If you are Pregnant...

An informational booklet on fetal development prepared by the Nebraska Department of Health and Human Services as required by law.

By Nebraska law, this information is made available to you.

If you need more information or have questions please visit with your doctor.

You may call this toll-free number, 1-800-548-2593, for information about assistance through pregnancy, childbirth, and the first years of life. Information about adoption and about services for prevention of unintended pregnancies is also available at this number. You may also use the Nebraska Resource Referral System on the Internet at: www.answers4families.org/nrrs/

Illustrations provided in this booklet: Copyright © www.peggerrity.com

Initial Version 1993
Major Revision 1995
Minor Revision in Format 1998
Illustrations Revised; Minor Revisions in Text 2005
Minor Revisions in Text 2008
Illustrations Revised 2012

TABLE OF CONTENTS

Calculating the length of pregnancy 1

Measuring the length of the embryo and fetus 1

Development of the embryo and fetus
in two-week increments 2

Methods of abortion 21

Complications of abortion 24

Psychological complications of abortion 28

Effects of abortion on future pregnancies 28

Complications of pregnancy 28

Psychological complications of childbirth 31

Calculating the length of pregnancy

There are several ways to calculate the length of a normal pregnancy. Generally, doctors use weeks starting from the first day of the last menstrual period. This manner of calculating the length of a pregnancy will be used in this document. Using this method, a full-term pregnancy lasts 40 weeks.

Measuring the length of the embryo and fetus

One way to measure the length of the embryo and fetus is called crown-rump. The crown-rump measurement is based on the length from the top of the head to the bottom of the buttocks. It does not include the legs, because they do not accurately reflect early rates of growth and development. The crown-rump method of measurement is used in this document.

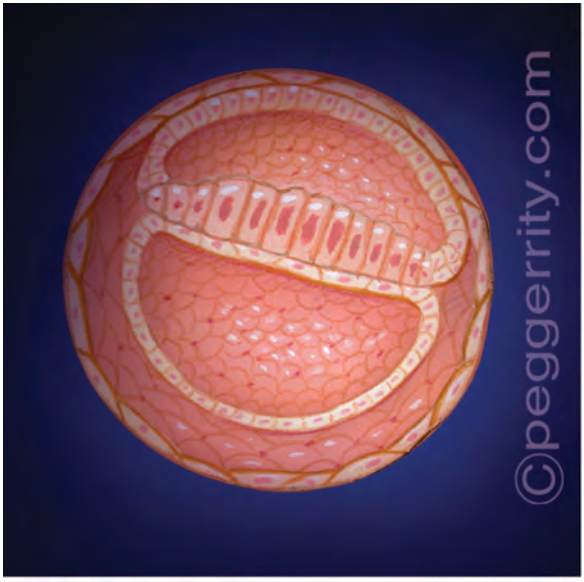
After about 18 weeks of pregnancy, fetal length and weight vary greatly, depending on nutrition, general health and heredity.

Development of the embryo and fetus

The following is a description of fetal growth and development.

3-4 weeks after the last menstrual period

- The female egg has been fertilized by the male sperm and begins to divide and multiply.
- The cluster of dividing cells, called an embryo, nests in the lining of the womb.
- The embryo is too small to be seen.



Size: The embryo is too small to be seen.

5-6 weeks after the last menstrual period

- A yolk sac nourishes the embryo while the placenta and bag of waters begin to form.
- The spine and head are forming.
- The heart is forming and blood circulation begins.
- Bumps appear where arms and legs will develop.
- The embryo is less than one-fifth of an inch in size.

Size: Less than one fifth of an inch.

7-8 weeks after the last menstrual period

- The head is over one-half of the body length.
- The ears and eyes are forming.
- The heart is pumping. The heartbeat is visible by ultrasound examination.
- Internal organs (liver, kidneys, and intestines) are growing.
- The limbs are growing longer.
- The embryo is about one-third of an inch in size.

Size: About one third of an inch.

9-10 weeks after the last menstrual period

- The nose and mouth are forming
- The fingers and toes lose their webbing and become separate.
- Movement can be seen on ultrasound examination.
- The fetus is about one-half to one inch in size.

Note: After 8 weeks of development, the embryo is called a fetus.

Size: One half to one inch.

11-12 weeks after the last menstrual period

- The face is broad and the eyes are widely separated.
- The kidneys are making urine.
- All organs are basically complete but immature.
- The heart beat can be heard.

Size: About 1 to $2^{1}/_{2}$ inches.

13-14 weeks after the last menstrual period

- Bones become solid.
- Joints and muscles allow full-body movement
- The fetus is about $3^1/_2$ inches in length.
- The weight increases from $^1/_2$ to $1^1/_2$ ounces

Length: About $3^1/_2$ inches.

15-16 weeks after the last menstrual period

- The inner sex organs are nearly complete.
- The brain is becoming more complex.
- The fetus is about $4^1/_2$ to $5^1/_2$ inches in length.
- The weight increases from $1^1/_2$ to 4 ounces.

Length: $4^1/_2$ to $5^1/_2$ inches.

17-18 weeks after the last menstrual period

- The head is about $^{1}/_{3}$ of the total body length.
- Myelin (insulation layer covering nerves) begins to form.
- Hair and nail beds begin to form.
- The fetus is about $5^{1}/_{2}$ to $6^{1}/_{4}$ inches in length
- Weight increases from 4 to 7 ounces.

Length: $5^{1}/_{2}$ to $6^{1}/_{4}$ inches.

19-20 weeks after the last menstrual period

- The mother begins to feel fetal movements and kicking.
- The fetus is about $6^1/_4$ to $7^1/_2$ inches in length.
- Weight increases from 7 to 11 ounces.
- Fetuses born before 20 weeks gestation are not able to survive outside the womb.

Length: $6^1/_4$ to $7^1/_2$ inches.

21-22 weeks after the last menstrual period

- Eyebrows and eyelashes begin to form.
- The skin is very thin and red with no fat underneath.
- Blood vessels are easily seen beneath the skin.
- The ears are flat and bend easily.
- The fetus is about $7^1/_2$ to $8^1/_4$ inches in length.
- Weight increases from 11 to 16 ounces.
- Of fetuses born before 23 weeks, about ten percent survive.

Length: $7^1/_2$ to $8^1/_4$ inches.

23-24 weeks after the last menstrual period

- Myelin (nerve insulation) begins to form in the brain.
- The network of nerve connections becomes more complex.
- The fetus is about 8¼ to 9 inches in length.
- Weight increases from 1 pound to 1 pound, 6 ounces.
- The chance for survival outside the womb is about 20 percent (about one in five) at 23 weeks and 55 percent (about 1 in two) at 24 weeks.

Length 8¼ to 9 inches.

25-26 weeks after the last menstrual period

- The sucking reflex begins.
- Fingernails begin to grow.
- The fetus is about 9 to $9^{3}/_{4}$ inches in length.
- Weight increases from 1 pound, 6 ounces to 1 pound, 13 ounces.
- The chance for survival outside the womb is about 70 percent at 25 weeks and 80 percent at 26 weeks.

Length: 9 to $9^{3}/_{4}$ inches.

27-28 weeks after the last menstrual period

- The eyes are partly open and can perceive light.
- Reaction to sound may be observed.
- The fetus is about $9^{3}/_{4}$ to $10^{1}/_{2}$ inches in length.
- Weight increases from 1 pound, 13 ounces to 2 pounds, 3 ounces.
- The chance for survival outside the womb is about 85 percent at 27 weeks and 90 percent at 28 weeks.

Length: $9^{3}/_{4}$ to $10^{1}/_{2}$ inches.

29-30 weeks after the last menstrual period

- The eyes open.
- Cycles of sleeping, turning, kicking and sucking are established.
- The skin is slightly wrinkled.
- The fetus is about 10½ to 11 inches in length.
- Weight increases from 2 pounds, 3 ounces to 2 pounds, 13 ounces.
- The chance for survival outside the womb is about 95 percent.

Length: 10½ to 11 inches.

31-32 weeks after the last menstrual period

- The skin grows thicker and pinker as fat begins to form.
- The body begins to fill out.
- Toenails begin to grow.
- The sucking reflex is coordinated with swallowing.
- Head control is beginning.
- The fetus is about 11 to $11^{3}/_{4}$ inches in length.
- Weight increases from 2 pounds, 13 ounces to 3 pounds, 12 ounces.
- The chance for survival outside the womb is about 95 percent.

Length: 11 to $11^{3}/_{4}$ inches.

33-34 weeks after the last menstrual period

- The ears begin to curve and hold their shape.
- Muscle tone increases steadily.
- The fetus is about $11^{3}/_{4}$ to $12^{1}/_{2}$ inches in length.
- Weight increases from 3 pounds, 12 ounces to 4 pounds, 10 ounces.
- Survival rate outside the womb is about 95 percent.

Length: $11^{3}/_{4}$ to $12^{1}/_{2}$ inches.

35-36 weeks after the last menstrual period

- Scalp hair becomes silky and lays flat against the head.
- Neck muscles can raise the head.
- Trunk muscles can hold the back straight.
- The fetus is about 12½ to 13½ inches in length.
- Weight increases from 4 pounds, 10 ounces to 5 pounds, 5 ounces.
- Survival rate outside the womb is greater than 95 percent.

Length: 12½ to 13½ inches.

37-38 weeks after the last menstrual period

- Arm and leg muscles are flexed.
- Sucking and rooting reflexes are well established.
- Lungs usually are mature.
- The fetus is about 13½ to 14½ inches in length.
- Weight is from 5 pounds, 5 ounces to 6 pounds, 5 ounces.
- Survival rate outside the womb is greater than 95 percent.

Length: 13½ to 14½ inches.

39-40 weeks after the last menstrual period

- The skin is pink and plump with a generous layer of fat underneath.
- The length from the head to the buttocks is approximately 14½ inches (or 19-21 inches from head to toe).
- Weight increases from 6 pounds, 5 ounces to 7 pounds, 6 ounces.
- Survival rate outside the womb is greater than 95 percent.

Length: 14½ inches or 19 21 inches from head to toe.

For a healthy pregnancy…..

There are many things a pregnant woman can do to increase the chances for a healthy birth.

She should:

Seek prenatal care early in the pregnancy, with a first visit as early as possible.

Follow her health care provider's advice about prenatal vitamins, diet, and exercise.

Avoid smoking, including secondhand smoke, use of alcohol and use of drugs.

You may call this toll-free number, 1-800-548-2593, for information about assistance through pregnancy, childbirth, and the first years of life. Information about adoption and about services for prevention of unintended pregnancies is also available at this number.

The following information about abortion procedures, the medical risks associated with each procedure, and the medical risks associated with carrying a child to term is provided as required by Neb. Rev. Stat. § 28-327 to 327.01 (Cum. Supp. 1994).

Methods of abortion

The method of abortion used depends on how far along the pregnancy is and the woman's health. More than 90 percent of all abortions are done in the first 14 weeks after a woman's last menstrual period. Only 1 out of 10,000 is performed after 24 weeks. In addition to the methods described below, there are other, less common methods of abortion. For more information, ask your physician.

Medical Abortion

A medical abortion can occur during the first 49 days (7 weeks) since the last menstrual period. Medical abortion procedures occur in a physician's office during three visits. The timing and steps for the three visits are: Day 1, oral medication given; Day 3, return visit to physician's office, if still pregnant, another medication is given orally or vaginally; and Day 14, return visit to check whether pregnancy has completely ended. If the pregnancy has not ended by Day 14, the physician will talk with the woman about other options including a surgical procedure to end the pregnancy.

Women who have a medical abortion can expect:

- Cramping and bleeding after the procedure.
- Bleeding like a menstrual flow for 9 to 16 days and up to 30 days after the procedure.
- Bleeding may include visible blood clots and tissue.
- About 1 out of 100 women may have bleeding so heavy that it requires a surgical procedure to stop it.

Suction curettage

This type of abortion procedure is used for first trimester abortions, those conducted 6 to 14 weeks after the last menstrual period. The vagina is washed and a local anesthetic is injected into or near the cervix, or general anesthesia may be used. The opening of the cervix is gradually stretched. A tube attached to a suction machine is inserted into the womb and the embryo (or fetus) is removed.

After the suction tube is removed, a curette (a spoon-like instrument) is used to scrape the walls of the womb to be certain that the placenta and the embryo (or fetus) are removed. This scraping is called curettage.

The procedure takes about 30 minutes.

Women who have a first-trimester abortion can expect:

- Cramping during and after the procedure.
- Bleeding like a menstrual flow for several days following the procedure.
- Antibiotics may be prescribed for a few days.

Dilatation and evacuation (D & E)

This type of procedure is used for abortions during the early part of the second trimester (those conducted 14 to 18 weeks after the last menstrual period). The vagina is washed. Dilators (small, tapered segments of absorbent material which expand as they become moist and slowly open the cervix) may be put into the cervix for several hours or overnight.

Intravenous medication may be given to ease pain and prevent infection. A local anesthetic is injected into or near the cervix. If dilators have not been used or expansion is incomplete, the cervix is carefully expanded with a series of smooth tubes. The fetus and placenta are removed from the womb with suction and scraping.

A woman with Rh negative blood will be given an injection of immune globulin to prevent blood incompatibility problems in future pregnancies. The procedure takes about 45 minutes.

Women who have an early second-trimester abortion can expect:

- Cramping during and after the procedure.
- Bleeding like a menstrual flow for several days following the procedure.
- Antibiotics may be prescribed for a few days.

Induction method

This method is used for abortions during the mid-to-late second trimester (those conducted 18 to 24 weeks after the last menstrual period). The induction method is usually carried out in a hospital. Prior to inducing labor, dilators or a hormone gel may be used for up to two days to soften and open the cervix. On admission to the hospital, a hormone suppository may be inserted into the vagina every 3 to 4 hours. As an alternative to hormone suppositories, oral or vaginal misoprostol may be used. A hormone may be given intravenously to cause contractions that induce labor and result in a stillbirth.

The time from the beginning of the procedure to delivery varies greatly. Most women deliver in 10 to 20 hours. Often the placenta does not separate readily and scraping is necessary to completely remove it.

Following delivery and removal of the placenta, intravenous medication will continue for a short time to make certain the uterus has contracted and bleeding is controlled. In rare cases where the induction method fails or cannot be used, surgery is performed to remove the fetus. This is similar to a caesarean section delivery and carries the same risks.

Cold packs and tight wrappings may be used to reduce breast milk production.

Women who have an induction method abortion can expect:

- Cramping while dilators or hormone gel are in place.
- Heavy cramping and labor pains which usually last several hours during the induction and delivery.
- Nausea, diarrhea, chills and fever due to hormone gels.
- An overnight stay in the hospital.
- Bleeding like a menstrual flow for several days following the procedure.
- Breasts may fill with milk a few days after delivery.
- Antibiotics may be prescribed by the doctor.

Possible complications of abortion

The chance for complications depends on many factors. The most important factor is how far along the pregnancy is. Other significant factors include:

- The skill of the physician,
- The kind of anesthesia used,
- The woman's health, and
- The abortion method used.

The types of complications encountered with each method of abortion are discussed in the sections below. Complications can be "immediate" (recognized right away), "delayed" (days to weeks after the abortion) or "late" (months to years later).

Immediate complications are handled during the procedure by the doctor. Delayed complications usually can be treated in the doctor's office or clinic. Warning signs of delayed complications include fever, chills, abdominal pain or tenderness, severe cramping, backache, prolonged or heavy bleeding, foul vaginal discharge, or a delay of six weeks or more in resuming periods. About one woman in 200 is hospitalized because of immediate or delayed complications.

The risk of complications becomes greater the further along in the pregnancy the abortion is performed. For example, at one to six weeks of pregnancy, one woman out of thirteen who gets an abortion will experience complications. At 17 to 20 weeks of pregnancy, one in two women who undergo an abortion procedure will experience some form of complication.

There is a chance for major complications, such as a serious reaction to anesthesia; blood loss requiring transfusion; unintended major surgery; or severe infection and fever. One woman in 1,000 who is one to six weeks pregnant experiences a major complication. A woman who is 17 to 20 weeks pregnant has a risk of one in 80.

The chance a woman will die from complications of a legal abortion is one per 200,000 for first trimester suction abortion procedures; one per 30,000 for second trimester dilatation and evacuation procedures; and perhaps one per 15,000 for inductions.

First trimester abortion complications may include:

- Allergic reactions to anesthetics or other medications.

  About one woman in 5,000 may experience a serious reaction to anesthesia, including high fever, seizures, cardiac arrest, or other life-threatening symptoms. General anesthesia is linked to higher rates of bleeding and perforation of the womb.

  Minor reactions to medications may cause rash, discomfort or mild fever.

- A cut or torn cervix.

  Cervical damage occurs in one in 500 to one in 100 suction abortions. Stitches may be required. There may be increased risk for premature delivery in future pregnancies.

- Perforation of the wall of the womb and/or other organs.

  Perforation of the womb occurs in one in 500 women undergoing early abortions. Serious perforations are usually marked by heavy bleeding and pain. Surgery is needed to repair the damage, and if bleeding cannot be stopped the womb must be removed.

- Blood clots in the womb.

  One women in 100 experiences large clots.

- Incomplete abortion.

  One woman in 300 may retain tissue in the womb. A second procedure is performed to completely empty the womb.

- Heavy bleeding requiring medical treatment.

  After a suction procedure, one woman in 1500 has bleeding severe enough to require a transfusion and possible hospital stay.

- Infection.

  One woman in 150 develops an infection and fever which must be treated with antibiotics. Untreated infections may cause infertility or, in rare cases, be life-threatening and require hospitalization.

Possible complications of a second trimester dilatation and evacuation (D & E) procedure may include:

- Allergic reactions to anesthetics or other medications.

  General anesthesia is linked to higher rates of bleeding and perforation of the womb. About one woman in 5,000 has a serious reaction to anesthesia, which may include high fever, seizures, cardiac arrest and other life-threatening symptoms.

  Minor reactions to medications may produce rash, discomfort or mild fever.

- A cut or torn cervix.

  Cervical damage occurs during one in 90 D & E abortions. Stitches may be required. There may be increased risk for premature delivery in future pregnancies.

- Perforation of the wall of the womb and/or other organs.

  Perforation of the womb occurs during one in 300 D & E abortions. Serious perforations are usually marked by heavy bleeding and pain. Surgery is needed to repair the damage and if bleeding cannot be stopped the womb must be removed.

- Blood clots in the womb.

  One woman in 100 experiences large clots and may require medical treatment.

- Incomplete abortion.

  One woman in 300 may retain tissue in the womb. A second abortion procedure is performed to completely empty the womb.

- Heavy bleeding that requires medical treatment.

  After a D & E procedure, one woman in 400 has bleeding severe enough to require a transfusion and possible hospital stay.

- Infection.

  One woman in 75 develops an infection and fever which must be treated with antibiotics. Untreated infections may cause infertility or, in rare cases, be life-threatening and require hospitalization.

Complications of an induction method abortion may include:

- Reactions to anesthetics or other medications.

In most women, the hormone gel causes chills, low-grade fever, diarrhea and nausea. Other medications may cause rash, discomfort or mild fever. About one woman in 5,000 has a serious reaction to anesthesia which may include high fever, seizures, cardiac arrest and other life-threatening symptoms.

- A cut or torn cervix.

  Cervical damage occurs during one in 200 inductions, most often when curettage is required to remove the placenta. Stitches may be needed. There may be increased risk for premature delivery in future pregnancies.

- Perforation of the wall of the womb and/or other organs.

  Perforation of the womb may occur in one in 300 procedures when curettage is required to remove the placenta. Serious perforations are usually marked by heavy bleeding and pain. Surgery is needed to repair the damage, and if bleeding cannot be stopped the womb must be removed.

- Heavy bleeding that requires medical treatment.

  After an induction, one woman in 300 has bleeding severe enough to require a transfusion or extended hospital stay, and if bleeding cannot be controlled the womb must be removed.

- Infection.

  One woman in 50 develops an infection and fever which must be treated with antibiotics. Untreated infections may cause infertility or, in rare cases, be life-threatening and require hospitalization.

Psychological complications of abortion

Some reports suggest that some women experience reactions such as sadness, grief, regret, anxiety and guilt.

A review of 250 studies conducted on the subject has found that factors which may influence the decision about abortion include: personal values, feelings about abortion, pressure from others, ending an originally desired conception, a decision made late in the pregnancy, or the lack of support by a partner or family.

Effects of abortion on fertility and future pregnancies

Most studies show no impact of first trimester abortion on fertility or subsequent pregnancies. The effect of second trimester abortion is undetermined. Having more than one abortion may increase the risk for future complications such as a premature delivery, especially if the abortions are performed after the first trimester. Abortion complications may cause infertility or reduced fertility.

Complications of pregnancy

Most of the complications of pregnancy can be successfully treated. The risks of pregnancy and delivery are influenced by the woman's age, health, ethnic background, the number of times she has been pregnant, her access to medical care, and other factors. Possible complications of pregnancy include:

- Miscarriage.

  Fifteen percent of clinically recognized pregnancies end in miscarriage. Ectopic (tubal) pregnancies account for 2% of all pregnancies.

- Threatened miscarriage or premature labor.

  One woman in 50 is hospitalized because of heavy bleeding early in pregnancy. One woman in 15 is hospitalized because of premature labor. One woman in 100 is hospitalized for cerclage (stitching the cervix closed to prevent premature delivery). One woman in 10 is put on restricted activity or bed rest to delay delivery.

- Severe nausea.

  One woman in 70 is hospitalized because of severe dehydration and weight loss due to nausea and vomiting during pregnancy.

- Gestational diabetes.

  Two to 5% of women develop diabetes during pregnancy. In most cases (6 out of 10), the diabetes goes away after delivery.

- High blood pressure.

  One woman in 14 develops high blood pressure due to pregnancy and one woman in 20 develops a more serious form of high blood pressure, called preeclampsia or eclampsia. Severe preclampsia/eclampsia can cause liver and kidney failure, clotting problems, fluid or blood clots in the lungs, seizures, stroke and other life-threatening complications. One woman in 70 is hospitalized because of high blood pressure and its complications. One woman in 50 is delivered early due to complications of high blood pressure.

- Kidney and uterine infections.

  One woman in 50 is hospitalized because of severe infections in the genitourinary system.

- Caesarean section.

  One woman in four has a surgical delivery.

- Episiotomy or perineal tear.

  To ease vaginal delivery the mouth of the vagina is snipped (episiotomy) in three of five woman. The cut is stitched and heals in about a week. Less often, the mouth of the vagina may tear and a fissure may open. This also is stitched and usually heals without complications.

- Injury to the cervix.

  Cervical damage occurs during one in 200 vaginal deliveries. Stitches may be needed. There may be increased risk for premature delivery in future pregnancies.

- Heavy bleeding that requires medical treatment.

  Before, during or after delivery, one woman in 80 has bleeding severe enough to require medical treatment.

- Reactions to anesthetics or other medications.

  Medicine given to stop premature labor often causes racing heartbeat, jitteriness and irritability; more severe complications can include accumulation of fluid in the lungs and heart failure. Other medications may cause rash, discomfort or mild fever. About one woman in 5,000 has a serious reaction to anesthesia which may include high fever, seizures, cardiac arrest, and other life-threatening symptoms.

- Infection

  One in 200 to one in 50 women develop an infection and fever which must be treated with antibiotics. Untreated infections may cause infertility or, in rare cases, be life-threatening and require hospitalization.

- Risk of maternal death

  The risk of maternal death (not including deaths due to abortion) is seven per 100,000 live births (1 in 14,000).

Women who are more likely to have serious complications during and after pregnancy are those with reduced access to prompt medical care and those with poor general health and living conditions.

Psychological complications of childbirth

Mild, passing depression ("postpartum blues") occurs in up to 70 out of 100 women, beginning during the first week after delivery and ending during the second week. Up to 10 out of 100 women experience depression of a lingering nature after childbirth. These women usually have a prior history of depression or have other complicating factors in their lives which contribute to their depression.

For more copies.....

Copies of this booklet are available to any individual, facility or hospital for the price of reproduction. If you have questions or would like additional copies, call or write:

Nebraska Department of Health and Human Services
301 Centennial Mall South
P.O. Box 95026
Lincoln, NE 68509-5026
TDD (402) 471-9570
Or toll-free 1-800-548-2593

References are available upon request.

Depa tment of Health & Human Services

DHHS

N E B R A S K A

ADA/AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER