 8 weeks, twelve weeks, or if maybe even twins are present! This is where the sonogram becomes important.

If you have never had a sonogram before, it will amaze you! A sonogram uses sound waves to produce a moving image in black and white on a television screen. You will be able to see the heart beating, the baby moving, and the doctor will be able to make measurements of the baby's features. These measurements are used to determine how old the baby is. In this way, it helps to establish your due date. The earlier in pregnancy that it is done, the more accurate it is in determining your due date. However, the later in pregnancy it is done, the better it can evaluate the developing structures such as the heart, lungs, spine, etc. It is important to determine an accurate due date so an ultrasound done within the first 12 weeks of your pregnancy can be accurate to within approximately one week.

Commonly you are given a due date at the time of your first examination in pregnancy. You might need an ultrasound, and this might give you a different due date. If another ultrasound is needed later in pregnancy, you might get yet another due date. Which one of these is your true due date? Is your due date changing as a result of each evaluation? The answer is that you have only one due date and this is the date that I give you based on all of the information available. If anyone else mentions a different due date, you can ignore them because they do not have all of the information available to them to make the due date determination.

I hope that this clears up some of the common misconceptions associated with due date determination.

YOUR PELVIS AND PREGNANCY

Imagine a fruit bowl. Suppose that it has been dropped and has broken into several pieces. It has been glued finely back together. This is an image, which describes your bony pelvis. The pieces are the bones of the pelvis. The seams where the pieces are glued represent the normally immobile joints of the pelvic bones.

In this bowl sit the bladder, the uterus, and the rectum. They rest at the bottom of the bowl with the bladder in front, the uterus in the middle, and the rectum behind. These organs are actually attached to each other by filmy tissue layers. In the bottom of this bowl there are three openings. In front is the opening of the bladder, called the urethra, through which urine passes. In the middle is the vagina, which connects directly to the uterus through its opening, the cervix. The rectal opening, called the anus, passes behind the vagina and serves to pass gas and stool.

This cracked bowl is normally rigid, but in pregnancy something amazing happens. Some of the joints loosen; allowing the bones of the pelvis increased flexibility, thus accommodating the pregnancy. As this occurs, pregnant woman can experience pressure or pain in the pelvis, vagina, hips or low back.

Fortunately, these maternal adaptations to the pregnant state are reversible and not commonly associated with injury.

The uterus is about the size and shape of a regular light bulb in the non-pregnant state. It weighs only about sixty grams, or about two ounces. It is a hollow organ and its opening, the cervix, projects into the vagina. The uterus is a muscle and is responsible for the contractions that occur during labor. Over the course of pregnancy, the uterus will increase in weight to approximately two pounds. The cavity will increase in size to accommodate a growing baby. As much as ten to thirty percent of all blood pumped within the body will flow to the uterus. There is a fascinating medical mystery surrounding the uterus in pregnancy – no one knows the exact forces that start the uterus contracting.

Attached to the uterus are two fallopian tubes, one on each side. Each is about as long as your index finger and hollow. They serve as passageways connecting the cavity of the uterus with the inside of the abdominal cavity. At the far ends they lie close to the ovaries. They are delicate and complicated organs. Muscular contractions within their walls create a rhythmic motion that helps to propel the egg toward the sperm. Damage to the walls of the fallopian tubes from injury or infection can result in infertility or a tubal pregnancy. At the far ends of the fallopian tubes are fimbriae. These "little fingers" are essential to "pick up" the egg as it is released into the abdominal cavity by the ovary.

There are normally two ovaries, one suspended on each side of the pelvic bowl. Each is the size and shape of a small bird's egg, or about three by two centimeters (remember that your fingertip is about one centimeter wide). The ovaries have two essential functions in pregnancy. First, they produce the hormones, which regulate the process of egg production. These hormones, produced by the ovaries, travel through the blood to the uterus where they stimulate the lining of the uterus to prepare for the pregnancy. If fertilization does not occur, the lining is shed as a "period". If fertilization occurs, the lining is retained, and no period occurs. This corresponds to the "missed period" that alerts you to the possibility of pregnancy. It takes about two weeks for the ovaries to prepare an egg for release (this egg release is also called ovulation). Only one egg is usually released with each ovulation. Rarely, more than one egg is released. If fertilization of two eggs occurs, fraternal or non-identical twins result. Fertility medications can cause this scenario to occur with increased frequency. Interestingly, a woman doesn't necessarily ovulate on one side one month and then switch to ovulate on the opposite side during the next month. It is also possible to ovulate on one side and have the egg picked up by the opposite fallopian tube. Pregnancy has been achieved, for instance, in women having one tube and one ovary, each located on opposite sides of the pelvis.

ULTRASOUND IN PREGNANCY

Ultrasound, one could argue, is one of the greatest inventions in medicine. It allows us to watch a developing pregnancy in action over a period of minutes. A series of ultrasounds allows us to see that same pregnancy over a period of months.

Ultrasound, also known as sonography, bounces sound waves off of structures that lie in the path of these waves. It converts these returning signals into a "live" video on a television screen. Ultrasonography is one of the most active areas in medical research. Advancements in the quality of ultrasound equipment and techniques have revolutionized the management of high-risk obstetrics and have revolutionized our ability to detect birth defects. Ultrasound's value to obstetrical care is unquestioned.

Is ultrasound overutilized? That is, does every woman merit an ultrasound, even in an uncomplicated pregnancy? To answer this question, we must first look at the reasons for which ultrasound is employed in pregnancy. There are three basic reasons for which ultrasound is used. First, ultrasound provides accurate dating of a pregnancy. Second, ultrasound detects many birth defects. Third, ultrasound is used to monitor a high-risk pregnancy for signs of impending danger to the fetus. In all three of these indications, ultrasound is used to manage the pregnancy and to improve the chance of a good outcome.

Over time the use of ultrasound has become more liberal, being employed in pregnancies with no high-risk factors. This "routine" use of ultrasound has been questioned by some authorities. They say that ultrasound is an unjustified cost to the health care system. They also point to studies which show that the routine use of ultrasound does not improve pregnancy outcomes. Those in favor of routine ultrasound "screening" in pregnancy argue that it provides reassurance to parents when it is normal. It also detects conditions that, while their outcomes might not differ, require special attention. One can recall, for instance, that half of twin pregnancies were not detected until delivery before the ultrasound era.

As a compromise between performing multiple screening ultrasounds and performing no screening ultrasounds, some practices advocate a single screening ultrasound. This ultrasound is usually performed between eighteen and twenty weeks of pregnancy.

There are good reasons to settle on this window of time to perform the ultrasound. To understand the reasons, you must first understand what we want to determine from the ultrasound study. First, we want to know if the due date is correct. The ultrasound provides this information with the most accuracy if performed early in pregnancy. The later it is performed in pregnancy, the less accurate is the date calculation.

Second, the ultrasound provides information concerning the presence or absence of certain types of birth defects. Ultrasound cannot determine with any reliability whether a chromosomal abnormality is present. It can, however, detect many of the major birth defects that occur in three percent of pregnancies. These include heart defects, limb deformities, spinal deformities, etc. The further the pregnancy has developed at the time of the ultrasound study, the more accurately these defects can be determined.

It becomes obvious then, that the accuracy of dating and the accuracy of anomaly detection are conflicting with regard to the gestational age of the pregnancy. The best compromise to satisfy the goals of dating and anomaly detection is the window previously stated-between eighteen and twenty weeks of pregnancy.

In an uncomplicated pregnancy, your decision about the use of screening ultrasound has much to do with your personal philosophy. If you realize that your risk for a birth defect detectable by ultrasound is low, but a normal study would case your mind, then consider the study if it offered to you.

HIV TESTING IN PREGNANCY

The human immunodeficiency virus (HIV for short) is the virus, which causes AIDS. AIDS is a very serious, as yet incurable, condition produced when the HIV virus infects the immune system. Your immune system exists to defend you against infection. As a result of your immune system's disability, you become susceptible to life-threatening infections and certain cancerous tumors. People with HIV die from infections that cannot be destroyed by the immune system. Pneumonia is a common infection, which leads to death in AIDS patients.

The HIV virus is spread in three general ways: by sexual intercourse, by exposure of secretions or other infected materials to the blood stream, or by exposure during pregnancy. Transmission by sexual intercourse might be either homosexual or heterosexual. Exposure to the bloodstream might occur with intravenous injections of infected material or by blood transfusion. Exposure during pregnancy might occur during a vaginal delivery, by transmission from mother to fetus through the bloodstream, or during breast-feeding. It is not spread by casual contact such as shaking hands or hugging. It is not known whether HIV can be transmitted from contact with saliva and no cases have been reported. However, it is a good precaution to avoid contact with all body fluids of those infected. These fluids include blood, semen, vaginal secretions, urine, and feces. The risk of spreading the HIV virus during oral-genital contact is not known. The risk can be decreased, however, by using an unlubricated condom during oral-genital sex.

The symptoms of HIV infection might be absent for several years after the blood test for the virus is positive. Unexplained weight loss, fever for more than two weeks, diarrhea for more than two weeks, enlarged lymph nodes for more than three months, unexplained sweats, chronic fatigue, muscle and joint pain or long-lasting throat soreness can be signs of infection. As well, certain kinds of sores in the skin lasting more than a month can be signs of infection.

At your first visit, we will attempt to identify factors, which might increase your risk for having HIV, even in the absence of any symptoms. These risk factors include a history of intercourse with a homosexual or bisexual male, intravenous drug use, heterosexual activity with many partners, a history of blood transfusions with unscreened blood, immigration from areas where AIDS is more prevalent, or a history of intercourse with an HIV infected male. Donated blood has been tested for HIV since 1985. Any transfusions administered before that date carry a risk for HIV infection. If at any time during or after pregnancy blood transfusions are required, they will only be ordered if absolutely necessary. If necessary, you can rest assured that the blood has been screened for HIV.

While counseling about HIV and testing for HIV has always been recommended, screening all pregnant women for the infection has not. Recently, however, research has demonstrated that identification and treatment of HIV positive women can significantly reduce the risk of transmission from mother to fetus in pregnancy. As a result of this evidence, we now recommend screening for all pregnant women. Testing still requires your consent, however, and you should be aware of possible cultural and legal ramifications of positive test results. You might, for instance, want to investigate your ability to obtain insurance for treatment or life insurance before you have the test done.

The HIV screening test involves drawing some blood from your arm. It is obtained with your consent at the same time that your other prenatal lab work is obtained. A sample of blood is withdrawn from your arm and sent to the laboratory. The results are returned to our office with full confidentiality. If your screening test does return positive, a confirmatory test is obtained. Only after confirmation with secondary blood testing are you diagnosed.

If you are diagnosed with HIV, you will receive full post-test counseling and follow-up during your pregnancy. If you have any of the aforementioned risk factors or develop risk factors during your pregnancy, you should strongly consider having testing. If your initial test returned negative and you are at risk based on your history, you should have the test repeated about six months after the first test. Likewise, if you are low risk and develop risk factors during pregnancy, you should be tested appropriately after exposure.

INFECTIONS IN PREGNANCY

Fortunately, dangerous infections in pregnancy are not common. There are, however, important considerations regarding infections during pregnancy. This chapter provides an overview of some infections encountered during pregnancy as well as the implications of these infections. If you suspect that you might have been exposed to or even contracted one of these infections, you should contact my office.

Yeast infection (candida)

This infection is unfortunately well-known to women, pregnant and nonpregnant alike. It is caused by a number of different yeast types which produce a thick discharge, redness of the skin inside and outside of the vagina, and progressively worsening itching. Pregnancy seems to predispose some women to this infection. Other factors, such as tight-fitting clothing or trapped moisture (a wet bathing suit, for example) are thought to promote the infection.

Whether this infection has any effect on pregnancy is unknown. It can, however, be transmitted to the newborn if present at the time of delivery. It should be treated when encountered during pregnancy, but treatment is often delayed if infection occurs during the first trimester. Medications are usually given by inserting a cream-filled applicator gently into the vagina for the prescribed period of time.

Bacterial Vaginosis

Bacterial vaginosis is a condition caused by an overgrowth of bacteria in the vagina. These bacteria cause a discharge which is thin, grey-white, and often has a strong "fishy" odor. It is diagnosed in the office by a simple vaginal and microscopic slide exam. The cause of this condition is not completely known. It is possible, however, that contamination of the vagina from the rectum is at least partly responsible.

Therefore, proper hygiene including proper wiping after bowel movements is important. Bacterial vaginosis has been implicated as a cause of preterm delivery and should be treated during pregnancy. Treatment usually consists of pills or vaginal cream. The condition can recur and once treated you should be on the lookout for recurrent symptoms.

Urinary Tract Infections

Urinary tract infections are also more common during pregnancy. Certain conditions predispose to bacteria in the urine which can lead to bladder infection (cystitis) or kidney infection (pyelonephritis). Diabetes and sickle cell disease are two examples of medical conditions which predispose to infection. The bacteria usually come from the area outside of the vagina or from the rectum. Good hygiene (wiping properly after bowel movements) is important to prevent these infections.

You will suspect a bladder infection if you have cramping in the area of the bladder or around the opening of the bladder when you urinate. Bladder infections are sometimes, however, present without any symptoms (asymptomatic bacteriuria). At your prenatal visits, your urine is tested for signs of infection. If these are present, a culture of your urine is usually obtained. If bacteria are present on culture, you will be treated with antibiotics and possibly retested after treatment. If you have frequent recurrences of infection, or if you have factors which increase your risk for infection, you might receive a small dose of antibiotics to be taken daily for the remainder of your pregnancy.

Rarely, bacteria in the urine can reach the kidneys and cause a severe infection called pyelonephritis. This infection usually causes a fever and back pain on one side. This condition can be very serious and deserves immediate attention. It can cause premature delivery and often requires hospitalization.

Toxoplasmosis

This is an infection caused by a parasite that exists in its various forms in farm animals and wild animals. Cats are the only animal, however, to harbor the organism in all of its stages. Cats infected with toxoplasmosis often show no signs of infection. Their feces (cat litter) can contain the organisms and should not be handled directly during pregnancy. Other sources of infection are undercooked and raw meat, blood transfusion, raw eggs, and goat milk. When handling raw meat, making hamburger patties for instance, pregnant women should wear plastic gloves and wash their hands thoroughly.

If a pregnant woman develops toxoplasmosis, she might not have any symptoms at all. On the other hand, she might feel enlarged lymph nodes in her neck or arm pits. Lymph nodes are normally present and found throughout your body. They are not normally enlarged but can be enlarged when infection is present. Muscle pain and flu-like symptoms can also be noted.

Toxoplasmosis can have serious effects on the fetus. It can also be treated. Therefore, attempts should be made to diagnose infection whenever exposure is suspected. Prenatal screening of pregnant women for toxoplasmosis is not currently recommended. When suspected, however, maternal blood can be tested.

Amniotic fluid can also be tested when the pregnancy has reached a certain stage. Fetal blood has also been obtained in some cases to test for infection. Sometimes ultrasound can demonstrate findings that suggest infection.

If infection is diagnosed, treatment will start immediately. This involves taking medication to eradicate the parasite.

Group B Strep

Group B Streptococcus is a bacterium which is commonly found in the digestive tract and the urinary tract as well as the vagina of women. It can infect the baby before birth if the bacteria pass into the amniotic fluid from the mother's circulation. It can also infect the baby at the time of delivery if it passes from the mother's vagina to the baby.

You wouldn't know you had Group B Strep unless you tested for it by doing a culture of the vagina, rectum, and bladder. Therefore, it can be difficult to know which women and infants are at risk

There have been risk factors for Group B Strep identified. These are used by physicians to identify women at risk. Women who are determined to be at risk are given antibiotics during labor. The antibiotics help to prevent infection of babies during birth.

Parvovirus

Parvovirus is a virus which can infect blood and the respiratory tree of children and adults. It can be spread by respiratory secretions (an infected person coughs in your face), by blood transfusion, or from mother to fetus. Infection can occur without symptoms or it can be associated with a rash, skin itching, or mild flu-like symptoms. The rash of Parvovirus infection can occur on the face (the so-called "slapped cheek" appearance) and/or on the body. In adults, painful joints are sometimes noted. The hand joints are most commonly affected, and pain can last for several months. In some people who are anemic (sickle cell patients for example) parvovirus infection can cause a decrease in blood cell production. This is not very common, fortunately.

Pregnant women who come into contact with infected individuals (especially daycare workers, teachers and other who come into contact with groups of children) should have blood tests done at a specific time after exposure to see if they have become infected. The virus can cross the placenta and cause anemia in the fetus. It can sometimes cause miscarriage or stillbirth. Fortunately, most fetuses whose mothers become infected with the Parvovirus are unaffected. There is also no evidence that birth defects are produced by infection with Parvovirus.

Chicken Pox

Chicken Pox is the name given to a very common infection caused by the Varicella Zoster virus. Chicken Pox is the second most commonly reported communicable disease in the United States. Most people develop immunity to Varicella Zoster after they develop Chicken Pox. Nine out of ten adults are immune to Varicella. Immunity means that if exposed to someone with the infection they cannot develop the infection. After an infection with Chicken Pox, however, the virus can lie inactive within your body. It might then reappear years later in the form of a condition commonly referred to as Shingles.

Varicella is highly contagious. After exposure, you should watch out for symptoms including fever, aches, and small "blisters" on your skin which itch. This usually occurs about two weeks after exposure. The blisters then crust over and heal within about a week. Until all of the blisters are crusted over, you should consider yourself contagious.

It is very important to call me as soon as possible after exposure. It might be necessary to test your blood for immunity to the virus. If you remember having bad Chicken Pox as a child, you have nothing to worry about. If you can't remember,

there is a ninety percent chance that you are immune. However, if you are uncertain about immunity, a blood test can confirm it. There is an injection that can be given to exposed women who are not immune to Varicella. This shot must be given within four days of exposure to the virus. Obviously then, it is important to know your immune status and to report any exposure immediately to me.

Infection with Varicella during pregnancy can have serious consequences. It can cause several types of birth defects. Fortunately, the risk for these birth defects is small in women with Chicken Pox during pregnancy. While the infection rate in the fetus can be as high as forty percent, the incidence of birth defects is about five percent.

The maternal risk is also significant. Chicken Pox can cause serious Pneumonia. Should this occur, hospitalization and immediate treatment with antiviral medication is essential.

Herpes Simplex

Herpes Simplex, commonly referred to as "herpes", is a viral infection like Chicken Pox. It produces painful blisters on mucous membranes such as lips, anus, or vagina. If you experience your first outbreak, you might have a fever and flu-like aches. If infection occurs in the vagina or on the cervix, you might notice a white discharge. Invariably, you will feel a painful sore or group of sores. They might be quite small, or they might involve a larger area (about the size of a postage stamp) with swelling and tenderness. The infection is most often sexually transmitted. Symptoms will generally occur about two weeks after exposure. With a first episode, the symptoms might last up to three weeks. After they disappear, the time of their reappearance will be unpredictable. Some women have a recurrence every month. More commonly, however, sores will reappear once or twice a year. Fortunately, recurrences tend to be less symptomatic and resolve more quickly. Some women are given a medication which helps to decrease the frequency of recurrences and speed healing of the sores. While this medication is not generally given during pregnancy, its use under special circumstances is being investigated.

If you get a herpes outbreak during pregnancy, its effect on the pregnancy is variable. It depends on when you experience the outbreak. If herpes is present at the time of delivery, it will prohibit a vaginal delivery. In fact, if you feel that you might be developing an outbreak, but no sores are visible, it might also be safe to avoid vaginal delivery. A cesarean section is performed to avoid passing the virus from the open sores to the infant's respiratory tract. A herpes infection in a newborn can be fatal. The risk for this neonatal infection is much greater with a first outbreak at the time of delivery. Interestingly, a recurrent episode is associated with a much smaller risk of neonatal infection. In spite of this smaller risk, the presence of a recurrent episode a vaginal delivery is prohibited.

If you have a history of herpes, it is extremely important to notify me. If you feel a recurrence of sores at any time in pregnancy, you should also notify me. With a history of herpes, I will inspect the outside of the vagina, rectum, inside of the vagina, and cervix as closely as possible when you are admitted to Labor and Delivery. If any suspicious areas are noted, they will be cultured. Their presence might also necessitate a cesarean section. As well, your pediatrician will be notified.

Venereal Warts

Venereal warts are caused by the Human Papilloma Virus (HPV). They can occur anywhere on the body but are commonly sexually transmitted and thus appear in the areas of the rectum, vaginal opening, inside of the vagina, and on the cervix. The infection can be latent, that is, not producing any warts at all. When a wart is produced, it first appears as a small, painless, roughened bump. It can then spread to produce a larger wart or groups of warts. If the virus infects the cervix, it is thought to be a cause of cervical cancer. How quickly cancer occurs after infection with HPV is unknown.

There are two reasons to treat any warts found during pregnancy. First, warts in the area of the vagina can produce significant bleeding at the time of delivery. Second, the HPV can infect the baby during delivery. Infection can cause genital warts in newborns. It can also infect the respiratory tract and cause warts on the vocal cords and windpipe. While cesarean section is not prescribed in the presence of warts, it is important to try and minimize the presence of the virus by the time of delivery.

Self-examination of the anus and vaginal opening with a mirror and a light is a useful way to monitor this virus. If you feel any unusual bumps in these areas, please inform me immediately. While this virus is almost impossible to eliminate, it is controllable with medical or surgical treatment.

Lyme Disease

Lyme disease is caused by an organism which is carried by deer ticks. As well as on deer, the tick can be found in the fur of dogs and cats. The organism may be carried in the urine of the carrier animal and thus may be spread in a number of ways. Signs of Lyme disease might include a "bull's eye" rash, flu-like muscle aches, arthritis, headaches, or weakness. The rash, which is only seen about half of the time, develops from the site where a tick was attached. It has a central red area and an expanding red ring to produce the classic "bull's eye".

The infection can cause miscarriage. It might also be responsible for certain types of birth defects, but this is not proven.

In order to avoid contact with ticks, be sure to wear light-colored, long sleeved clothing, with pant legs tucked into your socks. "Slippery" fabrics are better to prevent attachment of ticks. Put clothing into a plastic bag until it is washed. Tall grass should be avoided. Be conscientious about checking for ticks and check pets for ticks. If you see one, remove it carefully, pulling it straight out without squeezing its body.

It is best to notify me immediately after exposure to a tick but more importantly if symptoms develop. Antibiotic treatment can be given to prevent transmission of the organism to the placenta.

Measles

Measles is a viral infection that often affects children. It produces a fine rash all over the body. It is also associated with fever, aching joints and muscles, cough, shortness of breath, redevyes, and sensitivity to light.

In pregnancy, the infection can be associated with spontaneous miscarriage, maternal pneumonia, hepatitis, and a slight increase in risk for birth defects. If the infection occurs within a week of delivery, it can cause measles in the newborn.

Most people are immune to measles from previous infection. There is a vaccine which can be given to those who are not naturally immune. It is not recommended that the vaccine be given during pregnancy, however.

Vaccines given before 1980 might not have conferred immunity to you. If you are exposed to Measles and you did not have them as a child, or did not have the vaccine and developed immunity, you should notify me immediately. There is a medication that can be given after exposure, even during pregnancy.

Group B Streptococcus

A bacterium is commonly present in the vagina. It is called Group B Strep. It is not the same bacterium as causes strep throat. It normally produces no unusual discharge or irritation. You would not know if this bacterium were present. It can also be present one week and gone the next.

In pregnancy this bacterium takes on some significance. If it is present in the vagina at the time of delivery, there is a small chance that the baby could become infected. Group B Strep infections in babies can be quite serious.

Antibiotics given during labor can reduce the incidence of Group B Strep infection in babies. It is difficult, however, for obstetricians to know who needs the antibiotics.

The Centers for Disease Control, the American College of Obstetricians, and the American Academy of Pediatricians have reached a consensus. They have described two protocols, equally valid, to screen patients for Group B Strep.

The first protocol instructs physicians to screen every patient at 35 to 37 weeks of pregnancy. Culture swabs are obtained from the outside of the vagina and the rectum. If the cultures are positive for Group B Strep, antibiotics are given during labor. Often the newborn is watched in the nursery for forty-eight hours to make sure that they have not been infected.

The second protocol does not involve routine cultures. Patients are observed for certain risk factors. These factors include premature labor or preterm rupture of membranes, rupture of membranes for greater than 18 hours, a fever during labor, a urinary tract infection with Group B Strep during pregnancy, or a history of Group B Strep infection of a previous infant. If a risk factor is identified, antibiotics are given to the mother during labor.

It is important to note that only a small number of infants will be infected with Group B Strep. Both of these protocols will involve treating many women who either have no Group B Strep or will not pass it to their baby. These treatment protocols will, however, eliminate anywhere from half to two thirds of infections in newborns.

The institution of these protocols creates possible side effects. First, some women will have allergic reactions to the antibiotics. Second, bacteria might become resistant to the antibiotics over time. Third, some women will develop an infectious diarrhea as a result of antibiotic treatment.

I will follow the protocol that I believe makes the most sense. My goal is to reduce your risk for Group B Strep infection and minimize your risk for complications from treatment.

ALPHA FETOPROTEIN AND AMNIOCENTESIS

Certain tests are performed routinely in pregnancy. Prenatal lab work and diabetic screening are two examples of routine tests. Other tests are offered. Screening tests for birth defects are examples of offered tests.

Fortunately, the incidence of major birth defects is small. About 97 out of 100 pregnancies will deliver without a major birth defect. Some defects can be diagnosed with the help of screening tests. Alpha fetoprotein and amniocentesis are examples of such screening tests. Triple screening and ultrasound are other examples of screening tests.

A screening test is performed to detect pregnancies at risk for a specific birth defect. It does not diagnose the presence of the birth defect. If the screening test is abnormal, a diagnostic test is performed. It is important to realize that the diagnostic test is not performed on every pregnant woman. In the case of chromosomal defects and neural tube defects, the diagnostic test is amniocentesis.

It is also important to realize that screening tests can lead to false positive results. In that case, an amniocentesis would be performed to confirm that the pregnancy is normal. Abnormal screening tests are always associated with increased anxiety.

Alpha Fetoprotein

About one in one thousand babies is born without the normal development of its spinal canal, brain, or the protective covering of these structures. As a group these are called neural tube defects. The alpha fetoprotein test, known as the AFP test, is a screening test for neural tube defects. It is able to detect between eighty and ninety percent of these defects. Babies with these defects produce a protein, called alpha fetoprotein, that leaks into the mother's bloodstream and can be detected by a blood test. Conversely, in some cases the alpha fetoprotein will be falsely elevated. In this latter scenario, an inaccurate due date, twins, unrelated birth defects, or maternal liver disease, might be present.

If the test value is elevated, it must be followed by a diagnostic test. First, however, an ultrasound might be required. This is performed to check the accuracy of the stated due date, to rule out twins, and to check for other types of birth defects. If the ultrasound is normal, then the diagnostic test is performed. The diagnostic test in this case is amniocentesis.

The alpha fetoprotein test is also a screening test for Down Syndrome, although it can detect only about twenty percent of these defects. If the alpha fetoprotein test is abnormally low, this indicates an increased risk for Down Syndrome. The diagnostic test to detect this disorder is amniocentesis.

Down Syndrome is a chromosomal disorder. Instead of the infant having the normal number of chromosomes, he or she has an extra amount of chromosomal material on one of its chromosomes. The disorder causes varying degrees of mental retardation and sometimes birth defects involving the heart. Alterations in appearance of the infant include a flattened face, slanting eyes, and low-set ears.

The risk of carrying a child with Down Syndrome increases with age. Overall it occurs in about one per eight hundred pregnancies. While the overall risk is only one in 1667 for a woman of twenty, by age thirty-five that risk has increased to one in 378. Amniocentesis is offered as a diagnostic test for women who will be 35 or older at the time of delivery. At age 35 the risk for the birth defect is greater than the risk of performing the amniocentesis.

Amniocentesis

Amniocentesis is the test used to diagnose neural tube defects and Down Syndrome in patients whose pregnancies are at increased risk. The procedure involves passing a small needle into the fluid-filled sac surrounding the baby. While lying on the examination table, the maternal abdomen is prepared with an antiseptic scrub, (usually Betadine). The skin is anesthetized by injecting a small amount of xylocaine under the skin. Ultrasound is then used to guide the amniocentesis needle to the location of the fluid pocket to be sampled. A sample of the fluid is then withdrawn and sent to a genetics laboratory where it is analyzed. The results then show if there is any chromosomal abnormality. The accuracy of this test is nearly 100 percent. The results will also show if alpha fetoprotein is elevated. This would suggest the presence of a neural tube defect.

There are risks of performing amniocentesis. The chance that a pregnancy will be lost after amniocentesis, due to rupture of the membranes, bleeding, infection, or injury to the fetus, is less than one percent. This risk, however, is an important consideration in deciding whether to have the test done.

Triple Marker Screening

Triple marker screening is a blood screening test to determine the risk for chromosomal problems. It requires a sample of maternal blood to be analyzed for three substances: alpha fetoprotein, HCG, and estriol. These pregnancy-related substances will detect Down Syndrome about 65 percent of the time. If the test shows an increased risk for Down Syndrome, amniocentesis is offered. Since alpha fetoprotein is one of the substances analyzed, the triple marker test also screens for neural tube defects.

First Trimester Screening for Down Syndrome

A recently developed technique for Down Syndrome screening is available. It requires a first trimester sonogram in conjunction with a maternal blood test. It reports high success rates for detection of Down Syndrome. The sonographic examination is technically difficult and requires an experienced sonographer. Until more data are available in our local area, the usefulness of this technique is unknown. It is offered, however, and can be requested.

Who Should Have These Tests?

Women who have a previous pregnancy history of a neural tube defect should consider a triple screen test. Women who take medications for epilepsy should also consider testing. Women who have experienced high fever in the first trimester of the current pregnancy should consider neural tube screening as well.

Women who have a previous pregnancy or family history of chromosomal abnormality should consider screening for abnormal chromosomes. If a sonographic finding suggests an increased risk for chromosomal abnormality, testing should be considered.

SKIN CHANGES IN PREGNANCY

As a result of the change in hormonal milieu during pregnancy, your skin, nails and hair might undergo some changes. These changes are sometimes not reversed after delivery, however none of them are associated with health risks.

Skin changes vary between pregnant women and often between pregnancies. Sometimes nails seem less brittle, hair seems thicker and more lustrous, complexion smoother and brighter. Occasionally hair is thinner or has difficulty holding its curl, even with a permanent. Sometimes women find that their smooth complexions are blemished with acne.

Striae gravidarum, commonly referred to as stretch marks, can be common in pregnancy. These red or purple, wrinkled, stripes most often occur during the second trimester. They are commonly encountered on the breasts, the abdomen, and the thighs. Heredity does seem to play a role in determining who gets stretch marks but there are other risk factors. Stretch marks are more common in women carrying large babies or twins, and in those women, who are overweight before or during pregnancy. Keep in mind, however, that I have seen large patients carrying large twins with strong family histories for stretch marks whose skin remains unmarked throughout pregnancy!

Despite what you might hear, there does not exist any remedies for stretch marks. Applying Vitamin E lotion to the affected areas neither prevents nor treats stretch marks. The success of Retin A is controversial but generally it is considered ineffective treatment for stretch marks. Regardless, it should never be applied to the skin during pregnancy in an attempt to treat stretch marks. Over several months to years following delivery, it is common for stretch marks to fade somewhat. While they most often do not disappear, they become pale and smoother.

Changes in skin pigment also occur during pregnancy. The nipples, including the circle around the nipples (the areola) might darken. Other areas of skin involved in this process might include the armpits and vagina. A thin dark line between the pubic hairline and the umbilicus in the center of the lower abdomen can also develop (linea nigra). The skin over the cheekbones and forehead can also appear darkened in patches. This is known as chloasma, also referred to as the "mask" of pregnancy. Interestingly, this pigment change has been known to occur with birth control pills. While it does tend to fade after delivery, it can occur with subsequent pregnancies. Attempts to bleach or otherwise lighten this change in pigment should not be undertaken with anything more than make-up. You might also want to apply sunscreen or avoid direct sunlight, as this stimulates the pigment to darken these areas.

Growth or enlargement of moles and skin tags can occur during pregnancy. These can occur anywhere from the vaginal area to the scalp, literally from head to toe. Skin tags are not dangerous and can be easily removed, although you might want to wait until after delivery to assess the extent of the situation. Moles, which are generally smooth and painless bumps on the skin, can also appear, enlarge, or change color. It is important, as always, to be aware of the warning signs of melanoma. Inspect your skin thoroughly throughout pregnancy for suspicious changes in any mole. If you are unaware of the warning signs of melanoma, please ask to be educated. If you have previously been treated for melanoma, please inform me at your first visit.

Vascular changes during pregnancy are often manifested as changes in the color of the skin or the appearance of blood vessels on the surface of the skin. Spider angiomas are small red spots which appear above the skin surface. Out of these spots extend irregular, small blood vessels, like the legs of a spider. These develop in the late first trimester until the middle of the second trimester. They are most commonly found on the face, neck, arms and chest. They are thought to result from high estrogen levels. They are not dangerous and do not indicate the presence of any dangerous conditions in pregnancy. Vascular spiders go away after pregnancy and require no treatment.

Estrogen is also thought to be responsible for "liver palm", which is a red discoloration of the palms of the hands. This is not a painful or dangerous condition and like most of the vascular changes associated with pregnancy it resolves shortly after delivery.

Finally, epulis tumor of the mouth is a result of swelling of the gums and their blood vessels during pregnancy. This does not occur in every pregnancy, does not require treatment, and is not dangerous. The gums might be more sensitive to the touch and temperature, however, and might bleed more easily. If your toothbrush is pink when you brush your teeth, don't be concerned. By the way, dental exams are not prohibited during pregnancy. Your dentist will, however, need to know that

you are pregnant. If any procedures requiring anesthetic or pain medications are required, your dentist should give me a call before the procedure.

One final change in the skin can occur quite commonly varying in intensity between pregnant women. This is generally known as pruritus, or itching skin, and can be caused by a number of conditions. The itching is common on the abdominal area and might or might not be associated with a rash. Arms and legs as well as the vaginal area can sometimes be affected. This leads to scratching which might intensify as the itching continues. You should alert me to any rashes or itching. Some can be treated with various medications. If the itching is unaccompanied by a specific medical condition, it can be treated with oatmeal baths or various lotions. Occasionally, delivery late in pregnancy has been considered for those suffering from intense itching, to alleviate suffering from this condition.

In summary, there are many changes that can occur to your skin during pregnancy. Many of these resolve on their own after delivery. You should not hesitate to discuss any of these changes with me. Often treatment can be rendered to alleviate symptoms which might be bothering you.

MULTIPLE PREGNANCIES

Multiple pregnancies, most often twin pregnancies but rarely triplet or higher, are rare and fascinating occurrences. Twin pregnancies occur in about one per hundred pregnancies. The incidence of triplet pregnancies seems to be increasing over time. While it was once quoted as being one per eight thousand deliveries, it has increased in the last several years. It is presently occurring once per approximately fifteen hundred deliveries. Quadruplets have been reported to occur once per six hundred thousand deliveries. Quintuplets are thought to occur once per fifteen to twenty million pregnancies. The use of "fertility medicines" has increased the incidence of multiple pregnancies in past years.

Multiple pregnancies occur in one of two ways. If, at the time of ovulation (release of the egg) two or more eggs are released, there is a chance that each will be fertilized and implant in the uterus. In the case to twins, this is referred to as dizygotic (commonly referred to as fraternal). These twins can be the same sex or opposite sexes. If a single egg is released at the time of ovulation and is fertilized, the second form of twins occurs. In this scenario, the fertilized egg splits into two pregnancies after fertilization has occurred. This is termed monozygotic twins (commonly referred to as identical twins).

As wonderful and mysterious as twin pregnancies are, they are considered to be high-risk and require special consideration. Compared to single pregnancies, twins have a greater risk of being born preterm (at less than 37 weeks), an increased risk of being very low birth weight, and increased risk for physical limitations. These physical limitations are the result of both an increased risk for birth defects and an increased risk for premature delivery. Half of twin pregnancies are delivered at less than 37 weeks. Pregnancies with twins also have increased risk for gestational diabetes, preterm labor, premature rupture of membranes, and toxemia.

Monozygotic twins have additional risks including discordant growth. Discordant growth means that one of the twins grows at a different rate than the other twin. This difference in growth can be a sign of growth impairment and might even require early delivery.

For unknown reasons, up to seventy percent of pregnancies diagnosed with twins in the first ten weeks of pregnancy will go on to deliver single infants. This is referred to as the vanishing twin syndrome.

Ultrasound has been a very useful tool to follow twins through the pregnancy. Before the advent of ultrasound, as many as fifty percent of twin pregnancies were not diagnosed until the time of delivery. An ultrasound done in the first two or three months of pregnancy can diagnose the twin pregnancy. This can help to account for some signs and symptoms that might be present, such as a uterus that seems larger than it should be, or unrelenting nausea and vomiting. Extra iron and vitamins are often prescribed for twin pregnancies as soon as they are diagnosed.

Ultrasound is also used to determine whether the twins are monozygotic or dizygotic. If the twins are of opposite sexes, they are dizygotic. The sac membranes that separate the twins can be examined sometimes to see if the twins are monozygotic or dizygotic. Sometimes the twins are found to lie within a single sac. If so, the risk for cord entanglement is increased.

Ultrasounds can be performed every few weeks in pregnancy during the last three months to see if discordant growth is present. While the ultrasound is being performed, the flow of blood through the umbilical blood vessels can also be analyzed. This study is also used to determine whether impairment in growth of either twin is likely.

Twin pregnancies are also followed in the last few months with nonstress testing. This test analyzes a continuous tracing of the fetal heart rates over several minutes. It is a general test of fetal development and well-being. If it is abnormal, it is followed by other testing which more specifically determines whether a problem exists.

Twins might present both headfirst (called a vertex/vertex presentation) or one might be head first while the other is buttock first (a buttocks-first presentation is termed breech). It is also possible that one of the twins will lie sideways and this is called a transverse presentation. The most common presentation occurs when both twins are vertex. Almost as frequently, the first is vertex and the second is not. About twenty percent of the time the first twin is not vertex.

The delivery of twins is somewhat controversial. If both twins are vertex, they are often delivered vaginally. In the event that one of the twins is breech, methods of delivery vary. In some cases, if the second twin is breech it can be delivered

vaginally from the breech presentation. It can also sometimes be rotated so that it is vertex, and then delivered vaginally. In some cases, a cesarean section is performed to deliver the second twin. If the first twin is in the breech presentation, vaginal delivery is also controversial. In some cases, both twins are delivered by Cesarean section, as in the case when both twins are in the breech presentation.

Special considerations also exist for twin pregnancies. Requirements for iron and folic acid are increased above those of single pregnancies. Normal maternal weight gain for a twin pregnancy is about forty-five pounds. Bed rest is often considered during the last three to four months of pregnancy for twin pregnancies. Vaginal exams at prenatal visits should be performed more liberally in an attempt to diagnose premature labor at its earliest stage. Some physicians have advocated using a home contraction monitoring system to alert them to an early labor pattern. This home uterine monitoring is an expensive adjunct but has proved useful in detecting preterm labor. When used in conjunction with nursing support- frequent contact by nurses with patients to provide education and evaluation- the system has added benefit. This is imposed to help prevent premature labor or delivery.

Breast feeding should not be a problem with twins. Help is also available to get you started in the form of consultation and publications. Written information can be obtained from the following resources:

Mothers of Twins Clubs

National Organization of Mothers of Twins Clubs Executive Office
PO Box 23188
Albuquerque, NM 87192-118

Twins Magazine

PO Box 12045
Overland Park, KS 66282
Telephone: 800-821-5533

Twinline

Source of informational booklets on twin care:
PO Box 10066
Berkeley, CA 94709
Telephone: 510-524-0863

Books

The Joy of Twins: Having, Raising, and Loving Babies Who Arrive in Groups
PP Novotny. New York: Crown, 1988

BLOODTYPES

It is a good idea, whether you are pregnant or not, to know your blood type. Blood types are designated according to proteins found on the red blood cells. The different blood proteins designate you as O, A, B, or AB. Interestingly, the designation O means that your red blood cells do not have any of the blood type proteins on them.

In an emergency, it is important to know your blood type so that the same type of blood can be given to you. If you were type A, for example, you would receive type A blood from a blood donor. If your blood cannot be typed fast enough, or if your type of blood is not available, you can be given type O blood. If you are given blood which is not your type (type A blood being given to a person with type B blood, for instance) your body will react with a severe form of "allergic" reaction.

If you have donated blood before, the American Red Cross will give you a card, which tells your blood type. It is important to carry this card with you at all times. The blood type of all women is determined early in pregnancy as part of your prenatal blood profile. I will inform you of your blood type for your information.

Following your blood type letter, you will see a "+" or a "-" read as "positive" or "negative". This designates whether your red blood cells have a protein (called Rhesus if you want to get technical) or not. Women who have the protein would be designated O+, A+, B+, or AB+. Those who do not have the protein are designated O-, A-, B-, or AB-. This is not, by the way, like a report card. Those of you who are A+ should not flash your Red Cross cards with any air of superiority! In fact, most people have O+ blood. If you are asked whether you are "Rh" negative or positive (Rh meaning rhesus protein for short), they are asking about the plus or minus after your blood type.

This might all seem like alphabet soup to you. You might be wondering what all of this has to do with the wonder and excitement of motherhood. Well, the answer will become apparent to the approximately 15% of you who are found to be Rh negative.

The proteins found on your red blood cells are inherited. I mean by this that you have inherited both your blood type and your Rh factor type from your parents. Likewise, your child will inherit his or her blood type and Rh factor type from your parents. If you are Rh-negative, you will not contribute the Rh protein to your child. In that case your partner will determine if your child is Rh-positive or negative. If your partner is Rh-negative, your child will be Rh negative. If your partner is Rh positive, your child could be Rh-negative or Rh-positive. I will attempt to avoid confusion by stopping at this point.

The importance of all of this concerns the scenario of the Rh-negative mother and her Rh-positive child. It is possible that a few red blood cells will cross from the baby's blood to the mother's blood during a pregnancy. If the baby is Rh-positive, these cells will contain the Rh protein. The mother's body, having never encountered these proteins before, will consider them as foreign. She will develop antibody proteins to destroy these foreign red blood cells. The danger comes when the mother's antibodies cross the placenta and enter the baby's blood. Here they encounter blood that contains all Rh-positive blood cells. The antibodies attempt to destroy all of these cells. The baby then becomes anemic, not being able to produce red blood cells fast enough. The baby then starts to develop serious problems and can require blood transfusions before birth.

Fortunately, this problem was successfully resolved in 1968 when Rhogam was manufactured. Rhogam is a solution of antibodies against the Rh-positive red blood cells. These antibodies are given to Rh-negative mothers during pregnancy and during situations where there is a risk of fetal blood meeting maternal blood.

The Rhogam then acts like a policeman in the mother's body, patrolling the blood stream looking for fetal blood cells. If it encounters a cell, it "destroys" it. This somehow prevents the mother's body from recognizing the Rh-positive cells and making antibodies against them.

If you are found to be Rh-negative you will be given Rhogam at about 28 weeks of pregnancy. Rhogam is administered by an injection given into your arm. The Rhogam protection lasts about 12 weeks and thus will protect you until delivery. Since the risk of encountering fetal blood cells in a normal pregnancy is small prior to 28 weeks, Rhogam is not normally given before then. If you experience a miscarriage, you will be given Rhogam to protect you from possible exposure to fetal blood cells. Likewise, you will be given Rhogam after procedures such as amniocentesis. These procedures could theoretically expose you to fetal red blood cells.

If you do not receive Rhogam and are exposed to fetal red blood cells, your body will make and retain antibodies forever. This means that these antibodies will be present at the time of your next pregnancy. These antibodies, which can do serious harm to your baby, will be detectable on future prenatal blood testing. If detected, your pregnancy will be intensely monitored, and blood transfusions given to your baby when indicated.

If your partner is Rh-negative and has proof (a Red Cross card for example), you do not need to worry about Rh antibodies. In fact, you do not need Rhogam at all. In this scenario all of your children, like you, will be Rh-negative. The chance that both you and your partner will be Rh-negative is about one in 35. If your partner's blood type is positive, or is unknown, there is a chance that your baby will be Rh-positive. Since we do not check the baby's blood type (it involves a delicate and risky procedure) routinely, we "cover" you for the possibility of a Rh-positive baby by giving you Rhogam.

MEDICATIONS IN PREGNANCY

There is a simple rule to follow concerning medication use in pregnancy-don't use medications unless absolutely necessary. If you need something to take for a problem arising during pregnancy, please call me for approval or refer to the list provided below.

Medications in pregnancy are currently assigned a risk level of A B C D or X. Medications in group A are commonly used in pregnancy because there are no problems associated with their use. Group D medications are only used in life-threatening situations. These medications have proven risk to the fetus. These medications include female hormones, certain antibiotics, certain seizure medications, lithium, certain antidepressants, certain anti-anxiety medications, certain blood thinners, and iodine compounds.

Category X medications are prohibited in pregnancy. Examples of these include Retin-A, contraceptives, and MMR vaccines.

Since most medications used in pregnancy are either class B or class C, the risks of using them must be weighed against the benefit of using them. In many cases, the risks have not been clearly established. For this reason, you must ask yourself whether such medicines are absolutely necessary. If you feel that they are, you are accepting a small risk that the drug might affect your pregnancy in some way.

Sometimes medication will prevent worsening of a medical condition in pregnancy. The medication may have a history of safe use. As an example, Phenergan is given in pregnancy to relieve nausea when patients cannot keep food or fluids in their stomachs. It is given to prevent dehydration which can have serious consequences for the pregnancy. Even though it is a Category B medication, the benefit of using it in this scenario outweighs the risk.

Listed below are measures and medications which we recommend for common conditions in pregnancy. The medications listed should be used sparingly and only when most necessary.

Nausea

MEASURES: Consume dry foods such as toast or crackers and try to keep hydrated by taking small sips of fluids very frequently. Avoid caffeine or carbonated drinks, milk, fatty foods, greasy foods, or fried foods. Eat smaller amounts of food more frequently and avoid acidic foods. If your prenatal vitamins aggravate nausea, take them at night or split them in half and take half in the morning and half at night. If they continue to aggravate nausea, discontinue them for one month and then resume taking them. Acupressure wristbands (Seabands, for example) can be worn on the wrists to alleviate nausea. They are not as effective against vomiting. Herbal teas are often effective as well. These include raspberry, peppermint, spearmint, fennel, anise, and ginger. Ginger can be compounded as capsules, made into a tea, or taken as ginger ale. I often advise women with nausea to get a six-pack of ginger ale and let the carbonation bubble out. Then, I have them put the ginger ale in the refrigerator. Finally, it can be placed in a large thermos and sipped through a straw frequently in small amounts.

MEDICATIONS: There is a medication called Emetrol that can be obtained without a prescription. While it is perfectly safe to take for nausea, it doesn't provide significant relief for all women. Doxylamine (Unisom) can be taken at bedtime (25mg) and twice a day (12.5mg) for relief of nausea. It can be sedating. Doxylamine combined with pyridoxine (vitamin B6) has also been used and is quite effective.

Heartburn

MEASURES: Avoid chocolate, fried foods, spicy and fatty foods, carbonated drinks, citrus juices, peppermint, alcohol, caffeine, and smoking. Being overweight and wearing tight-fitting clothes predisposes you to heartburn. As well, certain unavoidable risks for heartburn include diabetes and use of certain medications (such as blood pressure medication and certain heart medications). You might elevate the head of the bed on blocks six inches high if heartburn is bad at night. Don't eat just prior to bedtime and avoid large meals.

MEDICATIONS: You may use low-sodium antacid tablets such as Tums. You may also use Riopan, Maalox, or Mylanta. Try to avoid aspirin-containing medicines such as Pepto-Bismol.

Headaches

MEASURES: Headaches may be caused by a number of things from stress to certain food ingredients to sinus congestion to poor vision. Identifying and eliminating or treating these conditions will often relieve headaches without medication. If your headaches are unrelieved by conservative measures, if they are severe, if they are associated with disturbances in vision, or if you have a history of high blood pressure, you should notify me.

MEDICATIONS: Tylenol, Anacin, or other medications containing acetaminophen may be used. Aspirin should be avoided if possible, during pregnancy.

Constipation

MEASURES: Increase brain and other fibers in your diet. Be aware that iron in your vitamins and iron supplements given to treat anemia can be constipating. Sources of fiber include green salads, spinach, prunes, raisins and other fruits, raw vegetables, and grains such as bran, and cereals. You should normally include about one ounce of fiber in your diet each day. Also, you might need to increase fluids so that you take in eight to ten glasses per day.

MEDICATIONS: Colace, Metamucil, Fibercon, Pyridium, Citrucel, and Senokot are examples of medications that you can use for occasional constipation.

Sinus Congestion

MEASURES: Increase fluids, take Tylenol for fever or pain. Call me if you develop a temperature above 100 degrees F. If you are less than twelve weeks pregnant and have the flu, or develop a rash or severe sore throat, you should let me know. If your symptoms persist for a week, please feel free to call me.

MEDICATIONS: Sudafed or Chlor-Trimeton for congestion, Robitussin DM for cough, and Sucrets, Cepacol, or Chlorseptic spray or lozenges for sore throat may be used. You might also consider a humidifier if the air is dry. Use of an "external nasal dilator", which goes by the brand name Breathe Right, has recently been shown to relieve congestion in pregnant women. It has no medications in it. It consists of a paper tape with a metal strip in it. When the tape is applied across the nose properly, the metal strip acts like a spring to keep the nasal passage open. While it can be worn at any time, it is most often used at night. I suppose this is because most women don't want to be seen around town during the day with a paper strip on their noses. While this isn't a product endorsement from me, it does seem that this unique product is safe and effective.

SEX IN PREGNANCY

There are many misconceptions about sex during the period of pregnancy. Many couples are reluctant to discuss their concerns about this issue. Many obstetricians consider your willingness to discuss these issues, however, as a sign of trust. I welcome and encourage you to ask questions.

The first misconception about sex during pregnancy is that it might be somehow harmful to the baby. In a pregnancy without complications, intercourse can be performed without restriction from the beginning to the end. There are some exceptions to this rule, however. The first is vaginal bleeding. If you experience vaginal bleeding it is sometimes important for your physician to determine the source of the bleeding.

Bleeding commonly originates from the cervix, or from inside of the uterus. Intercourse with deep penetration and thrusting can irritate the cervix and cause bleeding. If you complain of bleeding and have had intercourse recently, you might be asked to refrain from having intercourse for a period of days. In the meantime, I will evaluate possible sources of the bleeding. If the bleeding stops, in many cases you may resume normal sexual relations. If intercourse would jeopardize your pregnancy by initiating bleeding, as with a placenta previa for example, intercourse might be prohibited.

The second concern voiced by patients is its potential to produce contractions. Substances within semen are known to produce contractions within the uterus. These are seldom significant enough to initiate labor. If, however, you are already at risk for preterm labor, the risks of intercourse will be discussed with you.

Manipulation of your breasts, in particular the nipple areas, can also precipitate contractions of the uterus in the latter part of pregnancy. You will most likely be advised to refrain from these sexual activities only if they produce significant contractions.

There is a potential risk for infection when intercourse is performed in the presence of a dilated cervix. This is why physicians sometimes instruct their patients to limit intercourse at the very end of the pregnancy. Also, there have been risks described when cunnilingus is performed, and air is introduced into the vagina. This air can theoretically pass into the bloodstream and cause a blockage in a major blood vessel. This is called an air embolus and can be quite dangerous.

Communication between partners is as important as that between patient and physician. Levels of sexual desire can increase or decrease during pregnancy. Many women experience increased desire, possibly due to hormones or improvements in diet and exercise. Many men find their pregnant partners to be quite attractive. The pregnant form with its full curves is attractive to men. As well, changes in your skin often make your complexion "glow". Women who do not feel this increase in sexual energy should not feel concerned, however. Many factors affect your level of sexual desire---fatigue, body image, preoccupation with career and children, et cetera. The most important thing is to communicate openly your feelings with your partner.

Intercourse during pregnancy changes by necessity as pregnancy advances. When you start to "show", it will become more difficult to assume the man-on-top position. You might have to modify this position to have yourself on top or on your side. Physicians discourage activities in general where you lie flat on your back after this point in pregnancy. This position can compromise blood flow in your body by allowing the enlarged uterus to press down on some major blood vessels.

For those couples who are unable to engage in intercourse, many other forms of sexual gratification exist. Even more simple activities such as caressing often provide significant intimacy and satisfaction during pregnancy. Again, it is most important to discuss openly your feelings with your partner, and your concerns with your physician. This will help you to add further enjoyment to your pregnancy experience.

EXERCISE DURING PREGNANCY

While we discourage dieting and weight loss during pregnancy, we strongly encourage regular exercise. Those who have not exercised prior to pregnancy and those who are overweight, should ease into a routine gradually.

The benefits of both aerobic conditioning (walking, swimming, aerobic floor exercises et cetera) and muscle toning exercises are substantial. Being in "good shape" is beneficial during the laboring process. It also can reduce nagging symptoms of leg pain, swelling, joint pain and backache. As well, it helps to counteract the insatiable appetite that accompanies pregnancy, thus preventing excessive weight gain. It improves sleep, posture, self- image, and reduce your risk for gestational diabetes.

Your body will undergo many temporary transformations to accommodate your new passenger. Your blood volume will increase by about forty percent and your heart will work harder to pump this extra blood supply. Your heart rate at rest will increase from about seventy beats per minute to about eight-five beats per minute. Your lungs will also adapt to obtain an increased oxygen supply mainly by increasing the depth of your breathing. Your muscles and joints will also comply with the demands of your unique condition. As pregnancy progresses your joints become more relaxed. As well, your lower back will incur more strain, and your hips and pelvic bones will be strained by their progressive instability.

The good news is that safe guidelines for exercise in pregnancy have been established. Women who should consult me about the risks of exercise in pregnancy include those with the following: high blood pressure, a history of premature labor, a history of intrauterine growth restriction in past or present pregnancy, a history of toxemia {preeclampsia), an irregular heartbeat, asthma, chronic lung disease, twins, severe anemia, illicit drug use, severe heart disease, uncontrolled thyroid disease, a placenta previa, or an incompetent cervix. If you are unsure as to whether these conditions are present, you should ask about them prior to initiating an exercise routine. For those who are not restricted, a program should consider not only your history, but also how far in pregnancy you are. Some activities such as horseback riding, surfing, water-skiing, contact sports, scuba diving, body building, mountain climbing, sky diving, racquetball, whitewater rafting, and ultramarathon running should be avoided. These sports involve high impact, high acceleration, heavy loads, sudden movements or ballistic movements. In general, moderate aerobic exercises such as walking, swimming, cycling and cross-country skiing are ideal. Muscle toning and strength training of upper and lower extremities is also valuable.

Women should exercise at least three times a week, for fifteen to thirty minutes each time. Exercise while lying on the back should be avoided after the first trimester as this can compromise blood flow. While exercising you should be able to speak normally. If you are out of breath, you are probably overdoing it. Your heart rate should not exceed about 150 beats per minute. You should not feel totally exhausted when your workout is finished. Your activities should be low impact (one foot on the ground at all times).

Weight bearing exercises such as weightlifting are safe in moderation. After twenty weeks of gestation, however, you are more susceptible to muscle and ligament strains. Activities requiring agility, balance, strength and timing become unsafe in the third trimester. Should you experience any of the following symptoms while exercising, you should stop your activity immediately: an abrupt decrease in fetal movement, regular strong contractions, leaking of fluid, pain in your hips or back or pelvis or abdomen, generalized swelling, shortness of breath, chest pain, weakness or palpitations.

Good luck to you. We'll be here to cheer you on to the finish line!

A physical therapist who was pregnant recommended this to me:
Exercising Through Your Pregnancy by James F. Clapp. (1998) *Available through Amazon.com*

NUTRITION IN PREGNANCY

I would like to invite you to sit down and have a meal with me. The purpose of this meal, however, is not to feed your stomach. This meal is intended to feed your head. I want you to completely digest the following material. It is, after all, high in nutrition and totally free of calories.

In one sense, you are eating for two (or more if you have twins) now. Your baby is totally dependent on you for his or her nutrition and is relying on you to make good choices concerning nutrition. If in the past you have not been one to count fat grams or calories, or if you have developed habits such as smoking or drinking, perhaps now is the day of reckoning for the sake of the health or your baby (and yourself, of course).

The detrimental effects of smoking, alcohol and drugs are well-documented. They may cause impaired fetal growth in many different ways. Cocaine, amphetamines, and alcohol can all be associated with less desire to eat and thus can lead to malnutrition. Alcohol can impair the absorption of other nutrients and inhibit the transport of nutrients to the pregnancy. As well, alcohol can cause birth defects. While heavy alcohol use is definitely associated with more severe defects, how much alcohol is "safe" to your pregnancy is unknown. Cigarette smoking affects vitamin C and thus increases your requirements during pregnancy. Cigarette smoking during pregnancy is like living at an altitude of about two thousand feet above sea level. It chokes off the amount of oxygen that your baby can derive from your blood. Smoking and other drug uses are associated with pregnancy losses. Therefore smoking, alcohol, and street drugs should be eliminated from pregnancy. If you are having trouble quitting these habits, you should bring this immediately to my attention.

In another sense, however, you are not eating for two. If we look at calories, your requirements when not pregnant might have been around 2500 calories per day. A pregnancy increases your daily requirements by about 300 to 500 calories per day. As anyone who counts calories can tell you, that is not very much. In the end, this relatively small increase in calories will result in an average weight increase of 25 to 35 pounds. Approximately seven of these pounds will be added to your weight in the form of protein, fat and other nutrient stores. About four pounds of increased body fluids is also produced. Your blood volume increases by about one-half, and this increases your weight by about four pounds. Your breasts account for two pounds of weight gain on average. The uterus increases in size and weight by about two pounds. The fluid around the baby accounts for two pounds, the placenta accounts for two more pounds. Finally, but not least, the baby weighs in at about six to eight pounds on average. As pregnancy advances, the most difficult thing for you to do might be to resist the temptation to eat more than you should. Your appetite, after all, can be ravenous!

At each of your visits I will be weighing you to let you know how you are doing with your weight gain. This is not a form of torture meant to belittle those who are exceeding normal weight gain. After all, it is more important to watch the kinds of foods that you are eating than the absolute amount of weight that you gain. The purpose of weighing you is to offer supportive information to those of you who are gaining more or less weight than is recommended in pregnancy. Some issues concerning weighing you should be discussed. Many times, women come in saying that they can't understand their weight in the office because they weigh so much less at home. While it is important for you to follow your weight gain, you must also realize that all scales will tend to disagree by a small amount. It is only important for us to know your weight as given by the same scale, whether it be the one at home or the one in the office. In that way, any change in weight can be validated. Also be aware that sometimes in pregnancy you might be eating properly and have an excessive weight gain in a single month. In this scenario, we look at your overall weight gain to determine whether this is normal or not. In some cases, this month might represent your body catching up for weight that you had been lacking in previous months. Finally, since we do not ask you to remove all of your clothing to be weighed, it is probably a good rule to try to dress in similar clothing at each visit. This will avoid, for instance, the error in weight that heavy sweaters or boots can produce (This is only a good rule, of course, until the weather changes!).

Nutritional considerations actually start before you become pregnant. If you had a preconception visit, nutrition might have been discussed. It is important that you begin your pregnancy in the best possible physical shape. You should maintain a healthy weight. Regular physical activity is tremendously helpful both before and during pregnancy. If you are overweight, you should attempt to lose weight prior to becoming pregnant. You should, however, do so gradually at a rate not exceeding one or two pounds of loss each week. You should also seek to eliminate habits which are known to be detrimental to pregnancy—smoking, drug use, and alcohol. Any medications that you take regularly should be discussed with us prior to attempting pregnancy. If you have any medical conditions, especially diabetes or high blood pressure, these should be addressed by us immediately. Even before you conceive, it is important that you are provided with essential vitamins and

minerals. This can be achieved through diet or multivitamin supplements. Of particular importance you should receive between one-half and one milligram of folic acid each day through your diet or vitamin supplement. This will decrease your risk for developing certain birth defects in pregnancy.

There are established guidelines for optimal weight gain during pregnancy. These are based on height, weight, and number of pounds above or below your ideal weight that you are prior to becoming pregnant. You can figure out your Body Mass Index, which incorporates these measurements, and then follow your weight during pregnancy by plotting it on the graph provided. This will give you some indication of how you are doing as you go through pregnancy. The recommended weight gain for pregnancy is noted in the chart according to your Body Mass Index. It has been my experience, however, that some women gain more or less than this recommended amount and do very well during pregnancy. Other parameters such as your genetic makeup, your exercise level, your nationality et cetera must be taken into account. That is why, again, you should understand that nutrition is more important than weight gain. If you eat fast foods every day and only gain twenty pounds in your pregnancy, that is obviously not what we are hoping for.

The "skinny" on fat

It's time now to get down to the nitty gritty-what to eat and how much. As a general rule, you should consume between two thousand and twenty-five hundred calories per day. Of these, sixty percent should be complex carbohydrates (things such as cereal, potatoes, and other starches, pasta, rice, beans etc.), no more than thirty percent should be fats (most packaged foods now list calories from fat per serving), and ten to fifteen percent should be calories from protein. Since most of us are not calories or fat-gram counters, we need simple rules to follow. The US Department of Agriculture has created the food guide pyramid for people like us and it gives us general guidelines for eating on a daily basis. The principles provided are good for both pregnant and non-pregnant women. It provides information in terms of servings and provides examples of each food group. It is self-explanatory and is provided for your information.

In general, you should eat a variety of foods. Choose a diet that is low in fat, saturated fat, and cholesterol. Saturated fats increase your risk for heart disease and stroke. They should not contribute more than ten percent of your total calories or one-third of your total fat calories. Saturated fats are found in many foods such as animal fats and dairy products. You should have two or three servings of low-fat meat, fish or poultry. Have two or three servings of low-fat, calcium rich milk products such as low-fat milk, cheese, or yogurt. One cup of milk or yogurt is an example of one serving. Choose a diet with plenty of vegetables, fruits, juices, and grain products. Choose whole-grain products some of the time. Have two or more servings of fruit or juice, three or more servings of vegetables, and from six to eleven servings of grains each day. One slice of bread and one-half cup of rice, fruit, or vegetables are examples of one serving. Use sweets, sugars and soft drinks only in moderation. Use salt and salty foods also only in moderation.

In order to absorb more iron in pregnancy, include meat, poultry, fish or foods rich in vitamin C (foods such as orange juice, broccoli, strawberries). If you cannot eliminate coffee and other caffeinated foods from your diet, you should restrict them to less than 150mg per day. To give you some idea of how much this represents, a cup of coffee contains anywhere from 65mg to 150mg per cup.

Some examples of nutritious snacks and fast foods are provided below. Keep in mind that celery and carrot sticks are excellent snacks to satisfy the urge to chew between meals.

Foods Providing Calcium Not Derived From Dairy Products

Foods equal to about one cup of milk in calcium content:

3oz of sardines (including bones)

Foods equal to about one-half cup of milk in calcium content:

3oz of canned salmon (including bones)

4oz of tofu (processed with calcium sulfate)

4oz of collards

1 waffle (7 inches in diameter)

4 corn tortillas (if processed with calcium salts)

Foods equal to about one-third cup of milk in calcium content:

1 cup of cooked dried beans
4oz of bok choy or turnip greens or kale
1 medium square of cornbread
2 pancakes (4 inches in diameter)
7 to 9 oysters
3oz of shrimp

Foods that can be high in calcium:

Soups made from bones cooked with vinegar or tomato
Macaroni and cheese and other combination foods made with good sources of calcium

Zinc deficiency, when severe, has been associated with birth defects and depression of the immune system. Requirements for zinc are easily met by prenatal vitamin supplementation. Dietary sources of zinc are similar to those which provide iron. If your iron is low, it might also mean that zinc is low and would make taking your prenatal vitamin very important.

Iron requirements are increased in pregnancy to produce increased blood for both mother and baby. Iron levels are monitored through pregnancy and if low iron is noted, iron supplementation is given. While prenatal vitamins and diet provide for some of the increased requirement, extra supplementation in the form of pills or shots is sometimes required. Iron is obtained from both animal and plant sources. Its absorption is increased sometimes by the presence of vitamin C (taking your iron with a glass of fruit juice for example). Do not take your iron or prenatal vitamins with milk, as this can decrease the absorption of iron. Iron can be nauseating or constipating and instead of stopping supplementation, you should let us know about these problems. Some measures are available to counteract these symptoms.

Vitamins

While some people debate whether vitamin supplementations required for pregnancy in this country, it is a common practice to provide it. The adverse effects of vitamin deficiency in pregnancy are well- described. Minerals, such as iron, are also important as their requirements in pregnancy exceed those outside of pregnancy. While all vitamins and minerals are important, those especially important in pregnancy include calcium, zinc, folic acid, and iron.

Some women have problems obtaining adequate calcium during pregnancy. During the first trimester of pregnancy, calcium requirements are lower than they will be later in pregnancy. One gram (one thousand milligrams) is sufficient in the first trimester but should be increased to as much as two grams in the last trimester. Your prenatal vitamin supplement usually provides only two hundred milligrams of calcium.

Your diet, therefore, must provide the rest. If you have lactose intolerance (a condition where dairy products and other lactose-containing foods are not absorbed properly by the bowel) or if you cannot make yourself consume dairy products, there are other ways to get enough calcium. Some antacids contain calcium in relatively large amounts. Low sodium Tums, for example, contains significant amounts of calcium. Chewing two tablets each day is a good way to get calcium. Other sources of calcium are included in the chart above.

Specific Considerations

Diabetes

There are two types of diabetes. The first is the type you have before and during pregnancy. The other is called gestational diabetes. It appears only during pregnancy and resolves after delivery. Both of these forms of diabetes require special dietary considerations. The goal of dietary restrictions is to control the amount of sugar in the blood and produce normal weight gain during pregnancy. Everyone is tested for gestational diabetes with a glucose tolerance test. This is a screening test that involves giving you a certain amount of a glucose drink and drawing blood one hour later to determine your risk for gestational diabetes. Those whose tests are abnormal proceed on to have a three-hour glucose tolerance test. This test involves drinking a glucose drink and having four blood samples drawn- a fasting level before the test starts, and samples from your blood one, two, and three hours after your drink. The three-hour test will diagnose gestational diabetes. Those

who have gestational diabetes often require nothing more than dietary instruction and close monitoring of blood sugars. In rare cases, insulin is required to control their blood sugars.

Lactose Intolerance

This is a condition which prevents normal digestion of lactose. Lactose is a form of sugar found in many dairy products. Women with this condition cannot tolerate regular dairy products and must use special products. Interestingly, this condition sometimes improves during pregnancy and thus attempts may be made to consume some dairy products. Sometimes smaller servings of dairy products, consumed more frequently, are tolerated. Whole milk might be tolerated better than low-fat or skim milk. Taking milk with other foods often helps to avoid symptoms. Yogurt with active, live cultures is often well tolerated. Aged hard cheese such as cheddar cheese is also considerable. Lactase, an enzyme that helps to digest lactose, comes in drops or tablets and can be added to milk. There are also lactase-treated milk and milk products. Cultured buttermilk is also worth trying. If none of these measures are successful, calcium must be obtained from non-dairy sources as previously described

Breast-Feeding

The breast-feeding mother is producing almost a quart of milk each day during the height of breast feeding. Not only does this mean that she is burning up to five or six hundred extra calories each day, but also that her fluid requirements have increased by almost a liter a day. The most important nutrient in milk is calcium, and this is received by the infant in normal amounts whether the mother is receiving adequate calcium or not. This is because the calcium not provided by calcium supplementation is leached from maternal bone stores. Therefore, it is important for mothers to consume 1200 milligrams of calcium each day while breast feeding. It is difficult to achieve this by dietary measures alone and supplementation of calcium is often required. Some women continue to take their prenatal vitamins during the period of breast feeding. Women who follow a vegetarian diet require special consideration when breast feeding. The deficiencies in breast milk produced by vegetarianism must be accounted for and will be discussed when appropriate.

Special Recommendations for Lactating Women

- Avoid diets and medications that promise rapid weight loss.
- Eat a variety of foods.
- Take three or more servings of milk products daily.
- Make a greater effort to eat vitamin-A rich vegetables or fruit often. Examples include spinach or other cooked greens, sweet potatoes, and cantaloupe.
- Drink whenever you are thirsty. You will need more fluid than usual.
- If you drink coffee or other caffeinated beverages, such as cola, do so in moderation. Two servings are unlikely to harm the infant. Caffeine does pass into breast milk.

Caffeine and Aspartame (NutraSweet) During Pregnancy

There has been some controversy surrounding the use of caffeine in pregnancy. Caffeine is found in many foods including coffee and coffee-flavored foods, tea, and chocolate. Some recent data has implicated caffeine, in doses greater than the equivalent of three cups of coffee a day, as a cause of miscarriage. On the other hand, caffeine has not been implicated as a cause of birth defects. Caffeine given in large doses to laboratory animals might increase the potential of other factors, such as radiation, to cause birth defects in those animals. As a general precaution, therefore, it seems reasonable to limit caffeine to the equivalent of three cups of coffee or less each day.

NutraSweet is the brand name for aspartame, which is an artificial sweetener. No evidence exists that this substance is harmful in pregnancy except in the presence of a medical condition called PKU (phenylketonuria). You might not know that you have PKU and perhaps only your pediatrician would be able to tell you. All infants are tested for PKU at birth now. The incidence of PKU is about one in ten to fifteen thousand births. Even in the presence of PKU, however, large amounts of aspartame must be consumed to cause any risk.

Listeriosis

It is always a good idea to clean all surfaces that come in contact with raw foods. These surfaces include cutting boards, plates, knives, and cooking utensils. Proper cleaning and handling can prevent infection with a bacterium called Listeria. Listeriosis is caused by ingestion of the bacterium found in certain foods.

In order to avoid contracting this bacterium the Centers for Disease Control has the following recommendations:

- 1) Thoroughly cook raw food from animal sources.
- 2) Thoroughly wash raw vegetables before eating.
- 3) Keep uncooked meats separate from vegetables, cooked foods, and ready-to-eat foods.
- 4) Avoid consumption of raw (unpasteurized) milk or foods made from raw milk.
- 5) Wash hands, knives, and cutting boards after handling uncooked foods.
- 6) Avoid soft cheeses (Mexican-style, feta, Brie, Camembert, and blue-veined cheese).
- 7) Reheat leftover food or ready-to-eat foods (for example hot dogs).
- 8) Although the risk for listeriosis associated with food from delicatessen counters is relatively low, you might choose to avoid these foods or to reheat cold cuts thoroughly before eating.

TRAVEL DURING PREGNANCY

When advising you about the safety of travel during pregnancy, I must take two things into account. First, I must decide whether there are any risk factors that are present that could complicate your pregnancy. Second, I must decide whether these risk factors would jeopardize your pregnancy more if you were to travel.

Relative contraindications to travel would include: a history of miscarriage; an incompetent cervix; a history of ectopic pregnancy; history of premature labor or premature rupture of membranes; placental abnormalities such as placenta previa or abruption; vaginal bleeding in the current pregnancy; multiple gestations; history of toxemia, hypertension or diabetes with pregnancy; history of infertility; or current pregnancy as first pregnancy at age less than 15 or more than 35 years of age. Women with a history of valvular heart disease or heart failure, history of blood clots, severe anemia, or chronic illness should not travel. Finally, travel to hazardous destinations should also be avoided. High altitude, areas endemic for outbreaks of life-threatening food or insect-borne infections, or areas where live-virus vaccines are required, should be avoided.

If your pregnancy is free of risk factors, you are accepting only a small risk in traveling. That risk is the risk associated with unforeseen complications of pregnancy. For instance, an uncomplicated pregnancy has about a five- percent risk of developing preterm labor. It has about a one- percent risk of developing preterm rupture of the membranes. If you travel, and one of these uncommon events occurs, you are accepting the risk of delayed or insufficient medical attention and the complications that might result.

The American College of Obstetrics and Gynecology considers it safest to travel between 18 and 24 weeks of pregnancy. There is a theoretical concern about travel in an unpressurized airplane cabin at altitudes higher than 10,000 feet above sea level, as this should be avoided. Some authors have suggested avoiding elevations above 7,000 feet above sea level.

If you must travel internationally, I will need to know the country to which you are traveling. Some vaccinations and antibiotics that are required prior to travel cannot be used during pregnancy. It will be important to discuss your risks prior to your departure. Make sure also that your insurance covers you while abroad. If it does not, be sure to obtain a supplemental policy. It is advisable to travel with a companion.

If you decide that you must travel during pregnancy, you should observe the following precautions:

- If you are seated for an hour you should get up and move around to promote normal circulation and discourage blood clots from forming in your legs.
- If you are driving on the highway you should notice the exit signs indicating the location of the nearest hospital. A blue sign with a white "H" often indicates this. In the event that you need to go to the hospital, you will know the exit of the hospital.
- You should make certain that your destination is a town where obstetrical services are available should you need to be seen in an emergency.
- Take my phone number with you in case you need to contact me in the event of an emergency.
- If a cellular phone is available for you, consider taking it on your trip.
- Always wear a seat belt. The shoulder strap should be secure and pass between your breasts. The lap belt should pass beneath the waist and not across it.
- If you are driving the car, observe the speed limits and stay in the lane next to the shoulder as much as possible. In the event that you have a sudden pain, for instance, you will be able to move to the shoulder of the road immediately. You will also avoid the difficulty of looking over your shoulder. As well, since your reaction time might be slower, you will be able to avoid accidents.
- Pay attention to fluid intake and be sure to obtain an adequate amount. This is generally the equivalent of eight to ten eight-ounce glasses of fluid per day. Higher temperature and altitudes require more fluid intake.
- Foreign travel sometimes requires immunizations. Immunizations involving live viruses should not be given during pregnancy. Human immune globulin may be given for protection against hepatitis A infection.
- Iodides, which are sometimes used to purify water supplies, should be avoided since they can pass into the fetal circulation and cause fetal goiter and thyroid gland dysfunction.
- A common admonition is "Peel it. Boil it. Cook it or Don't Eat It".

THE KIDNEYS DURING PREGNANCY

As you will become aware all too soon in pregnancy, your kidneys are behaving differently. In response to the increased blood volume produced by pregnancy, your kidneys are called on to filter more blood. As this blood is filtered, it produces urine, which contains acids and other by products of your body's processes. In pregnancy the amount of urine produced is increased and thus your frequency of urination is increased. More than half of pregnant women urinate greater than seven times during the day. This is more common in women pregnant for the first time. Once this increased frequency is noticed, it tends to progress as pregnancy progresses. Often pregnant women are told that this is due to the enlarging uterus pressing on the bladder, but this is not so. In fact, the reason you urinate more frequently as pregnancy progresses is due to the increasing production of urine by your kidneys. Your kidneys produce, on average, about sixteen ounces more urine during pregnancy than they do when you are not pregnant. About a third of pregnant women will get up during the night two or more times to urinate. Increasing frequency of urination is possibly due to increasing salt and other by products produced during the night in pregnant women.

Bacteria in the urine can be a particular concern during pregnancy. Each pregnant woman is screened for bacteria in the urine by urine culture at the first obstetrical visit. At subsequent visits the urine is screened for the presence of bacteria, among other things. Symptoms of bacteria in the urine, such as burning with urination and pressure in the area of the bladder, can be less pronounced during pregnancy. Risk factors for bacteria in the urine include increasing age, increasing gestational age, and increasing number of deliveries. Bacteria in the urine must be treated, however, even if symptoms are not present. Treatment prevents serious infection of the kidneys, called pyelonephritis, from occurring. Antibiotics given during pregnancy will be safe and effective (Category B) and will be followed with urine culture to demonstrate a cure as necessary.

Some conditions such as sickle cell trait predispose to bacteria in the urine. If high risk situations are present and/or frequent infections are encountered during pregnancy, consideration will be given to using antibiotics on a daily basis to prevent recurrence of infection.

Incontinence, or uncontrollable loss of urine, is experienced by up to half of all pregnant women. In one third of pregnant women this occurs with the "stress" of coughing, bouncing up and down, sneezing, exercising, etc. It is as common in the beginning as in the end of the pregnancy. Once it occurs, however, it does tend to progress as pregnancy progresses. Fortunately, it does regress in up to eighty percent of women after pregnancy. Unfortunately, it does tend to recur and worsen during subsequent pregnancies. Almost half of women who experience incontinence during pregnancy will go on to develop significant incontinence later in life. The difficult delivery of a large infant has been implicated in the development of incontinence after delivery. Whether an episiotomy, or even a caesarean section, is warranted to prevent bladder weakening is debatable. If you have incontinence after delivery, you can expect this to continue to up to three months postpartum. Be aware, however, that the maximal degree of urinary continence will be present in almost all women by about six months postpartum.

Some medical conditions are detected by analyzing the urine of pregnant women. Diabetes, for example, is often detected when urine specimens contain sugar. The presence of sugar in the urine can, however, be normal as the kidneys allow more sugar into the urine during pregnancy. Diabetes is more reliably detected during pregnancy by the blood glucose screening test done normally in the second trimester.

Protein in the urine can signify the development of toxemia. While some normal conditions such as exercise, can be associated with a small amount of protein in the urine, toxemia must always be considered. You won't necessarily feel any different if protein is in your urine, so you probably won't be aware of it. If protein is present in any of your urine specimens, this will be discussed further with you.

Blood in your urine, whether or not it is associated with other symptoms such as pain, is something to discuss at your visits. Blood might be present if you are having vaginal bleeding. In this case, it is not a bladder problem per se. It can also be present if you are passing a kidney stone. Anyone who has had a kidney stone knows that this is most often associated with severe pain in the flank. Blood can also be a sign of a kidney infection or more rarely, kidney disease. In any case, blood in the urine requires particular attention and might require further testing.

Your kidneys are one of the organ systems that work overtime during pregnancy to make certain that changes in your body's function can be accommodated. They do a wonderful job normally and would apologize profusely for any inconvenience that they cause you in the middle of the night!

CHOOSING A DOCTOR FOR YOUR NEWBORN

Choosing a doctor to care for your newborn can be a difficult task. You must first consider the type of physician that you would like to use. Some women prefer a pediatrician, a physician who has trained exclusively in child and adolescent care. You might also choose a family physician or general practitioner because you prefer to have a single doctor to care for the needs of your entire family.

Of primary concern is your confidence in him or her as a physician. You might wish to ask for your physician's credentials. While these are often difficult to interpret, board certification is generally regarded as an indication of quality. Physicians who are board-certified have passed a comprehensive examination after their training programs. You might also ask whether your physician has had a malpractice case decided against him. You should be careful in interpreting this information, however. Some physicians have been involved in cases which occurred during their training periods. In many cases physicians are drawn into malpractice cases simply because their names were signed somewhere on a chart. Also, insurance companies sometimes do not allow physicians to fight frivolous lawsuits, accepting instead to pay the accuser some amount of money to avoid the costs of litigation. If the physician was involved in a malpractice case, simply ask him or her to explain the circumstances of the case.

Beyond the qualifications of your prospective physician, you must consider how comfortable you are when you deal with him. Does your physician communicate well with you and your family? Is it easy to discuss personal issues? Are questions answered to your satisfaction? Are some of your concerns ignored or do you feel rushed? Is the office staff courteous and do they seem to be happy? Is your doctor old enough to consider retirement before your children have grown? Does your doctor take his own call? If not, then how often does he share call? Does he take call for many other doctors? How long must you wait for an appointment? Are there evening hours? How long does it take him to return your call? How long do you wait in the waiting room? If you feel that you need to be seen are you accommodated? Is the waiting room comfortable for you and your sick child? Is there a waiting room for sick children that is separated from the regular waiting room? Are the office and its exam rooms safe for children with trash cans and medical waste receptacles removed from the reach of your children? Are there adequate bathrooms for you and your child which are kept clear? Are sinks or skin antiseptics present in the examination rooms for your physician to clean his hands? These are some of the questions that you should attempt to answer. You might be able to gather some of this information by interviewing your friends about their doctors.

This process can take months to accomplish and you should start early in pregnancy. You will be reminded of the need to choose a pediatrician when you are seen at your first prenatal visit. Should you have difficulty obtaining a list of pediatricians available in your area, you may ask me for help. You may also contact the following national referral services:

The American Academy of Pediatrics Pediatric Referral
PO Box 927
Elle Grove Village, Illinois 60009-0927

The American Academy of Family Physicians
Communications Department
88880 Ward Parkway
Kansas City, Missouri 64114-2729

INSURANCE

There are many different medical plans available to you. I realize that the choices might make the process of obtaining health care confusing and difficult for you and your family. You can appreciate my difficulty trying to sort out all of the various requirements and restrictions imposed by the various plans. As a patient and as a consumer, it has become extremely important for you to become an expert on your particular insurance plan.

To this end, I would like to inform you of the information that is important to me from an obstetrical perspective. You should take the time to find out:

1. Does your plan cover obstetrical sonograms? Under which circumstances are they covered?
2. Has your plan designated a primary care provider for you (usually a family practitioner or an internal medicine specialist but sometimes your gynecologist). If so, you might have to see him or her for concerns not directly related to pregnancy. This is unfortunate since I can care for many of these concerns conveniently during pregnancy. You must obey your plan's rules, however. Please ask you plan if you can come to your obstetrician during pregnancy for conditions not related to pregnancy (back pain, colds, vaginal infections, asthma, thyroid disease, etc.). If you cannot come without a referral, please let me know early in the pregnancy.
3. Does your plan allow you to have a repeat cesarean section if you so desire?
4. How many days are you allowed to stay in the hospital after a vaginal delivery? Be certain to specify when the first day begins. Some plans count the day of delivery as the first day and some plans count the day after delivery as the first day. Some plans determine this based on the time of delivery. For example, some plans will specify that if delivery occurs after nine o'clock P.M., the first day is the day after delivery. Be sure that you know this information well in advance of the time that you enter the hospital.
5. Under which circumstances are you allowed a longer stay in the hospital? Ask for specifics.
6. Does your plan allow for a home health nurse to visit you after you are discharged from the hospital? If so, do you have to notify the insurance company of your desire to have a home health nurse.
7. For how many days are you allowed to stay in the hospital after a cesarean section if there are no complications?
8. If a cesarean section is required, will your plan pay for a doctor to assist your surgeon?
9. Does your plan reimburse for circumcision?
10. Does your plan reimburse for epidural pain relief during labor?
11. Does your plan reimburse for prescribed therapies such as support girdles or support hose?
12. Which blood tests are covered during your prenatal care?
13. Does your plan reimburse for prenatal classes?

You must be pre-certified for your delivery. Our office staff performs the precertification. You should, however, check with me at the time of your thirty-four week visit to confirm that this has been done. If you are scheduled for a cesarean section you must make sure that you are pre-certified for the operation.

SHOPPING FOR YOU AND YOUR BABY

There are three shopping trips that you must take during your pregnancy: shopping for clothes for yourself, shopping for the baby and the nursery, and shopping for the trip to the hospital.

Clothing: You will find yourself shopping for everything from sweaters to dresses to underwear to bras during the course of your pregnancy as you graduate from one trimester to the next. You will be buying the most clothes for the season of your last trimester. If this is during the cold months, you might need heavier clothes. You should consider doing what athletes often do—layering your clothes. The clothes should fit loosely so that you are neither confirmed nor overheated. The layers may be peeled off as the ambient temperature changes. You will be feeling warm to begin with and being trapped in heavy clothing can make you miserable. Your shoes should have good arch support and be very comfortable, particularly in the last trimester when your feet retain fluid and swell. If you are due to deliver in the warmer months, you should wear loose-fitting clothing that prevents excess direct exposure to sun and heat. Sunscreen is also a necessary accessory to your wardrobe. Cotton clothing is the coolest as it "breathes". Maternity bras make more sense in many cases than regular bras. These tend to have more support and wider sides, more elastic back straps and extra hooks so that the tension can be adjusted. If you are going to breast feed, you will want to include a nursing bra towards the end of pregnancy. Buy this bra a bit bigger to accommodate engorgement after delivery. Include the purchase of nursing pads for breast-feeding.

Maternity underwear is also available and can contribute significantly to your comfort. They should have a comfortable elastic band that should fit under the abdomen. Panty hose as well should stretch easily, with the band placed either under or completely above the abdomen. These hoses can sometimes provide support for women with swelling or varicose veins in their legs. They can, however, sometimes trap heat and can be difficult to tolerate during the warmer months.

One of my patients once joked that they should make pants that stretch in the front as well as in the rear! She felt that she was "showing" both in the front and the back.

Baby's Needs

It is good to have an organized plan for buying your baby's necessities. It is always good to start out with just the essentials. You must consider the following purchases in advance of your delivery: a car seat, a crib, a changing table, a bathtub, and a stroller. These will ensure the safety of the ride home and the security of your baby at home. Other purchases to consider would be a monitor, a cradle, a portable playpen, and a bag to hold your baby's necessities on a trip.

Car seats come in two types. The first is a car seat to be used only for your child during infancy, when he or she is less than twenty pounds. This seat will have to be replaced when your child weighs more than twenty pounds. The advantage of this seat is that it fits smaller babies more closely. The disadvantage is that it is later useless and must be replaced by another car seat. The alternative is to purchase a seat that can be used for infants less than twenty pounds, or toddlers weighing more than twenty pounds. For infants the seat is turned to face backwards in the car seat. For toddlers it is rotated to face forward. While it is more economical, it is a compromise and the fit might not be as precise.

The Federal Motor Vehicle Safety Commission approves car seats. Car seats that bear this seal are so approved. The FAA similarly approves infant seats for air travel and a sticker appears on those seats that pass its standard. Infant seats produced after 1981 are required to meet these federal standards. If you have any questions about an infant car seat that you are planning to use, feel free to contact the National Highway Traffic Safety Administration at (800) 424-9393. By the way, some insurance carriers will help to defray the cost of an infant car seat. While this policy might change, it is worth your while to check with your insurance representative about this.

The infant's crib should be comfortable and safe. The mattress should be firm and fit tightly in the crib. The vertical bars of the crib should have spaces no wider than two and three-eighths of an inch apart. The corner posts should rise no higher than one sixteenth of an inch. The bed should have no holes, either on the ends or the sides, in which the baby could become trapped. The height of the mattress should be adjustable; to be lowered as the baby grows. This prevents your baby from climbing or falling out of the crib. The crib should not contain toxic materials such as certain paints. The United States Consumer Product Safety Commission sets the standards with which manufacturers of cribs must comply.

Strollers are often chosen to fit their specific purposes. If the stroller is used for long strolls, sturdy and possibly heavy construction is desirable. The wheels of these strollers tend to be larger and some have suspension for a smoother ride. Strollers that must be transported by car or plane are often of a lighter-weight construction and are collapsible. Be sure that the stroller has some protection from the sun and is appropriate for the surrounding temperature. Some strollers require restraints, so babies don't lean forward and risk falling out of the stroller. Make certain that this restraint is easy to operate and is secure.

A changing table should rest at a height comfortable for you. It should have a border and/or safety strap to prevent your baby from accidentally falling off of the table. It should have shelves to store the baby's diapers, cloths, et cetera so that you can stay close to your baby during diaper changes.

A bathtub should be easy for you to use. Your baby should rest comfortably in the tub without slipping. You might want a tub that fits in your sink securely so that you don't have to bend over so far when bathing your baby. Sometimes it is helpful for the tub to have a drainage plug.

For the Hospital

When you pack to go to the hospital, it helps to be prepared. You will want to bring clothing for yourself, including a nightshirt and/or nightgown. You will need to bring your nursing bras if you plan to nurse.

Bring with these some pads. Bring a comfortable bathrobe and some comfortable slippers to walk in the halls. Bring your toothbrush, toothpaste, brush, soap, shampoo, and other toiletries. Bring some comfortable socks, underwear, and loose-fitting clothing including those for the ride home. Bring sanitary pads and belt in case they are not provided. Bring your own pillow and pillowcase if it will make you rest more comfortably. Bring hard candy to keep your mouth moist and some petroleum jelly or lip balm for your lips. You might want to bring a spray bottle with water to keep your face moist and cool. If you use any medications, you should bring them with you. With the approval of your obstetrician you might be able to continue using them in the hospital. You might want to bring some acetaminophen and nasal decongestant spray.

To ease the discomfort of labor, you might want a rubber ball to roll across your back. You might also bring your own tape player with soothing music. You should bring paper and pencil with phone numbers. You might need change for the phone or a phone calling card. Make sure that any camera you bring has film and batteries and that the batteries are charged. Bring any insurance information and any hospital registration information as necessary.

To be prepared for your trip home have diapers, appropriate clothing and a warm blanket for your baby. Make certain that your infant car seat is secured on the seat of your car.

It is appropriate to assemble your hospital necessities about four weeks before your due date. With the calamity surrounding that trip to the hospital, you will be amazed by your sudden amnesia!

PREGNANCY MONTH BY MONTH

In the following discussion all dates referred to are menstrual dates. Eight weeks, for example, refers to eight weeks from the beginning of your last menstrual period.

This outline is intended to give you information about the changes to you and your baby that would have occurred by the time you come in for your scheduled office visits. It will also explain some of the testing that would be considered at these appointments. It is good practice for you to write down questions that occur to you between visits. I will be happy to address all of them. As always, if you feel that your questions are urgent and require an immediate answer, please call me at any time.

Please scan briefly through this entire section once at the start of your pregnancy and then read pertinent sections in advance of your visits.

Six weeks - Although you have not had your prenatal visit yet, this is an important milestone. The embryo, which measures five millimeters, sits in a sac that measures only three centimeters. The heart has begun to beat. Arms and legs are present only as small buds. The neural tube, which composes the brain and spinal cord, has just closed. Its failure to close results in a neural tube defect and this can be detected in many cases (see Alpha fetoprotein and amniocentesis). Although neural tube defects are rare, folic acid received from an adequate diet or vitamin supplementation can significantly reduce the risk for these defects.

Eight weeks - This is the most common time to have your first prenatal visit. During the visit a thorough history will be obtained. Any significant past medical history will be discussed as well as any risk factors for pregnancy present at this time. A full physical examination will be performed. This will include a routine PAP smear, possibly vaginal cultures for gonorrhea and chlamydia, and possibly a urine culture. Blood will also be taken for a prenatal profile of tests. From this sample your blood type will be determined. A measurement of your iron level will be made. Your immunity to Rubella will be established. A test for Syphilis will be performed. As well, tests for HIV and Hepatitis B will be obtained.

The embryo, as it will be called until ten weeks, measures about two and one-half centimeters. Fingers and toes are present. The period of pregnancy spanning from three to ten- and one-half weeks is a very important period. This is the period of organogenesis. This indicates the period of pregnancy during which structures are being formed. This is also the time when the pregnancy is most susceptible to injury from insults such as medications, toxins, infections, or radiation. During this time, you should avoid exposure to any of these unless absolutely necessary. You should also avoid having x-rays done unless necessary and only then with proper shielding of your pelvis. You should avoid getting a permanent for your hair, avoid getting into any hot tubs and should report any fever or flu-like symptoms to me. You should also alert me to the occurrence of any open sores, particularly those that are painful. This admonition applies throughout the remainder of the pregnancy.

There are three characteristic maternal symptoms during the first twelve weeks of pregnancy. They are often present at this visit. The first symptom is breast swelling and tenderness. During the course of pregnancy your breasts will increase in cup size and you might require a bra that is even two or three sizes bigger than your present one. The breasts in early pregnancy are tender to the touch and very sensitive.

This is one of the ways in which you might first know that you are pregnant. While the breasts will continue to enlarge, the discomfort associated with this is greatest during the first twelve weeks of pregnancy and subsequently decreases. The veins in the breasts will become more prominent and small bumps around the nipple area are sometimes seen. These bumps are referred to as Montgomery's glands and they are perfectly normal. If you feel any other lumps within the breast or armpit area, however, you should mention them at your visit. At this visit I will remind you of the importance of breast self-examination. Although examination is difficult due to breast swelling and tenderness, it remains an important practice even during pregnancy.

The second symptom which occurs is fatigue. You might not comprehend that early in pregnancy this is a common occurrence. You might even think that something other than pregnancy is responsible. While you should discuss at your visits any fatigue that you are feeling, you will often be reassured to find out that this is normal. Work or normal childcare activities might seem increasingly difficult. If you are able to take a rest during part of your day, this would be advised. You

should adjust your work schedule to accommodate this condition and explain your symptoms to others close to you who might become concerned. This symptom seems to resolve commonly by the twelve-week visit. Although some women say that taking prenatal vitamins helps to combat fatigue, the passage of time probably does more to resolve this symptom.

Nausea is the third symptom commonly encountered. This can range from mild nausea in the morning (morning sickness) to nausea and vomiting so severe that dehydration threatens. There is some simple measure to avoid mild nausea and vomiting (see Nutrition During Pregnancy). Attempts should be made to control this symptom without medication if possible. If no liquids can be tolerated by mouth and dehydration is a concern, anti-nausea medication can be considered along with intravenous rehydration in the hospital if necessary. Rarely, other medical conditions such as diabetes or gallbladder disease are responsible. If conservative measures do not control the symptoms you should discuss them at your visit. Nausea subsides often by week twelve, at which time it is often replaced by a ravenous appetite. This is one reason why weight gain is minimal in the first twelve weeks of pregnancy.

You might also experience mild cramping during this period. This is often due to mild contractions of the uterus. Changing hormone levels might also affect your bowel, causing cramping and bloating. Slight discomfort might also be caused by a cystic structure on the ovary that released the egg for fertilization. This structure on the ovary is called a corpus luteum and it plays an important role providing hormonal support for the pregnancy until the placenta develops at around ten weeks. The corpus luteum can sometimes swell to produce a corpus luteum cyst. This cyst, which can sometimes be felt by your doctor at the time of your pelvic examination, resolves on its own by about twelve weeks. It can also be detected on an ultrasound as a fluid-filled "bubble" on the ovary. A cyst that remains after twelve weeks is sometimes caused by a tumor and should be followed carefully. Sometimes these cysts require removal after twelve weeks. If you experience any pain, even though it might be mild, you should discuss this with me. The cause of significant pain should always be investigated.

If you find that you have some spotting, this should also be evaluated. Commonly the cervix softens during pregnancy and can be easily irritated to produce bleeding. Intercourse is one thing that can irritate the cervix and make it bleed. If you have had intercourse within the last day or two and you experience bleeding, you should refrain from having it until the bleeding stops. If you continue to spot you should notify me. Bleeding which comes from the inside of the uterus, presumably from the pregnancy itself, is of greater concern. This is not an uncommon event. It is often quoted that twenty-five percent of all pregnancies are associated with spotting in the first twelve weeks. Of these, approximately half will end in miscarriage. While the cause of the bleeding is rarely identified, it is sometimes evident that chromosomal abnormalities exist or that hormonal support for the pregnancy is deficient. Sometimes a condition that is called a "blighted ovum" exists. In this case the pregnancy test is positive, and the pregnancy develops to a very early stage before it stops developing. As this abnormal pregnancy is faltering some spotting might be noted. For these reasons any spotting should alert you to consult me, as ultrasound, blood testing or other evaluations of this situation might be necessary.

You might wonder at this visit whether you will be scheduled to receive an early pregnancy ultrasound. Ultrasound is discussed elsewhere. However, if you do require an ultrasound for some medical reason such as pain or spotting or to establish an accurate due date, it is important to know what you can expect to see. The ultrasound done at this point in pregnancy is performed in one or both of two ways. The first way involves insertion of an ultrasound probe (about the size of a tampon) into the vagina. This is not uncomfortable. The probe allows small structures in the uterus and ovaries to be closely inspected. This probe does not require filling of your bladder prior to performance of the study. The second scanning method involves the use of a probe that rests gently on the lower abdomen. A gel is spread over the lower abdomen to help to clarify the ultrasound picture. This study does require that your bladder be filled beforehand. A normal pregnancy at this time will appear as a small bean-shaped structure with a "blinking light" within it that represents the heart beating. The pregnancy measures about one-and-one-half centimeters. The pregnancy will sit in a sac, or "bubble" within the uterus. If multiple pregnancies are seen, two or more "blinking lights" will be seen! The embryo at this stage has developed all of its structures during the period of organogenesis, including eyes, a mouth, nostrils, arms, legs and teeth buds. These are not, however, visualized on ultrasound.

At this visit we will remind you that you will need to consider a pediatrician. This is discussed elsewhere (Choosing a Pediatrician). The sooner you decide, the better, for several reasons. If you have a condition arising during pregnancy that involves the management of your baby after delivery, then your pediatrician is often consulted. Second, some pediatricians only allow so many new patients to sign on within a given month. If you wait too long, this popular pediatrician might

become unavailable. Third, you might want to interview several pediatricians in order to decide which one you will use. This often takes some time and you wouldn't want to feel pressured by time to make this important decision.

We will also remind you to consider birthing classes at this time. Some birthing classes, such as the Bradley method, are held throughout pregnancy and early sign-up is obviously necessary. Other classes are held starting at about seven months of pregnancy. Early sign-up is important to ensure that you are able to schedule the class you want on the day that is most convenient to you. These classes often run for several weeks. You are under no obligation to attend a birthing class, however.

The specific requirements of your insurance plan will be discussed with you. It will be important for you to bring to this visit any pertinent information concerning your insurance. Please read the section on insurance elsewhere in this book to help you in gathering this information.

You will be given a prescription for vitamins which you should fill immediately. If you have been taking some form of prenatal vitamin prior to this visit, you should bring the bottle with you to be evaluated by your physician. While vitamins are important supplements to your good nutrition, nausea might prevent you from taking them at this point in pregnancy. Vitamins are discussed in your nutrition handout.

Twelve Weeks - At this visit your prenatal blood work will be performed. This includes your blood type, a screen for antibodies in your blood, a hematocrit to see if you are anemic, a test for rubella virus immunity, a test for syphilis, and tests to detect immunity from or infection with hepatitis, human immunodeficiency virus (the agent responsible for AIDS) or toxoplasmosis. Other tests such as sickle cell screening or a tuberculosis skin test, for example, are performed if indicated. Your consent is required to perform a test for HIV antibodies and your test results will be kept strictly confidential. The results of an abnormal test will be discussed with you.

This visit is unique in several ways. It is the first routine visit at which the uterus can be felt, just above the brim of the pelvis, through the lower abdomen. The fetal heartbeat can also be heard with a special instrument called a doppler. The fetal heartbeat will be heard at each visit from now on using the doppler. At your five-month visit, an instrument called a fetoscope might be used. This instrument works like a stethoscope to receive the fetal heartbeat. The fetal heartbeat can vary from minute to minute. Heart rates in the range between 120 and 160 beats per minute are considered normal. Determination of fetal sex according to heart rate is not considered to be a valid technique.

You should also notice that nausea is beginning to subside. The amount of weight gained up to this point in pregnancy is often two pounds or less. Concerns at this point might include constipation and stretch marks. Constipation is a by-product of the hormonal changes of pregnancy. It is sometimes aggravated by certain medications that you take, including your prenatal vitamins. Advice about measures to relieve constipation is discussed elsewhere in this book. Stretch marks are also commonly encountered in pregnancy. These are wrinkled, irregular streaks in the skin that occur during pregnancy. They can be located anywhere, from breasts to abdomen to thighs or hips or buttocks. While they are most prominent during pregnancy, they do persist in many cases past delivery. Attempts to prevent them or fade them using various creams or lotions have met with varying success and thus are not routinely recommended. What causes these marks is unknown, but they are not thought to be the result of any "stretching" of the skin.

Your baby, which was an embryo until ten weeks, is now called a fetus. The fetus measures between six and seven centimeters. Fingers with nails and early hair follicles are present. The fetus is capable of movement, but this is not perceived by you. Impulses are now traveling through the brain of the fetus. If you had twins, your uterus might be larger than expected and an ultrasound would be ordered at this point in pregnancy.

We will review some information given to you at your last visit including alpha-fetoprotein and triple screening tests. If you have any questions concerning these screening tests, you should address them at this visit. At the following visit, you will be offered these tests and should be prepared to request or refuse them.

Sixteen Weeks - At this visit we will measure the height of the uterus, called the fundal height. We will offer certain screening tests to you. Your blood pressure will be checked, and your urine will be checked, as they will be at each subsequent visit.

The fetus is now twelve centimeters long and weighs about 110 grams. External sex organs can be identified but cannot be reliably identified with ultrasound at this point in pregnancy. The fetus at this point is able to smile, frown, suck, and swallow.

You might be experiencing headaches. For some unknown reason, headaches are common at this time and seem to subside as pregnancy advances. Often the headaches are severe. If you have headaches which are not relieved by conservative measures or mild analgesics such as Acetaminophen (such as Tylenol), you should contact me. You might also feel some lower abdominal sensations often described as "fluttering" or "gas bubbles". These sensations are considered to represent the earliest perception of fetal movement. In the coming month you might experience more distinct kicking sensations. If you have not felt any kicking sensation by your twenty-week visit, you should notify me. This might be a sign that you are not as far along in pregnancy as you have calculated.

"Nose bleeds" can occur during this time and are thought to be caused by elevated hormone levels. Sometimes an easy solution is to smear a thin layer of petroleum jelly (Vaseline for example) in the nostrils. If this doesn't help you should notify me. It might be necessary to investigate the cause of the bleeding.

If your blood counts are low, this is called anemia. In most cases it results from a deficiency of iron in your blood. Your pregnancy demands extra iron, and this is provided by your vitamins. If you are unable to take your vitamins, or the iron is being poorly absorbed, anemia might develop. Anemia is detected by doing a test called a hematocrit, obtained by pricking your finger to obtain a small drop of blood. Anemia is treated by taking iron pills. Iron pills are usually prescribed to be taken twice each day in addition to your vitamins. When taking an iron supplement, be sure to take it between meals and not with coffee, tea, or milk.

Compounds present in many vegetables can decrease the absorption of iron, as can whole grain cereals. Vitamin C (ascorbic acid), which is found in citrus fruits for example, can substantially increase iron absorption. Sources of iron in your diet include both plants and meat. If supplemental sources of iron are unsuccessful in raising your blood count, shots of iron might be necessary. Failure of your blood counts to increase might indicate a type of anemia other than iron-deficiency and should be investigated further.

Skin changes are commonly noted at this stage of pregnancy. They might include an increase in the skin pigment over certain areas of the body, including the face, abdomen, and breasts.

If surgery is required for any reason, for example the removal of a symptomatic gallbladder, this is the time in pregnancy when this is most often performed. Surgery and the use of general anesthesia can lead to miscarriage if performed in the first twelve weeks of pregnancy. They can lead to premature labor and premature delivery if performed in the last twelve weeks of pregnancy. The middle period of pregnancy is therefore considered the safest when surgery is indicated. Fortunately, however, surgery is not often required at any time in pregnancy.

A screening ultrasound is commonly offered between sixteen and twenty weeks of pregnancy. This topic is discussed elsewhere (see Ultrasound in Pregnancy). At this point in pregnancy many organs of the fetus can be evaluated for defects. As well, the due date can be confirmed.

A rare complication of pregnancy is incompetent cervix. This occurs as a result of weakened muscle and supporting tissue within the cervix itself. This weakness can result in thinning, softening and dilation of the cervix prematurely. This process occurs in the absence of contractions and can be difficult to diagnose.

Your only clue might be an increase in vaginal discharge or a sense of pressure in the vagina. If you experience these symptoms you should discuss them with me. (Please note that you should not hesitate to mention any discharge in pregnancy which is increased, has a strong odor, or is irritating to the skin of the vagina.) Likewise, I will discuss any risk factors you might have for incompetence of your cervix at your initial visit. If detected early, a surgical procedure called a cervical cerclage can be performed to support the cervix in hope of prolonging the pregnancy.

Twenty Weeks - Congratulations, you are half of the way to your due date! The fetus now weighs three hundred grams and is sixteen centimeters in length. You can now easily perceive its movement, called quickening. Vernix is now present within the fluid surrounding the fetus. This is a creamy white paste that covers some of the baby's skin from now until delivery. It

is thought that vernix acts as a sort of "skin cream". The teeth buds which formed in the embryonic period are now beginning to absorb calcium. This is one reason why adequate calcium is so important in pregnancy. Calcium requirements are discussed in the nutrition section.

This is the period of pregnancy when certain kinds of discomfort appear. Round ligament pain is a term used to describe the sudden onset of sharp, severe pains that occur in the area of the creases of the thighs. They can occur on one side or the other and can even occur alternately on one side and then the other.

When you are lying in bed and twist or roll over, they can occur. They can also occur while standing or walking. The pain sometimes requires you to sit down or lie down until they go away. They characteristically appear at this time and diminish as the weeks pass. They are called ligament pains because some people think that this pain is a result of stretching of certain pelvic ligaments. No one knows the exact reason for these pains. They do not cause any harm to the pregnancy and nothing more than acetaminophen or other mild analgesic is required.

Another pain that is commonly noticed by pregnant women is one around the umbilicus (belly button). This pain can extend downward toward the lower abdomen. While this pain is common, it is nothing serious.

Pain can also occur in the lower back. The pregnancy is now big enough to shift your center of gravity. It also produces an inward curvature of the lower spine and thus puts stress on the lower back. It affects your stability as well as the way that you walk. If you have been exercising regularly, you will have to be careful not to exceed your back's ability to resist this stress. Lower back support is sometimes required.

Flexing your hips helps to relieve this strain. You might find that your reaction time is slower, your coordination is poorer, and your vision is worse. These are all normal afflictions of pregnancy. It is not advisable to have prescription lenses changed during pregnancy unless absolutely necessary. They might have to be adjusted a second time after delivery when vision returns to its previous acuity. You might also be frustrated by your inability to concentrate and by your deficient memory. This is something too that arrives with pregnancy. It might be a direct result of the pregnancy or might be an indirect result, more directly related to poor sleep patterns and fatigue.

Premature labor should also be considered at this time in pregnancy. This complication of pregnancy is uncommon. While it is known that infection and twin pregnancies can be associated with premature labor, in many cases the cause is unknown. What you will experience is the onset of contractions, which sometimes develop a pattern. If you experience any contractions that appear to be strengthening or develop a pattern, you should contact me. It doesn't matter how many of these contractions occur within a certain period of time.

Twenty-Four Weeks - The middle portion of pregnancy is commonly a time when blood pressure drops slightly. It is also a period when women complain of feeling lightheaded. Be careful that you do not change position from lying to sitting or sitting to standing too quickly, as this can cause a lightheaded sensation. Also be careful to avoid sudden changes in temperature, from air conditioning to heat, or from a hot shower to a cold room, for example. Some women find that certain positions-lying flat on the back or sitting, cause a lightheaded sensation. These are positions in which the enlarging uterus can reduce the circulation of blood to the heart. These positions should be avoided when possible. Pregnant women are often told to spend their nights lying on their left sides. This theoretically displaces the right-shifted uterus to the left, relieving its compression on the blood vessels returning to the heart. While this would seem reasonable, it is impossible for a woman asleep to maintain this position.

This is the point in pregnancy when all women are screened for gestational diabetes. After consuming a glucose-containing drink over a period of ten minutes, you must wait for exactly one hour, not smoking or engaged in any physical activity. After one-hour blood is drawn and sent to a lab for analysis. If the level is abnormally high, then a three-hour glucose tolerance test is performed. While fasting before the one-hour test is not required, the three-hour test requires an overnight fast. Another drink, this time with twice as much glucose, is consumed after which a fasting blood sample is obtained. After one hour, two hours, and three hours blood is drawn and sent for analysis. If two of the blood levels are abnormal, gestational diabetes is diagnosed. The results of your blood tests will be discussed and if the diagnosis of gestational diabetes is made, you will be counseled. Most pregnancies complicated by gestational diabetes require only dietary restrictions and close monitoring of the pregnancy. Fortunately, only about ten percent of patients have an abnormal glucose screening test and

only about three percent are complicated by gestational diabetes. If your screening test is abnormal but your three- hour test is normal, you do have an increased risk for a large baby and should watch your diet carefully.

Your fetus at this point weighs 630 grams and measures twenty-one centimeters. Some fat is being deposited beneath the skin layer. Eyebrows and lashes are fanning. Your baby can cough and hiccup. You might feel the motion associated with this type of activity. This is normal for pregnancy.

Twenty-Eight Weeks - This is the last of your monthly visits. After this visit you will be seen every two weeks until thirty-six weeks.

The fetus is now twenty-five centimeters in length and weighs eleven hundred grams. It also makes breathing movements. Babies who are born this early often survive but are at risk for problems associated with prematurity and low birth weight. The fetus is able to appreciate sounds, but sound is distorted by the fluid in which the fetus lives. Internal sounds such as your heartbeat, as well as some external sounds, can be heard. Your baby can also perceive light.

You might experience leg cramps, especially at night. These cramps are characteristic of the stage in pregnancy and do not result from inadequate calcium intake or lack of exercise. They tend to diminish as pregnancy advances further and require no specific treatment. You might be bothered by hip pain, or the sensation that your hips are trying to "pop out". This can be attributed most likely to the progressive instability of the joints surrounding the pelvis. Sharp pains emanating from the area of the pubic bone "shooting" downward to the vaginal area also occur.

Hemorrhoids are common at this stage. Hemorrhoids represent veins around the anus which have swollen due to increased pressure within them. This pressure comes from within the abdominal cavity or from impedance of blood flow within the veins. Simple measures to relieve the discomfort and swelling of hemorrhoids would include application of a mild hydrocortisone cream preparation such as Anusol or Proctofoam HC. Avoid straining activities such as heavy lifting and take steps to relieve constipation as this can cause straining to have a bowel movement. While hemorrhoids can persist past the time of delivery, they most often decrease in size and become less irritating.

Fluid can leak from your breasts. This fluid is perfectly normal. It might require insertion of a pad into your bra to absorb this secretion.

Swelling of feet and ankles sometimes occurs this early in pregnancy. Swelling of hands is less common. Facial swelling and puffy eyes are not common at all and might raise concern when you discuss this with me at your visit. Swelling is also due to poor blood flow and fluid settles out into the lower parts of your body. The remedy for this swelling is to improve your circulation by lying on your side with feet propped up or by wearing support hose. You should mention any swelling to me, including any related symptoms such as numbness or tingling in your hands. This swelling might also explain some extra weight that you gain in spite of good eating habits.

We will remind you of prenatal classes that will begin around this time. Remember to write down any questions that arise from your attendance of these classes. I will be happy to discuss them at your prenatal visits.

Thirty-Two Weeks - At this point in pregnancy your baby weighs eighteen hundred grams and measures twenty-eight centimeters. At this office visit an attempt will be made to determine the presentation of the pregnancy by feeling your abdomen. Vertex presentation is the most common and occurs when the fetal head is the part of its body that enters the pelvis first. When vertex is the presentation, the fetus tends not to convert to another type of presentation for the remainder of the pregnancy. Breech presentation occurs when the buttocks or legs enter the pelvis first. While breech presentation is fairly common several months before delivery, it is a rare presentation to encounter in labor. Only about four percent of pregnancies reach labor in a breech presentation. There are several types of breech presentations, each describing a different configuration of the lower limbs - lower legs flexed, lower legs extended, both legs fully extended. At this point in pregnancy a breech presentation is of no consequence unless delivery would be required imminently. If the baby persists in this presentation the management of this condition will be discussed.

You will notice less distinct fetal kicking and more "rolling" of the fetus around this time. This is normal but it might be misconstrued as a decrease in movement. You should not be alarmed. If you become concerned about a decrease in movement, you should notify me. I might have you perform fetal kick counts. This is a screening test that you can do at

home to determine whether further evaluation is necessary. There are different methods used but one common method is as follows: lie down on your side with your hand on your abdomen over your uterus. Remove yourself from all distractions. For one hour count the number of times that you feel fetal movement. If this number is five or greater your baby is moving normally. To be reassured, however, you should repeat this test later in the day. If the number is less than five you should call the office immediately.

You might be feeling some contractions at this point. These are true contractions; in that they are caused by uterine muscle contraction. They are not labor pains, however, because they vary in strength, duration and the interval of time between contractions. They will not result in delivery and don't predict when you will deliver. They are called Braxton-Hicks contractions.

By thirty-four weeks some babies will have dropped into the pelvis. This is called lightening. While you might have been experiencing increasing shortness of breath and a feeling that the baby is "kicking your ribs", these sensations diminish when lightening occurs. New sensations such as pelvic pressure and low back ache can replace them, however.

Your blood will be checked for anemia, as it has been checked in the past during this pregnancy. Should you require iron supplementation it will be prescribed for you. At this point some women are interested in discussing donation of their own blood for storage in case of emergency or caesarean section. This is referred to as autologous blood donation. While it has been established that a woman can have withdrawn one unit of blood (about five hundred cc) without jeopardizing her pregnancy, it is not often suggested.

First of all, you must realize that your body has already prepared for some blood loss at delivery by increasing its volume by forty-five percent. Second, blood transfusions are rarely required after delivery by vaginal or caesarean routes. If there exists a complication of your pregnancy that could be associated with excessive blood loss, such as a placenta previa or fibroids, the use of blood products will be discussed with you.

Toxemia, also called preeclampsia, is a complication of pregnancy which should also be mentioned. This occurs in about seven percent of pregnancies, more commonly in black than in white women. It is classically characterized by three signs—the onset of high blood pressure in pregnancy, the detection of protein in the urine specimens, and generalized swelling of the skin (notably the legs, hands and face).

Sometimes toxemia presents with only one of these signs and can be difficult to diagnose early in its course. You should report any symptoms such as headaches unrelieved by mild analgesics or episodes of blurred vision. You might notice swelling, called edema, by a greater than anticipated weight gain since a previous visit. If your skin, when pressed with a finger, retains the indentation, this is a sign of fluid retention within the tissues.

No one knows the cause of toxemia. It is known, however, to be a progressive condition. It can progress from mild to severe and can be associated with seizures, liver damage, and bleeding disorders which can threaten the lives of you and your baby. The treatment for toxemia is delivery of the baby. After delivery the condition reverses. While the greatest risk for developing toxemia is encountered with a first pregnancy, a history of toxemia increases the risk of recurrence several-fold.

Thirty-Six Weeks - The long process of pregnancy might be wearing you a little thin at this point. You are carrying around a baby weighing twenty-three hundred grams (about four and one-half pounds) and measuring forty-five centimeters. From this and a lack of sleep you are exhausted. You are urinating more frequently during the day and night. You might leak urine occasionally. You might be experiencing more heartburn and might be eating less. Your skin might be itching all over. You might be dealing with a rash which is also associated with itching. A vaginal discharge which is white or clear and thick like mucus might appear. A discharge like this can persist throughout pregnancy, getting more copious as delivery approaches. This discharge is normal. If, however, a vaginal discharge is brown or yellow, causes the skin to itch or burn, or has an odor, this is not a normal discharge. These symptoms should alert you to call our office. Further investigation of this discharge might be required.

Passage of a thick lump or "plug" of mucus, often associated with a slight amount of spotting, is commonly referred to as a mucus plug. The passage of this plug occurs in the latter weeks of pregnancy but does not signal that labor or delivery is imminent.

Again, you should be reminded to alert me to the outbreak of any sores during these final weeks of pregnancy, as this can impact on the management of your delivery.

This visit is commonly a time when labor precautions are given. You should call me if you feel that your membranes have ruptured (your water has broken), if you have bleeding that is like a menstrual period, or if you think that you are in labor. It is important to emphasize that any other concerns of yours should be communicated to me, as this is a most important phase of pregnancy.

When your water breaks it will most often result in a sudden gush of fluid from the vagina. The amount of fluid surrounding the pregnancy at this point is about one liter or about one-third of one gallon. You should try to make note of any color or odor to the fluid. If the membranes rupture while the baby's head is firmly descended into the pelvis (this is called engagement), the head might act like a cork to prevent fluid from leaking out. In this scenario it might be difficult for you to differentiate this from a small leak of urine from the bladder. If you are uncertain about the source of any fluid lost from the vagina, you should call me immediately.

Vaginal bleeding can result from many sources. Recent intercourse, a recent pelvic examination, or loss of the mucus plug can be associated with a small amount of bleeding. This bleeding usually resolves within a day in the absence of further provocation. Other vaginal bleeding is more concerning and should be addressed immediately. If you notice bleeding, you should call me at once to discuss the situation further.

The signs of labor are quite variable. Some women experience discomfort arising from the upper abdomen and progressing downward. Some women experience lower abdominal or pelvic pain only. Some experience low back pain. Some women experience only a tightening sensation which they don't perceive as painful. With any of these presentations of labor there is a common sign—a tightening of the uterine muscle which can be felt by pressing on the abdomen over the area of the uterus. In order to appreciate the difference in firmness, let's use another muscle as an example. Stretch out your arm in front of you. Using your opposite hand, press into the large muscle of your upper arm (your biceps muscle). You should be able to indent this muscle quite easily. Now, flex your arm tightly by bringing your outstretched hand up to your shoulder. Again, press on the biceps with your opposite hand. The muscle should be more difficult to compress. This represents a contraction. By applying this principle to the uterus when you are having pain, you should be able to tell if you are having a contraction.

Contractions have characteristic strength, duration and interval. As labor intensifies, the strength of the contractions increases. You might feel that your contractions have become so strong that they take your breath away. As labor intensifies, the duration of the contractions increases so that contractions often last forty-five to sixty seconds from start to finish. Also, as labor intensifies the interval between contractions decreases, becoming more regular. While contractions might begin at ten, fifteen- or twenty-minute intervals for example, they can progress to intervals of five or even three minutes apart. Women who are pregnant for the first time are commonly instructed to call when contractions are uncomfortable, last more than thirty seconds, and have been coming at five-minute intervals (or less) for one and one-half hours. I might modify these instructions if a pelvic exam has revealed that your cervix has ripened significantly, if you live far from the hospital, etc.

These rules do not apply with subsequent pregnancies. Labor can be quite different and often quite a bit more rapid after the first delivery. Often you are instructed to call as soon as regular contractions begin, regardless of the interval. If your first pregnancy was delivered by cesarean section, particularly if little or no labor was involved, the present pregnancy might progress more like a first pregnancy. For other reasons, however, you will be given individualized instruction concerning labor.

If your baby is in breech presentation, this will be discussed with you. A method called external version might be discussed. This technique manipulates the baby by exerting pressure through the abdominal wall and attempts to rotate the baby into a vertex position. Guidelines under which a vaginal delivery might be attempted, and risks associated with vaginal delivery, will be discussed. Finally, cesarean section in association with pregnancies that persist with breech presentation will also be discussed.

At this point in your pregnancy you might be deciding when to stop working. If you have an uncomplicated pregnancy you may continue to work through your pregnancy. On the other hand, the discomfort of sitting or standing all day might be too

much for you now, and you may request a release from work. You may also inquire about a disability sticker for your car so that you may park in handicapped parking areas. This might ease the aggravation of long walks in parking lots.

Forty Weeks - If yours is a pregnancy that reaches this point, you will begin a period which might become frustrating. Now it becomes clear why you were advised to ignore your due date. With each day that passes you will feel that this is extra time, unnecessary time. In fact, your pregnancy might just not be ready for delivery. You should try to convince yourself that these extra days are necessary to prepare your cervix and uterus for labor. With each day that passes, you should believe that your cervix is more ripened. More ripening often means a shorter total labor. Allowing you to continue past this point is safe up to a point. Pregnancies that pass two weeks over their due dates run a risk for bad outcomes. When this point of increased risk begins exactly is debatable. Some doctors will induce labor in patients who pass their due dates as soon as they are inducible (see Labor and Delivery). Some doctors will allow patients to reach forty-one weeks of pregnancy before induction. A minority of physicians will allow their patients to go past forty-two weeks (this is termed a postdate pregnancy). Pregnancies that progress past the due date must be followed closely, sometimes with ultrasound and fetal heart rate monitoring. These evaluations are performed to reassure doctors about the status of the pregnancy. If these tests are not reassuring, then delivery is performed. In many cases high-risk pregnancies are not allowed to pass beyond the due date.

Delivery is performed to avoid a sudden, tragic, loss of the pregnancy to stillbirth.

ANALGESIA

Analgesia is a term used to describe the absence of pain. Anesthesia is a term used to describe the absence of sensation. An analgesic is a medication or other substance that relieves pain. An anesthetic is a substance that relieves sensation. If you have a headache, aspirin provides analgesia. If you have a cut stitched together, anesthesia is used to remove sensation.

To relieve the pain of labor, analgesia can be provided in a number of ways. Medication can be injected either into your muscle (an IM or intramuscular injection) or it can be injected into your vein (an IV or intravenous injection). Intravenous injections are easily administered if you already have an intravenous "line" in place. Examples of medications administered in this way include morphine, meperidine (Demerol), butorphanol (Stadol) and nalbuphine (Nubain). These medications can be given until the cervix is almost completely dilated. After that they are not given. These medications can affect the baby at delivery. Babies can lack the drive to breathe if these medications are present in their blood. If this occurs, a medication called Narcan is given by injection to the newborn. This reverses the effect of the medication in the infant.

One disadvantage of analgesics is that they can produce significant pain relief but lose effect over a few hours. Pain then returns until the next injection takes effect. These medications can also produce drowsiness.

An epidural block can also be used during labor for analgesia. This technique blocks the pain of contractions without affecting the ability of the uterus to contract. It provides a more continuous form of pain relief. It is usually performed when labor is more advanced, at about four or five centimeters of dilation.

Let us consider an analogy. Picture your spinal cord as a carrot sitting in a sock. The sock is filled with fluid and the carrot does not reach the toe of the sock. That fluid is spinal fluid which bathes the spinal cord. The sock is the dura, a tough "sock" surrounding the spinal cord. The dura holds the spinal fluid. An epidural (epi as in "before") is a technique that injects medicine around the outside-of the sock. It does not enter the spinal cord or spinal fluid.

Epidurals can affect labor in three ways. First, an epidural can prolong the latent phase of labor if administered too early in labor. If, however, labor is dysfunctional, sometimes an epidural will help labor to progress. Finally, an epidural can prolong the second stage of labor-the stage of pushing. Pushing requires that a woman feel a sensation of pressure with her contractions. This allows her to verify to herself the effectiveness of her efforts. If the epidural becomes an anesthetic, this sensation is lost. The epidural, if too strong, can also weaken uterine contraction strength.

For a cesarean section, analgesia and anesthesia are required. Interestingly, contractions are blocked by a cesarean section epidural. After surgery, the epidural catheter can remain in place to provide analgesia for one or two days. A small electrical pump will provide medicine continuously. You can press a button on the pump if you need extra pain medicine. The pump will not allow you to give yourself too much medicine. While the epidural is employed, you will be able to get out of bed and walk around. You will carry the small pump, about the size of a wallet, over your shoulder. It remains attached to the epidural catheter, which is taped to your back.

Some women who have vaginal deliveries require no analgesia. They use concentration and breathing techniques to alleviate pain. The brain produces its own analgesics that accumulate as labor progresses. For some women, these natural analgesics suffice to control labor pain. These women might only require a small amount of anesthetic injected into the perineum for an episiotomy. Thresholds for pain vary, however, between individuals. In some cases, the pain of labor exceeds their natural pain thresholds. For these women analgesia is provided.

General anesthesia is given to patients who need emergency cesarean sections. It is also given for those cesarean sections when epidurals are contraindicated. General anesthesia is rarely required. This technique involves the use of anesthetic gases that are passed into the lungs through the trachea or "windpipe". These gases "put the patient to sleep". The anesthesiologist must help the patient to breathe by passing air along with anesthetic gas into the lungs. The patient is unconscious. Her heart continues to beat but she will not be able to hear or see and she will not remember the delivery process.

Local anesthetic blocks are injections of anesthetic solutions into specific areas of the birth canal. Injection of local anesthetic into the perineum, for example, provides anesthesia for an episiotomy. Injection of local anesthetic on the right and left sides of the vagina, close to the left and right pudendal nerves, anesthetizes the nerves. This is used to provide

anesthesia of the lower vagina and vaginal opening. Anesthesia in this area provides pain relief for vaginal delivery whether spontaneous or operative (with forceps or vacuum). This is administered shortly before delivery.

BREECH PREGNANCY

The position of the baby's head in relation to his mother's pelvis is called the presentation. When the head approaches the mother's pelvis first this is called the cephalic presentation. When the head presents away from the pelvis this is called a breech presentation. A transverse presentation occurs when the baby's stomach or back approaches the pelvis.

Most babies are in the cephalic presentation during the last trimester. This is because the baby's head acts like a key searching for a lock (his mother's pelvis). Once the head finds the pelvis, it tends to stay in the cephalic presentation. This is demonstrated by the steady decrease in breech presentations as pregnancy advances. Between 21 and 24 weeks about a third of pregnancies are in the breech presentation. Between 29 and 32 weeks about 15 percent are breech. After 38 weeks only about, four percent are breech.

There are three basic types of breech presentation. The first occurs when the legs are stretched out straight, with feet by the baby's ears. This is called a frank breech and is the most common type of breech. The second type of breech is a complete breech and it occurs when the baby sits with legs crossed in a "squatting" position. The third type of breech is a footling breech, and it occurs when one or both feet dangle down in the pelvis.

A breech presentation is often suspected when I do an examination of your abdomen during the last trimester of your pregnancy. This examination consists of maneuvers, called Leopold maneuvers, which allow me to determine the presentation of the baby. By pressing gently on your abdomen, I can also tell how the arms, legs, and back are positioned. Generally, if a breech presentation is suspected, the type of breech can only be determined by performing an ultrasound.

The treatment of breech presentations persisting after 38 weeks of pregnancy is a matter of debate. The number of breech babies being delivered vaginally has steadily decreased over the last thirty years. This trend has developed because of two important forces. First, younger physicians are not receiving adequate training to allow them to feel comfortable with vaginal breech deliveries. Second, physicians have developed the notion that cesarean sections are safer than vaginal deliveries and produce better outcomes in this high-risk situation. Physicians also feel the legal pressure of having a problem that develops during or after the vaginal breech delivery. Some studies indicate that a breech pregnancy is at a higher risk for neurological problems even before it is born. Some have speculated that this is perhaps why the fetus initially presents as a breech. If this were the case, then the method chosen for delivery would not alter the outcome.

These uncertainties in the value of cesarean section, along with a national movement to reduce the rate of cesarean section, have led to a reconsideration of the technique of vaginal breech delivery. Guidelines have been established to allow certain pregnancies to attempt a vaginal breech delivery at maturity.

Measurement of the maternal pelvis with an x-ray or CT scan or MRI is a prerequisite. This is done to see whether the maternal pelvis is adequately large to allow passage of the infant. The fetal weight is estimated by ultrasound and the position of the infant's head (whether the chin is down on the chest or up away from the chest) is determined. As well, the type of breech is determined. If all of the criteria are met, a vaginal breech delivery may be attempted.

A technique called external cephalic version is also considered whenever a breech pregnancy reaches 37 weeks. This is a technique that attempts to convert the presentation to cephalic by pressing on the abdomen of the mother. After certain ultrasonic parameters are assessed; such as the type of breech presentation, the fetal weight, the amount of amniotic fluid present, the position of the placenta, the position of the fetus, the position of the fetal buttock in relation to the maternal pelvis; employment of this technique will be offered.

There are risks associated with the procedure that must be discussed beforehand. In some cases, it is not wise to perform external cephalic version. The risks of the procedure will be discussed prior to any attempt at version. Remember that a breech fetus has a chance of converting to a cephalic presentation on its own prior to the onset of labor.

External cephalic version is attempted either in the office or in a labor and delivery room. Sometimes a medication is given to relax the uterine muscle prior to the version attempt. The baby's heart rate is monitored for a short period of time. After this, using a lubricant on the abdomen and checking periodically with ultrasound, an attempt is made to turn the baby. The procedure can be uncomfortable because of the pressure felt on the abdomen and within the uterus. It is not intolerable in most cases.

External cephalic version is usually performed at about 37 weeks of gestation. If it is successful and the fetus is thought to be mature, induction of labor can be initiated. If the cervix is unfavorable for induction of labor or the infant is at risk for prematurity, delivery is delayed.

Of interest are other techniques to promote conversion from breech to cephalic presentation. In general, these techniques seem to work by disengaging the breech from the pelvis or promoting increased fetal movement. Having a mother lie with buttocks elevated for several minutes each day is one such technique. Another curious technique from the Chinese is called moxibustion. A burning moxa roll is placed next to the outer corner of the fifth toenail. It seems to promote increased movement of the fetus. This in turn seems to convert some breech presentations to cephalic presentations. Currently it is not employed commonly in the United States (but you can keep your toes crossed and hope)!

The chance of success of a version attempt depends on several factors. If successful, however, the chance is good that the fetus will stay in the cephalic presentation. The benefits of avoiding a cesarean section are obvious and substantial.

LABOR AND DELIVERY

Delivery of the baby involves a coordinated effort between the contractions of the uterus and changes in the cervix. The cervix can begin this process in advance of the onset of contractions. Throughout pregnancy the cervix has served to prevent infection, rupture of membranes and premature delivery. Through processes collectively referred to as cervical ripening, the cervix softens, thins and begins to dilate. The forces that initiate this process are poorly understood but involve changes in the composition of the fibrous and muscular tissues of the cervix. The temporal relationship between ripening and labor is variable, not only from mother to mother but also from one pregnancy to the next. Some women are found to have a cervix that has ripened significantly prior to labor. Some begin labor without significant ripening. About eight percent of pregnancies will reach forty-two weeks of pregnancy without significant ripening or labor. To complicate matters, the ripening sequence of the cervix varies. Often women who are delivering for the first-time experience softening and thinning (called effacement) prior to dilation. Women who have had a vaginal delivery previously are often found to have dilated first. Dilation is measured in centimeters, from zero to ten. Effacement is measured from zero percent, when the cervix is long, to one hundred percent when the cervix is "paper thin".

In an attempt to combine several parameters to assign a cervical ripening "score", the Bishop score is commonly employed. This score ranges from zero to thirteen with a maximum score of three given for the parameters of cervical dilation, effacement, and the level of descent of the baby's head into the pelvis (termed station). Its parameters can all be determined from a pelvic exam. The consistency of the cervix, whether soft or firm, is measured with a maximum score of two. The position of the cervix, whether pointing anterior or posterior, is determined and given a maximum score of two. Women who have scores of nine or more will often have a successful labor resulting in vaginal delivery. The score does not predict when a woman will go into labor on her own. It is also useful to give physicians a standard by which they can compare patients, giving them some idea of how "inducible" a given patient might be.

You might hear mention of a medication called prostaglandin, also known as prostin. This compound is used to increase the Bishop score of patients who are not inducible, but who must be induced for some indication. The prostin comes in the form of a gel, suppository, or pill. Prostin can be placed in the opening of the cervix or in the vagina. Applications of the gel or pill may be repeated. The gel is credited with increasing the Bishop score about three points on average. In some instances, it initiates labor but this is an unpredictable effect. If induction of labor is indicated and the Bishop score indicates inducibility, prostin is not necessary.

The process of labor begins with contractions that start at the top of the uterus. The contractile force progresses toward the cervix. The lower segment of the uterus thins out as part of this process and the force produced propels the baby towards the vagina. Contractions are usually irregular at first but develop a pattern that increases in duration and frequency, decreasing in interval between contractions. To be effective, contractions must reach a certain interval, duration, and intensity.

As you are now aware, your due date is not a good prediction of the date by which or on which you will deliver. In fact, only about five percent of pregnancies deliver on the due date. About half of pregnancies will deliver by the due date.

Labor can be divided into two phases. The first is the latent phase, during which the cervix slowly dilates to four or five centimeters. In first deliveries the latent phase might take up to twenty hours if measured from the onset of labor to the end of the latent phase. In women who have delivered vaginally previously, this phase might last up to fourteen hours.

As the latent phase ends, the cervix begins a phase of more rapid dilation and descent of the baby's head into the pelvis. This is called the active phase of labor. This phase should last less than five hours with first deliveries, less than four hours with subsequent pregnancies.

Labor is also divided into stages. The first stage of labor begins with the onset of regular contractions and ends when the cervix is completely dilated. The second stage of labor begins with complete dilation of the cervix, when maternal pushing is initiated. The second stage ends with delivery of the infant. The third stage of labor describes the period measured from the delivery of the infant to the delivery of the placenta.

Not every labor follows the progression classically described. In some cases, dysfunctional labor occurs. The process of dilation and descent of the baby in the pelvis can become prolonged or arrested. If this arises, I will assess the situation and discuss this with you. If the cause of the dysfunctional labor is thought to be an inadequate pattern of contractions, medication might be given through your intravenous catheter. This medicine is called Pitocin.

Pitocin is a protein that is manufactured and mixed with your fluids. It mimics the action of a protein which is produced by your brain, called oxytocin. Oxytocin is responsible for the natural production of uterine contractions. The concentration of Pitocin in your blood can be varied to produce the intensity and interval of contractions known to affect a normal labor pattern. The intensity, interval and duration of contractions can be accurately monitored after insertion of an intrauterine pressure catheter through the open cervix into the cavity of the uterus.

An intrauterine pressure catheter is a device shaped like a long wire with a small bulb on one end. The end of this wire, when passed into the uterine cavity, transmits any increase of uterine pressure directly to a monitor.

If an adequate contraction pattern has been present or is produced with Pitocin, but arrest if dilation persists, then a vaginal delivery will not be likely. The diagnosis of cephalopelvic disproportion is made. The diagnosis means that the baby's head is unable to pass through the pelvis. This is either because the baby is too large, or the pelvis is too narrow. Occasionally, a normal-sized infant within an adequate pelvis is unable to deliver vaginally. A subsequent pregnancy is then delivered vaginally, raising the question of why the first pregnancy could not deliver. There is sometimes no good explanation for this, unless labor is never determined to be adequate.

When labor has progressed successfully and you are "completely dilated", it is time to start pushing. Your cervix is about ten centimeters dilated, completely effaced, and the baby's head is felt low in the pelvis. The process of labor and final delivery is sometimes accompanied by squeezing pressure on the baby's head. Amazingly, the bones of the baby's skull, which will not fuse together until several months after delivery, will shift to accommodate the narrow birth canal. Over the course of labor this pressure can produce a swelling of the scalp, called caput. This condition persists for a day or two after delivery when it resolves on its own. It doesn't usually cause any problems for the baby.

Pushing involves contraction of abdominal muscles in a coordinated effort with muscles in the pelvic floor (the bottom of the bowl in our anatomical analogy). These forces propel the baby to final delivery. This exercise is similar to the muscular action used to have a bowel movement. If this is your first pregnancy you might require two or three hours of pushing to effect delivery. The use of epidural anesthesia to relieve the pain of labor can be associated with a prolongation of the pushing stage. If you have delivered before, this stage of labor can last up to two hours if epidural anesthesia is employed. Of course, it is possible to achieve delivery more quickly in many cases.

When pushing has caused the descent of the baby's head, the vagina will open to reveal the top of the baby's head. Babies are born when the back of the head passes beneath the mother's pubic bone, which is shaped like an arch. Most babies are born with their faces toward the floor. Some babies are born facing the ceiling. In the latter case these babies can produce "back labor" or contraction pains perceived in the lower back. These pregnancies sometimes require a longer pushing phase. I might attempt to rotate the baby to the more common face-down position in order to facilitate delivery. If this is not possible, the baby can be delivered facing upwards.

If your membranes were not ruptured prior to labor, a number of scenarios can be described for rupture. If labor is proceeding normally; the pregnancy is uncomplicated and no internal monitors on or around the baby are required, you might labor until shortly before delivery with intact membranes. I might rupture your membranes shortly before delivery to check the amniotic fluid for signs of meconium.

Your membranes might also rupture spontaneously in labor, accompanied by a large gush of fluid. Remember that as much as a liter of fluid might be present. Some studies support the notion that rupture of membranes can speed up labor. Artificial rupture of membranes might be suggested to you if your labor pattern is dysfunctional. Prior to rupturing your membranes (which is also known as breaking your water) I will make sure that the baby's head is well descended (engaged) in the pelvis. This reduces the risk for the umbilical cord to drop down to the cervix. If a cord prolapse occurs, it can require immediate delivery by cesarean section. This is not a common event and should not be something about which you are concerned.

Breaking your water might be necessary in order to use an internal scalp electrode. This is an electrical wire attached to the baby's scalp to provide an accurate continuous monitor of the baby's heartbeat. In situations where this is required, an electrode will be carefully applied. Your membranes must also be ruptured to use an intrauterine pressure catheter.

If meconium is present in the amniotic fluid, this will be important to note. Meconium represents the stool that is present in the bowel of the unborn baby. It is thick and green and can stain the amniotic fluid if it is passed. What makes a baby pass meconium is unknown. Its presence in the amniotic fluid at the time of membrane rupture might mean nothing. On the other hand, if there are other signs that the baby is not doing well, meconium might be a sign of distress. At the time of delivery, a specialist might be in attendance to remove meconium from the baby. The mouth, nose, and stomach will be suctioned. The airway will be inspected and suctioned if necessary. All of this is done to prevent meconium, which can pass into the baby's respiratory tract, from lodging in its lungs. Meconium in the lungs can create respiratory problems for newborns. They are watched closely for several hours after delivery and given respiratory support as needed.

At the time of delivery an episiotomy might be required. This incision is made between the vagina and the rectum in an area called the perineum. How large the episiotomy depends on how much room the baby needs to deliver. The baby's head is the largest part of its body. The remainder of its body delivers easily after the shoulders pass beneath the pubic arch. An episiotomy is not part of the routine of delivery but is sometimes required. If an episiotomy is performed, it will be the smallest necessary to accomplish delivery. The episiotomy will be repaired with sutures that dissolve over time. If the baby extends the episiotomy, it will require further repair. Sometimes an episiotomy can extend from the vagina to the rectum, if the baby is very large or if the perineum is small. This is called a fourth-degree extension of the episiotomy. Less extensive episiotomies are called third or second degree, the latter being the most common. In some cases, the infant is delivered without an episiotomy and no tearing of the skin occurs.

This is more common in women who have delivered previously.

After the baby is delivered the umbilical cord is clamped. The baby no longer receives blood or oxygen from the placenta. The baby takes his or her first breath and an amazing transformation occurs. With this breath oxygen fills the lungs and passes into the blood stream. The heart, which has received its oxygen from the placenta for nine months, now must reroute its circulation to the lungs. Some passageways for blood through the heart and around the lungs are opened or shut to accommodate this transformation. The blood vessels that coursed to and from the umbilical cord lose their purpose and soon become obliterated.

While the delivery is associated with the loss of the remaining fluid surrounding the baby, separation of the placenta from the wall of the uterus is associated with bleeding. The placenta usually separates spontaneously within several minutes after delivery. The uterus continues to contract, assisting in this process. With gentle traction on the umbilical cord, I will withdraw the placenta from the cavity of the uterus. The placenta is inspected to look for abnormalities. The uterus is able to contract fully, causing the flow of blood from its lining. When it is finished, blood loss will normally total about four hundred cc (almost two cups). Over the next several weeks blood loss will continue, and the uterus will continue to decrease its size. Cramping will accompany this as the uterus contracts.

Women often ask when they should come to the hospital for evaluation of labor. There are three general indications that you should be evaluated: rupture of the fetal membranes, bleeding, or regular contractions.

Let us first discuss rupture of the fetal membranes. This is usually accompanied by a gush of fluid from the vagina. The fluid can be clear or bloody or green. There is usually quite a bit of fluid lost when the fetal membranes rupture. In some cases, a quart of fluid can be lost. Rupture of the membranes does not always occur after contractions have begun. It can also occur with little loss of fluid. If a small amount of fluid is lost, you should do a "tampon test". If you feel that your membranes might have ruptured, first empty your bladder. Then place a tampon gently in the vagina. Finally, rest in bed for about fifteen minutes. When you remove the tampon, check it for moisture. A coating of cervical mucus or discharge does not confirm rupture of the membranes. If, however, the tip of the tampon is wet as if dipped in water, rupture has probably occurred. Admittedly, a small amount of fluid leaking from the vagina can be difficult to evaluate. Sometimes it is nothing more than leakage from the bladder. In other cases, the break in the membranes is small and produces little fluid. If you have any questions after performing the tampon test, please feel free to call.

Bleeding can originate from the dilating cervix or disruption of the placental vessels. If bleeding occurs shortly after a pelvic examination in the office, it is not worrisome. You should rest and observe for increased bleeding. If bleeding increases, you should call me. If the bleeding stops hours after the examination, you should not worry. If you experience bleeding at any other time, you should call immediately. If bleeding is heavy and brisk, you might instead come straight to the emergency room.

Contraction patterns can vary quite a bit from one person to the next. They can also vary from one pregnancy to the next. First time deliveries are often associated with slow labors. If it is your first delivery, you should watch for a pattern of contractions. If contractions come in a pattern, you should time them. Time both the duration and the interval of contractions. If contractions are coming every five to seven minutes apart (or less), please call. These contractions generally last for thirty or more seconds.

When the contraction peaks in intensity, it can take your breath away.

If this is not your first delivery, there is no guidance for calling. Labor might be rapid or slow. It might be painful or almost painless. Therefore, I would have you call when contractions are getting stronger and closer together.

Last but not least, you should call if you have any questions about the above guidelines. This communication can be helpful for me as well as for you.

VAGINAL BIRTH AFTER CESAREAN SECTION (VBAC)

Once a cesarean section has been performed, there is a permanent scar on the uterus. Most often this scar runs "side to side" (transversely), but it might also be "up and down" (vertical). When a subsequent pregnancy occurs, it is complicated by the presence of this scar.

The risk associated with a previous cesarean section scar relates to the time of labor and delivery. An attempt at vaginal delivery after cesarean section is called a "vaginal birth after cesarean" or VBAC for short. The concern during VBAC is that this scar might weaken and open up. The chance that the scar will separate is small, often quoted to occur once or twice in one hundred attempts at VBAC.

Most often the separation of the scar will occur during labor, but it can also occur before labor begins. When the separation of the uterine scar occurs, it can be difficult to diagnose. The signs might include the sudden onset of moderate or severe abdominal pain. If fetal monitors are attached to measure the fetal heart rate and strength of contractions, they might indicate a sudden change in the fetal heart rate and a loss of contractions. These signs, however, are not always seen. Women who have epidural analgesia might not feel the pain of scar separation. A change in fetal heart rate might occur too late to save the baby.

If a separation of the scar occurs, it might not affect the VBAC at all. After a vaginal delivery the obstetrician puts his hand into the uterus and feels the area of the scar. If the scar is separated, patients are observed for signs of increased bleeding. If none is noted, no repair is necessary. If, however, bleeding occurs with separation of the scar, it might be heavy. It might require abdominal surgery to close the defect and stop the bleeding.

If a separation of the scar occurs before delivery, it might produce a medical emergency. In this case the baby and mother might be in danger of injury or death. Heavy bleeding might increase the maternal risks. Meanwhile the baby might be at risk for placental separation and death. Once this situation is recognized time is of the essence to deliver the baby and stop the bleeding. An emergency cesarean section must be performed. This will often require going to sleep for surgery. The baby might be found floating in the abdomen so delivery might require a vertical skin incision. A blood transfusion might be necessary.

The alternative to VBAC is a repeat cesarean section. These are most often scheduled around the time of your due date. Remember that a cesarean section is major abdominal surgery. Some physicians feel that the risks associated with repeat cesarean section are greater than the risks of VBAC. These risks might include the risks of scar tissue formation, infection, bleeding requiring blood transfusion, injury to the bowel or bladder during surgery or injury to the baby. As well, the hospital stays and recuperation period for surgery are much longer than for a vaginal delivery.

It is extremely important that you understand these risks. You will be asked at the start of your pregnancy to consider these risks. I will request your medical records from your previous delivery, if possible, to see whether the uterine scar is transverse or vertical (A vertical scar is a contraindication to VBAC). You will then decide whether the risk of scar rupture is too great for you to allow. If it is, you will be offered a repeat cesarean section. If the risk is not too great for you, a VBAC might be allowed. I often tell my patients that they must consider the incidence of a complication multiplied by its consequence. If the chance of a complication is low and its consequence is great, this might create more concern than a complication whose risk is higher but has less severe consequences.

CESAREAN SECTION

Cesarean section is a surgical technique to effect delivery of the baby through the abdomen. Broadly defined, its indications include conditions where vaginal delivery is impossible or to be avoided. It is performed in a special delivery room. The surgeon, his assistant, and several nurses are required to proceed. An anesthesiologist and his team are present to monitor anesthesia. A team from the nursery, including the pediatrician, is ready to attend to your newborn. Many times, a spouse or other family member is allowed to accompany you to provide support and experience the delivery firsthand.

A cesarean section starts with a skin incision. This incision is either vertical, between the umbilicus and pubic bone, or transverse just above the pubic hairline. Successive layers of the abdominal wall are carefully incised until the abdominal cavity is entered. This cavity contains many organs besides the uterus and care must be taken not to harm them with scissors or scalpel. Entry into this cavity can be made difficult when previous abdominal surgery has been performed. Scar tissue can cement the layers of the abdominal wall together, making dissection difficult. Within the abdominal cavity this scar tissue, called adhesions, can "glue" organs together. This too can make surgery difficult and dangerous. The cause of adhesions is unknown, but factors which promote adhesions include infection and damage to the tissues which compose the organs within the abdominal wall and cavity.

The bladder, which rests against the front of the uterus, must be peeled off of the lower segment of the uterus. The lower segment is the area of the uterus in which an incision is made. It has usually become thinner toward the end of pregnancy. By extending this incision deeper, the cavity of the uterus is opened. It is through this incision that the baby will be delivered.

The amount of blood lost during a cesarean section is generally greater than that lost during a vaginal delivery. Cesarean section losses are anywhere from fifty to one hundred percent greater. This extra blood loss occurs because of bleeding associated with a uterine incision. Also, the placenta is separated from the uterus by the surgeon's hand and this can contribute to blood loss.

The infant is delivered through the uterine incision, its nose and mouth are suctioned, and the umbilical cord is clamped and cut. A sample of blood is withdrawn from the cord, representing a blood sample from the baby. This is sent for some routine tests. The newborn is then passed to the pediatric team for routine or special care as needed.

After delivery of the infant, it is time to put all of the separate layers together. Generally, the process which results in delivery is shorter than the repair process if adhesions and other scar tissue are not obstacles. The uterine incision is closed with sutures, which will dissolve over time. The successive layers of the abdominal wall are also reapproximated with temporary sutures. The skin layer may be closed in a number of ways including suture or stainless-steel staples. There is no difference between the effect produced by staples or suture. Staples are generally removed after a few days with minimal discomfort.

Two advances have made this surgical form of delivery possible-controlled anesthesia and antibiotics. Anesthesia can be either general or regional (such as an epidural). General anesthesia involves putting you to sleep for delivery. Its indications are few such as emergency delivery required in the absence of an epidural block. Epidural anesthesia is discussed elsewhere. You can be awake for your delivery with an epidural, seeing and hearing events surrounding the birth of your baby. After delivery, an epidural can be maintained to provide pain relief. You will be able to walk around and get up to the bathroom. The epidural would be discontinued after a few days, however, as postoperative pain decreased.

Recovery from a cesarean section takes several weeks. You must carefully clean the area around the skin incision. If staples were employed, they are removed prior to your discharge from the hospital. They are replaced by strips of tape (steristrips). The steristrips are then removed about 7-10 days later. It is rare to have any problems with your incision. If your incision becomes red or swollen or opens, you should call immediately. Infection or separation of the incision can occur. If it does, it will require extra care.

In the pages that follow I have included a copy of an article. This article was published in the February 2002 issue of Obstetrical and Gynecological Survey. This editorial proposes that patients might ultimately control the decision regarding cesarean section. This provocative article will undoubtedly stir discussion both within and without the medical community.

FORCEPS AND VACUUM EXTRACTOR USE

Some people are vaguely familiar with the instruments known as forceps and vacuum extractors (vacuums). Prenatal classes discuss their use (so called instrumental deliveries). Patients may have required their use in previous deliveries. Friends and family may have had deliveries requiring either forceps or vacuum.

Most people also harbor negative feelings about their use.

Forceps and vacuums are used to accomplish the same goal. They are intended to facilitate the vaginal delivery of the infant. They do not work in the same way. As a result, your physician decides which instrument is best in a given situation. You should not, therefore, maintain the opinion that only one or the other should be used.

Forceps are a family of metal instruments. Although there are different types of forceps, they all have common features. For instance, they are all made of metal. They all consist of two parts that join together. They are all applied to the sides of the infant's head. Some forceps were developed to improve on previous forceps design. Some were developed for particular situations, such as premature infant deliveries. Again, it is up to your physician to use the forceps that are most appropriate. Sometimes this would be the forceps with which he or she feels most comfortable.

The vacuum extractor is a soft or hard plastic cup attached to suction tubing. It is applied to the top of the infant's head towards the back. A specific degree of suction is then applied to the cup. There are slightly different cup designs. Again, you physician will decide which is most appropriate. Advantages of the vacuum extractor over forceps include easier application, less force applied to the infant's head, less anesthesia is required (in the event that the laboring mother dose not have an epidural), and less maternal tissue injury. Disadvantages of the vacuum include delay in delivery of the infant, an increase in scalp bleeding, a greater incidence of jaundice in the infant, occasional difficulty in maintaining the suction pressure.

There are specific indications for the use of either of these devices. There are also certain criteria that must be met in order to use them safely. If you could otherwise deliver vaginally but can't because of exhaustion, forceps or vacuum might be employed. If the infant's heart rate is not reassuring and a delay in delivery might compromise the infant, forceps or vacuum might be applied. Again, your physician should decide whether an instrumental vaginal delivery is better than a cesarean section in the given scenario.

There are risks associated with the use of forceps or vacuum. It is not clear, however, if the instrument or the labor situation is responsible for certain complications of delivery. For instance, the rate of intracranial bleeding is the same with an instrumental delivery as it is with cesarean delivery of a patient in labor. This would imply that certain difficulties of labor produce complications whether or not instrumental delivery is employed. It is obviously difficult to predict if and when complications will arise.

Difficult vaginal deliveries can be associated with maternal trauma. Extension of an episiotomy involving the anus, or its musculature can result in incontinence of stool. Collections of blood known as hematomas can result in significant blood loss and require extensive repair. Nerve injury to sensory or motor nerves can result in pain or loss of function. Injury to tissues supporting the bladder/uterus/rectum can result in urinary incontinence or descent of the uterus/vaginal walls. Intercourse can be affected by injury or scar tissue in the area of the vaginal opening.

Difficult vaginal deliveries can also be associated with trauma to the infant. Injury to the soft tissues of the scalp can result in bleeding beneath the scalp. Bleeding can also occur beneath the skull bones. It can also occur within the brain. These bleeding complications are not common. If a difficult vaginal delivery is accomplished, the pediatrician will be notified to watch for signs of these complications.

It is worth repeating that delivery of an infant is not always easy. It is sometimes necessary to make a judgment regarding the best way to deliver the infant. Complications do arise whether delivery is spontaneous, assisted by instruments, or accomplished by cesarean section. The skill and good judgment of your physician should comfort you during a difficult delivery. Feel free to discuss concerns you might have about instrumental delivery at any prenatal visit.

CIRCUMCISION

Circumcision is an elective procedure performed on male infants. It is important to stress that this surgery is elective-you decide for your child whether or not to have it performed. Most male infants in the United States are currently circumcised. Most male infants in Europe are not.

Advocates of circumcision have debated that it lowers the incidence of urinary tract infection, penile infections, cancer of the penis, and sexually transmitted diseases which might include HIV. Critics of the procedure cite risks for bleeding, infection of the circumcision site, injury to the penis during the operation, removal of too much or too little foreskin, and scar tissue formation in the area of the surgical excision.

At birth the penis is covered by a hood of skin (the foreskin) which is easily pulled back from the tip of the penis (called the glans). After inspection of the penis and its opening (called the meatus) reveals no deformity, you will decide upon a circumcision. You will be given an informed consent form to sign, indicating that you understand the procedure and give consent to its performance. Since obstetricians, pediatricians, and family practitioners are capable of performing circumcisions, you must also decide whom you will choose to perform the surgery.

The procedure may be done after it has been determined that the baby is without significant medical problems, usually by the first day after delivery. It is preferable that newborn infants not have fed just prior to the circumcision. Newborn infants are routinely given vitamin K injections after birth to enhance their clotting ability, and this is helpful when performing a circumcision to prevent postoperative bleeding.

At the time of circumcision, the infant is placed in a restraint to prevent excessive movement. The penis is cleansed with antiseptic solution and the area is draped with a sterile drape. The use of anesthetic to relieve the pain of circumcision is sometimes used. In some cases, the foreskin is stuck to the glans by filmy adhesions. The surgeon must first free the foreskin from the glans by gently passing a blunt probe between them and moving it around the entire surface of the glans. This is generally not associated with bleeding. After this the foreskin is removed using one of several safe and effective clamps-Mogen, Gomco, or Plastibell. Which instrument is used depends most on the preference of the surgeon and his comfort with the instrument. After the foreskin is removed, the glans and the rim of skin around it are inspected for bleeding. In the absence of bleeding, a gauze with petroleum jelly is applied to the glans. The infant is then watched closely by the nursery nurses for one or two hours. If minor bleeding occurs, it might be stopped with application of silver nitrate to the point of bleeding. If more significant bleeding occurs, a small stitch might be required to control it.

Postoperatively, you will receive instructions from the nursery nurses regarding the inspection, cleaning, and care of the circumcised penis. Of greatest importance is the prevention of infection and scar tissue formation around the area of operation.

BREASTFEEDING

Breastfeeding is regarded by physicians as the best way to feed your infant. The American Academy of Pediatricians recommends that breast feeding start within the first hour of delivery and continue for at least 12 months. Many different aspects of breast feeding make it superior to bottle feeding.

From a maternal standpoint, breast feeding is an integral part of the recovery process after delivery. Breast feeding induces cramping which helps the uterus to contract down to its normal size. The cramping is also associated with a decrease in postpartum bleeding. Breast feeding on demand and exclusively in the absence of menstrual bleeding (amenorrhea) is associated with only a small chance of pregnancy in the first six months after delivery. Breast feeding is associated with a decreased risk for breast cancer, ovarian cancer, and urinary tract infections. Mothers who breast feed also tend to lose weight faster in the postpartum period.

From the infant's standpoint breastfeeding is important to enhance bonding. As well, mother's milk contains cells and proteins which provide important immunity to infection, aid in gut maturation, and digestion of nutrients. Brain development is also aided by the proteins found in breast milk during the first year of life.

Only a small percentage of women are unable to breastfeed. Even women who have had breast implants or a breast reduction operation are most often able to breast feed. Women who plan to breast feed should feel confident that with proper instruction they will be able to breast feed.

At the first prenatal examination the breasts will be inspected to see if abnormalities of the nipples are present. Inverted nipples will be noted. No special preparation of the breasts or nipples is necessary prior to delivery unless inverted nipples are noted. In this case special nipple shields should be worn during the last six weeks of pregnancy in preparation for nursing. These plastic shields have a hole in the center which properly positions the nipple. When breast feeding begins, the shield is only worn between feedings to maintain correct position.

Breast creams need not be applied to the breasts as glands (Montgomery glands) around the nipple produce a moisturizing secretion for the nipple and areola (the pigmented circular area around the nipple).

The breasts increase in size throughout pregnancy. Blood flow to the breasts increases and both ducts and glands in the breast increase. By the beginning of the second trimester the breasts are capable of producing breast milk and begin producing thick milk (colostrum). At the height of milk production almost a liter of milk is produced. This requires approximately six hundred extra calories each day. Protein is required (which should be noted by vegetarians) as well as increased calcium (about 1200mg per day). It is debatable whether increased fluids are necessary.

Suckling results in milk "let down". This occurs as suckling initiates nerve impulses which travel to a gland in the brain which then secretes oxytocin. This protein causes smooth muscle to contract (including the uterine smooth muscle) and causes small muscle cells in the ducts of the breast to propel milk from the glands to the nipple. About twenty-five ducts converge and open upon the nipple.

Soon after the baby is born, often within the first hour after birth, you might want to try and put your baby to your breast. Babies often have strong sucking reflexes established as soon as they are born.

The first milk produced by the breast is called colostrum. It is produced in smaller amounts than subsequent breast milk but is chock full of nutrients and immune factors. It also has natural laxative properties to help your baby pass his or her stools. You will want to attempt feedings frequently at first while paying close attention to your baby's natural tendencies. Some babies are vigorous feeders from birth while some are less aggressive for the first few days. Some babies nurse more frequently (every one or two hours) while some nurse less frequently. During the first three or four days, until your milk "comes in", you should attempt to breast feed every three hours or whenever your baby is fussy. It takes about two hours for your milk supply to be replenished. After four hours, if your baby is asleep, gently wake him.

Try to keep him/her awake by rubbing his/her back or wiping his/her forehead with a cool, damp cloth. They can also vary in the length of time that they nurse. Generally speaking, your baby will empty the breast within six to eight minutes. It is important to try and nurse for ten minutes on the first side in order to obtain the maximum nutrition available in the breast

milk. Burp the baby when switching from the first to the second breast. Then try to feed on the second breast for ten to fifteen minutes. It is important to try to nurse both breasts at each feeding, but some babies will take more interest in one breast than the other. Try alternating the side on which you start feedings. As long as your baby is properly attached and continues to feed, do not stop the feeding or switch breasts.

Proper breast feeding requires that the baby be properly positioned and properly attached to the breast. While there are various acceptable positions, it is important that the baby's head be supported, and his/her body turned so that he/she faces the nipple. This might require that you prop the baby's body up on pillows. Sometimes it is good to undress the baby down to his/her diaper so that he/she doesn't get overheated. Your breast should also be supported while he/she is latching on and during the feeding. This is done by placing your thumb above and four fingers below the areola, well behind the nipple area. The baby should open his/her mouth wide. You can stimulate the rooting reflex of the baby (the baby turns his/her head toward the nipple and opens his/her mouth to begin sucking) by gently stroking his/her cheek on the side toward the breast. It is most important that he/she latches onto the breast behind the nipple on the areola. This will avoid pain and nipple irritation which occurs when babies attach directly onto the nipple. If your baby is producing breast pain by nursing, break his/her suction on the breast and reattach him/her properly.

It is good to try and assess whether your baby is feeding adequately. This is most simply accomplished by counting the diapers when they are full. Your baby should wet one or two diapers each day during the first few days and have two or more bowel movements each day. The stool is usually loose and may be yellow. After breast feeding is well established, he/she should wet six or eight diapers each day. Don't be alarmed if your baby loses some weight during the first few days, as it is normal for your baby to lose up to ten percent of his birth weight. After that he/she will gain at least four to seven ounces per week or at least a pound each month. Much of this weight loss is extra fluid which has accumulated in your baby up to the time of birth.

Sometimes breast feeding requires perseverance. Most problems associated with breast feeding can be corrected with patience. Breasts that become engorged can produce pain, warmth, and redness. Hot compresses applied before breast feeding can open the milk glands and ease discomfort. Massaging the breasts toward the nipples, more frequent breast feeding, and application of cold compresses between feedings can also help to resolve pain from engorgement.

If you have a tender, red, and firm breast that is associated with a fever, be sure to call the office. This might represent a breast infection. While breast infections most often occur within the first seven weeks following a delivery, they can occur at any time. It is important to diagnose breast infection early so do not hesitate to call if you have any concerns about the way that your breasts feel. An antibiotic is often prescribed for breast infections. It is usually taken for ten days. It is important to take all of the prescribed medication.

Sometimes the breast can become infected with yeast. Predisposing factors to yeast infection of the nipple include nipple damage, postpartum antibiotic therapy, and vaginal yeast infection. Babies sometimes acquire a yeast infection in the birth canal. They develop thrush (a white plaque in the mouth) and pass the yeast to the nipple when feeding. The infection is often characterized by severe pain in the nipple, sometimes burning or sharp. The pain sometimes worsens after feedings. There is no test to confirm the infection. There are no definite physical findings on examination of the breast.

Treatment consists of applying a prescribed antifungal cream to the nipples and areolae (the pigmented area around the nipples) after breast feedings. The nipples can be rinsed with water or a solution of one cup of water plus one tablespoon of vinegar. The area is dried, and the cream is applied. This is repeated every three hours or after each feeding. Breast shields can provide relief from painful contact between breasts and clothing.

Often women complain that they are not producing enough breast milk and they become anxious. While you should keep your pediatrician informed if you think that your baby is not receiving enough, this is not a common problem. Avoid, however, using bottles to supplement feedings unless your physician so advises.

Lactation consultants are available to you for home or phone consultation. If you decide to breast feed, you will find it to be enjoyable and richly rewarding for you and your new addition!

Additional sources of information can be obtained from the La Leche League International at (708) 519-7730.

FROM DELIVERY ONWARD – THE POSTPARTUM PERIOD

The recovery from a vaginal delivery is quite different from that from a Cesarean section. After a vaginal delivery, most discomfort arises from the vaginal area, especially if an episiotomy was required. The episiotomy is repaired with sutures that will dissolve over several weeks. The area of the episiotomy between the vagina and anus is called the perineum. For two or three days after delivery, this area can be slightly swollen and tender. Ice packs are commonly applied to this area for eight to twelve hours after delivery, to reduce swelling. After this time, heat is applied to soothe discomfort and speed healing. This is often accomplished using a sitz bath, a warm tub of water with or without an antiseptic solution (such as Betadine) in which you sit. You may continue a sitz bath for ten to twenty minutes and repeat it up to twice a day. Agents containing witch hazel, such as Tucks Pads or Tucks Clear Gel, can be applied directly to the perineum to relieve discomfort. Anesthetics applied to the skin of the perineum, such as Dermoplast or Americaine spray, can also be used. You will also be offered a mild pain medication to relieve discomfort. Some pain medications can sedate your baby if you are breastfeeding. If you are given one of these medications for pain, you should use it after you breastfeed.

When you have had a cesarean section, discomfort arises from the incisions made in the various layers of your body tissues from the skin down to the uterus. The inner layers are repaired with sutures that dissolve as the body repairs the incisions. The skin layer can be closed in a number of ways. Options include stainless steel staples that are removed after a few days, or sutures that can either dissolve or be removed. The quality of the scar that forms is not entirely dependent on the method used to close the skin. The scar is a result of the way in which your body reacts to the surgery. Some women form keloids, which are raised and thickened, sometimes painful, scars. If you are a keloid former, you will sometimes know it from past experience- having your ears pierced, for example.

It takes approximately six weeks for the tissues that have been cut to recover. While the sutures will keep them together during this repair process, unnecessary strain on the incisions should be avoided. Exercises that cause increased intra-abdominal pressure, such as sit-ups or weightlifting, should be avoided. Lifting objects greater than twenty pounds (some doctors suggest not lifting anything heavier than your baby) should likewise be avoided. Climbing stairs or getting up and down from a sitting position or lying position is acceptable only as long as it does not result in significant discomfort. Don't be afraid to ask for the help of those around you if necessary. Resumption of other activities, such as exercise, after delivery are dealt with individually and should be discussed with me.

At the end of the day, if you have exceeded normal levels of activity, your incision pain might increase. You will be given a prescription for pain medication that will be strong enough to alleviate your discomfort. If it does not provide relief, call me. This pain might then need to be evaluated. Some pain prescriptions are narcotic and will make you feel lightheaded. If so, you should avoid activity after taking pain medication. If your pain is less severe, medications such as Tylenol or Ibuprofen can be taken without risk.

Both vaginal and cesarean section deliveries are associated with cramping. For a few days after delivery, cramping can cause significant discomfort. The uterus, which started out about the size of a light bulb, has enlarged and stretched to accommodate a pregnancy. After delivery, the uterus must contract itself back down to its non-pregnant size. This discomfort can be noted after breast feeding, as suckling stimulates uterine contractions. These contractions cause discomfort that often requires pain medication. If you require pain medication for these cramps, try to take it after breast feeding. This will minimize the amount of medication in your breast milk at the time of the baby's next feeding. These contractions are generally felt off and on for several days but gradually decrease in intensity.

Be on the lookout for any pain that is increasing instead of subsiding over the days and weeks after delivery. Increasing pain in the lower abdomen, in the vagina, or pelvic areas as well as in the areas of the episiotomy or cesarean section incision should alert you to call me. Painful urination can signal a bladder infection that can complicate your recovery. An infected incision is often red, tender, and hot to the touch. The skin surrounding it might become tense and the incision might eventually open and drain yellow fluid. At the first of any of these signs, you should notify me.

Postpartum bleeding, called lochia, is also normal after vaginal and cesarean section deliveries. Some blood is lost during the delivery process as the placenta separates from the uterine lining. The average blood lost is about two cups after a vaginal delivery and three cups after a cesarean section. This blood loss does not cause any problems in the postpartum period.

because your body has increased its blood volume by about forty percent (about 70 ounces) over the course of pregnancy. Much of the extra dietary requirement for iron has been directed toward this increase in blood production.

Some deliveries are associated with more than average blood loss. After these deliveries iron can be lower than your body can tolerate, causing nausea, dizziness, and a drop in your blood pressure when standing. Your skin would look pale and your pulse might be higher than normal. Iron pills would be given to you in this situation for several weeks to help restore your body's blood supply. Until the time that your blood supply normalizes, you should be very careful when arising. You should remain seated for several minutes before arising. You might even need assistance walking until you no longer feel lightheaded.

Lochia usually decreases significantly as the uterus becomes firm over the day or two that you remain in the hospital. Over the ensuing weeks it will become a dark red or brown discharge, then a white or yellow discharge. This process can take from two to four weeks. If lochia is not decreasing in this fashion you should notify me. After the cessation of this process new bleeding can occur at any time. Most often this represents a "period", although usually not like the one to which you were accustomed. The number of days that pass before this period occurs can be quite variable and are dependent on whether you are breast feeding. Breast feeding can delay the onset of the period for up to six months after delivery. If a period has not occurred by the sixth month after delivery, you should notify me.

Fever is also a sign not to be ignored. It might signify an infection or other inflammatory process. A temperature rise above 100 degrees should be followed with frequent monitoring. During this period of observation, no Tylenol or aspirin or aspirin-like medicines should be taken. Avoid sipping ice or cold fluids just prior to taking your temperature. If it rises to 100.5 degrees or greater you should call me. Let me know of any other symptoms that you are having such as pain, leg soreness, painful urination, or breast soreness.

General instructions given at the time of discharge from the hospital will also include refraining from inserting anything into the vagina until you are seen for your postpartum visit. This will include tampons or douching. When recovering from an episiotomy or lacerations of the perineum, you should wait at least three weeks after delivery to resume intercourse. Most importantly, if you are not using a reliable contraceptive, intercourse might result in pregnancy during the postpartum period!

If you have intercourse within the first few months after delivery, you might find that the vagina is dry and easily irritated. This is more pronounced if you are continuing to breast feed. The use of a water-based lubricant such as KY Jelly or Astroglide is often helpful until the vagina regains its normal consistency.

Resumption of birth control will be discussed at the postpartum visit, which you will schedule to occur approximately six weeks after delivery. Resuming oral contraceptives while breastfeeding is controversial. Women who are not nursing, however, may resume birth control pills two weeks after delivery. Nursing mothers should wait for four weeks after delivery to begin birth control pills. This is so that the pills will not reduce the milk supply, as they might if started earlier. Diaphragm fitting should be performed after six weeks postpartum to allow the anatomical configuration of the vagina to return to normal.

Showering is permitted any time after vaginal delivery and a day or so after cesarean section, unless you are still feeling unsteady on your feet. While warm water might be soothing it can also cause you to feel slightly lightheaded. Tub baths should be avoided for a few days after delivery except for sitz baths with antiseptic solution mixed into the water. If you have no allergy to iodine, Betadine is a suitable antiseptic.

I always advise new mothers not to begin driving a car for at least two weeks after delivery. It takes at least this amount of time for your pregnant state to revert somewhat to normal. In the meantime, you may sit in a car as a passenger without driving. Before you begin to drive, be sure that you can twist your trunk without discomfort. Also be certain that your reaction times are normal so that if a quick reaction is required, you will be able to respond. Drive in the right-hand lane, don't switch lanes, and observe the speed limit.

If you are planning to breast feed your baby, be sure before leaving the hospital that you understand the proper feeding techniques. Lactation consultation is available to give you additional instruction if necessary. Proper feeding technique will prevent cracked nipples and pain that might lead to infection or cessation of nursing. Be certain that your pediatrician is

aware of any medications prescribed to you so that you may discuss their safety during breast feeding. If you choose not to breast feed your baby, you will probably start to feel your breasts becoming engorged two or three days after delivery. You should then wrap your breasts in a binder made from a tight-fitting bra or Ace bandage until the swelling subsides. You should avoid touching your breasts or nipples since this can stimulate milk let-down. Engorgement will generally subside after two or three days. Compresses and pain medication are sometimes required to relieve pain from engorged breasts.

Hemorrhoids afflict many mothers as a result of the pregnancy and particularly the pushing phase of a vaginal delivery. Swelling of hemorrhoids is sometimes accompanied by significant discomfort and occasionally requires strong pain medication. Hemorrhoids that produce swelling and possibly itching may be treated with hydrocortisone cream 1% which can be obtained over the counter at the pharmacy. This should not be applied any more frequently than twice a day and not for any longer than two weeks. Stool softeners such as docusate sodium (Colace, Dialose) prevent straining during bowel movements. Their use reduces the aggravation of hemorrhoids. If hemorrhoids are causing severe pain unrelieved by conservative measures, please don't hesitate to call me.

Inability to control loss of urine or stool is not uncommon after a vaginal delivery and can be related to the size of the episiotomy, as well as the difficulty encountered while delivering the baby. Normal function of bladder and bowels commonly returns by six weeks postpartum. Incontinence of urine can be improved by doing simple exercises that will be discussed when necessary. Some women will continue to have problems with incontinence and should feel free to mention these to me on or before the postpartum visit.

In the weeks prior to delivery, perhaps you were not sleeping well. After your delivery, the excitement and attention from friends and family might also have prevented you from getting the rest you needed. When you arrived at home with your newborn you were awakened during the night for feedings. You might have been uncomfortable from a cesarean section incision that bothered you at night. You might have had other small children competing for your attention. All of these are reasons why, after a delivery, you might have become extremely fatigued. Awareness of this sleep deprivation is the first step to getting relief. You should adjust your personal goals downward for the time being. Take the opportunity to sleep when the baby is sleeping. Most importantly, don't be afraid to ask for help from friends and family.

It is possible that you will experience a mixture of feelings after delivery. You are happy that the pregnancy has ended and anxious about your new responsibilities. You might also be feeling irritable from a lack of sleep and feeling frustrated by your lack of energy. Your memory might suffer and your ability to concentrate might diminish. You might feel agitation, guilt, and a fear of isolation, uncontrollable mood swings, or crying spells. You might be puzzled by your inability to enjoy activities that used to be pleasurable. Rarely, you might feel a lack of enthusiasm, a sullen mood. While all of these feelings are not what you are expecting, they are not unusual. In its milder form, this constellation of symptoms is called postpartum blues. In its more severe form, it is known as postpartum depression. One out of ten women will experience significant depressive symptoms, usually by the third week after delivery. The cause is unknown but has been attributed to shifts in hormonal levels or deficiencies in certain important proteins. Some women who are at risk include those with a history of postpartum depression (a woman who has had postpartum depression in a previous pregnancy has a risk for recurrence of 25 percent), depression outside of pregnancy, or Premenstrual Syndrome (PMS).

It is often difficult for you to express your feelings to others. Your spouse and family can experience helplessness and frustration. Your awareness of these signals can, however, prepare you to seek professional help.