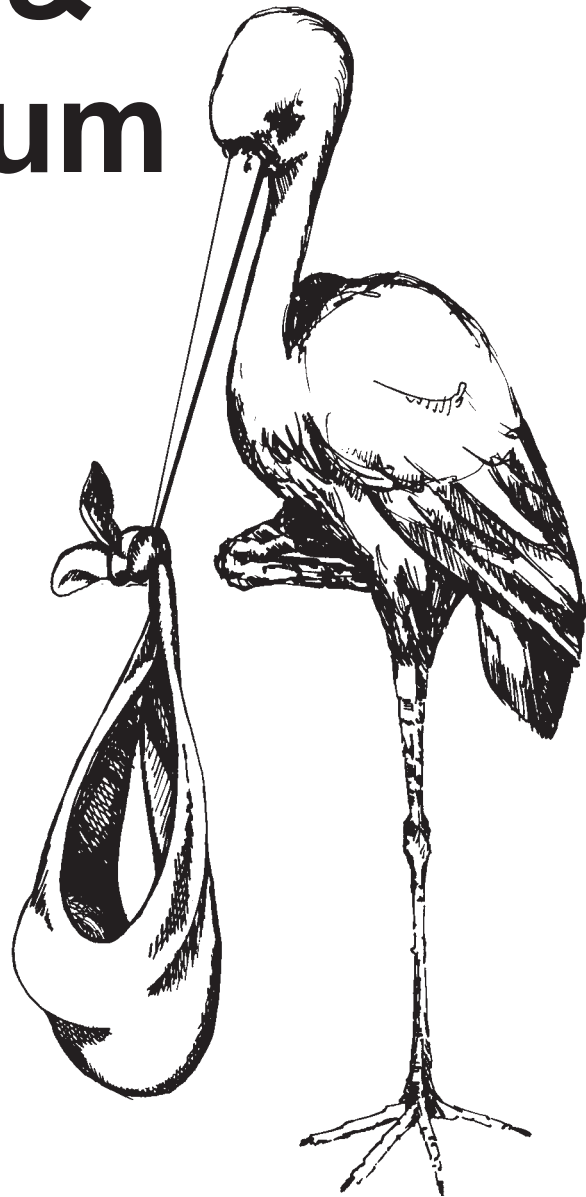


Florida Nutrition Training Guide

Nutrition Education Series

Prenatal & Postpartum Nutrition Module

Revised December 2003



**Florida Department of Health
Bureau of WIC and Nutrition Services**

Introduction to the Prenatal & Postpartum Nutrition Module

for the Supervising Nutritionist and the Staff Member Studying the Module

The *Prenatal & Postpartum Nutrition Module* is part of the *Nutrition Education Series* of the *Florida Nutrition Training Guide*. Other modules in the series are: Basic Nutrition, Infant Nutrition, Preschool Child Nutrition, and Breastfeeding.

The *Prenatal & Postpartum Nutrition Module* consists of the following 3 components:

- the module itself, to be studied by the staff member. The module is the “textbook” which contains information about prenatal nutrition.
- the workbook, to be completed by the staff member. The workbook contains: the self-checks, the answer key to the self-checks, and the practical activity.
- the evaluation materials for the supervising nutritionist. The evaluation materials contain: the answer key to the practical activity, the posttest, and the answer key to the posttest.

Instructions for using the module, the workbook, and the evaluation materials are contained within each of these documents. Staff members, while progressing through the module and workbook, should read all the instructions—in the order in which they are presented—to ensure proper completion of all requirements. The supervising nutritionist should also read the instructions in both the module and the workbook, as well as in the evaluation materials, in order to understand their basic format, his/her responsibilities as a supervising nutritionist, and the appropriate evaluation procedures to use.

The *Nutrition Education Series* of the *Florida Nutrition Training Guide* has been revised and updated to provide standardized nutrition training to staff members such as dietetic technicians and clerical staff (who provide newsletter nutrition education contacts).¹ In addition, this newly revised *Nutrition Education Series* has been developed so that a more diverse audience might also benefit from its use; e.g., entry-level nutrition professional staff, experienced nutrition staff new to public health, or other professional staff such as nurses. (over)

1. Refer to the *WIC Procedure Manual* (DHM 150-24) for complete information and policies regarding which staff members are required to complete the *Florida Nutrition Training Guide* before they are eligible to provide specific nutrition services to WIC clients.

The learning materials in each module of the *Florida Nutrition Training Guide* are developed for individualized, self-paced instruction and are competency-based. In most cases, the staff member will be studying the modules independently, and not in a group setting. The supervising nutritionist should serve as a facilitator, assisting the staff member as needed and evaluating the staff member's performance of specified activities. The study of each module, its workbook activities, and its posttest should take no more than 10 hours to complete. Therefore, the entire *Nutrition Education Series* of the *Florida Nutrition Training Guide* is approximately a 50-hour training program (but, in many cases, can be successfully completed in less time).

If you have any questions about the *Florida Nutrition Training Guide*, please contact the Nutrition Unit, WIC and Nutrition Services, Florida Department of Health at (850) 245-4202.

Instructions on HOW TO DO this Module

1. Read the Knowledge and the Performance Objectives that follow these instructions. These objectives specify what you are expected to learn (Knowledge Objectives) and what you will be expected to do (Performance Objectives) as a result of studying this module.
2. Begin reading and studying the module. This module is designed for individualized instruction. Read the information at your own pace, or according to the timelines established by your supervising nutritionist.
3. Stop when you come to a *Self-Check* section and complete the assigned *Self-Check* questions right away. The *Self-Check* questions can be found in the *Workbook for the Prenatal & Postpartum Nutrition Module*. Request this workbook from your supervising nutritionist; it is yours to work in and keep. The workbook contains the: *Self-Check questions, Answer Key to the Self-Check questions, and Practical Activity*. **Use your workbook to record your answers—please do not write in this module.**
4. After you complete a *Self-Check* section, immediately check your answers against the *Answer Key*, which follows the *Self-Check* questions in your workbook. If you have incorrect answers, re-read the appropriate section of text to find, and then record, the correct answer(s). Then, move onto the next new section in the module.
5. Continue to read and study the module—repeating steps 2, 3, and 4 of these instructions—until you reach the end of the module. At the end of the module, you are asked to do the *Practical Activity for the Performance Objective*.
6. Complete the *Practical Activity*, which also can be found in your workbook. When you complete your *Practical Activity*, submit it to your supervising nutritionist, who will, in turn, grade and evaluate it.¹ If you answer at least 85% of the questions and assignments correctly and completely, this is considered acceptable completion.
7. Arrange for a convenient time to take the *Posttest*, and also for the follow-up conference between you and your supervising nutritionist.¹ The supervising nutritionist will give you a copy of the *Posttest* at the arranged time. The *Posttest* is **not** an open book test.

Note: The *Posttest* measures your mastery of the Knowledge Objectives. Thus, to prepare for the *Posttest*, **especially review the Knowledge Objectives**. Each *Posttest* question is directly related to one of the Knowledge Objectives.

1. **Note to the Supervising Nutritionist:** The *Answer Key to the Practical Activity*, the *Posttest*, and the *Answer Key to the Posttest* can be found in the *Evaluation Materials for the Supervising Nutritionist*.

Objectives of the Prenatal & Postpartum Nutrition Module

Knowledge Objectives

The staff member will be able to:

1. Identify the reasons why adequate nutrition during pregnancy is important.
2.
 - a. State the definition of a nutrition risk.
 - b. Recognize the nutrition risks which can be associated with pregnancy and understand why these are nutrition risks during pregnancy.
3.
 - a. State the recommended range of total weight gain for the pregnant woman based upon her prepregnancy weight status.
 - b. Recognize the importance of both a gradual prenatal weight gain and an appropriate total prenatal weight gain for all pregnant women.
4. List four nutrients that are needed in increased amounts during pregnancy, and understand the importance of these nutrients for the pregnant woman.
5. Recognize the five food groups of the Food Guide Pyramid, and understand that the Food Guide Pyramid is a general guide that can help all people, including pregnant women, choose diets that are nutritionally adequate.
6. Identify the reasons why pregnant adolescents are at a higher nutrition risk when compared to other pregnant women.
7. State current recommendations regarding vitamin/mineral supplementation, the use of salt, and the use of diuretics during pregnancy.
8.
 - a. Explain what happens when there is an iron deficiency in the body.
 - b. Identify the tests used in the diagnosis of iron-deficiency anemia.
 - c. Recognize foods that are good sources of iron.
9. Identify foods and beverages, other than milk, that are good sources of calcium.
10. State nutrition education and counseling recommendations for the common problems of pregnancy: nausea, heartburn, and constipation.
11.
 - a. State the nutrition risks and nutrition education and counseling recommendations for use of caffeine, alcohol, drugs, and cigarettes during pregnancy.
 - b. Identify foods and beverages that contain caffeine.
12. Identify why good nutrition is important for the woman with AIDS or HIV.
13. Recognize the reasons why adequate nutrition and weight management is important during the postpartum period.
14. State the postpartum nutrition guidelines for non-breastfeeding women.

15. Identify the basic physical activity guidelines for pregnant and postpartum women.
16. State the specific types of fish that have a high methylmercury content and therefore, should not be consumed by pregnant women and women of child bearing age who may become pregnant.
17. State current recommendations for prevention of listeriosis and basic food safety guidelines.
18. Recognize that women who have experienced a difficult outcome of pregnancy or birth need a lot of extra support and understanding.

Performance Objectives

After reviewing a pregnant adolescent's case study, the staff member will be able to analyze the information presented in the case study and demonstrate an ability to provide appropriate basic nutrition education and counseling tips that address the pregnant adolescent's nutrition-related concerns.

The staff member will be able to:

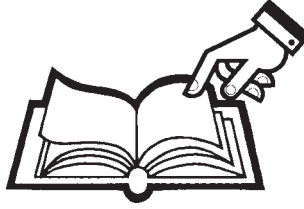
1. Identify the three major nutrition-related concerns presented in the case study.
2. Provide specific recommendations to share with the pregnant adolescent regarding her snacking habits and eating at fast food restaurants. For this objective, the staff member will demonstrate a good understanding of the Food Guide Pyramid and how it can be used as a tool in basic nutrition education.
3. Identify appropriate information to share with the adolescent regarding prenatal smoking.
4. Demonstrate an ability to provide appropriate basic nutrition education and counseling tips to a pregnant adolescent about the importance of prenatal weight gain, the rate or pattern of weight gain during pregnancy, the reasons why she is at a higher nutrition risk when compared to pregnant adult women, and postpartum weight recommendations.

Note: Knowledge Objectives 1–18 directly relate to the *Posttest* that the staff member takes as the final requirement for successful completion of this module.

Performance Objectives 1–4 directly relate to the *Practical Activity* that the staff member completes after his/her study of this module; the *Practical Activity* is located in the *Workbook for the Prenatal & Postpartum Nutrition Module*.

The *Posttest* and the *Practical Activity* will be graded/evaluated by the supervising nutritionist.

Glossary for the Prenatal & Postpartum Nutrition Module



Adolescent. A boy or girl who is in the period of physical and psychological development from the onset of puberty to maturity. An adolescent is also referred to as a teenager or teen. In this module, a pregnant adolescent is defined as a pregnant girl less than or equal to 17 years old.

Anemia. A condition where the blood does not contain the proper amount of hemoglobin or erythrocytes (red blood cells). When this is due to a lack of iron in the body, the condition is called iron-deficiency anemia.

Body Mass Index (BMI). Measures weight in relation to height. BMI can be calculated using either of these formulas: pounds/(inches)² x 703 **or** kilograms/(meters)² x 100.

Conception. Occurs when the egg is fertilized by the sperm.

EDD. This stands for a pregnant woman's "expected delivery date" or her "due date." Another term that also refers to a pregnant woman's "due date" is "EDC," which stands for "expected date of confinement."

Edema. The accumulation of water or fluid in the tissue spaces.

Embryo. The stage of development of the unborn baby from conception and up to the end of the eighth week of pregnancy.

Fetal/neonatal loss. A fetal death at greater than or equal to 20 weeks gestation (also referred to as stillborn) or a neonatal death from after birth to 28 days of life.

Fetus. The stage of development of the unborn baby from the beginning of the ninth week of pregnancy until birth.

Gestation. The state of being pregnant. The period of carrying the developing embryo/fetus from fertilization to birth. This period of time is usually 40 weeks. For example, if a woman is "at 20 weeks gestation," this means that she is 20 weeks along in her pregnancy.

Gestational age. The age of the embryo/fetus computed from the first day of the last menstrual period to any time up to birth.

Health care provider. For purposes of this module, "health care provider" refers to the person or facility providing the primary source of medical care for the pregnant woman; such as, the family doctor, obstetrician, midwife, or health clinic.

Hematocrit (Hct) test. This test measures the percentage of red blood cells in a sample of whole blood.

Hemoglobin (Hgb) test. This test measures the concentration of hemoglobin in a sample of whole blood. Hemoglobin is the iron-containing pigment of the red blood cells that carries and releases oxygen to the body cells.

Hyperemesis gravidarum. Severe nausea and vomiting during pregnancy that can lead to weight loss, dehydration, and metabolic imbalances.

Hypertension. High blood pressure.

Listeriosis. An illness caused by a bacteria called *Listeria monocytogenes*. Listeriosis can be particularly dangerous for pregnant women and their unborn babies.

Low birth weight (LBW). A birth weight less than or equal to 5 pounds 8 ounces (2500 grams).

Morbidity. Sickness, or a condition resulting from disease.

Mortality. Death.

Nutritionist. For purposes of this module, “nutritionist” refers to a licensed nutritionist. In some cases, however, nutrition education and counseling services can be provided by other staff members, e.g., nutrition educators, nurses, and dietetic technicians. Refer to the *WIC Procedure Manual* (DHM 150-24), Chapter 6, Nutrition Education, for policies regarding the staff members who are qualified to provide nutrition education and counseling services to medically high risk, high risk, and low risk clients.

Parity. The condition of having carried a pregnancy to a point of viability (greater than or equal to 20 weeks gestation), regardless of the birth outcome. A single or multiple birth (e.g., twins) each count as one birth, regardless of the number of infants resulting from the birth.

Periconceptual. The periconceptual period is a term that lacks a tight definition. The Institute of Medicine of the National Academy of Sciences suggests that it be used to denote a period from 1 to 3 months before conception to week 6 of gestation.

Perinatal. Pertaining to the period shortly before or after birth, beginning at the completion of the 20th to 28th week of gestation and ending 7 to 28 days after birth.

Pica. Cravings for or eating of non-food items.

Placenta. The organ which connects the fetus to the mother, carries nutrients to the fetus, and removes wastes from the fetus. It is completely formed by the 12th week of gestation.

Postpartum. That period of time occurring after childbirth extending up to several months after delivery. May also refer to the mother after childbirth, extending to several months after the delivery.

Pregnancy-induced hypertension (PIH). A condition characterized by an acute elevation of blood pressure, edema (abnormal fluid retention), and proteinuria (protein in the urine). Sometimes occurs in the latter half of pregnancy.

Pregnancy. The stage in which the mother is carrying the embryo/fetus, from conception to birth.

Pregravid. Before pregnancy, i.e., before the embryo was conceived. Also referred to as pre-pregnancy.

Prematurity or Preterm. Birth occurring less than or equal to 37 weeks of gestation.

Prenatal. During pregnancy. May also be used to refer to the pregnant woman.

Prepregnancy weight. What the woman weighed before she became pregnant.

Trimester. The stage of the pregnancy defined in terms of “weeks gestation”; that is: the first trimester is defined as 1 to 13 weeks gestation; the second trimester is defined as 14 weeks to 26 weeks gestation; the third trimester is defined as 27 to 40+ weeks gestation.

Part 1: Prenatal Nutrition

The Importance of Nutrition During Pregnancy

Several studies have established the fact that adequate prenatal nutrition is one of the most important factors influencing the health of pregnant women and their infants. Adequate nutrition during pregnancy is needed to maintain the tissues and nutrient stores of the mother and to allow for the normal growth and development of the fetus (the unborn infant).

Women who consume an inadequate diet during pregnancy demonstrate a greater percentage of complications and difficult deliveries including stillbirths, prematurity, and infants with birth defects. Women who have unhealthy eating habits during pregnancy may not gain weight adequately and thus increase the chances that their infants will be low birth weight (less than or equal to 5 pounds 8 ounces at birth). Low birth weight in infants is associated with an increased chance of illness and death during the period just before and after birth (the perinatal period).



It is important to point out that nutrition care, although extremely important, is only one component of good prenatal care. Women should be encouraged to visit a health care provider such as a family doctor, obstetrician, midwife, or health clinic, as soon as they learn of their pregnancy. They should return for regular check-ups during their pregnancy to ensure that everything is progressing normally. Many complications of pregnancy that can result in illness or mortality of infants and mothers are preventable. Early detection of potential problems is more likely when the pregnant woman makes regular visits to her health care provider. In addition, the health care provider can answer questions and suggest pamphlets or books on topics of interest to the pregnant woman.

Some women fear that the cost of prenatal care may be too high and they do not seek medical care early in their pregnancies. It is important to reassure these women that there are health care providers available that can provide them with high quality care through Medicaid, or at very reasonable prices, throughout the entire period of their pregnancies.



Self-Check



**Prenatal & Postpartum
Nutrition Module**

*This begins a series of **Self-Check Questions** that occur throughout this module. The Self-Checks are contained in the **Workbook for the Prenatal & Postpartum Nutrition Module**.*

*Each time you come to a Self-Check assignment in this module (highlighted with the stork logo—see above), go to your workbook and complete the assigned Prenatal & Postpartum Self-Check Questions right away. Record your answers directly in your workbook. **Please do not write in the module textbook!***

*After completing each assigned set of Self-Check Questions in your workbook, you should immediately correct your responses by using the **Answer Key to the Self-Check Questions** that is also contained in the workbook.*

GO TO the **Workbook for the Prenatal & Postpartum Nutrition Module** and complete **Self-Check Questions 1–3** right now.

After completing Questions 1–3, immediately check your answers against the Answer Key to the Self-Check Questions (contained in your workbook) before proceeding to the next section of the module.

Follow this procedure for all the Self-Checks.

Nutrition Risks in Pregnancy

Since adequate nutrition during pregnancy is so important, all pregnant women need a nutrition assessment, nutrition counseling, and follow-up. However, some women may need specialized nutrition counseling because of certain factors related to their health. These factors are called nutrition risks. Nutrition risks can affect a woman's nutrient needs and/or her dietary intake.

For instance, adolescents (less than or equal to 17 years of age) who are pregnant are considered to be at nutrition risk. This is because a girl in her teens may not have finished her own growth, and therefore has greater nutritional needs than those of an adult pregnant woman. Since pregnancy creates a second growth need, an adolescent must meet the nutritional needs of *two* growing bodies—the fetus and her own. In addition, adolescent girls frequently may attempt to lose weight or they may have poor eating habits.

Use of cigarettes, alcohol, or drugs is also considered to be a nutrition risk. Frequent use of any of these substances may decrease the amount of food eaten by a pregnant woman and thus may replace necessary foods in her diet. In addition, these substances can directly harm the woman's body and her baby's growing body.

A pregnant woman with a nutrition risk has an increased chance of having a problem with normal fetal growth or development. Therefore, it is extremely important that we understand the nutrition risks that can be associated with pregnancy and know how to identify a woman who is at risk.

Additionally, there are some clients who are identified as **high risk or medically high risk**—these are women who are at an *even greater nutrition risk* than the others. High risk women are targeted for more intense, in-depth nutrition counseling and education. **All high risk clients must be referred to a nutrition educator or nutritionist. All medically high risk clients must be referred to a licensed dietitian/nutritionist.**

The following pages contain an overview of prenatal nutrition risks. This is not intended to be an all inclusive list of the nutrition risks used for WIC certification. For in-depth information about nutrition risk criteria, refer to the *Florida WIC Nutrition Risk Criteria Interpretive Guidelines*. This document provides all the necessary information about WIC nutrition risks: which nutrition risks are considered medically high risk or high risk, the nutrition risk codes, definitions and interpretive guidelines, and counseling factors/considerations for each nutrition risk.

Nutrition Risks and Explanations

The following describes many of the **Nutrition Risks** that may be associated with pregnancy, along with **Explanations** of why these factors represent nutrition risks for a pregnant woman:

Nutrition Risk: *Low maternal weight gain or maternal weight loss during pregnancy*

Explanation: A woman who has either gained too little weight or lost weight during pregnancy may not be getting the right amounts and kinds of foods necessary for her health and the health of her baby. Adequate and proper weight gain has been shown to be a very important factor related to the outcome of a woman's pregnancy. A woman who has a ***low maternal weight gain*** is considered to be at **high risk**.

Nutrition Risk: *High maternal weight gain*

Explanation: Excessive weight gain during pregnancy may be due to either overeating or edema (collection of fluid in the tissues). In some cases, edema can be a symptom of *pregnancy-induced hypertension*, a serious condition that requires medical intervention. On the other hand, excessive weight gain during pregnancy that is due to excessive fat accumulation may complicate delivery. Excessive fat accumulation is treated by having the pregnant woman follow a well-balanced, nutritious diet. **However, weight loss during pregnancy is never recommended.**

Nutrition Risk: *Prepregnancy underweight* (Body Mass Index less than 19.8)

Explanation: A woman who was **underweight before her pregnancy** may have had a diet inadequate in calories and nutrients and is considered to be at **high risk**. Good nutrition during her pregnancy is necessary for the growth of the fetus and the maintenance and replenishment of maternal body tissues. It is important to encourage her to gain the proper amount of weight since inadequate prepregnancy weight can be associated with poorer pregnancy outcomes. The underweight woman should plan to gain about 28 to 40 pounds during her entire pregnancy; however, individual needs and health care provider recommendations should be taken into consideration when determining the desirable prenatal weight gain.

Nutrition Risk: *Prepregnancy overweight* (Body Mass Index of greater than or equal to 26.1)

Explanation: A woman who was overweight before her pregnancy is more likely to experience the following complications: hypertension and/or pregnancy-induced hypertension, gestational diabetes, cesarean section, and perinatal morbidity and mortality. However, once an overweight woman discovers she is pregnant, she should not attempt to lose weight. Rather, she should eat a well-balanced, nutritious diet and monitor her weight gain carefully. An overweight woman should plan to gain about 15 to 25 pounds during her entire pregnancy and an obese woman should plan to gain about 15 pounds; however, individual needs and health care provider recommendations should be taken into consideration when determining the desirable prenatal weight gain.

Nutrition Risk: *Multifetal gestation*

Explanation: A woman who is pregnant with multiple fetuses (that is, more than one child) has an increased demand for calories and nutrients to meet the needs of each fetus. She is also at a greater risk for some of the complications of pregnancy, such as pregnancy-induced hypertension.

Clinical/Health/Medical Nutrition Risks

Explanation: Clinical, health, or medical problems that cause or contribute to an inability to obtain adequate nutrition for the growth and development of the fetus may place the mother and fetus at nutrition risk and/or medical risk. These include, but are not limited to: *asthma; cancer; celiac disease; central nervous system disorder; major dental problem; depression; developmental delay/disability; diabetes mellitus; drug/nutrient interaction; eating disorder; food allergy; gastrointestinal disorder; genetic or congenital disorder; gestational diabetes* (current or history of); *hyperemesis gravidarum* (severe nausea and vomiting); *hypertension; hypoglycemia; inborn error of metabolism; infectious disease; lactose intolerance; nutrient deficiency disease; renal disease; major surgery; or thyroid disorder*. Depending on the problem and/or its severity, the pregnant woman is considered to be either low risk, high risk, or medically high risk.

Nutrition Risks Related to History of Negative Pregnancy Outcome

Explanation: If any one of the complications listed below occurred in a previous pregnancy, there is a chance that it may occur again. This places the mother and fetus at increased nutrition risk during the current pregnancy. Examples of negative pregnancy outcome include the following:

- ***History of preterm delivery:*** birth of an infant at less than or equal to 37 weeks gestation;
- ***History of low birth weight baby:*** birth of an infant weighing less than or equal to 5 pounds 8 ounces (2500 grams);
- ***History of spontaneous abortion, fetal, or neonatal loss:*** history of 2 or more spontaneous abortions (less than 20 weeks or less than 500 grams), any history of fetal death (death at greater than or equal to 20 weeks gestation), or any history of neonatal death (birth to 28 days of life);
- ***History of infant weighing greater than or equal to 9 pounds*** (4000 grams) *at birth;* and/or
- ***History of infant born with a neural tube defect or diagnosed nutrition-related congenital or birth defect*** linked to inappropriate nutritional intake, e.g., inadequate zinc, folic acid, or excess vitaminA.

Nutrition Risk: *Age less than or equal to 17 years at last menstrual period*

Explanation: An adolescent less than or equal to 17 years of age may not have finished growing. Her growth plus the growth of a developing fetus puts unusually high nutritional demands on her body. A pregnant adolescent ***less than 16 years of age at last menstrual period*** is considered to be at **high risk**.

Nutrition Risk: *High parity and young age*

Explanation: A pregnant woman who was less than 20 years old at the time of her last menstrual period and has had 3 or more previous pregnancies of at least 20 weeks duration, regardless of birth outcome is considered to have high parity at a young age. Pregnancy depletes nutrient stores; and, when a young woman has had a high number of pregnancies, there is a higher risk that her nutrient stores have not been adequately replenished.

Nutrition Risk: *Closely spaced pregnancy - conception before 16 months postpartum*

Explanation: A pregnant woman may be at nutrition risk when she has a closely spaced pregnancy, i.e., when she becomes pregnant and her last menstrual period is within 16 months from the termination of a previous pregnancy. It may take at least one full year to completely replenish nutrient stores which have been depleted during a pregnancy. If a woman becomes pregnant again before her body has reached optimal nutritional status, she and her fetus may be at nutrition risk.

Nutrition Risks related to Substance Abuse

Explanation: *Maternal smoking, alcohol use, or illegal drug use* are dangerous practices. Many drugs cross the placenta and harm the fetus. These substances can affect the mother by interfering with oxygen transport and increasing her blood pressure. Women who smoke, drink alcohol, and/or use illegal drugs have an increased risk of giving birth to babies with physical and neurological abnormalities; low birth weight; prematurity; and fetal/infant deaths. Maternal smoking is defined as any current, daily smoking of tobacco products, i.e., cigarettes, pipes, or cigars. A pregnant woman who drinks any alcohol and/or uses illegal drugs anytime during pregnancy is considered to be at **high risk**.

Biochemical Nutrition Risks - low hematocrit/hemoglobin values and elevated blood lead levels

Explanation: Hemoglobin and hematocrit are measurements of red blood cells. Low hemoglobin or hematocrit measurements may be a sign of anemia and a reduced ability to meet the oxygen needs of the body. The following are the hematocrit and hemoglobin levels which are considered nutrition risks for pregnant women:

High risk hgb/hct: less than 10 gm/dl hemoglobin or less than 30% hematocrit;
Low hgb/hct: less than 11 gm/dl hemoglobin or 33% hematocrit during the 1st or 3rd trimester; **or** less than 10.5 gm/dl hemoglobin or 32% hematocrit during the 2nd trimester.

There are a number of possible causes of anemia. Nutrient deficiency anemias can prevent a person from making adequate amounts of hemoglobin or red blood cells. The most common nutrient deficiency anemia is *iron-deficiency anemia*.

Iron-deficiency anemia is a condition in which the blood does not contain enough hemoglobin. Hemoglobin, which contains iron, is the component of red blood cells which carries the oxygen to all parts of the body, including the fetus in a pregnant woman. If a woman does not eat enough foods (or supplements) containing iron, her body may not be able to make enough hemoglobin to function properly. Another nutrient deficiency which can cause anemia is a folic acid deficiency. Folic acid is required for cell division. Folic acid is also needed for the body to make red blood cells daily to replace the worn out ones.

If a woman is anemic she may have one or more of the following symptoms, all of which may be attributed to a poor dietary intake of iron and/or folic acid: weakness; tired and sleepy most of the time; loss of appetite; pale skin color; headache; dizziness; and/or sick more than usual.

Nutrient deficiency anemias may be prevented by eating a variety of foods from all food groups, with an emphasis on those items high in iron, vitamin C and folic acid. In addition, iron and folic acid supplements are routinely prescribed for pregnant women since diet alone usually does not meet the high demands for iron and folic acid during pregnancy.

Blood lead levels of 10 µg/dl or higher may be associated with a shorter gestation and reduced birth weight. Too much lead can cause serious damage to the brain, kidneys, nervous system, and red blood cells, especially to the unborn child. A woman with a **blood lead level of 15 µg/dl or higher** is considered to be **medically high risk**. For information on reducing the risk of lead poisoning, see the Preschool Child Nutrition Module.

Dietary Nutrition Risks

Explanation: If a pregnant woman consumes a *vegan diet* or has a *highly restrictive diet, inappropriate eating habits*, or an *inadequate diet*, she may be risking her health and the health of her unborn baby. Adequate nutrition is necessary for the maintenance of maternal body tissues, as well as for the growth and development of the fetus. The dietary nutrition risks for pregnant, breastfeeding, and postpartum women are documented on the Adult & Adolescent Nutrition Assessment Form (DH Form 3086E).

Other Nutrition Risks

Explanation: There are a number of other nutrition risks which place a pregnant woman at increased risk of having health-related problems and/or not being able to obtain foods to maintain an adequate diet. These include: *lack of or infrequent prenatal visits; pregnant woman currently breastfeeding; homelessness; migrancy; victim of abuse; woman with limited ability to make feeding decisions and/or prepare food; or foster care/shelter care* (entering or changing foster/shelter care home in previous 6 months).



Self-Check



**Prenatal & Postpartum
Nutrition Module**

✎ **GO TO** the Workbook for the Prenatal & Postpartum Nutrition Module and complete Self-Check Questions 4–6 right now. Then, immediately check your answers against the Answer Key to the Self-Check Questions (contained in your workbook) before proceeding to the next section of the module.

Prenatal Weight Gain

As we have learned, weight gain during pregnancy has a tremendous effect on the outcome of the pregnancy. Adequate weight gain is necessary for normal growth and development of the fetus.

If a woman fails to gain enough weight, she is far more likely to deliver a low birth weight baby and/or have other complications with delivery and with her baby. *The primary concern is how much the baby will weigh at birth.* Low birth weight (a birth weight of less than or equal to 5 pounds 8 ounces) has been associated with mental retardation, birth defects, growth and development problems, and cerebral palsy. Adequate weight gain during pregnancy increases the likelihood that a woman will deliver a full-term, healthy baby.

There is no one weight gain that is right for every woman. The desired amount of weight gain is determined by what the woman weighed **before** she became pregnant. This is called her **prepregnancy** or **pregravid weight**. Once a woman's prepregnancy weight is determined, then it is important to determine if her prepregnancy Body Mass Index (BMI) was within the *normal range, underweight range, overweight range, or obese range*. The woman's prepregnancy BMI can be determined by using *Figure 1. Prepregnancy Body Mass Index (BMI) Table for Determining Weight Classification for Pregnant Women* on the following page.

Note: The BMI ranges used to determine weight classification for pregnant women differ somewhat from the BMI ranges used to determine weight classification for non-pregnant women. (The BMI ranges for non-pregnant women are shown on page 67 of this module.) A prepregnancy BMI of 19.9 to 26 is considered to be the normal range for pregnant women, while for non-pregnant women the normal range is a current BMI of 18.5 to 24.9. The reason for this difference is that pregnancy outcome studies and prenatal weight gain recommendations were based on the BMI ranges shown in Figure 1.



Figure 1. **Prepregnancy Body Mass Index (BMI) Table for Determining Weight Classification for Pregnant Women (1)**
(weight in pounds)

Height (in inches no shoes)	A Normal Weight BMI of 19.8 - 26.0	B Underweight BMI of < 19.8	C Overweight BMI of 26.1 - 29.0	D Obese BMI of ≥ 29.1
58	95 – 124	< 95	125 – 138	> 138
59	98 – 128	< 98	129 – 143	> 143
60	102 – 133	< 102	134 – 148	> 148
61	105 – 137	< 105	138 – 153	> 153
62	108 – 142	< 108	143 – 158	> 158
63	112 – 146	< 112	147 – 163	> 163
64	116 – 151	< 116	152 – 169	> 169
65	119 – 156	< 119	157 – 174	> 174
66	123 – 161	< 123	162 – 179	> 179
67	127 – 166	< 127	167 – 185	> 185
68	130 – 171	< 130	172 – 190	> 190
69	134 – 176	< 134	177 – 196	> 196
70	138 – 181	< 138	182 – 202	> 202
71	142 – 186	< 142	187 – 208	> 208
72	146 – 191	< 146	192 – 213	> 213

(1) Adapted from the Institute of Medicine: *Nutrition During Pregnancy*, National Academy Press; 1990; page 12.

Instructions for Use of the Prepregnancy Body Mass Index Table

Determine the woman’s height (in inches, without shoes) and locate the corresponding prepregnancy weight (inpounds). If the w oman’s height is not a whole number, then round it to the nearest whole number when determining the prepregnancy BMI range. Fractions less than 1/2 should be rounded down; fractions of 1/2 or more should be rounded up to the next higher whole number. For example, a woman who is 64 1/2 inches would have her prepregnancy BMI range determined by using the row for 65 inches. A woman who is 64 1/4 inches would have her prepregnancy BMI range determined by using the row for 64 inches.

Desirable Weight Gains for Prepregnancy BMI Range

Once the woman's prepregnancy BMI range has been determined using Figure 1, then it can be determined how much weight she should gain during her pregnancy. It is important to remember that these weight gain recommendations are *general* recommendations. *Individual needs and health care provider recommendations* should be taken into consideration when determining the desirable prenatal weight gain.

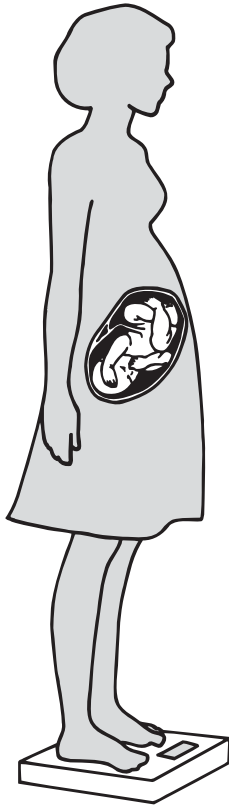
Here are the weight gain recommendations for pregnant women:

- Women who are within the **normal weight range** should be encouraged to gain **25 to 35 pounds** for the entire pregnancy.
- **Underweight women** need to gain additional weight since their nutritional stores may have been significantly depleted before they became pregnant. The additional calories and nutrients are needed to help ensure adequate growth and development of the fetus. It is recommended that underweight women gain **28 to 40 pounds** for the entire pregnancy.
- **Overweight women** should generally be encouraged to gain a little less than normal weight women. It is recommended that overweight women gain **15 to 25 pounds** for the entire pregnancy.
- **Obese women** should be encouraged to gain a total of **15 pounds** for the entire pregnancy, although in some situations, less weight gain may be recommended by the health care provider.
- **Multiple fetuses**—For **twin** pregnancies, 4 to 6 pounds should be gained in the first trimester and 1.5 pounds per week for the second and third trimesters for a total gain of **35 to 45 pounds**. Underweight women should gain at the higher end of the range and overweight women should gain at the lower end of the range. For triplet pregnancies, the overall gain should be around 50 pounds with a steady rate of gain of approximately 1.5 pounds per week throughout the pregnancy.

Pregnancy is not the time to try to lose weight. *Pregnant women should never go on a weight-reduction diet.* Even overweight and obese women need to gain weight during their pregnancy. The pregnant woman should never attempt to reduce or even maintain weight at this time, since prolonged weight loss during pregnancy is known to have harmful effects on the fetus.

Figure 2. How Weight Gain Is Distributed During Pregnancy shows that weight gain is a *necessary* part of a normal pregnancy. Weight increases are a natural process of pregnancy. As you can see in Figure 2, an average weight baby accounts for only a portion of a woman's total weight gain during pregnancy. Other factors that contribute to a pregnant woman's weight gain include increases in her blood volume and other tissues which are needed to nourish and support the developing fetus.

Figure 2. **How Weight Gain Is Distributed During Pregnancy**¹



For a woman who gains 25 to 35 pounds during her pregnancy, the following is an approximate breakdown of how her weight gain is distributed throughout her body during pregnancy.

7 to 8 pounds	baby
3 to 4 pounds	placenta and amniotic fluid
2 to 3 pounds	increased size of uterus (womb)
8 to 10 pounds	increased blood and other body fluids
5 to 10 pounds	mother's stored fat
<hr/>	
25 to 35 pounds	Total Pregnancy Weight Gain

1. Adapted from: Worthington-Roberts BS, Williams SR. *Nutrition in Pregnancy and Lactation*. 6th Edition. Boston, MA: WCB/McGraw-Hill; 1997, p. 69.

Illustration reprinted from: *Prenatal Nutrition: Clinical Guidelines for Nurses*, by D. Dimperio. White Plains, NY: March of Dimes Birth Defects Foundation, 1988, p. 21, by permission of the author and the publisher.

Pattern of Prenatal Weight Gain

Now that we have established the importance of gaining enough weight during pregnancy, there is another aspect we need to consider—the *rate* or *pattern* in which the weight should be gained. Gaining weight according to an appropriate rate or pattern increases the chances of having a normal delivery and a healthy baby.

All pregnant women should aim for a **steady rate** of weight gain. The following is a discussion of recommended patterns of weight gain throughout pregnancy:

- During the **first trimester**—which is the first 13 weeks (3 months) of pregnancy—the following weight gain is recommended:

For women whose prepregnancy weight is within the **normal weight range**, weight gain should be about **3.5 pounds for the first trimester**.

For women whose prepregnancy weight is in the **underweight range**, weight gain should be at least **5 pounds for the first trimester**.

For women whose prepregnancy weight is in the **overweight or obese range**, weight gain should be about **2 pounds for the first trimester**.

(Much of the weight gain during this first trimester is caused by growth of the uterus and expansion of the pregnant woman's blood volume.)

- During the *second and third trimesters*, the following pattern of weight gain is recommended:

For women whose prepregnancy weight is within the **normal weight range**, weight gain should be **about 1 pound per week**.

For women whose prepregnancy weight is in the **underweight range**, weight gain should be **slightly more than 1 pound per week**.

For women whose prepregnancy weight is in the **overweight or obese range**, weight gain should be **about $\frac{2}{3}$ pound per week**. (This recommended weight gain may be less if the woman's prepregnancy weight is in the obese range.)

As you can see, it is important that the weight gain continue throughout the entire pregnancy at a steady rate. Weight gain should be monitored to ensure that there is a *progressive increase* in weight that *approximately* results in the recommendations that were described previously. When the weight gain is slightly lower or higher than the recommended rates, this is not cause for alarm. However, a rapid and large change in the weight gain pattern may signal a problem and should be **immediately reported to the health care provider**.

Prenatal Weight Gain Grid

The desirable pattern of weight gain can be depicted graphically on a Prenatal Weight Gain Grid. Stop now to examine *Figure 3. Prenatal Weight Gain Grid—Side 1 and Side 2* —on the following two pages.

A pregnant woman's weight gain is plotted directly on the grid. The Prenatal Weight Gain Grid serves as a visual aid throughout the woman's pregnancy. By using this grid, the health care provider and other staff can monitor patterns of weight gain during pregnancy and will then be more prepared to offer appropriate counseling. *Remember that adequate weight gain directly relates to pregnancy outcome in terms of infant birth weight.* The grid can also be used as a teaching device for the client, to help illustrate appropriate rates and patterns of weight gain.

Healthy Eating During Pregnancy

Emphasis should be placed not only on prenatal weight gain, but also on the *nutritional quality* of that weight gain. Nutrients which are obtained from foods are necessary to build and maintain body tissues for the pregnant woman and her baby. In this section we will attempt to answer the question, *How should a pregnant woman be eating?* To answer this question, we will first look at some specific nutrient needs during pregnancy.

Dietary Reference Intakes

The Institute of Medicine of the National Academy of Sciences develops reference values for the intake of nutrients by Americans. These reference values are known as ***Dietary Reference Intakes (DRIs)***. DRIs can be used for planning and assessing diets for healthy populations and are a way of presenting information about recommended nutrient intakes. The reference values are updated periodically based on new scientific research findings.

The DRIs include:

- **Recommended Dietary Allowances (RDAs);**
- **Adequate Intake (AI);**
- Estimated Average Requirement (EAR); and
- Tolerable Upper Intake Level (UL).

For this module, we will discuss only the **RDAs** and **AIs**.

Definitions of RDA and AI

Recommended Dietary Allowance (RDA): the average daily dietary nutrient intake level sufficient to meet the nutrient requirement of nearly all (97 to 98 percent) of healthy individuals in a particular life stage and gender group.

Adequate Intake (AI): the recommended average daily intake level based on observed or experimentally determined approximations or estimates of nutrient intake by a group (or groups) of apparently healthy people that are assumed to be adequate. It is used when there is not enough scientific evidence to calculate an RDA.

The RDAs and AIs are nutrient levels that, when consumed, should decrease the risk of developing a condition associated with ill health. Nutrient intake at the level of the RDA or AI would not necessarily *replenish* individuals who are undernourished or who have a disease.

During pregnancy the need for most nutrients increases. This is because a woman must provide for her own nutrient needs plus those of her growing baby. On the following page is *Figure 4. Dietary Reference Intakes (DRIs) for Pregnant and Non-Pregnant Women*. This figure shows the nutrient requirements of pregnant women as compared to non-pregnant women. Take a few minutes to examine Figure 4. Note the increased requirements during pregnancy for **protein** and **carbohydrates** and many of the vitamins and minerals, especially **iron** and **folic acid (folate)**.

It is important to be familiar with these values, but it is even more important to be able to translate these values into a healthy daily eating pattern. This is exactly what happens on the following pages. After Figure 4, there is an overview of the Dietary Guidelines for Americans and a discussion of the Food Guide Pyramid.

Figure 4. Dietary Reference Intakes (DRIs) for Pregnant and Non-Pregnant Women¹

Note: Values are for women 14 to 50 years of age. In some cases, the value for 14- to 18-year-olds differs from the value for older women. When this is the case, the value for 14- to 18-year-olds is provided in brackets.

	<i>Pregnant (amount per day)</i>	<i>Non-pregnant (amount per day)</i>	<i>RDA or AI?</i>
Protein	1.1 g/kg or +25 g additional	0.8 g/kg [0.85 g/kg] or 46 g	RDA
Carbohydrate	175 g	130 g	RDA
Fiber	28 g	25 g [26 g]	AI
Fat-Soluble Vitamins			
Vitamin A ²	770 µg [750 µg]	700 µg	RDA
Vitamin D ^{3,4}	5 µg	5 µg	AI
Vitamin E ⁵	15 mg	15 mg	RDA
Vitamin K	90 µg [75 µg]	90 µg [75 µg]	AI
Water-Soluble Vitamins and Choline			
Vitamin C	85 mg [80 mg]	75 mg [65 mg]	RDA
Thiamin	1.4 mg	1.1 mg [1.0 mg]	RDA
Riboflavin	1.4 mg	1.1 mg [1.0 mg]	RDA
Niacin ⁶	18 mg	14 mg	RDA
Vitamin B ₆	1.9 mg	1.3 mg [1.2 mg]	RDA
Folate ⁷	600 µg ⁸	400 µg ⁹	RDA
Vitamin B ₁₂	2.6 µg	2.4 µg	RDA
Pantothenic Acid	6 mg	5 mg	AI
Biotin	30 µg	30 µg [25 µg]	AI
Choline	450 mg	425 mg [400 mg]	AI
Minerals			
Calcium	1,000 mg [1,300 mg]	1,000 mg [1,300 mg]	AI
Phosphorus	700 mg [1,250 mg]	700 mg [1,250 mg]	RDA
Magnesium	350-360 mg [400 mg]	310-320 mg [360 mg]	RDA
Iron	27 mg	18 mg [15 mg]	RDA
Zinc	11 mg [12 mg]	8 mg [9 mg]	RDA
Iodine	220 µg	150 µg	RDA
Selenium	60 µg	55 µg	RDA
Fluoride	3 mg	3 mg	AI
Molybdenum	50 µg	45 µg [43 µg]	RDA
Manganese	2.0 mg	1.8 mg [1.6 mg]	AI
Chromium	30 µg [29 µg]	25 µg [24 µg]	AI
Copper	1,000 µg	900 µg [890 µg]	RDA

1. Reprinted with permission from: *Dietary Reference Intakes*, 1997, 1999, 2000, 2001, and 2002 by the National Academy of Sciences, courtesy of the National Academies Press, Washington, D.C. These reports may be accessed via the Internet at www.nap.edu.
2. Retinol activity equivalents (RAE). 1 RAE = 1 µg retinol, 12 µg β-carotene, 24 µg α-carotene, or 24 µg β-cryptoxanthin in foods. To calculate RAEs from REs of provitamin A carotenoids in foods, divide the REs by 2. For preformed vitamin A in foods and for provitamin A carotenoids in supplements, 1 RE = 1 RAE.
3. Cholecalciferol. 1 µg cholecalciferol = 40 International Units (IU) of vitamin D.
4. In the absence of adequate exposure to sunlight.
5. As α-tocopherol.
6. As niacin equivalents (NE). 1 mg niacin = 60 mg tryptophan.
7. As dietary folate equivalents (DFE). 1 DFE = 1 µg food folate = 0.6 µg folic acid (from fortified food or supplement) consumed with food = 0.5 µg synthetic (supplemental) folic acid taken on an empty stomach.
8. It is assumed that women will continue consuming 400 µg folic acid from supplements or fortified food until their pregnancy is confirmed and they enter prenatal care, which ordinarily occurs after the end of the periconceptional period—the critical time for formation of the neural tube.
9. It is recommended that all women capable of becoming pregnant consume 400 µg folic acid from supplements or fortified foods in addition to intake of food folate from a varied diet.



Self-Check



Prenatal & Postpartum Nutrition Module

✎ **GO TO** the Workbook for the Prenatal & Postpartum Nutrition Module and complete Self-Check Questions 7–11 right now. Then, immediately check your answers against the Answer Key to the Self-Check Questions (contained in your workbook) before proceeding to the next section of the module.

Dietary Guidelines for Americans

The *Dietary Guidelines for Americans* provide guidelines for healthy adults and children (ages 2 years and older). These guidelines help promote health and reduce the risk of chronic diseases such as heart disease, certain types of cancer, diabetes, stroke, and osteoporosis. These diseases are leading causes of death and disability among Americans. Healthy eating can also reduce major risk factors for chronic disease—such as obesity, high blood pressure, and high blood cholesterol. Food choices, lifestyle, environment, and family history all affect a person’s well-being. Figure 4 lists specific essential nutrients that are adequate to meet the needs of most healthy pregnant women and non-pregnant women. The Dietary Guidelines for Americans (Fifth Edition, 2000) are shown below. These guidelines should be adapted to the special needs of pregnant women and postpartum women based on health care provider recommendations.

Aim for Fitness

- Aim for a healthy weight.
- Be physically active each day.

Build a Healthy Base

- Let the Pyramid guide your food choices.
- Choose a variety of grains daily, especially whole grains.
- Choose a variety of fruits and vegetables daily.
- Keep food safe to eat.

Choose Sensibly

- Choose a diet that is low in saturated fat and cholesterol and moderate in total fat.
- Choose beverages and foods to moderate your intake of sugars.
- Choose and prepare foods with less salt.
- If you drink alcoholic beverages, do so in moderation. However, some people should **not** drink alcoholic beverages at all. These include: children and adolescents; individuals of any age who cannot restrict their drinking to moderate levels; **women who may become pregnant or who are pregnant**; individuals who plan to drive, operate machinery, or take part in other activities that require attention, skill, or coordination; or individuals taking prescription or over-the-counter medications that can interact with alcohol.

A discussion about the Food Guide Pyramid, which is presented on the next few pages, helps translate the Dietary Reference Intakes and the Dietary Guidelines into the kinds and amounts of food to eat each day.

The Food Guide Pyramid

One way to help a pregnant woman choose a healthy eating plan that is nutritionally adequate is to introduce her to the Food Guide Pyramid. The Food Guide Pyramid is an outline of what to eat each day. It includes recommendations about the number of servings and serving sizes for each of the major food groups that people should consume each day. Recommendations are based on a person's age, sex, size, and activity level and also address the needs of pregnant women. The Food Guide Pyramid was developed to help people improve their current eating practices and to encourage them to make the best food choices.

Take a few minutes to study the Food Guide Pyramid in Figure 5, along with the information on that page. Note that there are five major food groups:

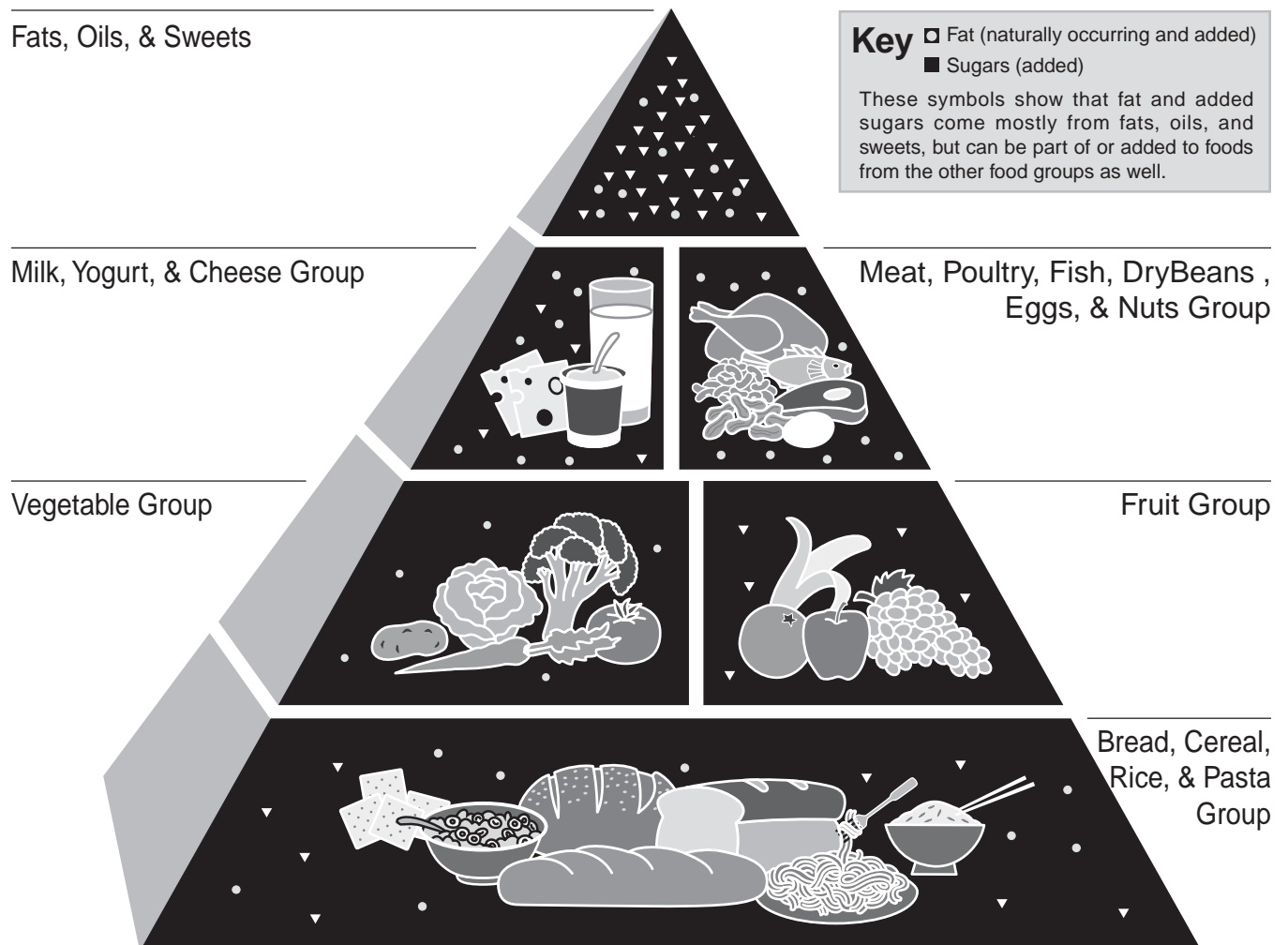
Milk, Yogurt, & Cheese Group	The foods in this group come from animals. These foods are important sources of protein, calcium, and some vitamins.
Meat, Poultry, Fish, Dry Beans, Eggs, & Nuts Group	The foods in this group come from animals and some plants. These foods are important sources of protein, iron, zinc, and some vitamins.
Vegetable Group Fruit Group	The foods in these two groups come from plants. Most people need to eat more of these foods for the vitamins, minerals, and fiber they supply.
Bread, Cereal, Rice, & Pasta Group	The foods in this group are from grains. You need the most servings of these foods each day. These foods are important sources of B vitamins, iron, and energy.

Each of the food groups provides some, but not all of the nutrients a pregnant woman needs. Foods in one group do not replace those in another. No one food group is more important than another—for good health all are needed. The small tip of the Pyramid shows Fats, Oils, & Sweets. See the box on page 31 for more detailed information. The Food Guide Pyramid is a general outline of what a person should eat each day. It is not a rigid prescription, but provides general recommendations for choosing a healthy eating plan. When presenting nutrition information about the Food Guide Pyramid to your clients, point out to them how the WIC foods are included in the Food Guide Pyramid recommendations and that these WIC foods make a valuable contribution to a healthy and nutritious diet.

Figure 5.

Food Guide Pyramid

- The Food Guide Pyramid should be used to help a person eat better every day.
- Each of the food groups provides some, but not all, of the nutrients a person needs.
- Foods in one group can't replace those in another.
- No one food group is more important than another—for good health, all are needed.
- The Food Guide Pyramid is a general outline of what a person should eat each day. It is not a rigid prescription, but presents general recommendations for choosing a healthy diet.



Source: U.S. Department of Agriculture/U.S. Department of Health and Human Services

Figure 6. **A Guide To Daily Food Choices for Pregnant Women**
Based on the Food Guide Pyramid Recommendations¹

Food Groups & What Counts as One Serving	Recommended Number of Servings per Day												
<p>Meat, Poultry, Fish, Dry Beans, Eggs, & Nuts Group 2 to 3 oz of cooked lean meat, poultry, or fish (3 oz of cooked meat is about the size of a deck of cards.)</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>These foods count as 1 oz of cooked lean meat:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">1 egg</td> <td style="width: 50%;">1/4 cup tuna fish</td> </tr> <tr> <td>2 tablespoons peanut butter</td> <td>1/3 cup nuts</td> </tr> <tr> <td>1/2 cup cooked dry beans or peas</td> <td></td> </tr> </table> </div>	1 egg	1/4 cup tuna fish	2 tablespoons peanut butter	1/3 cup nuts	1/2 cup cooked dry beans or peas		<p>2 to 3 (for a total of 6 to 7 oz daily)</p>						
1 egg	1/4 cup tuna fish												
2 tablespoons peanut butter	1/3 cup nuts												
1/2 cup cooked dry beans or peas													
<p>Milk, Yogurt, & Cheese Group</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">1 cup milk (8 oz)</td> <td style="width: 50%;">1 1/2 oz natural cheese</td> </tr> <tr> <td>1 cup yogurt</td> <td>2 oz processed cheese</td> </tr> <tr> <td>1 cup pudding</td> <td>1 1/2 cups ice cream, ice milk, or frozen yogurt</td> </tr> <tr> <td></td> <td>2 cups cottage cheese</td> </tr> </table>	1 cup milk (8 oz)	1 1/2 oz natural cheese	1 cup yogurt	2 oz processed cheese	1 cup pudding	1 1/2 cups ice cream, ice milk, or frozen yogurt		2 cups cottage cheese	<p>3 to 4 (Women ages 19 to 50 need about 3 servings daily. Teens and women over 50 need about 4 servings daily.)</p>				
1 cup milk (8 oz)	1 1/2 oz natural cheese												
1 cup yogurt	2 oz processed cheese												
1 cup pudding	1 1/2 cups ice cream, ice milk, or frozen yogurt												
	2 cups cottage cheese												
<p>Fruit Group²</p> <ul style="list-style-type: none"> 1 medium piece of fruit 1/2 cup cooked or canned fruit 3/4 cup (6 oz) fruit juice 1/4 cup dried fruit 	<p>3 to 4</p>												
<p>Vegetable Group²</p> <ul style="list-style-type: none"> 1/2 cup cooked vegetables or chopped raw vegetables 1 cup raw leafy vegetables 3/4 cup (6 oz) vegetable juice 1/2 cup potatoes (scaloped, mashed, or potato salad) 	<p>4 to 5</p>												
<p>Bread, Cereal, Rice, & Pasta Group</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">1 slice bread</td> <td style="width: 50%;">1 medium muffin (for example: bran or corn)</td> </tr> <tr> <td>1/2 hamburger bun, bagel, or English muffin</td> <td>1 tortilla (6")</td> </tr> <tr> <td>1/2 cup cooked cereal, rice, pasta, or grits</td> <td>1 waffle or pancake (4")</td> </tr> <tr> <td>3/4 cup (or 1 oz) ready-to-eat cereal</td> <td>3 to 4 small plain crackers</td> </tr> <tr> <td></td> <td>3 cups popcorn</td> </tr> <tr> <td></td> <td>3/4 oz pretzels</td> </tr> </table>	1 slice bread	1 medium muffin (for example: bran or corn)	1/2 hamburger bun, bagel, or English muffin	1 tortilla (6")	1/2 cup cooked cereal, rice, pasta, or grits	1 waffle or pancake (4")	3/4 cup (or 1 oz) ready-to-eat cereal	3 to 4 small plain crackers		3 cups popcorn		3/4 oz pretzels	<p>9 to 11</p>
1 slice bread	1 medium muffin (for example: bran or corn)												
1/2 hamburger bun, bagel, or English muffin	1 tortilla (6")												
1/2 cup cooked cereal, rice, pasta, or grits	1 waffle or pancake (4")												
3/4 cup (or 1 oz) ready-to-eat cereal	3 to 4 small plain crackers												
	3 cups popcorn												
	3/4 oz pretzels												

1. This is a *general* guide—for pregnant women of all ages—to the number of servings needed per day and what counts as one serving. The number of servings needed by some pregnant women may be different from those indicated in this figure due to individual nutrient and caloric needs. More specific and individualized counseling recommendations should be provided by the nutritionist.

2. See Figure 7 for fruits and vegetables that are excellent and/or good sources of vitamin A and vitamin C, as well as “other” fruits and vegetables.

A Closer Look at Fat and Added Sugars

The small tip of the Pyramid shows Fats, Oils, & Sweets (see Figure 5). These foods provide calories but few vitamins and minerals. These foods include: salad dressings, oils, mayonnaise, cream cheese, cream, sour cream, butter, margarine, snack chips, sugars, jellies, syrups, sodas, fruit drinks, candies, and sweet desserts. It is best for most people to limit intake of these foods. However, since adequate caloric intake is so important during pregnancy, advice regarding intake of fats and sweets must be individualized, according to the needs of the client; this advice should be provided only by the nutritionist or health care provider.



Self-Check



Prenatal & Postpartum
Nutrition Module

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Figure 7. **Fruits and Vegetables for Pregnant Women**¹

Fruits and Vegetables		Recommended # Servings
<p>Excellent Sources of Vitamin A One serving contains at least 200% of the RDA for vitamin A for pregnant women.</p> <p>1 sweet potato with skin 1 raw carrot</p>		<p>3 or more per week</p> <p>or</p> <p>2 or more per day</p>
<p>Good Sources of Vitamin A One serving contains 40% to over 100% of the RDA for vitamin A for pregnant women.</p> <p>1/4 cup canned pumpkin 1/2 cup cooked kale or callaloo 1 raw mango 1/2 cup cooked hubbard or butternut squash 1/2 cup cooked spinach 1/2 cup cooked turnip or beet greens 1/2 cup cooked dandelion greens 1/2 cup cooked calabaza 1 cup raw cantaloupe pieces 1/2 cup raw or cooked sweet red peppers or red chili peppers² 1/2 cup cooked collards, frozen 1 cup cooked plantain</p>		
<p>Fair Sources of Vitamin A One serving contains 20% to under 40% of the RDA for vitamin A for pregnant women.</p> <p>1/2 cup cooked swiss chard or mustard greens 1 medium apricot, nectarine, tangerine, papaya, or sapote 1/2 cup shredded bok choy 1/2 cup cooked broccoli 3/4 cup vegetable juice or tomato juice 1/4 cup tomato paste 1/2 cup mandarin oranges</p>		
<p>Excellent Sources of Vitamin C</p> <p>One serving contains at least 50% to 100% of the RDA for vitamin C for pregnant women.</p> <p>broccoli guava strawberries brussels sprouts kiwi sweet peppers, red, green & yellow cantaloupe mango sweet potato (canned) chili peppers orange vitamin C-enriched juices grapefruit, pink & red papaya orange/grapefruit juice</p>		<p>1 to 2 or more per day</p>
<p>Other Fruits and Vegetables</p> <p>apple green beans plantain avocado juices (that are not plums, prunes banana on vitamin C list) potato bean sprouts lettuce squash—summer beets malanga (tanier) varieties including cabbage mushrooms zucchini cauliflower nectarine tangerine celery okra tomatoes cherries onion turnip corn peach water chestnuts cucumber pears watermelon eggplant peas yam (taro) grapes, raisins pineapple yuca (cassava)</p>		<p>Eat each day for variety</p>

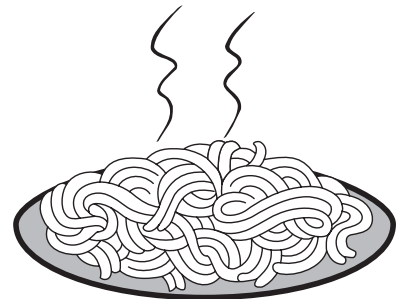
1. Source of data: Pennington, JAT. *Bowes and Church's Food Values of Portions Commonly Used*. 17th ed. Philadelphia: Lippincott-Raven Publishers; 1998.

2. Green and yellow peppers also contain vitamin A, but a very small amount.

The Food Guide Pyramid, Pregnancy, and Calories

For pregnant women, there is no ideal daily calorie intake. The general guidelines, based on the Institute of Medicine of the National Academy of Sciences¹ recommended daily energy intake, include a **340-calorie-per-day increase** over the prepregnancy energy needs during the **second trimester of pregnancy** and about a **450-calorie-per-day increase** over the prepregnancy energy needs during the **third trimester of pregnancy**. If the pregnant woman consumes the minimum number of servings of foods in the five food groups as presented in Figure 6, she will receive approximately 2,200 to 2,800 calories per day. Depending on the women's prepregnancy energy requirements, this calorie range should adequately support the calorie needs of most women during the second and third trimester of pregnancy. *It should be remembered, however, that each person should be evaluated individually; for example, pregnant teens and very active women may need additional calories or other nutrients, based on an individualized nutrition assessment conducted by a nutritionist.*

Foods should be chosen wisely and should not include excessive amounts of fat, oils, or refined sugar. It is also important to recognize that the amount a person eats may be more than one serving. For example, a dinner portion of spaghetti could count as *two* or maybe even *three servings* of pasta, depending on how much spaghetti an individual consumes at the meal. For more information about food portions, you can view a copy of the USDA pamphlet, "*How Much Are You Eating?*" at www.usda.gov/cnpp/Pubs/Brochures/HowMuchAreYouEating.pdf.



How Much Food Is Enough?

The best way to measure whether a pregnant woman is consuming enough calories is to follow her pattern of weight gain. If she is gaining in a steady, gradual manner, then she is taking in enough calories. However, consuming an adequate amount of calories does not guarantee that a woman is getting sufficient nutrients. For example, a woman can gain weight by eating potato chips and drinking soda. Thus, it is critical to remember that both the quantity and the **quality** of the foods eaten are important.

1. Source of data: National Academy of Sciences. *Dietary Reference Intakes for Energy, Carbohydrates, Fiber, Fat, Protein and Amino Acids (Macronutrients)*. Washington, DC: The National Academies Press, 2002, page 5-64. The report may be accessed via the Internet at www.nap.edu.

Counseling a Woman with Low Maternal Weight Gain

A woman who was underweight before pregnancy or who has a low maternal weight gain pattern should be monitored carefully. If she seems reluctant to gain weight, remind her how beneficial her weight gain is to the health of her baby. Refer to *Figure 2. How Weight Gain Is Distributed During Pregnancy* to show her why her weight gain is crucial to the normal process of pregnancy, and remind her of the problems that can be associated with an inadequate diet.

The woman with low maternal weight gain may simply need advice on what to eat. Rather than trying to completely change her diet, advise her *not only* to continue to follow the recommendations as shown in *Figure 6. A Guide To Daily Food Choices for Pregnant Women*, but also encourage her to try to increase her intake of snacks throughout the day. Some recommended snack foods that are also high in calories include nuts, peanut butter, milk shakes, whole milk, cheese, fruit yogurt, pizza, sandwiches, and ice cream. Adding dry milk or shredded cheese to meals during their preparation will also increase the caloric and nutrient content of the meals.



Reminder: Any woman whose prepregnancy weight falls within the underweight status, that is, her prepregnancy BMI was less than 19.8, is considered to be “high risk” and should be referred to the nutritionist. Also, any woman who has a low maternal weight gain is considered to be “high risk” and should be referred to the nutritionist for further assessment and counseling.

Adolescent Pregnancy

Adolescents (teenagers) who become pregnant are considered to be at higher nutrition risk than pregnant adult women. An adolescent (less than or equal to 17 years of age at conception) may not yet have completed her own growth and development, so the increased nutrient demands of pregnancy may compromise her own nutritional status. Studies indicate that adolescent pregnancy is associated with an increased incidence of pregnancy-induced hypertension, anemia, infection, prematurity, low birth weight, and neonatal mortality. It is not clear if these greater health and medical risks are related to the age of the mothers or to the adverse social and economic circumstances experienced by many pregnant teens.



There may be several social risk factors associated with adolescent pregnancy, such as acceptance of the pregnancy, unfinished education, and living in an unstable family environment. These social factors can have a negative influence on a pregnant adolescent's nutritional status.

A pregnant adolescent—like others in her age group—is also more likely to have unhealthy eating habits, follow fad diets, and go for long periods without eating. Other typical eating behaviors of this age group also include frequent snacking and eating at fast food restaurants.

An adolescent whose body is still growing will have a higher need for calories than a pregnant adult woman. A pregnant adolescent's weight gain should be closely monitored to help ensure that she is eating enough food. In fact, some of the recommendations made in Figure 6 may need to be adjusted; that is, the number of recommended servings from some, or all, of the food groups may need to be increased—*this is an issue that must be determined by the nutritionist.*

Counseling tips for the pregnant adolescent:

- The two most important things the adolescent needs to do are to **eat well** and **gain an appropriate amount of weight** during pregnancy.
- Emphasize how to make healthy food choices when eating in fast food restaurants, selecting snacks, preparing breakfasts, or choosing quick-fix meals.
- Make messages simple and positive, focusing on foods rather than nutrients.
- Give “how to” information and less “why” information. Information and activities should focus on what to eat, how much and how often to eat, and how to prepare foods (especially fast and easy to prepare foods).

For more information on this subject, refer to: Story M, Stang J, eds. *Nutrition and the Pregnant Adolescent: A Practical Reference Guide*. Minneapolis, MN: Center for Leadership, Education, and Training in Maternal and Child Health, University of Minnesota, 2000.

Individual Dietary Preferences and Concerns

A last important point to remember when using the Food Guide Pyramid is that it may need to be modified according to an individual's dietary practices. There are many factors that play an important role in shaping a person's food habits, and these factors must be considered if nutrition counseling is to be realistic and appropriate for a client.

A person's income level, family and cultural background, religious beliefs about food, climate, geographic location, agricultural conditions, and philosophical attitudes toward food can all influence her eating habits.

For example, some pregnant women have cravings for, or customs of, eating nonfood items such as clay, chalk, starch (laundry and cornstarch), dirt, ashes, paint chips, large quantities of ice, and baking soda and may eat these items in large quantities. This practice is called *pica*. When the practice of *pica* is discovered, it should immediately be brought to the attention of the nutritionist.

Vegetarianism

Note: Refer to the Basic Nutrition Module for an in-depth discussion about vegetarianism.

Some pregnant women may be vegetarians, due to their personal philosophical beliefs about food. Vegetarian eating patterns, particularly when highly restrictive, require careful planning and supplementation to meet the needs of the pregnant woman and her developing fetus. If vegetarian eating patterns are inadequate, the result can be nutrition problems during pregnancy.

For example, the following are some potential risks of vegetarian eating patterns before and during pregnancy:

- low prepregnancy weight
- iron-deficiency anemia
- low gestational weight gain
- compromised protein utilization
- decreased mineral absorption
- nutrient imbalances or deficiencies

If a pregnant woman practices vegetarianism, refer her to the nutritionist for a nutrition assessment and appropriate nutrition counseling.

Source: The above section on “Vegetarianism” was reprinted, with permission, from the March of Dimes Birth Defects Foundation, from the following publication: *Nutrition Management of the Pregnant Adolescent, A Practical Reference Guide*. Developed by the U.S. Department of Health and Human Services, the U.S. Department of Agriculture, and the March of Dimes Birth Defects Foundation, 1990.

The Low Income Client

The low income pregnant client needs special attention since a nutritionally adequate diet cannot be obtained when there is not enough money to purchase the necessary foods. Every effort should be made to refer low income pregnant clients to appropriate food and nutrition assistance programs and to other community agencies.

Efforts should also be made to provide information on nutrition topics such as how to plan, purchase, and prepare nutritious and economical (low cost) meals. Your local agency can order educational materials about wise shopping and food safety from organizations such as the local Cooperative Extension Service.

Favorite Foods

And finally, it is very important to find out what the client’s favorite foods are and show her ways to incorporate these foods into a balanced diet.

Other Nutrition Concerns During Pregnancy

Vitamin/Mineral Supplements





What about taking vitamins and minerals during pregnancy? Since the requirements for so many nutrients increase during pregnancy, pregnant women are usually advised to take a vitamin/mineral supplement each day.

In particular, iron and folic acid need to be supplemented because their increased requirements during pregnancy are usually too great to be met through diet alone. The need for these two nutrients is much higher during pregnancy because they are necessary to form new blood cells for both the fetal and the expanded maternal blood systems. Anemia may develop if there is an inadequate intake of these nutrients.

Adequate amounts of folic acid in early pregnancy are also necessary to prevent neural tube defects in the baby. For more information on folic acid, and its significance for *all* women during their reproductive years, refer to Part 3 of this module, Postpartum Nutrition, and find the Folic Acid section.

For most pregnant women, supplements of 30 milligrams of ferrous iron are recommended daily during the second and third trimesters. These supplements are prescribed by the health care provider. It is recommended that the iron supplement be taken between meals or at bedtime on an empty stomach to help with the absorption of the iron. Prenatal clients should be advised **not** to take their iron supplement (or vitamin/mineral supplement containing iron) with tea, coffee, or large amounts of milk or cheese because these products may inhibit the absorption of the iron.

A pregnant woman should be advised to take a vitamin/mineral supplement (which should include iron and folic acid) that is prescribed by her health care provider, and to consume a nutritionally adequate diet while she is pregnant. While it is important to take a daily vitamin/mineral supplement, prenatal clients should be advised that these supplements do not take the place of a nutritionally adequate diet. If a pregnant woman has problems tolerating the iron supplement, counsel her to discuss this problem with her health care provider.

 **Self-Check**  **Prenatal & Postpartum Nutrition Module**

✍ **GO TO** the Workbook for the Prenatal & Postpartum Nutrition Module and complete Self-Check Questions 14–17 right now. Then, immediately check your answers against the Answer Key to the Self-Check Questions (contained in your workbook) before proceeding to the next section of the module.

Iron-deficiency Anemia During Pregnancy

Let's focus now on iron and what happens when there is an iron deficiency in the body. Iron is needed to form **hemoglobin**, a protein found in red blood cells. Hemoglobin assists in carrying oxygen to the body cells and carbon dioxide back to the lungs. Hemoglobin combined with oxygen gives blood its red color. If an iron deficiency exists, then sufficient amounts of hemoglobin are **not** formed, and the final result is that **less** oxygen is carried to all parts of the body.

This condition is called **iron-deficiency anemia**. It is characterized by the production of fewer red blood cells that are smaller and light-colored. A woman who is anemic may look pale; she may be tired, listless, and irritable. She may experience an increased incidence of infection because iron is associated with normal immune function. She may also report that her appetite has dropped and that she is having headaches and dizziness.

We can find out if there are enough red blood cells by doing a **Hemoglobin (Hgb)** or a **Hematocrit (Hct)** test. These two hematological tests are simple screening tests that are done by means of a "finger stick." The hemoglobin test measures the concentration of hemoglobin in a sample of whole blood. The hematocrit test measures the percentage of red blood cells in a sample of whole blood.

In our discussion of weight gain during pregnancy, we mentioned that several pounds can be accounted for from an increase in blood volume and other fluids. Because a woman's blood volume increases dramatically throughout pregnancy, her hematocrit may actually decrease during the second and third trimesters. This decrease is normal, since her red blood cells are essentially diluted. A pregnant woman, however, needs extra iron during pregnancy to form new red blood cells. These red blood cells are needed to carry oxygen **to** and carbon dioxide **from** the baby's tissues.

Iron Requirements During Pregnancy

Because the recommended intake of iron doubles during pregnancy, a pregnant woman can easily become anemic. It is important to encourage her to eat foods that are good sources of iron, as well as take her prenatal vitamin and any additional iron supplement that is prescribed by her health care provider.

See Figure 8 of this module for a list of foods and their iron content. The black bars on Figure 8 visually indicate how much iron (in milligrams) each food contains. Study this figure carefully, as well as the footnotes that accompany it.

Iron Absorption. The iron in meat, poultry, or fish products is better absorbed by the body than the iron in plant products (vegetables, fruits, breads, and cereals). But when meat, poultry or fish products are eaten at the same meal with iron-containing plant products, the meat, poultry, or fish products will help the iron in the plant products to be absorbed.

Another way to increase the absorption of iron from meals containing plant products is to eat foods that are good sources of vitamin C at the same meal, because vitamin C helps the body absorb iron. Foods and beverages that are good sources of vitamin C include: fruit and vegetable juices that contain at least 120 percent of the Daily Value¹ of vitamin C; broccoli; grapefruit; kiwi; mangos; melons; oranges; papaya; raw cabbage; strawberries; and tomatoes. (See Figure 7 of this module for a more detailed list.) Still another way to increase the amount of iron in the diet is to cook with an iron skillet. Small amounts of iron will be leached from the skillet, increasing the iron content of the cooked food, particularly when an acid food such as tomato sauce is being cooked in the iron skillet.

On the other hand, there are some substances that may decrease the absorption of iron. These include tea, coffee, bran, antacids, and large amounts of calcium. As previously mentioned, prenatal clients should be advised **not** to take their iron supplement (or vitamin/mineral supplement containing iron) with tea, coffee, or large amounts of milk or cheese because these products may inhibit the absorption of the iron.

Calcium Requirements During Pregnancy

It may not always be easy for a pregnant woman or teen to meet the recommended daily requirements from the Milk, Yogurt, & Cheese Group. Some pregnant women do not like milk and will not drink it. It is necessary, then, not only to stress the importance of calcium in their diet, but also to offer them food choices other than fluid milk that will help them meet their calcium needs. For example, chocolate milk is an acceptable alternative for many women. Soups and puddings made with milk also may be more acceptable to some women. It's also a good idea to add dry milk to foods like casseroles, meatloaves, mashed potatoes, and cookies during preparation in order to help meet calcium requirements. *Make the Most of Milk* is a pamphlet that can be given to clients. This pamphlet contains counseling tips and recipes for incorporating milk and milk products into the woman's diet. (See page 78 of this module for pamphlet information.)

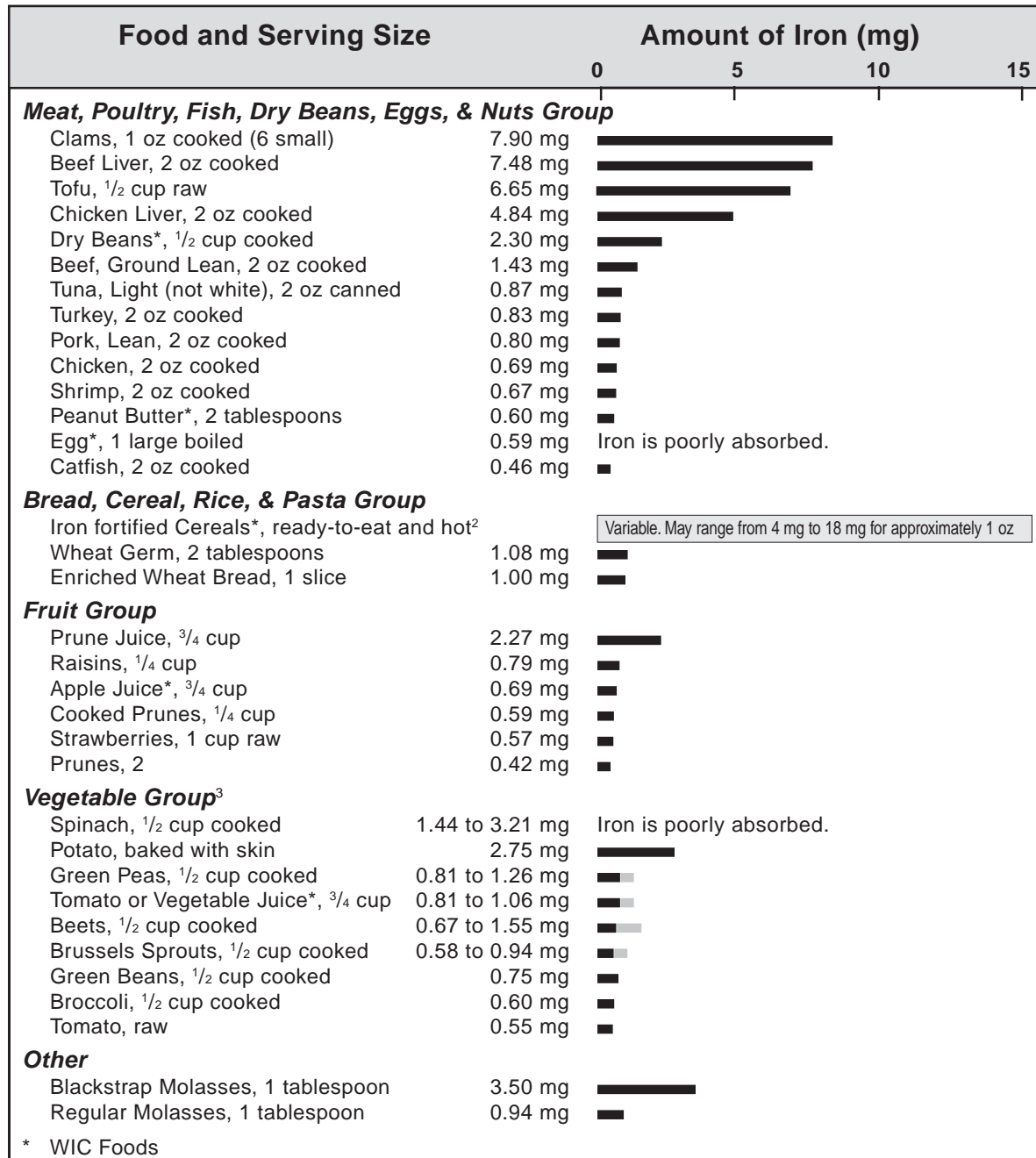
If a woman is unable to drink milk because she is allergic to milk proteins or because she cannot digest lactose, refer her to the nutritionist in your clinic. For more about lactose intolerance and the lactose-free or lactose-reduced milk products that are available for people with lactose intolerance, see the Basic Nutrition Module.

Figure 9. Calcium Equivalents to One Cup (8 fluid ounces) of Milk on page 41 illustrates the various food sources of calcium and the portion sizes which would have to be consumed in order to receive the same amount of calcium that is contained in one cup of fluid milk. While drinking fluid milk may be the easiest way to obtain the necessary calcium (and vitamin D), there are other ways a pregnant woman can meet her calcium needs.

1. Percent Daily Values (% DV) are listed on the nutrition label of packaged foods to give the consumer information about the nutrient value of foods. A high % DV means the food contains a lot of a particular nutrient; a low % DV means it contains just a little. For more information about % DV and nutrition labeling, see the Basic Nutrition Module.

Figure 8. Sources of Iron¹

The Milk, Yogurt, & Cheese Group is not listed since foods in this group only have trace amounts of iron.



* WIC Foods

1. Source of data: Pennington, JAT. *Bowes and Church's Food Values of Portions Commonly Used*. 17th ed. Philadelphia: Lippincott-Raven Publishers; 1998.
2. Iron fortification is different for each cereal. **Read the label** to find out *what percentage of the Daily Value of iron* is contained in the *serving size* for the cereal. Regarding iron-fortified cereals: not all iron-fortified cereals are WIC-approved; check with your local WIC agency for the current list of WIC-approved, iron-fortified cereals. A ready-to-eat cereal is considered a good source of iron when it contains at least 45% of the Daily Value of iron per serving.
3. While many of these vegetables *appear* to be good iron sources, it must be noted that the majority of them contain other compounds that cause their iron content to be poorly absorbed by the body. This is one more reason to stress to the clients the importance of adequate vegetable consumption because: *by increasing the number of vegetables—and also fruits and grains—in your daily diet (in accordance with the Food Guide Pyramid recommendations), you are also increasing the potential for adequate iron absorption for the body's use.* Check with the nutritionist in your local agency for further information about iron absorption issues.

Salt Restriction and Use of Diuretics

In the past, women were often told to restrict their intake of sodium (as salt) and to take diuretics (drugs that increase water and sodium loss from the body) in an attempt to prevent the excessive water retention that sometimes occurs during late pregnancy. The condition of abnormal and excessive build-up of body water and the **hypertension** (high blood pressure) which accompanies it during late pregnancy is known as **pregnancy-induced hypertension (PIH)**.

However, it is now believed that these practices of salt restriction and use of diuretics during pregnancy may be potentially dangerous because the need for sodium may actually increase slightly during pregnancy. Sodium is a mineral that is required by the body and must be supplied in the diet. Restricting sodium or using diuretics during pregnancy could possibly result in a sodium deficiency in the pregnant woman and these practices should, therefore, be discouraged.

An *excessive* intake of salt, however, is not a recommended practice for anyone, including the pregnant woman. Thus, it is important for you to discuss with the client the foods she is eating that contain large amounts of salt, and discuss alternative choices that she might be willing to eat instead. Some foods with a high salt content include potato chips, corn chips, canned soups, salad dressings, salted nuts, ham, luncheon meats, sausage, bacon, and frozen dinners. However, there are many reduced-salt versions of these products available in the grocery stores that the client should be encouraged to try if the client eats these foods.

Figure 9. **Calcium Equivalents to One Cup (8 fluid ounces) of Milk¹**

Milk Products:	Serving Size:
Fluid milk (fat free, lowfat, reduced fat, or whole)	1 cup
Yogurt	1 cup
Cheese	1 ¹ / ₂ oz
Non-fat dry milk powder	¹ / ₃ cup
Evaporated milk	¹ / ₂ cup
Cottage cheese	2 cups
Cream soup	2 cups
Pudding or custard	1 cup
Ice Cream, Ice Milk or Frozen Yogurt	1 ¹ / ₂ cups
Other Food Sources:	Serving Size:
Soy milk, calcium fortified	1 cup
Tofu (if coagulated with a calcium salt)	2 ¹ / ₂ " cube
Broccoli, cooked	3 cups
Dry beans, cooked	3 cups
Almonds	1 cup
Sardines with bones	3 oz
Blackstrap molasses (not regular molasses)	2 tablespoons
Salmon, canned with bones	4 oz
Calcium-fortified orange juice	1 cup
Calcium-fortified cereals ²	varies
Sesame seeds, whole, dried	3 ¹ / ₂ tablespoons

- Note: 1 cup of milk contains approximately 300 mg calcium or 30% of the Daily Value (DV) for calcium that is listed on the Nutrition Facts food label.
- Some cereals are fortified with calcium in ranges from 10% of the DV (100 mg calcium) up to 100% of the DV (1,000 mg calcium).

Physical Activity During Pregnancy

Almost all women can and should be physically active during pregnancy. The pregnant woman should first ask her health care provider about a level of exercise that is safe for her. She should aim to do at least 30 minutes of a moderate activity (one that makes her breathe harder but does not overwork or overheat her) on most days of the week.

Regular, moderate physical activity during pregnancy may:

- help the mother and baby to gain the proper amounts of weight.
- reduce the discomforts of pregnancy such as backaches, leg cramps, constipation, bloating, and swelling.
- improve the woman's mood, energy level, and feelings about the way she looks.
- strengthen muscles and improve blood flow.
- improve sleep.
- help the woman have an easier, shorter labor.
- help the woman recover from delivery and return to a healthy weight faster.

These safety precautions should be followed while a woman is being active during her pregnancy:

- Choose moderate activities that are unlikely to cause injury, such as walking, water aerobics, swimming, yoga, or using a stationary bike.
- Stop exercising when she starts to feel tired, and she should never exercise until she is exhausted or overheated.
- Drink plenty of water.
- Wear comfortable clothing that fits well and supports and protects the breasts.
- The woman should stop exercising if she experiences dizziness, shortness of breath, back pain, swelling, numbness, upset stomach, or if her heart is beating too fast or at an uneven rate.



For the woman's health and safety, and for the health of the baby, there are certain physical activities that should not be done while pregnant. Some are listed below. A woman should talk to her health care provider to find out if there are other physical activities that she should avoid.

- Avoid being active outside during hot weather.
- Avoid steam rooms, hot tubs, and saunas.
- Avoid physical activities, such as certain yoga poses, that call for lying flat on the back after 20 weeks of pregnancy.
- Avoid contact sports such as football and boxing, and other activities that might cause injury such as horseback riding.
- Avoid activities that include jumping or changing directions quickly such as tennis or basketball. During pregnancy, joints loosen and a woman is more likely to hurt herself when doing these activities.

Tips to Help a Pregnant Woman Get Physically Active

The woman can be encouraged to:

- take walks with a friend or family member.
- sign up for a prenatal yoga, water aerobics, or fitness class. (The woman should make sure the instructor knows that she is pregnant before beginning the class.)
- rent or buy an exercise video for pregnant women. (Videos can be obtained from the local library, video store, health care provider's office, hospital, or maternity clothing store.)
- sign up for a session with a fitness trainer who knows about physical activity during pregnancy. (The fitness trainer may be found at a local gym, community center, YMCA, or YWCA.)
- get up and move around at least once an hour if she sits in a chair most of the day. (If sitting watching TV, this could be done during commercials.)

Source: The above section on "Physical Activity During Pregnancy" was adapted from: U.S. Department of Health and Human Services, National Institutes of Health. *Healthy Eating & Physical Activity Across Your Lifespan, Fit for Two: Tips for Pregnancy*. NIH Publication No. 02-5130, September 2002. This publication is available at www.niddk.nih.gov/health/nutrit/pubs/fit4two/fitfortwo.htm.

Feeding the Baby

This section is not complete without mentioning the topic of breastfeeding. While we have spent a lot of time discussing the diet of the prenatal woman, it is also very important to consider the feeding options for her soon-to-be-born baby.

During the first 6 months of life, a baby's nutritional, immunological, and emotional needs can best be met with exclusive breastfeeding. Breastfeeding is recognized by health professionals not only as a lifestyle choice but more importantly as a positive health choice for both mother and baby.

The promotion and support of breastfeeding within your client population is very important. Through counseling and the provision of printed materials designed for clients, you can provide information on the advantages and the "how to's" of breastfeeding. You can also address the myths and social barriers to breastfeeding, thereby empowering the pregnant woman to make an informed decision. (Refer to the Breastfeeding Module for a thorough and in-depth study of breastfeeding issues.) In instances when a pregnant woman chooses not to breastfeed, you should be respectful of her choice. If not breastfeeding, she should feed her baby an iron-fortified infant formula (artificial baby milk) for the first year of life.



Prenatal Nutrition Guidelines

In summary, let's review the prenatal nutrition guidelines.

Encourage the client to:

- ✓ Follow the Food Guide Pyramid recommendations and choose foods from each of the five food groups with an awareness of the appropriate number of servings per day and the amount of food in each serving size. The number of servings per day from each food group may need to be modified by the nutritionist depending on the woman's individual needs.
- ✓ Gain weight in a gradual and steady manner. The total weight gain that is recommended for the pregnancy is as follows:
 - normal weight woman: 25 to 35 pounds
 - underweight woman: 28 to 40 pounds
 - overweight woman: 15 to 25 pounds
 - obese: 15 pounds
- ✓ Take a prenatal vitamin/mineral supplement, which includes iron and folic acid, as prescribed by a health care provider.
- ✓ Avoid weight-reduction diets.
- ✓ Avoid the use of diuretics, and avoid both an excessive or restrictive use of salt.
- ✓ Consider reasonable physical activities, but only after the woman discusses her physical activity plans with her health care provider.



Self-Check



**Prenatal & Postpartum
Nutrition Module**

✎ **GO TO** the Workbook for the Prenatal & Postpartum Nutrition Module and complete Self-Check Question 18–23 right now. Then, immediately check your answers against the Answer Key to the Self-Check Questions (contained in your workbook) before proceeding to the next section of the module.

Part 2: Special Concerns During Pregnancy

Common Problems During Pregnancy

Heartburn

Heartburn is a common problem which occurs during pregnancy, usually during the last months. Heartburn may occur because there is increased pressure on the stomach as the fetus grows. A pregnant woman should only use over-the-counter drugs (such as antacid tablets) when they are prescribed by her health care provider.

The following suggestions may help to relieve **heartburn** if it should occur:

- Eat 5 or 6 small meals per day instead of 2 or 3 large meals.
- Limit fatty, greasy, and fried foods.
- Limit foods that may cause gas.
- Limit or avoid coffee and other caffeine-containing beverages.
- Avoid spicy foods.
- Wear clothes that are loose around the waist.
- Do not lie down right after eating. If you need to lie down, put a pillow behind your head and shoulders, or sit up for a while.
- Avoid bending over.
- Drink fluids between meals.

Constipation

Constipation may occur during pregnancy due to the normal hormonal changes of pregnancy. Lack of exercise or too little fiber and/or fluids in the diet can also promote this condition. A pregnant woman should never use over-the-counter drugs, e.g., laxatives, to relieve constipation. However, natural fiber products, e.g., Metamucil[®], are generally acceptable to use, but only after the pregnant woman has received approval from her health care provider.

The following suggestions may help relieve **constipation**:

- Eat more raw fruits and vegetables, including the skins. Also try prune juice (in moderation) or dried fruits.
- Use whole grain cereals and breads such as bran cereals, whole wheat bread, and brown rice.
- Participate in regular physical activity, but only after checking with the health care provider about the appropriate physical activities that can be done.
- Eat meals at regular times.

- Drink more liquids. It is recommended that the pregnant woman drink at least 8 cups of water or other liquids each day (for a total of at least 64 fluid ounces per day). Liquids include such items as water, milk, fruit or vegetable juices, and soup. A glass of warm water after getting out of bed in the morning is helpful for some. (Sodas or liquids with caffeine should *not* be increased.)

Note: The pregnant woman should not stop taking your vitamin/mineral supplement or iron supplement unless the health care provider recommends it.

Morning Sickness or Nausea

One of the most notorious problems during pregnancy is morning sickness or nausea. Morning sickness may also occur throughout the day, or many women experience nausea only in the evening. It often occurs during the early months of pregnancy and usually disappears after the third or fourth month. The following pages contain some counseling suggestions written specifically for the pregnant woman who is suffering from morning sickness or nausea.



If you have **morning sickness**, these suggestions may help you:

Before going to bed:

- Be sure to have plenty of fresh air in the room where you sleep. The odors in the room where you sleep may upset your stomach.
- Place some dry cereal or dry bread within reach of your bed. You can use toast, dry bread, dry biscuits, ready-to-eat cereals, or crackers.

Before getting up in the morning:

- Eat some of the dry bread or cereal. A little jelly on the bread may make it taste better, but do not use butter or margarine.

When you get up:

- Get up very slowly; take several minutes. Avoid sudden movements when getting out of bed.

Before you prepare breakfast:

- Eat some more dry bread or cereal a little while after you get up and before you prepare breakfast.

Don't cook breakfast; instead have "cold" foods for breakfast like ready-to-eat cereal with milk, and toast.

- If you wish to cook breakfast, have a window open to remove odors of the foods being cooked.

If you have **nausea** during the day, these suggestions may help you:

Meals:

- Eat 5 to 6 small meals during the day rather than three large meals, because you are more likely to feel nauseated when your stomach is empty.
- Prepare easy foods that you can eat when you do not feel like cooking.
- Limit fluids or soups at mealtimes (but drink fluids between mealtimes).
- Sometime during the day you may find you can eat a regular meal. Be sure not to overeat at this time.

Foods to avoid:

- Avoid fried foods and foods cooked with grease, oils, or fatty meats. Fats and greasy foods tend to upset the stomach.
- Limit your intake of the following foods: butter, margarine, gravy, bacon, salt pork, oils, mayonnaise, salad dressings, pie crusts, pastries.
- Avoid highly seasoned foods such as those cooked with garlic, onion, pepper, chili, and other spices because they may upset your stomach.
- Do not eat foods that give you gas.
- Avoid foods that make you feel sick. You can add them back to your diet when you feel better. Try to choose alternate foods from that same food group.

Between meals:

- Drink small sips of liquids frequently between meals. Take milk, water, fruit juices, and soups *only* between meals.
- When you feel nauseated, drink a *small* amount of caffeine-free carbonated beverages or fruit juices.

When you cook:

- Have windows open to get rid of the smell of cooking foods.
- Choose foods or cooking methods (e.g., microwave) with reduced cooking time.

While nausea and vomiting are common early in pregnancy, some women may experience severe nausea and vomiting that can lead to weight loss, dehydration, and metabolic imbalances. These women may be diagnosed by their health care provider with a condition referred to as *hyperemesis gravidarum*. In some cases, women experiencing hyperemesis gravidarum are hospitalized. These women should be referred to the nutritionist and must be closely monitored by their health care provider.

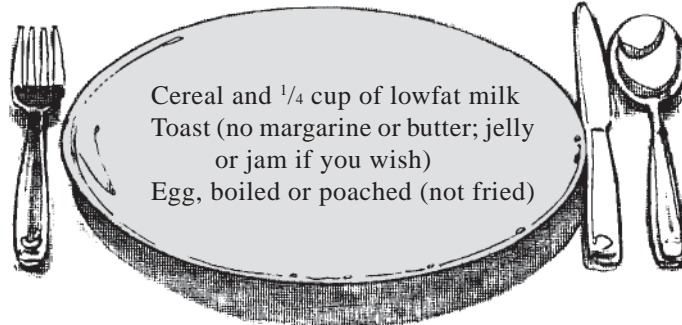
Eating Plan to Control Nausea

Note: This eating plan does **not** give all the foods needed during pregnancy. As soon as the pregnant woman is no longer nauseated, she should eat all of the foods in *Figure 6. A Guide to Daily Food Choices for Pregnant Women*.

Before getting up:

Crackers, dry bread, toast, or dry cereal

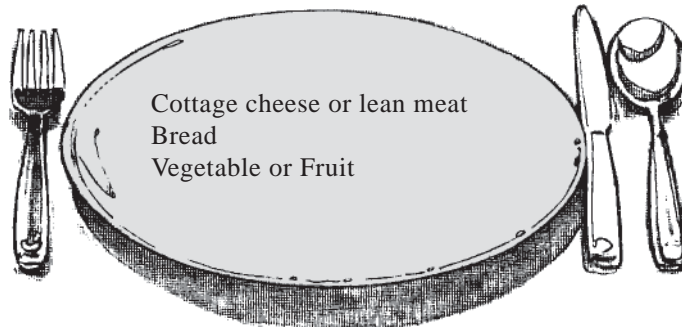
Breakfast:



Snack (30 minutes or more after breakfast):

Fruit juice or milk—about two sips at a time

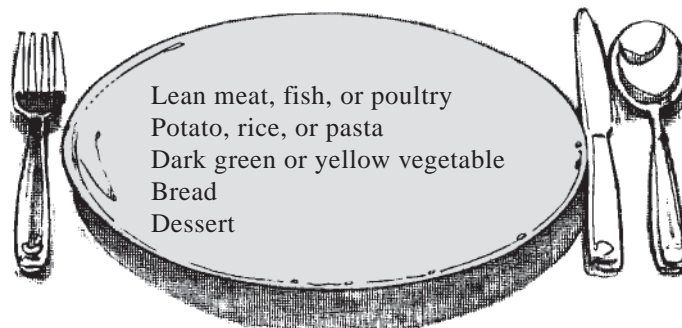
Lunch:



Snack (30 minutes or more after lunch):

Milk, fruit juice, or soup—about two sips at a time

Dinner:



Before bed (30 minutes or more after dinner):

Milk or other liquid—about two sips at a time



Self-Check



Prenatal & Postpartum Nutrition Module

✎ **GO TO** the Workbook for the Prenatal & Postpartum Nutrition Module and complete Self-Check Questions 24–26 right now. Then, immediately check your answers against the Answer Key to the Self-Check Questions (contained in your workbook) before proceeding to the next section of the module.

Use of Drugs During Pregnancy

Caffeine

A great deal has been written about the hazards of consuming too much caffeine. Caffeine is a drug, and in many people it produces the side effects of nervousness, sleeping difficulties, and frequent urination. Caffeine is found predominantly in coffee, tea, cocoa, chocolate, and some soft drink beverages. It is also contained in some prescription drugs and several over-the-counter drugs, e.g., some aspirin tablets and many cold preparations contain 30 to 60 milligrams (mg) of caffeine per tablet.

Studies of the safety of caffeine consumption during pregnancy have been inconclusive. However, it appears that *small* amounts of caffeine (no more than three 6-ounce cups of coffee per day) are *probably* safe for the growing fetus. It is best to recommend that the pregnant woman restrict her caffeine intake to no more than 300 milligrams per day or, better yet, avoid it completely. Use Figure 10 to help you identify how many milligrams of caffeine are contained in the foods and drinks listed. Note the serving size of each entry. While a serving size of coffee is listed as 6 fluid ounces, be aware that many coffee mugs hold about 12 fluid ounces.

Figure 10. **Caffeine Content of Foods and Beverages**

Food or Beverage	Caffeine Content
Coffee, brewed (6 fluid oz)	103 mg
Coffee, instant (6 fluid oz water & 1 rounded teaspoon powder)	57 mg
Cola (12 fluid oz)	46 mg
Tea, black (brewed 3 minutes) (6 fluid oz)	36 mg
Iced Tea, instant powder (1 teaspoon)	30 mg
Milk Chocolate Candy Bar (1.55 oz)	11 mg
Cocoa Mix, powder (1 oz packet or 3-4 heaping teaspoons)	5 mg
Decaffeinated Coffee (6 fluid oz water & 1 rounded teaspoon powder)	2 mg

Source of data: Pennington, JAT. *Bowes and Church's Food Values of Portions Commonly Used*. 17th ed. Philadelphia: Lippincott-Raven Publishers; 1998.

Alcohol

Drinking excessive amounts of alcohol during pregnancy can cause birth defects. One particularly serious alcohol-related defect is **Fetal Alcohol Syndrome (FAS)**. FAS can result in infants born with low birth weight; mental retardation; heart defects; cleft palate; and deformities of the face, arm, and leg.

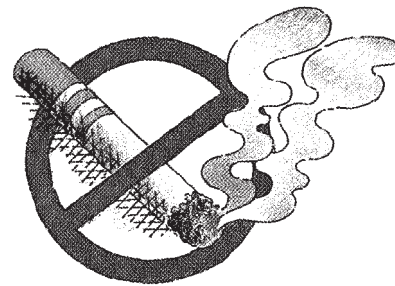


Drinking alcohol is also associated with an increased risk of spontaneous abortion. Occasional “binge” drinking, especially in early pregnancy, is also unsafe for the developing fetus.

*Because there is **no** safe level of alcohol that a pregnant woman can drink and at the same time be certain she is not harming the fetus, alcohol should be avoided during pregnancy. (This includes **early** pregnancy, which is before most women even know they are pregnant.)*

Smoking^{1,2,3}

Smoking is a major public health problem. In 1999, about 12 percent of women giving birth reported smoking during pregnancy. Smoking during pregnancy is associated with adverse outcomes, including low birth weight, preterm delivery (delivery before 37 weeks gestation), intrauterine growth retardation, and infant deaths, as well as negative consequences for child health and development. Low birth weight babies (babies who weigh less than 5¹/₂ pounds at birth) are at increased risk of serious health problems during the newborn period, chronic disabilities (such as cerebral palsy, mental retardation, and learning problems) and even death.



Cigarette smoke contains more than 2,500 chemicals. It is not known for certain which of these chemicals are harmful to a developing baby. However, both nicotine and carbon monoxide are believed to play a role in causing adverse pregnancy outcomes.

Other Problems Associated with Smoking in Pregnancy

- A higher risk of **Sudden Infant Death Syndrome (SIDS)** exists for babies of women who smoke compared with babies of women who don't smoke.

1. Portions of this section on “Smoking” were reprinted (with permission from the U.S. Department of Agriculture) from the booklet: *Smoking Cessation in Pregnancy, Abbreviated Prenatal Counseling Protocols for WIC Educators and/or Health Care Professionals*. Developed by the Colorado Department of Health, with technical assistance from the Centers for Disease Control and Prevention. A U.S. Department of Agriculture Reprint, December 1994.

2. March of Dimes, *Drugs & Alcohol Fact Sheet*, 09-1392099, February 2003.

3. Mathews TJ, Smoking during pregnancy in the 1990s. *National Vital Statistics Reports*. Volume 49, Number 7, August 28, 2001.

- Babies born to mothers who smoke are more susceptible to respiratory infections for the first year after birth. These include pneumonia, bronchitis, asthma, recurrent colds, and ear infections.

Effects of Secondhand Smoke

Pregnant women who do not smoke should avoid exposure to other people's smoke. Studies suggest that regular exposure to secondhand smoke may reduce fetal growth and, therefore, increase a woman's chances of having a low birth weight baby.

It's Never Too Late to Quit Smoking

While it is best to counsel women to stop smoking *before* becoming pregnant, a woman who quits smoking when she discovers she is pregnant increases her chances of a good pregnancy outcome. If she quits by the end of the first trimester, her risk of having a low birth weight baby is similar to that of a non-smoker. The risk is also decreased if she stops smoking in the second or third trimester. According to the American College of Obstetricians and Gynecologists, women who stop smoking at any time up to the 30th week of pregnancy have babies with higher birth weights than women who smoke throughout pregnancy.

Counseling Tips

When counseling a pregnant woman to stop smoking, it is very important to counsel her with care and concern, rather than with blame and guilt. No one likes to be "preached" to about a personal habit or behavior. Most smokers are already well aware of the health hazards of smoking and may have already tried to quit. During the counseling sessions, the counselor should consistently provide support, encouragement, and praise to the prenatal client. Refer clients to a smoking cessation program available in your area.

A woman who smokes also has increased needs for certain vitamins; the health care provider will probably recommend an extra vitamin supplement for her.

Drugs: Prescription, Over-the-Counter, and Illegal

Many common drugs—both prescription and over-the-counter, that are usually harmless—can harm an unborn baby. Illegal drugs or "street" drugs, as well as very high doses of vitamins, are also dangerous to the growing fetus. *A pregnant woman should only take those medications approved by her health care provider for use during her pregnancy.*

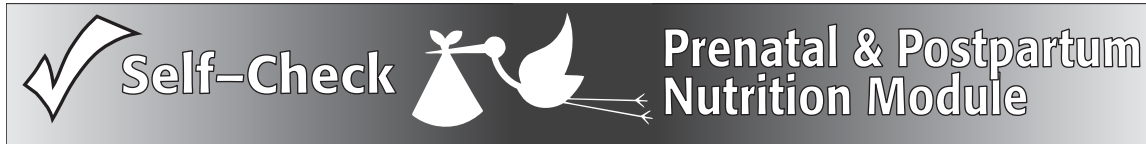


Drugs are the most toxic to the fetus during the first half of pregnancy. During this time, organs and tissues (such as arms, heart, brain, kidneys) are developing and are, therefore, more susceptible to malformation. This is also the time when the woman may not realize she is pregnant. During the remainder of the pregnancy, drugs may negatively affect the growth of the infant.

Street drugs can cause problems with the fetus prior to and after birth. Infants born to addicted mothers are at greater risk for low birth weight, hepatitis, intrauterine growth retardation, and infant death.

Crack/Cocaine

The use of crack, which is a highly potent, purified form of cocaine, is becoming more common. Thus, staff should be sensitive to symptoms of crack addiction in the pregnant woman. Women who are crack users often appear extremely underweight and nervous, and may complain of headaches and insomnia. A suspected crack user should be referred to the nutritionist who will provide nutrition counseling and will then refer the client to the appropriate health care provider for further assessment, counseling, and treatment.



✍ **GO TO** the Workbook for the Prenatal & Postpartum Nutrition Module and complete Self-Check Questions 27–29 right now. Then, immediately check your answers against the Answer Key to the Self-Check Questions (contained in your workbook) before proceeding to the next section of the module.

Listeriosis and Pregnancy

Food contaminated by harmful bacteria can cause serious illness. One type of bacteria, *Listeria monocytogenes* (pronounced lis-TIR-ee-ya mon-o-si-TAH-gin-eez), can cause an illness called listeriosis. The Centers for Disease Control and Prevention (CDC) estimates that 2,500 people become seriously ill with listeriosis each year in the United States. Of these, one in five die from the disease. Listeriosis can be particularly harmful for pregnant women and their unborn babies. Foodborne illness caused by *Listeria* in pregnant women can result in premature delivery, miscarriage, fetal death, and severe illness or death of a newborn from infection.

Listeria is a type of bacteria found everywhere in soil and ground water and on plants. Animals and people can carry *Listeria* in their bodies without becoming sick. Despite being so widespread, most infections in humans result from eating contaminated foods.

Most people are not at increased risk for listeriosis. However, there are some people who are considered at risk because they are more susceptible to listeriosis. In addition to pregnant women and their unborn babies and newborns, other at-risk groups include older adults and people with weakened immune systems caused by cancer treatments, AIDS, diabetes, kidney disease, etc. By carefully following safety precautions, persons at risk for listeriosis can substantially reduce their chances of becoming ill.

Hormonal changes during pregnancy have an effect on the pregnant woman's immune system that lead her to an increased susceptibility to listeriosis. According to CDC, pregnant women are about 20 times more likely than other healthy adults to get listeriosis. In fact, about one-third of listeriosis cases happen during pregnancy. Listeriosis can be transmitted to the fetus through the placenta even if the pregnant woman is not showing signs of illness. This can lead to premature delivery, miscarriage, stillbirth, or serious health problems for her newborn.

Symptoms

Because the symptoms of listeriosis can take a few days or even weeks to appear and can be mild, the pregnant woman may not even know she has it. That is why it's very important for a woman to take appropriate food safety precautions during pregnancy.

In pregnant women, listeriosis may cause flu-like symptoms with the sudden onset of fever, chills, muscle aches, and sometimes diarrhea or upset stomach. The severity of symptoms may vary. If the infection spreads to the nervous system, the symptoms may include headache, stiff neck, confusion, loss of balance, or convulsions. When a woman has these symptoms, she should contact her health care provider. A blood test can be performed to find out if the symptoms are caused by listeriosis.

Treatment

During pregnancy, antibiotics are given to treat listeriosis. In most cases, the antibiotics also prevent infection of the fetus or unborn baby. Antibiotics are also given to babies who are born with listeriosis.

Prevention

USDA's Food Safety and Inspection Service (FSIS) and the U.S. Food and Drug Administration (FDA) provide the following advice for pregnant women and all at-risk consumers:

- **Do not eat** hot dogs, luncheon meats, or deli meats unless they are reheated until steaming hot.
- **Do not eat** unpasteurized cheeses. Hard cheeses, semi-soft cheeses, and soft cheeses such as feta, bleu, or camembert may be eaten as long as they are made with pasteurized milk and stored properly.¹
- **Do not eat** refrigerated pâté or meat spreads. Canned or shelf-stable pâté and meat spreads can be eaten.
- **Do not eat** refrigerated smoked seafood unless it is an ingredient in a cooked dish such as a casserole. Examples of refrigerated smoked seafood include salmon, trout, whitefish, cod, tuna, and mackerel which are most often labeled as "nova-style," "lox," "kippered," "smoked," or "jerky." This fish is found in the refrigerated section or sold at deli counters of grocery stores and delicatessens. Canned fish such as salmon and tuna or shelf-stable smoked seafood may be safely eaten.

1. In October 2003, the FDA revised its advice on the consumption of soft cheeses. It stated that people most likely to get food poisoning from listeria can safely eat soft cheeses such as feta, bleu, or camembert as long as they are made with pasteurized milk. The agency's previous advice to pregnant women, people with weak immune systems, and the elderly was to avoid soft cheeses altogether. FDA officials said they made the change because new studies show soft cheese made from pasteurized milk is not at high risk for listeria.

- Use all perishable items that are precooked or ready-to-eat as soon as possible.
- Clean the refrigerator regularly.
- Use a refrigerator thermometer to make sure that the refrigerator always stays at 40°F or below.

If someone has eaten a contaminated product and does not have any symptoms, most experts believe tests or treatment are not necessary. However, a pregnant woman should inform her health care provider if she knows she has eaten a contaminated product and within 2 months experiences flu-like symptoms.

It's important that pregnant women learn how to protect themselves and their unborn babies from foodborne illness. Getting in the habit of eating a safe and nutritious diet not only benefits the baby, but also gives the mother peace of mind.

New information on food safety is constantly emerging. Recommendations and precautions are updated as scientists learn more about preventing foodborne illness. Consumers need to be aware of and follow the most current information on food safety. If there are questions, recommend that the pregnant woman consult with her health care provider.



Basic Food Safety Guidelines

When preparing meals, it is important to remember these four basic guidelines to help keep food safe from harmful bacteria.

- 1. Clean** - Wash hands and surfaces often.
- 2. Separate** - Don't allow cross-contamination between raw and cooked foods.
- 3. Cook** - Cook to proper temperatures and use a food thermometer.
- 4. Chill** - Refrigerate or freeze promptly.

Also, Part 2 of the Basic Nutrition Module contains information on food safety in Guideline #6: Keep Food Safe To Eat.

For more information, see the list of food safety resources on page 79 of this module.

Source: The above section on "Listeriosis and Pregnancy" was adapted from: U.S. Department of Agriculture. *Listeriosis and Pregnancy: What is Your Risk? Factsheet*, September 2001. This factsheet is available at www.fsis.usda.gov/OA/pubs/lm_tearsheet.pdf for the English version and www.fsis.usda.gov/OA/pubs/lm_tearsheet_sp.pdf for the Spanish version.

The Risks of Mercury in Fish

Seafood can be an important part of a balanced diet for pregnant women. It is a good source of high quality protein and other nutrients and is low in fat. However, some fish contain high levels of a form of mercury called methylmercury that can harm an unborn child's developing nervous system if eaten regularly. By being informed about methylmercury and knowing the kinds of fish that are safe to eat, pregnant women and women of child bearing age who may become pregnant can prevent any harm to their unborn children and still enjoy the health benefits of eating seafood.

Mercury occurs naturally in the environment and it can also be released into the air through industrial pollution. Mercury falls from the air and can get into surface water, accumulating in streams and oceans. Bacteria in the water cause chemical changes that transform mercury into methylmercury that can be toxic. Fish absorb methylmercury from water as they feed on aquatic organisms.

Nearly all fish contain trace (very small) amounts of methylmercury, which are not harmful to humans. However, long-lived, larger fish that feed on other fish accumulate the highest levels of methylmercury and pose the greatest risk to people who eat them regularly. Pregnant women and women of child bearing age who may become pregnant can protect their unborn children by not eating these large fish that can contain high levels of methylmercury:

- **Shark**
- **Swordfish**
- **King Mackerel**
- **Tilefish (also known as Golden Snapper or White Snapper)**



While it is true that the primary danger from methylmercury in fish is to the developing nervous system of the unborn child, it is prudent for nursing mothers and young children (under 10 years of age) not to eat these fish as well.¹

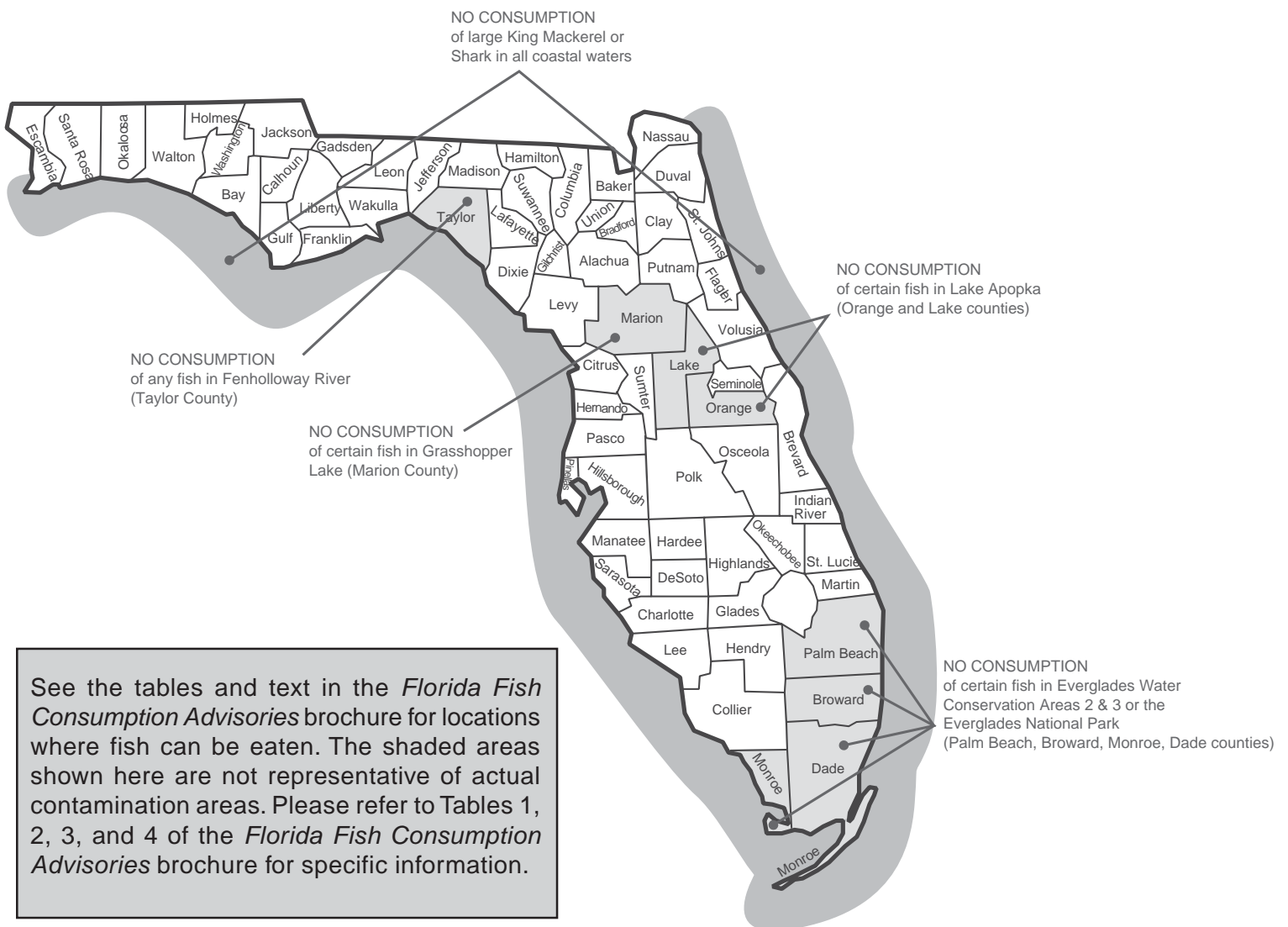
Women and children can safely enjoy eating a variety of other fish as long as they eat **no more than 12 ounces per week of cooked fish**. A typical serving size is from 3 to 6 ounces of cooked fish. (Note: 4 ounces of raw fish is about the size of a slice of sandwich bread. When cooked, 4 ounces of raw fish equals about 3 ounces of cooked fish.) These other fish include shellfish, canned fish, smaller ocean fish, or farm-raised fish—just pick a variety of different species.

Source: The information on this page is from *An Important Message for Pregnant Women and Women of Childbearing Age Who May Become Pregnant About the Risks of Mercury in Fish*. U.S. Food and Drug Administration, Center for Food Safety and Applied Nutrition, Consumer Advisory, March 2001. More information on FDA advisories is online at www.cfsan.fda.gov/~dms/admehg.html.

What About Fish Caught In Local Florida Waters?

There can be a risk of contamination from mercury in fresh waters from either natural or industrial causes that would make the fish unsafe to eat. In Florida, women and young children (under 10 years of age) should limit their consumption of **Largemouth Bass, Bowfin, and Gar** to one serving a month. However, in some water bodies in Florida these three species of fish should not be consumed. Other types of fish caught in Florida may also need to be limited or avoided, depending on where the fish was caught. For specific information regarding fish caught in Florida waters and to view the *Florida Fish Consumption Advisories* brochure, go to the following website: www.doh.state.fl.us/Environment/hsee/fishconsumptionadvisories/index.html.

Figure 11. Map of Florida Fish “No Consumption” Advisories



Source: The information on this page is from the following brochure: *Florida Fish Consumption Advisories*. Florida Department of Health, January 2003. Check for updated Advisory information and information by county online at www.doh.state.fl.us/Environment/hsee/fishconsumptionadvisories/index.html.

HIV/AIDS

AIDS, the **A**cquired **I**mmune **D**eficiency **S**yndrome, is a very serious illness that weakens the body's ability to fight infections. AIDS is caused by a virus called **HIV**, the **H**uman **I**mmunodeficiency **V**irus. A person can be infected with HIV for many years without experiencing any of the AIDS symptoms, yet, at the same time, is capable of infecting others with the virus.

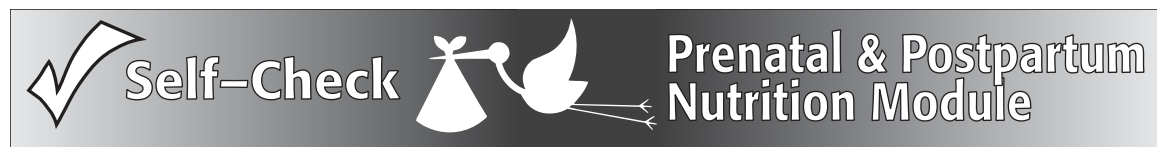
As the infection progresses, however, the person usually begins to experience some of the symptoms of HIV disease, which include swollen glands, "night sweats," and persistent diarrhea. Without antiretroviral medication, most HIV-infected people will eventually develop AIDS. At this point, their body's immune system is so weakened that they become susceptible to certain infections or rare diseases that are life-threatening conditions for them.



HIV-infected pregnant women need regular prenatal care along with treatment for their HIV infection and to prevent transmission of the virus to the infant. For women with AIDS, nutritional status is compromised because of the frequent infections associated with the disease. Symptoms such as coughing, labored breathing, vomiting, and chronic diarrhea cause a woman's nutritional status to deteriorate; eating and swallowing are often very painful because of oral and gastrointestinal lesions. For HIV-infected women, antiretroviral medications may affect appetite and reduce their nutrition intake.


Although not curative, nutrition support may maximize the body's ability to fight infection and possibly delay further AIDS-related complications. In addition, current research shows that good nutritional status may actually delay the onset of symptoms and retard disease progression in HIV-infected women.

It is recommended that all pregnant women know their HIV status, since without medication a pregnant woman infected with HIV has about a 30 percent chance of passing the virus to her baby. However, with proper prenatal care and treatment the risk of perinatal HIV transmission is reduced to 2 percent.

It is extremely important that you refer an HIV-infected pregnant woman to the nutritionist, who will assess the woman's nutritional status and provide her with appropriate counseling. If she is not already under medical care, the nutritionist will, in turn, refer the client to a health care provider for further treatment and care. In addition, since the HIV virus can be passed to the baby through breastmilk, in the United States it is recommended that all HIV-infected women not breastfeed. The infant should be fed iron-fortified infant formula for the first year of life.



 **Self-Check**  **Prenatal & Postpartum
Nutrition Module**

 **GO TO** the *Workbook for the Prenatal & Postpartum Nutrition Module* and complete *Self-Check Questions 30–34* right now. Then, immediately check your answers against the *Answer Key to the Self-Check Questions* (contained in your workbook) before proceeding to the next section of the module.

Part 3: Postpartum Nutrition¹

Nutrient Needs of Postpartum Women

Just as adequate nutrition is important during pregnancy, it is also important during the **postpartum** period. The postpartum period is that period of time *after* childbirth extending to several months after delivery. Consuming a healthy diet during this time is needed to rebuild the nutrient stores that were depleted during pregnancy.

This continues to be a special time for the mother and it is important to convey this message to her. The new mother, whether breastfeeding or not, will be experiencing many physical and emotional changes. Some of these changes may be linked to her nutritional status and diet. Thus, it is very important to stress the positive effects of good nutrition during this postpartum period.

Replenishing the body's nutrient stores is important for the health status of the mother. Equally important, though, is the fact that a mother's nutritional status *before* she becomes pregnant again can affect the outcome of *future* pregnancies.

It is critical for the mother to practice healthy nutrition habits even after the postpartum period because the benefits of maintaining a good nutritional state are extended to *her* health as well as to the health of any future children she may have.



The Food Guide Pyramid

Note: Refer to the *Breastfeeding Module* for a thorough study of the nutrient needs of **breastfeeding**, postpartum women.

Refer to Figure 5 of the module for a visual representation of the Food Guide Pyramid, and then refer to *Figure 12. A Guide To Daily Food Choices for Non-Breastfeeding, Postpartum Women*. This figure “puts it all together,” so that you can see in one simple chart the five food groups, some food choices, serving sizes, and recommended range of the number of daily servings for non-breastfeeding, postpartum women.

1. Sections of Part 3 of this module were adapted from the Texas Department of Health, Bureau of Nutrition Services, *Postpartum Nutrition Module*; July 2003.

Note on Figure 12 that the “Recommended Number of Servings Per Day” section has a **range** for the number of servings for each food group. The number of servings that are appropriate for the postpartum, non-breastfeeding woman depends on the number of calories needed by the woman. Calorie needs are related to a person’s age, size, and activity level. Almost everyone should consume at least the lowest number of servings in the ranges. Most teenage girls and active women need about 2,200 calories per day. A 2,200-calorie daily intake would be approximately the following:

2 to 3 serving from the Meat, Poultry, Fish, Dry Beans, Eggs, & Nuts Group

3 to 4 servings from the Milk, Yogurt, & Cheese Group

3 servings from the Fruit Group

4 servings from the Vegetable Group

9 servings from the Bread, Cereal, Rice, & Pasta Group

Choosing only foods low in fat and low in sugar will result in fewer calories. Choosing higher fat and higher sugar foods will result in more calories. More specific and individualized nutrition counseling recommendations should be provided by the nutritionist.

Iron

Iron is an important mineral that helps to carry oxygen through the body. A diet lacking in iron results in depleted iron stores. Over time, these depleted iron stores can lead to iron-deficiency anemia. Iron needs are highest during pregnancy due to increased blood volume. However, the importance of iron needs to be emphasized during the postpartum period because iron-deficiency anemia is a widespread public health concern, especially among women of childbearing age. One challenge is that women require more iron than men due to monthly blood loss during menstruation. Also, some women lose a significant amount of blood during childbirth, depleting their stores. What’s more, in order to meet the daily recommended intake of iron, a woman needs to eat a very well-balanced diet with plenty of iron-rich foods. That’s not always easy, especially for new moms who often cut back on their food intake in an effort to lose weight.



There are two kinds of iron in foods. **Heme iron** is found in animal products such as meat and poultry. **Non-heme iron** is found in dried beans, tofu, dried fruits, and fortified cereals. In general, the body absorbs heme iron from animal sources better. In fact, including heme iron foods in a meal will increase the absorption of non-heme iron. Also, foods high in vitamin C will increase iron absorption, while coffee and tea decrease iron absorption. And here’s another tip—cooking foods in cast-iron pots can add iron to foods.

Figure 12. **A Guide To Daily Food Choices for Non-Breastfeeding, Postpartum Women**
Based on the Food Guide Pyramid Recommendations¹

Food Groups & What Counts as One Serving	Recommended Number of Servings per Day												
<p>Meat, Poultry, Fish, Dry Beans, Eggs, & Nuts Group 2 to 3 oz of cooked lean meat, poultry, or fish (3 oz of cooked meat is about the size of a deck of cards.)</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>These foods count as 1 oz of cooked lean meat:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">1 egg</td> <td style="width: 50%;">1/4 cup tuna fish</td> </tr> <tr> <td>2 tablespoons peanut butter</td> <td>1/3 cup nuts</td> </tr> <tr> <td>1/2 cup cooked dry beans or peas</td> <td></td> </tr> </table> </div>	1 egg	1/4 cup tuna fish	2 tablespoons peanut butter	1/3 cup nuts	1/2 cup cooked dry beans or peas		<p>2 to 3 (for a total of 5 to 6 oz daily)</p>						
1 egg	1/4 cup tuna fish												
2 tablespoons peanut butter	1/3 cup nuts												
1/2 cup cooked dry beans or peas													
<p>Milk, Yogurt, & Cheese Group</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">1 cup milk (8 oz)</td> <td style="width: 50%;">1 1/2 oz natural cheese</td> </tr> <tr> <td>1 cup yogurt</td> <td>2 oz processed cheese</td> </tr> <tr> <td>1 cup pudding</td> <td>1 1/2 cups ice cream, ice milk, or frozen yogurt</td> </tr> <tr> <td></td> <td>2 cups cottage cheese</td> </tr> </table>	1 cup milk (8 oz)	1 1/2 oz natural cheese	1 cup yogurt	2 oz processed cheese	1 cup pudding	1 1/2 cups ice cream, ice milk, or frozen yogurt		2 cups cottage cheese	<p>3 to 4 (Women ages 19 to 50 need about 3 servings daily. Teens and women over 50 need about 4 servings daily.)</p>				
1 cup milk (8 oz)	1 1/2 oz natural cheese												
1 cup yogurt	2 oz processed cheese												
1 cup pudding	1 1/2 cups ice cream, ice milk, or frozen yogurt												
	2 cups cottage cheese												
<p>Fruit Group²</p> <ul style="list-style-type: none"> 1 medium piece of fruit 1/2 cup cooked or canned fruit 3/4 cup (6 oz) fruit juice 1/4 cup of dried fruit 	<p>2 to 4</p>												
<p>Vegetable Group²</p> <ul style="list-style-type: none"> 1/2 cup cooked vegetables or chopped raw vegetables 1 cup raw leafy vegetables 3/4 cup (6 oz) vegetable juice 1/2 cup potatoes (scaloped, mashed, or potato salad) 	<p>3 to 5</p>												
<p>Bread, Cereal, Rice, & Pasta Group</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">1 slice bread</td> <td style="width: 50%;">1 medium muffin (for example: bran or corn)</td> </tr> <tr> <td>1/2 hamburger bun, bagel, or English muffin</td> <td>1 tortilla (6")</td> </tr> <tr> <td>1/2 cup cooked cereal, rice, pasta, or grits</td> <td>1 waffle or pancake (4")</td> </tr> <tr> <td>3/4 cup (1 oz) ready-to-eat cereal</td> <td>3 to 4 small plain crackers</td> </tr> <tr> <td></td> <td>3 cups popcorn</td> </tr> <tr> <td></td> <td>3/4 oz pretzels</td> </tr> </table>	1 slice bread	1 medium muffin (for example: bran or corn)	1/2 hamburger bun, bagel, or English muffin	1 tortilla (6")	1/2 cup cooked cereal, rice, pasta, or grits	1 waffle or pancake (4")	3/4 cup (1 oz) ready-to-eat cereal	3 to 4 small plain crackers		3 cups popcorn		3/4 oz pretzels	<p>6 to 11</p>
1 slice bread	1 medium muffin (for example: bran or corn)												
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3/4 cup (1 oz) ready-to-eat cereal	3 to 4 small plain crackers												
	3 cups popcorn												
	3/4 oz pretzels												

1. This is a *general* guide—for non-breastfeeding postpartum women of all ages—to the number of servings needed per day and what counts as one serving. The number of servings needed by some women may be different from those indicated in this figure due to individual nutrient and caloric needs. More specific and individualized counseling recommendations should be provided by the nutritionist.
2. See Figure 7 for fruits and vegetables that are excellent and/or good sources of vitamin A and vitamin C, as well as “other” fruits and vegetables.

Calcium

Calcium needs are highest during the teenage years, however, calcium intake needs to be emphasized for women of all ages because it's such an important nutrient for bone health, and because women generally don't get enough calcium in their diets. In later adulthood, if there's a long history of poor calcium intake combined with other risk factors, **osteoporosis** can develop. The best way to try to avoid osteoporosis is to: 1) get enough calcium during the teenage years when the bones are growing; and 2) reduce calcium loss during the adult years by eating a calcium-rich diet, exercising, not smoking, and not abusing alcohol.

Calcium recommendations are currently 1,000 milligrams per day for *all* women over age 18, regardless of whether they're pregnant, non-pregnant, or breastfeeding. Teenage girls, on the other hand, require more calcium since they're still growing. In fact, nearly *half* of a girl's bone mass is formed between the ages of 11 and 15 years. So all teenage girls (pregnant, non-pregnant, and breastfeeding) should get at least 1,300 milligrams of calcium per day.

Dairy products are the richest sources of calcium. It takes at least 3 servings of dairy products to meet the 1,000 milligrams per day calcium requirement (and at least 4 servings for teens to get 1,300 milligrams of calcium per day). Many women and teens avoid dairy products in an effort to cut back on fat and calories, but fortunately, there are plenty of lowfat and fat free dairy products available. Women who are following a strict vegetarian (vegan) diet must rely on non-dairy sources of calcium to meet their needs. It is possible to get enough calcium from non-dairy sources, but it's not easy. Fortified soy milk, firm tofu, fish with edible bones (canned sardines and salmon), blackstrap molasses, and sesame seeds do offer considerable amounts, as do fortified breads, cereals, and juices. Almonds, broccoli, and dried beans also contain calcium, but in smaller amounts compared to dairy foods. See Figure 9 on page 41 for a list of milk products and other foods that provide calcium.



Mooove to lowfat or fat free milk!

Folic Acid

Folic acid (folate) is an important B vitamin for the following women:

- those who are capable of becoming pregnant;
- those who are planning to become pregnant; or
- those who are pregnant—especially during the early months of pregnancy.

Folic acid is a synthetic form of the vitamin “folate” and is the form used in vitamin supplements and fortification of foods. “Folate” is the form of the vitamin naturally found in foods. Food folates may be destroyed by lengthy cooking and are not as well absorbed as synthetic folic acid. (About 85% of the synthetic form is absorbed by the body, while only about 50% of the food folate is absorbed by the body.) The term folic acid is used in this discussion to designate both the synthetic and the naturally occurring forms of this vitamin.

Folic acid is important because an adequate intake of it around the time of conception can significantly reduce a woman’s risk for having a baby with a **neural tube defect (NTD)**. NTDs are caused when the spinal column and the brain do not develop properly. One common NTD that can be prevented in part with adequate folic acid intake is spina bifida, or “open spine.” Spina bifida is usually severely disabling because of the paralysis, loss of bowel and bladder control, and hydrocephalus (water on the brain) that frequently occur.

An adequate intake of folic acid **before** pregnancy is important, because NTDs occur early in pregnancy, before most women even know they are pregnant. In other words, folic acid is needed most during the period that starts one month before a woman conceives and then throughout the early months of pregnancy.

The Dietary Reference Intakes (DRIs) recommend that all women capable of becoming pregnant consume 400 micrograms¹ (abbreviated mcg or µg) of synthetic folic acid from fortified foods and/or supplements *in addition to* intake of food folate from a varied diet in order to decrease the risk of NTDs. Women with a history of a fetus with a neural tube defect should be advised that folic acid supplementation may substantially reduce the risk of NTD recurrence in a future pregnancy. These women are generally prescribed a much higher dose of folic acid (4.0 milligrams per day) at least one month before conception and through the first trimester. A woman with a prior NTD should consult with her health care provider before planning a future pregnancy so she can be prescribed the appropriate dose of folic acid. High doses of folic acid are not available as over-the-counter vitamin supplements. They must be prescribed by the health care provider.

1. It may also be expressed as 0.4 milligrams; a microgram is 1/1000 of a milligram. The Tolerable Upper Level (UL) for synthetic folic acid is 1,000 µg/day for a woman from 19 to 50 years of age and 800 µg/day for a woman less than or equal to 18 years of age. The UL is the maximum level of daily nutrient intake that is likely to pose no risk of adverse effects.

2. It is assumed that women will continue consuming 400 µg folic acid from supplements or fortified food until their pregnancy is confirmed and they enter prenatal care, which ordinarily occurs after the end of the periconceptual period—the critical time for formation of the neural tube.

Good Sources of Folic Acid

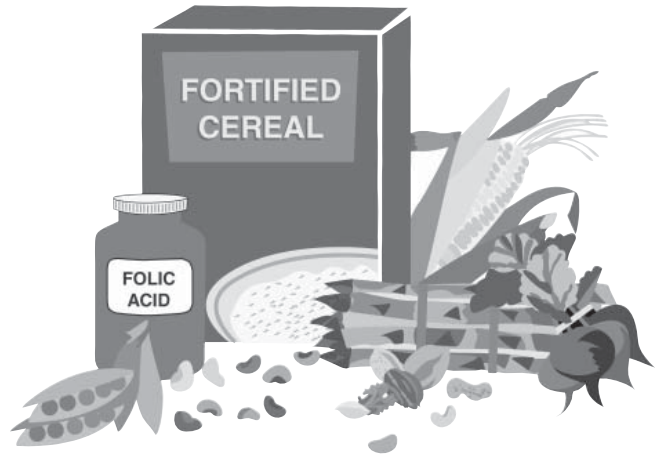
Good sources of folic acid (folate) are:

Ready-to-eat Breakfast Cereals:

Cereals that provide at least 25 percent of the Daily Value (DV) of folic acid per serving.¹

Enriched Bread and Cereal Grain Products: These include breads, buns/rolls, cornmeal, corn grits, flour, macaroni, noodles, and rice.

Whole-Grain Breads and Wheat Germ: These include breads, bagels, and muffins made with whole wheat, rye, oat bran, or wheat germ. Also, wheat germ by itself is a good source of folic acid.



Citrus and Other Fruits and Their Juices: These include oranges, orange juice, pineapple juice, avocados, mangos, and papayas.

Green Leafy and Other Vegetables: These include asparagus, beets, broccoli, Brussels sprouts, bok-choy, collard/mustard/turnip greens, cauliflower, corn, endive, green peas, parsnips, romaine lettuce, and spinach.

Cooked Dry Beans, Peas, or Lentils: These include baked beans, lima beans, black beans, black-eyed peas, chickpeas/garbanzo beans, kidney beans, pinto beans, split peas, and roasted soybeans.

Cooked Liver and Giblets: These include liver from beef, pork, and poultry as well as chicken giblets.

Nuts and Seeds: These include almonds, cashews, mixed nuts, peanuts, peanut butter, Spanish peanuts, walnuts, pumpkin seeds, and sunflower seeds.

Other Foods: These include a burrito with beans, an enchilada with beans and cheese, and chili.

Source: This section on “Good Sources of Folic Acid” was adapted from pages 8 and 9 of *After You Deliver-Health Tips for Moms*, U.S. Department of Agriculture, Food and Nutrition Service, Program Aid No. 1602, December 1997.

1. A cereal which has 400 µg folic acid per serving would indicate on the nutrition label that it had 100% of the Daily Value (DV) for folic acid. “Enriched” cereal and grain products (e.g., breads, pasta, rice, and corn grits) include 140 µg folic acid per 100 grams. For example, one cup of prepared rice or pasta contains 60 µg of synthetic folic acid and bread contains 20 µg per slice.



Self-Check



Prenatal & Postpartum Nutrition Module

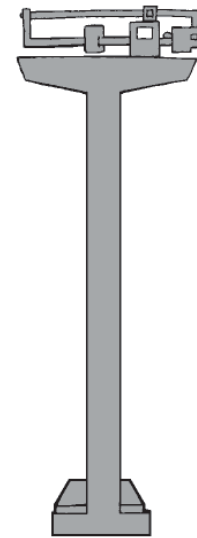
✍ **GO TO** the Workbook for the Prenatal & Postpartum Nutrition Module and complete Self-Check Questions 35–38 right now. Then, immediately check your answers against the Answer Key to the Self-Check Questions (contained in your workbook) before proceeding to the next section of the module.

Weight Trends and Issues for Postpartum Women

More than 40 percent of non-pregnant women in the U.S. between the ages of 15 and 49 are overweight or obese, which is a dramatic increase over the last few decades. Many overweight women claim that having children has a lot to do with the extra pounds, and surveys and studies support the idea that having children increases a woman's risk of gaining excess weight.

But the research also shows that most postpartum women return to a weight that's within 2 to 4 pounds of their prepregnancy weight. This seems like a minimal amount of weight gain. So what's going on?

- First, not everyone loses the extra weight. About 15 to 20 percent of women retain 11 pounds or more of the weight they gained during pregnancy, and some women gain additional weight during the postpartum period.
- Also, many adolescents and women are overweight or obese before their first pregnancy. These women are at an unhealthy weight to begin with, plus studies suggest they're more likely to retain more postpartum weight.
- For some women, having a number of pregnancies throughout the childbearing years may contribute to significant weight increases over time.
- Many women gain weight after the first year postpartum, so besides the weight gain associated with pregnancy, it's likely that other lifestyle changes related to child-rearing contribute to long-term weight gain.
- Age-related weight gain is also a factor.



Risks for Overweight and Obese Women

For a woman, being overweight or obese is a serious concern. Most people are familiar with the long-term health risks including diabetes, hypertension, and heart disease, which are all serious concerns. In fact, heart disease is the leading cause of death for women in the United States.

But, in addition to the well known risks related to chronic disease, overweight and obesity can also affect future pregnancies:

- Being obese increases a woman's risk of infertility by as much as 70 percent.
- Overweight or obese women who do become pregnant tend to have more complications such as preterm delivery, gestational diabetes, pregnancy-induced hypertension, and cesarean section deliveries.
- Research suggests that infants born to overweight and obese women have a slightly increased incidence of birth defects, including neural tube defects. A 2002 report by the March of Dimes looked at the results of two large studies and found that overweight and obese women were 1.3 to 1.4 times as likely as women of normal weight to have a baby with a major birth defect.

Risks for Women Who Are Underweight

There are also concerns for postpartum women who are underweight, including increased risk of osteoporosis, menstrual irregularity, and infertility. Also, underweight women who become pregnant may have a greater chance of delivering a low birth weight baby.

Factors Affecting Postpartum Weight Change

Why do some mothers lose weight in the postpartum period while others don't? There's no easy answer to that question, but researchers do agree that excess weight gain during pregnancy is one of the main reasons postpartum women retain extra weight. Also, weighing too much before pregnancy and not losing the extra weight within the first 6 months postpartum seem to be fairly strong predictors of higher weight retention. Other factors are also thought to affect postpartum weight, but the connections aren't always as strong. For example, many believe that breastfeeding promotes postpartum weight loss. But, in fact, the results from studies are very mixed—some breastfeeding women tend to lose weight while others don't.

Typical Weight Loss During the Early Postpartum Period

A postpartum woman goes through some dramatic weight changes as her hormones and other body systems try to restore her body to its prepregnancy weight and composition. Starting at delivery, a woman immediately loses an average of 10 to 13 pounds. (This takes into account the infant, the placenta, the amniotic fluid, and blood loss.) Next, major fluid shifts and tissue changes occur. For example, the uterus shrinks from 2° pounds immediately after delivery, to a mere 2 ounces at 6 weeks postpartum. So these changes during the first 6 to 8 weeks postpartum lead to an additional 7 to 11 pounds of weight loss, on average.

Then, in the following months, a typical postpartum woman will continue to steadily lose weight, with the greatest weight loss occurring in the first 3 to 4 months postpartum. Typically, around 6 months postpartum, her body weight is more stable and, hopefully, she's close to her prepregnancy weight.

Using Body Mass Index to Set Goals for Weight Loss

The Body Mass Index (BMI) is a helpful assessment tool for determining a new mother's current weight status. Also, it's a great tool for figuring out a desirable, healthy weight range for the new mother. Chances are, you won't say "BMI" when talking to clients; many people aren't familiar with this term and it can be confusing. Instead, you'll probably want to talk about working toward a "target weight range" or a "healthy weight range."

BMI is simply a calculated number based on a person's height and weight. BMI indicates whether a person is underweight, at a normal weight, overweight, or obese. To become more familiar with the concept of BMI, work through the example in Figure 13. Then when you're done, determine your own BMI.

Once you've established a weight range goal for a postpartum woman, it's important to put it in perspective for her, keeping the focus on overall health and healthy lifestyle habits. Here are a few tips:

- **Focus on opportunities.** When discussing weight, don't emphasize her current weight and how far she has to go. Instead, emphasize that the postpartum period offers a unique opportunity to start eating healthier and becoming more active, both of which can help her reach her normal weight range.
- **Help her understand that it takes time.** After the initial rapid weight changes that occur after delivery, weight loss slows down. Her pregnancy lasted 9 months, so she needs to allow lots of time to adjust. Discuss losing weight at a slow, healthy rate (1 to 2 pounds per week). Emphasize that quick weight loss schemes can be dangerous and they generally don't have lasting results, if any. The best approach is to eat healthy foods, cut out "empty-calorie" foods, and at the same time, increase activity level.
- **Remind her that she's an individual.** No two women are alike, so she shouldn't compare herself to a cousin who "lost all her weight within a month," or a friend "who never lost any of her postpartum weight." Instead she needs to focus on her own health and well-being and allow her body to adjust at its own rate.

- **Be sensitive to underweight women.** Although most postpartum women need to lose weight, there are a number of underweight clients, and reaching a healthy weight goal is equally important for these women. They deserve just as much consideration with regard to their weight status, eating habits, and physical activity.

Figure 13. Determining Weight Classification for Non-Pregnant Women

Example: Determine the BMI for a woman who is 5 feet, 6 inches tall and weighs 180 pounds. Then figure out what a normal weight range would be for this woman.

1. Find her height (in inches).
She is 66 inches tall.
2. Next, move across to the right, and find the range that includes her weight.
Her weight falls within the range of 155 – 185 pounds.
3. Go to the top of that column to determine her BMI range and weight classification.
Her BMI is between 25.0 – 29.9 and she is considered to be overweight.
4. Move back to the column that indicates “Normal Weight, BMI 18.5 -24.9” and find the normal weight range a woman who is 66 inches tall.
Her normal weight range is 114 – 154 pounds.

BMI Table for Determining Appropriate Weight Classification for Non-Pregnant Women¹

Height (inches)	Underweight BMI <18.5	Normal Weight BMI 18.5-24.9	Overweight BMI 25.0-29.9	Obese BMI ≥ 30.0
58"	< 88	88-118	119-142	>142
59"	< 91	91-123	124-147	>147
60"	< 94	94-127	128-152	>152
61"	< 97	97-131	132-157	>157
62"	<101	101-135	136-163	>163
63"	<104	104-140	141-168	>168
64"	<107	107-144	145-173	>173
65"	<111	111-149	150-179	>179
66"	<114	114-154	155-185	>185
67"	<118	118-158	159-190	>190
68"	<121	121-163	164-196	>196
69"	<125	125-168	169-202	> 202
70"	<128	128-173	174-208	> 208
71"	<132	132-178	179-214	> 214
72"	<136	136-183	184-220	> 220

1. Source: Adapted from *Clinical Guidelines on the Identification, Evaluation and Treatment of Overweight and Obesity in Adults*. National Heart, Lung and Blood Institute, (NHLBI), National Institutes of Health (NIH). NIH Publication No. 98-4083.

Managing Weight with a Healthy Attitude

A woman's body image and her attitudes toward food, eating, and activity can greatly affect her health, her health habits, and her postpartum weight. In general, positive attitudes are related to healthier outcomes. Of course, it's not realistic to expect a woman with negative feelings to change overnight. What you as the staff member can do is offer suggestions for thinking differently. Encourage her to focus on an inner sense of health and well-being rather than her outward appearance and weight status. Here are some practical tips to pass along to new moms:

- **Put away the bathroom scale.** Some people watch their weight on a daily basis, and if the scale tips in the wrong direction, they get discouraged and give up. Real weight change happens over time. So instead of the scale, women can check their progress by the way they feel and the way their clothes feel on them. That way they focus on their new improved lifestyle habits instead of obsessing about how many pounds they have or have not lost.
- **Don't count every calorie.** While it helps to know the caloric content of foods, women should not go overboard thinking about every calorie and gram of fat. They'll end up restricting themselves too much and losing sight of what the goal should be—to enjoy a balanced variety of healthy foods.
- **Quit “dieting.”** Postpartum women should forget the idea of “going on a diet” just until they can squeeze into those prepregnancy jeans. Instead, they need to discover their own healthy eating plan that they'll follow for years to come. And rather than dwelling on “foods to avoid,” think about all the healthful foods they get to enjoy as they improve their eating habits.
- **Listen to their appetite.** Women should not eat just because its time to eat or because they happen to be in the kitchen. They need to get in touch with their appetite and wait until they're actually hungry. Then, they should eat slowly and continue to listen to their appetite. When they start to feel full, they should stop and tell themselves that they're done, and appreciate how satisfying it is to be full, knowing that they did not overeat.
- **Recognize stress.** It's especially easy to get stressed during the postpartum period, and many people turn to food when they're stressed. Before biting into something, women should ask themselves if they're truly hungry or are trying to fulfill some other need.
- **Nourish the senses as well as the body.** Women should take the time to see, smell, and taste foods and truly appreciate the flavors. And, when possible, eat more often with family or friends. When eating with others, women are more likely to eat a balanced variety of foods, and they'll tend to slow down and enjoy the meal.

Physical Activity

Physical activity can improve aerobic fitness, flexibility, and muscle toning, which are important benefits for all postpartum women, including those who don't need to lose weight. Also, most new moms will tell you that they simply feel better after doing something physical because they know they've done something good for themselves.

There are common barriers to exercise for postpartum women, including bad weather; concerns about safety; limited time and money; and lack of transportation and child care. But it's possible to work around these concerns, especially if a woman is flexible and a little creative about the types of activities she chooses. For example, one option on a rainy day is to stay inside the house and do some high energy house cleaning, or use an exercise video or follow an exercise program on television. When a sitter isn't available, taking a brisk walk with the baby in the stroller is a great activity. And, if safety is a concern, suggest walking in a mall or walking with friends.



Physical activity doesn't simply refer to jogging, swimming, or going to an aerobics class. It also means taking the kids to the park when the weather is nice, walking the dog, doing yardwork, dancing to the radio when the mood strikes, or parking several blocks away from work and then enjoying a nice 5-minute walk to and from work each day. Granted, most of these activities usually aren't as intense as traditional exercise, but they do offer benefits and they help make up an active lifestyle. Probably the best plan for a postpartum woman is to find one or two exercises she enjoys (brisk walking, jogging, biking, swimming, etc.) and combine these with a goal to walk more, dance more, play more, and simply move more as part of an active life.

Here are some basic guidelines for exercise and physical activity during the postpartum period:

- The women should check with her health care provider before getting started. Most women are ready to get more active by about 6 weeks postpartum.
- Start slowly and gradually build up. This is especially true for women who didn't exercise during pregnancy. Those who were physically active during pregnancy have a head start, but they still shouldn't try to jump right in at the same pace they were used to before pregnancy.
- Be especially careful in the first 4 to 5 weeks postpartum. Ligaments and tendons are still loose during the early postpartum period, so there's a higher chance of injury.
- Breastfeeding women should wear an exercise bra with good support. Also, it may help to nurse or express milk before exercising.

- Always start by warming up with a light activity, such as slow walking. This gets muscles moving and ready for more intense activity. Likewise, be sure to cool down at stretch afterwards. Don't bounce when stretching; instead hold stretches for 20 to 30 seconds.
- Drink a lot of fluids (water is the best choice), especially if breastfeeding.
- If possible, exercise with someone—the baby, a partner, a neighbor, or the family dog. Having company makes it more fun and less likely you'll skip your planned routine.

Postpartum Nutrition Guidelines

In summary, let's review the postpartum nutrition guidelines.

Encourage the client to:

- ✓ Follow the Food Guide Pyramid recommendations and choose foods from each of the five food groups with an awareness of the appropriate number of servings per day and the amount of food in each serving size. The number of servings per day from each food group may need to be modified by the nutritionist depending on the woman's individual needs.
- ✓ The client should be instructed to give particular attention to consuming adequate amounts of iron, folic acid, and calcium.
- ✓ Once you've established a weight range goal for a postpartum woman, it's important to put it in perspective for her, keeping the focus on overall health and healthy lifestyle habits.
- ✓ Consider reasonable physical activities, but only after the woman discusses her physical activity plans with her health care provider.



Self-Check



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Nutrition Module

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Part 4: Other Postpartum Issues¹

Postpartum Depression

Feelings of anxiety or depression after delivery can affect a woman's appetite, intake, and overall health, in addition to her child's health and well-being. While postpartum depression is nothing new, it's certainly getting much more attention these days from the media, health professionals, and the public. Fortunately, physicians are learning more about diagnosing postpartum depression, and postpartum women are learning that help is available.

Because the staff member has the opportunity to talk with so many postpartum women, it's important to understand what postpartum depression is and what the symptoms are. *However, staff members are not qualified or authorized to diagnose postpartum depression or try to distinguish between the "baby blues" and other more severe forms of depression in clients.* If a client indicates she is depressed, it's appropriate to offer general support and then refer her to a health care provider for further evaluation.

Emotional reactions during the postpartum period can range from common, mild anxieties, known as the postpartum blues, to more severe forms of depression, referred to as postpartum depression and postpartum psychosis.

Postpartum Blues (or the "Baby Blues")

About 50 to 75 percent of new mothers experience the postpartum blues (or the "baby blues"). These are temporary symptoms that usually appear three to four days after delivery and then go away within several days to several weeks. Symptoms include:

- mood swings
- crying easily and for no reason
- irritability
- restlessness
- difficulty sleeping
- difficulty eating
- uncertainty about caring for a new baby

For many women, it helps to know that these feelings are normal and very common. Also, support from family and friends is especially important, as well as getting plenty of rest, eating healthy foods, taking a shower and getting dressed each day, getting out of the house, and taking daily walks. However, without adequate support, and in stressful situations, the blues can lead to a more serious postpartum depression. Also, if the baby blues continue into the third week postpartum, it may be an indication of something more serious.

1. Part 4 of this module was adapted from the Texas Department of Health, Bureau of Nutrition Services, *Postpartum Nutrition Module*; July 2003.

Postpartum Depression (Non-psychotic)

Postpartum depression (non-psychotic) is more severe than the postpartum blues, and it occurs in about 10 to 20 percent of postpartum women. It generally happens within 6 months postpartum, usually starting 2 to 3 weeks after delivery. Unlike the baby blues, the symptoms of postpartum depression don't go away within a few weeks. Women with postpartum depression often experience:

- severe sadness or emptiness
- withdrawal from family, friends, or pleasurable activities
- constant fatigue and trouble sleeping
- overeating or loss of appetite
- a strong feeling of failure or inadequacy
- intense concern and worry about the baby, or a lack of interest in the baby
- thoughts about suicide, and/or fears of harming the baby

Postpartum Psychosis

Postpartum psychosis is a rare, but very severe form, of postpartum depression which occurs in 1 to 3 cases for every 1,000 births. Symptoms include:

- delusions (false beliefs)
- hallucinations (hearing voices or seeing things that are not real)
- thoughts of harming the baby
- severe depressive symptoms

Compared to women with non-psychotic postpartum depression, women with postpartum psychosis who have thoughts of harming their infants are more likely to act on them.

Predictors

Studies point to a number of predictors for postpartum depression, including prenatal depression, poor self-esteem, child care stress, stressful life events, lack of social support, history of previous depression, infant temperament, being single, low socioeconomic status, and unplanned or unwanted pregnancy.

Treatment

If left untreated, postpartum depression can have long-term consequences. The woman is at greater risk of experiencing recurrent depression in the future, especially in future pregnancies. Also, studies have shown that a mother's depression can affect her children's ability to learn, as well as contribute to various emotional, behavioral, and interpersonal problems in the child's life. The good news is that the symptoms of postpartum depression, both mild and severe, can be treated with skilled professional help and support. Treatment often involves a combination of medical, psychological, and social interventions. Again, staff members are not trained to diagnose postpartum depression, though they can be very helpful in referring women who indicate they are depressed.

Difficult Outcomes of Pregnancy and Birth

For women who have experienced loss through a miscarriage, fetal death, neonatal death, or sudden infant death syndrome (SIDS), the postpartum period is a very difficult and challenging time. (See the information below for an explanation of each type of infant loss.) These women often feel angry, helpless, guilty, and/or frightened and their grief can be almost unbearable. Similarly, those who have delivered a baby with a birth defect or some other serious medical condition will also experience a number of difficult emotions, and they can be overwhelmed with the prospects of caring for the infant, especially if they have limited support and resources.

Women in these situations need a lot of extra support and understanding as they work through their loss and pass through various stages of grief. They're likely to experience a series of different emotions such as shock and numbness, then denial, anger, bargaining, and guilt, followed finally by acceptance. Also, it's important to realize these women are at higher risk for postpartum depression.

Sometimes listening to the mother is the best a counselor can do. It's important for a staff member to avoid comparing the mother's grief with anything he/she has experienced, since this takes the focus off the mother and puts it elsewhere. Staff should avoid saying things like "I know how you feel." The mother will think "No, you don't." Instead, a counselor who has had a similar experience (miscarriage, loss of a parent, etc.) might say "I lost a loved one, too. I remember how hard it was." But it's important to stop there. It's not the time for other people to share their stories. Instead, they need to listen and offer support. One important way staff members can help is to recommend appropriate support groups. Many communities have groups for pregnancy loss, SIDS support, and support for parents with critically ill children. Social workers and area hospitals may be of help in locating area support groups.

Miscarriage

Miscarriage is a spontaneous abortion that occurs prior to 20 weeks gestation. About 15 to 20 percent of known pregnancies end in a miscarriage, and most happen because of chromosomal abnormality in the fetus. It can take several weeks to a month or more for a woman to physically recover from the loss but, emotionally, it can take much longer. A woman may worry that if she becomes pregnant again, she'll lose the next baby as well. The good news is that at least 85 percent of women who experience a miscarriage will have a successful pregnancy the next time they become pregnant.

Fetal Death (Stillbirth)

Fetal death (stillbirth) is the death of the fetus after 20 weeks gestation. About one out of every 200 pregnancies ends in fetal death. For many women, the loss is unexpected because many of those pregnancies have progressed without any obvious problems. Some of the most common causes of fetal death include placental problems, birth defects, restricted growth, and bacterial infections. Cases of fetal death have dropped by almost half in the last 20 years, due to better medical care during pregnancy. Typically, after

fetal death is diagnosed, the health care provider will induce labor which, emotionally, can be very difficult for the woman.

Neonatal Death

Neonatal death is the death of an infant within the first 28 days of life. Neonatal death often occurs because the infant was born with a birth defect, such as a heart defect, underdeveloped lungs, or a neural tube defect. Prematurity is another cause of neonatal death. The earlier a baby is born, the higher the risk of death.

Sudden Infant Death Syndrome (SIDS)

SIDS is the sudden, unexplained death of an infant under 1 year of age. Most cases occur between 2 and 4 months of age and they are often associated with sleep. SIDS deaths have declined dramatically since 1992, when the American Academy of Pediatrics announced that healthy infants should sleep on their backs to reduce the risk of SIDS. Other recommendations include breastfeeding, not smoking around infants, and avoiding soft bedding products. Most researchers believe that babies who die of SIDS are born with one or more conditions that make them more vulnerable to normal stresses after birth. Prenatal factors such as smoking during pregnancy, poor prenatal care, low weight gain, anemia, and use of illegal drugs can contribute to an increased risk of SIDS.

Gestational Diabetes

Gestational diabetes mellitus (GDM) is a type of diabetes, or high blood sugar, that some women develop during pregnancy. The condition goes away after the baby is born, but GDM is still an important health issue even after it's gone. That's because women with a history of GDM are at higher risk of experiencing GDM again during future pregnancies, plus they have a much higher risk of developing **type 2 diabetes**, which can occur anytime. In type 2 diabetes, high blood sugar can damage the heart, arteries, eyes, nerves, and kidneys and can cause serious health problems. In addition, infants born to women with diabetes have a higher risk of birth defects. Therefore, it is crucial to educate postpartum women who have a history of GDM. Here are some ways they can lower their risk of developing diabetes in the future:

- **Know the risk factors for GDM and type 2 diabetes.** Risk factors include being obese; having a family history of diabetes; being Hispanic, African American, or Native American; and having GDM during a previous pregnancy.
- **Reach and maintain a healthy weight.** For some women who are overweight, losing even just a little weight can help them avoid type 2 diabetes.
- **Eat healthfully and become physically active.** Diet and exercise help the body use glucose, plus they are key to reaching a healthy weight.
- **Have blood sugar check routinely.** The American Diabetes Association recommends that a woman who had GDM should have her blood sugar checked at the postpartum visit and then a minimum of once every 3 years.

- **Know the symptoms of type 2 diabetes.** A woman should contact her health care provider if she thinks she's having any symptoms of diabetes. These include blurred vision, lack of energy, extreme thirst or hunger, frequent urination, a sudden change in weight, a slow-healing cut or sore, numbness or tingling in hands or feet, frequent infections, and depression.

Teenage Mothers

Many teen moms find themselves in a vicious cycle. Not only is there a greater financial burden with raising a child, but each year, three out of every 10 teenage mothers fail to complete high school. Poor education limits their earning potential, which in turn, limits their access to health care, child care and other opportunities for their children. And it's not all that surprising that children born to teen moms have higher rates of adolescent childbearing themselves.

But the picture isn't totally bleak. Various types of school and public health intervention programs across the country offer support and education to help teen mothers, and WIC is an important partner in this effort. However, teens are a special group of clients that require some specific knowledge and counseling skills. Here are some tips:

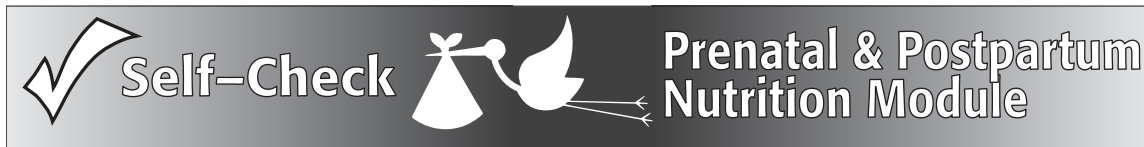
- Greet and call teens by their names each time you see them.
- Create an attitude of acceptance. They don't want to hear how they have "messed up" their lives by having a baby too early. Teens want to know what to do to care for their baby and care for themselves.
- If possible, counsel the teen individually, without friends or family present. (This may not be possible in all situations.) This allows a supportive, non-judgmental tone to be set. This may be one of the few times the teen gets individual attention separate from others.
- Ask what type of support she has from family, friends, the baby's father, community, etc. Help her think of specific ways she can use this support (i.e., friends/family can help prepare meals, run errands, and/or baby-sit; some communities offer free parenting classes, etc.).
- Allow the teen choices when possible; this allows her to feel independent and that she is making her own decisions.
- Allow the teen to offer her own ideas and suggestions before presenting information, since she may not be very interested in what an adult or health professional has to say. Or, let her choose among several ideas or strategies you present.
- If the client indicates she is depressed, refer her to a health care provider for further evaluation.
- Focus on positive changes that teens can make rather than a long list of things they can't do or eat. If a teen does need to make changes in her behavior, try to reach a compromise with her by suggesting she "cut down" instead of insisting that she "cut out" a food or behavior.

Family Planning

For a postpartum woman, family planning can help her avoid a closely-spaced pregnancy, thus giving her body time to adjust and rejuvenate. A woman needs time to replenish depleted nutrient stores before getting pregnant again, especially for nutrients such as iron and folic acid. Also, closely-spaced pregnancies increase the risk of having a low birth weight infant.

What's more, family planning can help a new mother prepare herself for her next pregnancy. In particular, it's important to try to reach a healthy weight before conception in order to have a healthier pregnancy and healthier baby. For example, being obese increases the risk of infertility. Also, overweight and obese women tend to have more complications during pregnancy, including gestational diabetes and high blood pressure. Underweight women, on the other hand, run a higher risk of delivering babies with restricted growth.

This postpartum period is the appropriate time to encourage the client to consider family planning. If appropriate, the client should be referred to a health care provider who is qualified to provide her with information about birth control and other family planning matters.



✍ **GO TO** *the Workbook for the Prenatal & Postpartum Nutrition Module and complete Self-Check Questions 44–47 right now. Then, immediately check your answers against the Answer Key to the Self-Check Questions (contained in your workbook).*

Congratulations! You have just finished your study of the Prenatal & Postpartum Nutrition Module.

After completing Self-Check Questions 44-47,

✍ **GO TO** *the “Practical Activity for the Performance Objectives,” which is in your Workbook for the Prenatal & Postpartum Nutrition Module—it follows the Answer Key to the Self-Check Questions. Do this Practical Activity according to the instructions provided.*

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Pamphlets that can be used for nutrition education:

- Florida Department of Health. *Breastfeeding Basics: Why Breastfeeding is Best for You and Your Baby*. DH 150-337 (English), DH 150-338 (Spanish), and DH 150-676 (Haitian Creole).
- Florida Department of Health. *Food for a Healthy Mother and Baby*. DH 150-15 (English), DH 150-97 (Spanish), and DH 150-756 (Haitian Creole).
- Florida Department of Health. *For Women Only*. DH 150-355 (English), DH 150-373 (Spanish), and DH 150-376 (Haitian Creole).
- Florida Department of Health. *Iron for Healthy Blood*. DH 150-94 (English), DH 150-30 (Spanish), and DH 150-375 (Haitian Creole).
- Florida Department of Health. *Let's Be Lead Free*. DH 150-687 (English), DH 150-688 (Spanish), and DH 150-693 (Creole).
- Florida Department of Health. *Make the Most of Milk*. DH 150-575 (English) and DH 150-629 (Spanish).
- Florida Department of Health. *Smart Snacks Using the Food Guide Pyramid*. DH 150-37 (English) and DH 150-510 (Spanish).
- Florida Department of Health. *Vitamin A*. DH 150-574 (English).
- University of Florida Cooperative Extension Service and Florida Department of Health. *Haitian Nutrition Initiative materials*.

Additional Resources

American College of Obstetricians and Gynecologists (ACOG) www.acog.org or 1-800-762-2264.

American Dietetic Association www.eatright.org or 1-800-877-1600.

American Lung Association www.lungusa.org/tobacco/ or 1-800-LUNGUSA (1-800-586-4872)

Food and Nutrition Information Center, Dietary Guidelines for Americans www.nal.usda.gov/fnic/dga/.

Health Resources and Services Administration (HRSA) Information Center www.ask.hrsa.gov or 1-888-ASK-HRSA (1-888-275-4772).

March of Dimes www.marchofdimes.com or 1-888-MODIMES (1-888-663-4637).

National Diabetes Information Clearinghouse (NDIC) www.niddk.nih.gov/health/diabetes/ndic.htm or 1-800-860-8747.

National Institute of Child Health and Human Development (NICHD) www.nichd.nih.gov or 1-800-370-2943.

National Institute on Drug Abuse (NIDA) www.drugabuse.gov/about/AboutNIDA.html or (301) 443-1124. For treatment referrals, call 1-800-662-HELP or visit www.findtreatment.samhsa.gov.

National Organization on Fetal Alcohol Syndrome www.nofas.org/main/index2.htm or 1-800-66NOFAS.

National Women's Health Information Center, U.S. Department of Health and Human Services www.4woman.gov or 1-800-994-9662 or TDD 1-888-220-5446.

Weight-control Information Network (WIN) www.niddk.nih.gov/health/nutrit/nutrit.htm or 1-877-946-4627.

WIC Works Resource System www.nal.usda.gov/wicworks/.

Food Safety Resources

Centers for Disease Control and Prevention/Foodborne Illness Line (24-hour recorded information) www.cdc.gov/foodsafety or 1-888-232-3228.

Food Safety and Inspection Service Meat and Poultry Hotline www.fsis.usda.gov or 1-800-535-4555 or TTY: 1-800-256-7072.

U.S. Food and Drug Administration, Center for Food Safety & Applied Nutrition www.cfsan.fda.gov or 1-888-SAFEFOOD.

HIV/AIDS Resources

Lawhead C, ed. *Putting the Pieces Together - A Companion Guide to Improving Nutrition and Food Safety for Persons Living with HIV/AIDS*. 5th ed. New Port Richey, FL: Pasco County Health Department; September 2002.

U.S. Department of Health and Human Services, Health Resources and Services Administration, HIV/AIDS Bureau. *Health Care and HIV - Nutritional Guide for Providers and Clients*; June 2002. Additional copies may be ordered through the HRSA Information Center at 1-888-275-4772.

Note: Inclusion of resources is for information only and does not imply endorsement.



**Florida Department of Health
Bureau of WIC and Nutrition Services**



Florida Nutrition Training Guide

Nutrition Education Series

Prenatal & Postpartum Nutrition Module



State of Florida
Department of Health
Bureau of WIC and Nutrition Services

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Table of Contents

Introduction to the Prenatal & Postpartum Nutrition Module	1
Instructions on HOW TO DO this Module	3
Objectives of the Prenatal & Postpartum Nutrition Module	5
Knowledge Objectives	5
Performance Objectives	6
Glossary for the Prenatal & Postpartum Nutrition Module	7
Part 1: Prenatal Nutrition	9
The Importance of Nutrition During Pregnancy	9
Nutrition Risks in Pregnancy	11
Nutrition Risks and Explanations	12
Prenatal Weight Gain	18
Desirable Weight Gains for Prepregnancy BMI Range	20
Pattern of Prenatal Weight Gain	21
Prenatal Weight Gain Grid	22
Healthy Eating During Pregnancy	22
Dietary Reference Intakes	25
Dietary Guidelines for Americans	27
The Food Guide Pyramid	28
The Food Guide Pyramid, Pregnancy, and Calories	33
How Much Food Is Enough?	33
Counseling a Woman with Low Maternal Weight Gain	34
Adolescent Pregnancy	34
Individual Dietary Preferences And Concerns	35
Vegetarianism	36
The Low Income Client	36
Favorite Foods	36
Other Nutrition Concerns During Pregnancy	37
Vitamin/Mineral Supplements	37
Iron-deficiency Anemia During Pregnancy	38
Iron Requirements During Pregnancy	38
Iron Absorption	38
Calcium Requirements During Pregnancy	39
Salt Restriction and Use of Diuretics	41

Physical Activity During Pregnancy	42
Tips to Help a Pregnant Woman Get Physically Active	43
Feeding the Baby	43
Prenatal Nutrition Guidelines	44
Part 2: Special Concerns During Pregnancy	45
Common Problems During Pregnancy	45
Heartburn	45
Constipation	45
Morning Sickness or Nausea	46
Eating Plan to Control Nausea	48
Use of Drugs During Pregnancy	49
Caffeine	49
Alcohol	50
Smoking	50
Other Problems Associated with Smoking in Pregnancy	50
Effects of Secondhand Smoke	51
It's Never Too Late To Quit Smoking	51
Counseling Tips	51
Drugs: Prescription, Over-the-Counter, and Illegal	51
Crack/Cocaine	52
Listeriosis and Pregnancy	52
Symptoms	53
Treatment	53
Prevention	53
Basic Food Safety Guidelines	54
The Risks of Mercury in Fish	55
What About Fish Caught in Local Florida Waters?	56
HIV/AIDS	57
Part 3: Postpartum Nutrition	58
Nutrient Needs of Postpartum Women	58
The Food Guide Pyramid	58
Iron	59
Calcium	61
Folic Acid	62
Good Sources of Folic Acid	63

Weight Trends and Issues for Postpartum Women	64
Risks for Overweight and Obese Women	65
Risks for Women Who Are Underweight	65
Factors Affecting Postpartum Weight Change	65
Typical Weight Loss During the Early Postpartum Period	66
Using Body Mass Index to Set Goals for Weight Loss	66
Managing Weight with a Healthy Attitude	68
Physical Activity	69
Postpartum Nutrition Guidelines	70
Part 4: Other Postpartum Issues	71
Postpartum Depression	71
Postpartum Blues (or the “Baby Blues”)	71
Postpartum Depression (Non-psychotic)	72
Postpartum Psychosis	72
Predictors	72
Treatment	72
Difficult Outcomes of Pregnancy and Birth	73
Miscarriage	73
Fetal Death (Stillbirth)	73
Neonatal Death	74
Sudden Infant Death Syndrome (SIDS)	74
Gestational Diabetes	74
Teenage Mothers	75
Family Planning	76
Prenatal & Postpartum Nutrition References	77
Additional Resources	79

List of Figures

Figure 1. Prepregnancy Body Mass Index (BMI) Table for Determining Weight Classification for Pregnant Women	19
Figure 2. How Weight Gain Is Distributed During Pregnancy	21
Figure 3. Prenatal Weight Gain Grid	23
Figure 4. Dietary Reference Intakes (DRIs) for Pregnant and Non-Pregnant Women	26
Figure 5. Food Guide Pyramid	29
Figure 6. A Guide to Daily Food Choices for Pregnant Women	30
Figure 7. Fruits and Vegetables for Pregnant Women	32
Figure 8. Sources of Iron	40
Figure 9. Calcium Equivalents to One Cup (8 fluid ounces) of Milk	41
Figure 10. Caffeine Content of Foods and Beverages	49
Figure 11. Map of Florida Fish “No Consumption” Advisories	56
Figure 12. A Guide to Daily Food Choices for Non-Breastfeeding, Postpartum Women	60
Figure 13. Determining Weight Classification for Non-Pregnant Women	67