LEVEL 2

WIC Certification Program

Prenatal & Postpartum Module

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IOWA WIC

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Health AND Human
SERVICES

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Knowledge and Practice Objectives

At the completion of this module, the learner will be able to:

1. State two reasons why adequate nutrition during pregnancy is important.

2. State the major criteria used in assessing the nutritional status of prenatal participants.

3. List at least three nutrition risk factors for pregnant women and state why these factors affect nutritional needs and status.

4. Recognize all nutrition risk factors for pregnant women.

5. State why pre-pregnancy BMI is important in determining a woman's recommended weight gain range during pregnancy.

6. State the recommended range of weight gain and the recommended pattern of weight gain during pregnancy for underweight, normal weight, overweight, and obese women.

7. Demonstrate the correct use of the Prenatal Weight Gain Chart to assess weight gain during pregnancy.

8. State current recommendations regarding vitamin/mineral supplementation, salt restriction, and use of diuretics during pregnancy.

9. Use the Eating for You and Your Baby handout when making dietary recommendations to prenatal participants to enhance their nutrient intake.

10. State counseling recommendations for the common problems of pregnancy: nausea, heartburn, and constipation.

11. List common nutrition concerns for the pregnant adolescent.

12. State counseling recommendations for excessive weight gain and weight loss in pregnancy.

13. State recommendations regarding the use of caffeine, alcohol, tobacco, and other drugs during pregnancy.

14. State the dietary recommendations indicated for iron-deficiency anemia.

15. State one reason why adequate nutrition during the postpartum period for non-breastfeeding women is important.

Introduction

From the day she finds out she is pregnant, until the day the baby is born, the pregnant woman is on a journey that will help determine how healthy her baby will be at birth and will impact the baby's life forever. The smell of food may make her sick, yet she needs to eat well to have a good pregnancy outcome. She must reconsider drinking alcohol or smoking cigarettes. She needs to decide how she will feed her new baby. She will need to find a doctor and attend regular prenatal check-ups, which might be challenging.

Even with all of the changes and decisions to be made, pregnancy is an exciting time in the life of a woman. She can dream of what the future will bring her child. There is so much to look forward to!

Because of the excitement and desire to do the best for the baby, the nine months of pregnancy is also a time when a woman is especially interested in learning. She will want information about what and how much to eat, how much to exercise, how to manage nausea, vomiting, or heartburn, and how to feed her baby.

You are in an important position to help pregnant women improve their eating habits, take care of themselves, and nurture their growing babies. You will:

- Determine a woman's nutritional needs based on her height, weight, hemoglobin, and dietary intake
- Identify the participant's food habits and concerns
- Offer nutrition information that supports healthy eating habits
- Work with expectant mothers to set nutrition and health goals
- Make referrals to other needed services
- Issue food benefits for supplemental foods
- Document the nutrition education given and plan for future education

This module will give you the information, tools, and procedures you need to help pregnant women have healthy, successful pregnancies.

Words to Know:

Low Birth Weight: Infant weighing ≤ 5 pounds 8 ounces (2,500 grams) at birth

High Birth Weight: Infant weighing ≥ 9 pounds (4,000 grams) at birth

Section I: The Importance of Nutrition & Prenatal Care

The Importance of Nutrition

Adequate nutrition during pregnancy is needed to maintain the tissues and nutrient stores of the mother and to allow for normal growth and development of the infant. A woman's diet during pregnancy impacts her infant's gene expression, hormone concentrations, developing nervous system, and risk of disease later in life. Women who consume an inadequate diet during pregnancy have a greater chance of complications such as pre-eclampsia, anemia, infections, and inflammation. Poor maternal nutrition is also associated with prematurity, low birth weight, birth defects, and stillbirths.

A woman who eats poorly during pregnancy may gain too much or too little weight. When a woman does not gain the appropriate amount of weight during pregnancy (gaining too much or too little), there is a greater likelihood that her baby will be low birth weight or high birth weight. Low birth weight babies are more likely than normal birth weight babies to become ill and die during the perinatal period (the time just before and after birth). They may also suffer long-term health problems, including obesity and developmental disabilities. A mother of a high birth weight baby has a higher chance of caesarean delivery (C-section) and the baby is more likely to be obese as a child and later in life.

Words to Know

Stillbirth: Pregnancy loss after 20 weeks of gestation

Miscarriage: Pregnancy loss within the first 20 weeks of gestation

Prematurity: Birth occurring before 37 weeks gestation

Perinatal: Pertaining to the period around childbirth beginning at 20 weeks of gestation to the end of the neonatal period (28 days after birth)

Primary Care Provider (PCP): A physician, usually family practice, pediatrician, internist, or obstetrician, who provides a broad range of routine medical services and refers patients to specialists, hospitals, and other providers as necessary

The Importance of Prenatal Care

It is important to point out that nutrition, although extremely important, is only one part of good prenatal care. The quality, quantity, and timing of prenatal care also impacts pregnancy outcomes (1). You should encourage participants to visit a primary care provider, obstetrician, midwife, or a prenatal clinic as soon as they learn of their pregnancy. Women should return for regular checkups during their pregnancy to ensure that everything is progressing normally. Many complications of pregnancy that result in illness or death for mothers and infants are preventable. Early detection of potential problems is more likely when the pregnant woman gets regular prenatal checkups. Inadequate prenatal care is closely associated with teenage pregnancy, substance abuse, poverty, limited education, belonging to a minority group, and residency status.

Women who choose not to have prenatal care when it is available make this decision for many reasons. Some of these reasons are:

- Fear that the cost of prenatal care may be too high
- Not wanting to bother with the Medicaid application process
- Feeling prenatal care is unnecessary
- Not wanting to confront their health issues (e.g., substance abuse during pregnancy)
- Mistrust of doctors and/or the medical system

Your Role in Promoting Prenatal Care

During the WIC Certification appointment, ask pregnant women if they have been to a doctor yet and how far along they were in the pregnancy when they first sought prenatal care. If a pregnant woman is not receiving prenatal care by the 13th week of pregnancy, try to identify the reason why. If she doesn't have insurance and qualifies for Medicaid, provide information on how to apply. If she needs a health care provider, but doesn't know where to start, provide referrals to medical centers. Inform her that regular prenatal care has been shown to result in better pregnancy outcomes—fewer complications for the mother and her baby, fewer low weight births, and lower neonatal death rates. Any time and effort spent on having a healthy pregnancy will pay off after the baby is born.

By asking the Nutrition Interview questions in Focus, and following up with additional participant centered questions, you should be able to assess if prenatal care has been received or what barriers the participant might need help overcoming and if a risk factor for inadequate prenatal care should be assigned.

NRF 334 - Inadequate Prenatal Care ***(High Risk)***

Definition: When a woman begins prenatal care after 13 weeks of pregnancy.

Prenatal Growth and Development

A full-term baby develops in 40 weeks (or nine months). The nine months of pregnancy are divided into three trimesters of three months each. On the next few pages, you will learn what happens to both the mother and the newborn baby during the three trimesters (2).

The First Trimester (conception through 13 weeks)
Pregnancy begins with conception, when sperm fertilize an egg. Fertilization takes place in the fallopian tube. During the next few days, the fused egg and sperm move through the tube to the lining of the uterus where it implants and starts to grow. The fertilized egg is called an embryo for the first eight weeks of life. After eight weeks, the developing embryo is called a fetus.

The Embryo/Fetus
Month 1: The embryo measures about ½ inch and weighs less than an ounce. Arms and legs, brain, spinal cord, heart, and lungs will all begin to form and develop in these early weeks. The heart will start to beat by the end of the first month.

Month 2: The embryo is now about 1 inch long, still weighing less than one ounce. Growth is very rapid. Eyelids and bones appear. By the end of the second month, all major organs and body systems are developing. Embryos are now at the greatest risk of teratogen exposure. Teratogens are agents or factors that cause malformations to the embryo, such as alcohol, drugs, radiation, infections, or illnesses.

Month 3: The fetus is now 3½ inches long and weighs just over one ounce. It is growing teeth buds and soft nails. The urinary and circulatory systems are functioning and other organs of the body continue to develop. The sex organs are developed, but it is difficult to tell if the baby is a boy or a girl. A heart beat can be detected by doppler between 10-12 weeks.

The Pregnant Woman
During the first month of this trimester, many women don't know they are pregnant. Yet this is the most critical period in the fetus' development. A woman will often continue to drink, smoke, or take medications that might harm her baby, because she doesn't know she is pregnant.

After a missed menstrual period, the woman may be certain she is pregnant. Even before that, she may feel nauseated or sleepier than usual. She may need to urinate more often and notice that her breasts are tingly and tender. She may also have heartburn, indigestion, constipation, nausea, or vomiting. These symptoms may continue through the first trimester.

During the first trimester, a mother's body changes to help her baby grow. The placenta develops to carry nutrients and oxygen to the fetus and carry carbon dioxide and other wastes away from it. The amniotic sac fills with fluid to cushion the developing baby. The mother's uterus and its supporting muscles increase greatly in size, strength, and flexibility. Her breasts grow and change in preparation for breastfeeding. Her blood volume increases by 50 percent to carry the extra nutrients and waste products.

The Second Trimester (14 through 26 weeks)
The Fetus
Month 4: The fetus is 6-7 inches long, weighing 5 ounces. Eyebrows, eyelashes, and fingernails form. The skin is now covered with a waxy coating (vernix) and fine hair (lanugo). The fetus is beginning to be able to hear and swallow.

Month 5: This is when many pregnant women begin to feel movement. The fetus will have sleep and wake cycles. The sucking reflex develops. In girls, eggs will have formed in their ovaries. In boys, the testicles begin to descend from the abdomen into the scrotum.

Month 6: The fetus is now about 12 inches long and weighs 1-1½ pounds. The eyes are able to open and finger and toe prints can be seen. The brain is rapidly developing and the lungs, although immature, are fully formed. By the end of the sixth month, the fetus is developed enough to have a chance of survival if born prematurely.

The Pregnant Woman

Many women feel the best during the second trimester. At this point, women usually do not need to urinate as often and have less nausea and vomiting. But, an expectant mother may still feel tired and have constipation. Heartburn and indigestion can get worse as the fetus grows larger. Their breasts may no longer feel tender, but will have grown larger.

The Third Trimester (27 through 40 weeks)

The Fetus

Month 7: The fetus is now very active; kicking and stretching frequently. The eyes can open and close and sense changes in light. The fetus will begin responding to sound.

Month 8: The fetus is gaining weight rapidly. It is approximately 18 inches long and weighs around 5 pounds. Major development is finished. Bones harden, although the skull remains soft and flexible for delivery. Moms may begin to feel hiccups.

Month 9: During the final month, the fetus will usually turn so its head is facing downwards. There is little room for moving around now. The lungs are fully mature and can function on their own. The brain continues to develop until the 40th week; a major reason why elective inductions are not recommended. At birth, the average baby will be around 20 inches long, weighing 6-9 pounds.

The Pregnant Mother

During the third trimester, most women feel less tired. They have many things to think about and prepare for such as baby clothes, a place for the baby to sleep, a car seat, etc. The woman may have more heartburn and indigestion as the baby gets bigger. Pressure of the growing fetus on the bladder may bring on the return of frequent urination. Leg cramps and swelling are also common during the final trimester.

SELF-CHECK: PRACTICE YOU KNOWLEDGE

1. Name two reasons why good nutrition is important during pregnancy.

   _____

   _____

True or False? (T or F)

2. ____ Low birth weight in babies is desirable because it results in an easier delivery.

3. ____ Women are risked as having inadequate prenatal care if they begin visiting their provider late in their first trimester of pregnancy.

ANSWERS

1. All of the following answers are correct:
   a) To maintain the tissues and nutrient stores of the mother
   b) To allow for normal growth and development of the infant
   c) Positively impact the infant's gene expression, hormone concentrations, nervous system, and disease risk later in life
   d) Decrease the chance of complications during pregnancy
   e) Decrease the change of complications during delivery and postpartum, including prematurity, stillbirths, and birth defects
   f) To decrease the chances of having low birth weight babies

2. False. Low birth weight in babies is associated with an increased chance of illness and death during the perinatal period.

3. False. While early prenatal care is very important, risk factor #334, Inadequate Prenatal Care, is only assigned if a woman has not started her prenatal care by the second trimester (after 13 weeks of pregnancy).

Section II: Anthropometric Indicators of Nutritional Needs

The first step in evaluating a woman's nutritional need is an anthropometric assessment. Anthropometric assessment is the process of determining whether the woman's pre-pregnancy BMI was low, normal, overweight, or obese; and whether she is gaining enough weight in her current pregnancy. Her pre-pregnancy weight and her weight gain during pregnancy can both be indicators of her nutritional needs and can affect the outcome of her pregnancy. For example, low weight gain during pregnancy may mean that the woman is not eating enough to balance the energy she is using. You have a unique opportunity to provide nutrition education and counseling to improve pregnancy outcomes.

Make an extra effort to be accurate with height and weight measurements because this is the information used for assessing a woman's health. The *Screening Module* provides the correct techniques for taking accurate heights and weights.

Importance of Appropriate Weight Gain during Pregnancy

Weight gain during pregnancy has a tremendous effect on the outcome of the pregnancy. Appropriate weight gain is necessary for normal growth and development of the fetus (1, 2).

Babies whose mothers do not gain enough weight are more likely to grow poorly in the uterus and be born prematurely or small for gestational age. There is also an association between low maternal weight gain and failure to initiate breastfeeding.

Babies whose mothers gain too much may have high birth weights, are more likely to be delivered by Caesarean section, and are at greater risk of birth trauma. Women who gain too much weight during pregnancy may have gestational diabetes, difficulties with delivery, and high blood pressure. Also, it can be difficult to lose the weight after the baby is born.

Appropriate weight gain during pregnancy increases the chance that a woman will deliver a full-term, healthy baby.

How much weight should a woman gain during pregnancy?

The recommendations below are based on a woman's pre-pregnancy BMI and the number of fetuses she is carrying. These numbers represent a full term pregnancy (3).

Weight Gain Guidelines		
Pre-pregnancy BMI	Recommended Weight Gain - singleton pregnancy	Recommended Weight Gain - twin pregnancy
Underweight	28-40 lbs.	No set guidelines*
Normal Weight	25-35 lbs.	37-54 lbs.
Overweight	15-25 lbs.	31-50 lbs.
Obese	11-20 lbs.	25-42 lbs.

Women pregnant with triplets should aim to gain 50 lbs., regardless of their pre-pregnancy BMI.

Weight Gain Distribution during Pregnancy

You may be wondering why a woman needs to gain 25-35 pounds throughout her pregnancy. Some of this weight is necessary to nourish the growing fetus. You can see from the following breakdown the baby accounts for only a portion of the total weight gain.

Components of Prenatal Weight Gain	
7-7 ½ lbs.	Baby
2 lbs.	Amniotic Fluid
1-2 lbs.	Placenta
2 lbs.	Uterus
3 lbs.	Maternal Blood
1 lb.	Breasts
9-17 lbs.	Maternal Fluid, Fat, Other Tissues

Determining Weight Gain Recommendations

During a pregnant woman's certification visit, you can discuss what amount of weight gain is best for her.

1. Determine the pre-pregnancy Body Mass Index (BMI):

   Pre-pregnancy BMI is calculated by dividing a woman's weight in kilograms prior to pregnancy by her height in meters squared. (BMI = kg/m^2)

   Focus will do this calculation for you once a woman's pre-pregnancy weight is entered in the Pregnancy panel and her current height is entered in the Anthropometric panel. Accurately determining the pre-pregnancy weight is very important. How to determine this value, when a woman is unsure of her weight prior to pregnancy, will be discussed later.

2. Identify the weight category:

   After the pre-pregnancy weight and height have been entered into Focus, the BMI will be displayed on the Prenatal Weight Gain Chart and on the Pregnancy panel. Weight categories used for determining appropriate prenatal weight gain are defined by the following BMI values:

Underweight	BMI < 18.5
Normal	BMI ≥ 18.5 - 24.9
Overweight	25.0 – 29.9
Obese	≥ 30.0

   Here is an example: Adriana is a 5'4" (64") woman with a pre-pregnancy weight of 160 lbs. She has an estimated BMI of about 27.5. Her BMI value falls into the "overweight" category.

3. Determine the recommended target weight gain range:

Pre-pregnancy BMI value		Target weight gain range
Underweight	<18.5	28 – 40 pounds
Normal	18.5– 24.9	25 – 35 pounds
Overweight	25.0 – 29.9	15 – 25 pounds
Obese	≥30.0	11-20 pounds

Here is an example: You have already determined that Adriana had a pre-pregnancy BMI of 27.5. She is expecting 1 baby and has no health concerns. Using the chart above, you can determine that she should aim to gain between 15-25 lbs. throughout her pregnancy.

In addition to looking at pre-pregnancy weight categories to recommend a normal weight gain, also consider that weight gain for multi-fetal pregnancies is higher.

Assessing Weight Gain during Pregnancy

In addition to estimating how much weight a woman should gain, we need to evaluate her rate of weight gain during pregnancy (4).

Women generally gain between one and five pounds in their first trimester. For women in their second and third trimesters, weight gain recommendations for singleton pregnancies are as follows:

- Underweight and normal weight women are encouraged to gain about 1 lb./week
- Overweight women are encouraged to gain about 0.6 lb./week
- Obese women are encouraged to gain about 0.5 lb./week

In twin pregnancies, weight gain of 1.5 pounds per week during the second and third trimesters has been associated with a reduced risk of preterm and low-birth weight delivery. In 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.

Keep in mind that weight gain is not always linear. The rate of gain can be variable without negatively effecting birth outcomes. These numbers are averages.

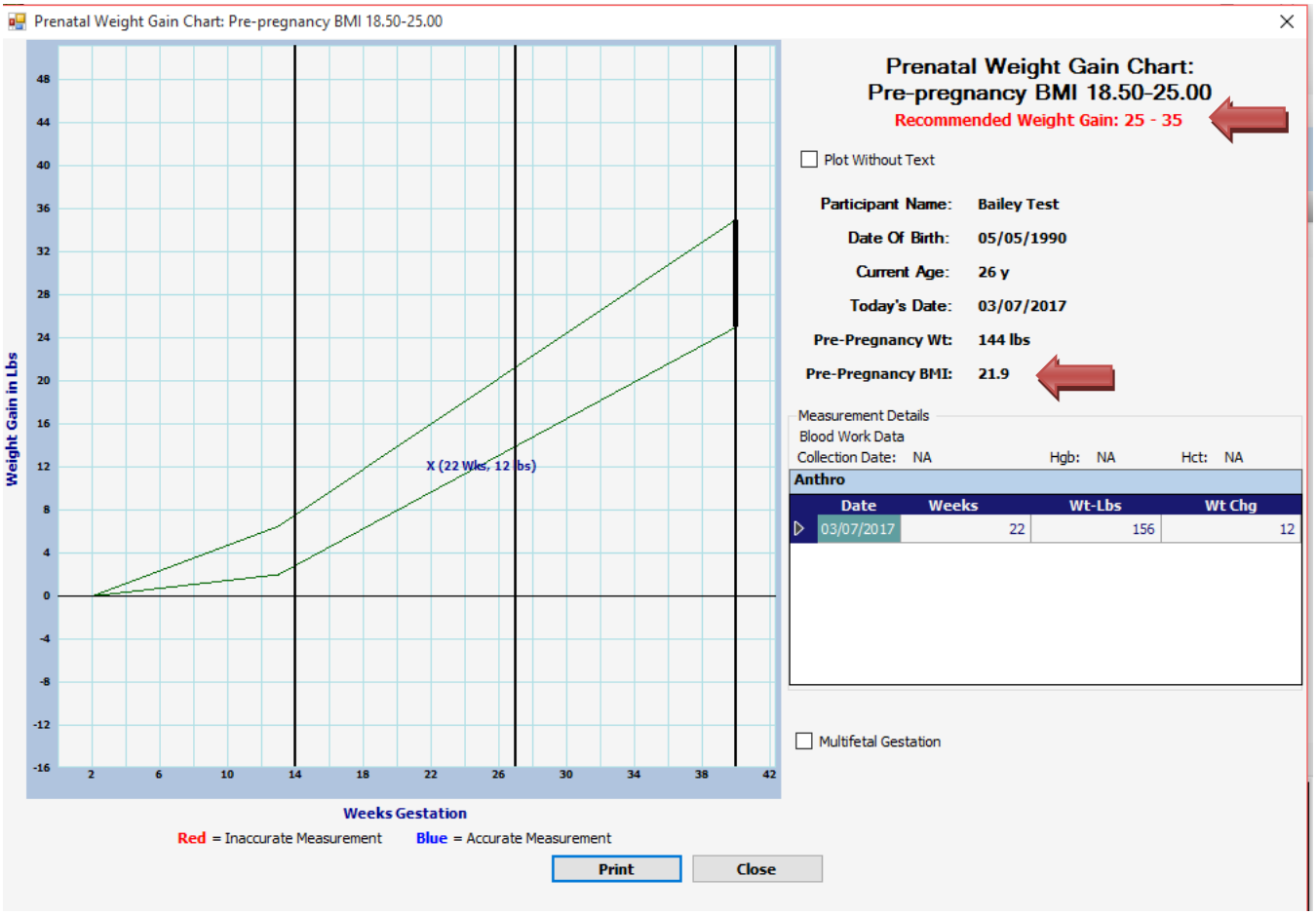
The Prenatal Weight Gain Chart

The Prenatal Weight Gain Chart in Focus is a graph that allows you to track a woman's weight gain throughout her pregnancy. It provides a pictorial view of her weight gain where she can see how her weight gain compares to the weight gain recommended. Remember, the recommended total weight gain range is based on a woman's pre-pregnancy BMI category.

The weight gain ranges on the charts are the two upward sloping lines. The upper-most line represents the upper end of the target weight gain range and the lower line represents the lower end of the target weight gain range.

Women are recommended to gain weight at a steady rate between the two lines. These charts are useful for providing a picture of the pregnancy weight gain. They make it easier to detect inappropriate changes in weight over time. Let's take a closer look at these charts and how you would use them to assess a woman's weight gain.

Example: The chart below illustrates a woman with a pre-pregnancy BMI of 21.9. Her BMI value falls into the normal weight category. Her recommended target weight gain range (25-35 lbs.) is shown in red. The weight gain range is shown on the chart using two green sloping lines. From this chart, we can easily determine that the participant's 12 lb. weight gain over the first 22 weeks of her pregnancy is within the recommended range.



Procedure for Determining Pre-Pregnancy Weight

At the first visit, if pre-pregnancy weight is known:

1. Enter the woman's reported pre-pregnancy weight and EDD (estimated delivery date) or date of her last menstrual period on the Pregnancy panel in Focus. Enter her current height and weight on the Anthropometric panel. The pre-pregnancy BMI will be visible on the Pregnancy panel and the Weight Gain Chart on the Anthropometric panel. The appropriate weight gain range will also be in the Weight Gain Chart.
2. You are not required to weigh pregnant women at subsequent Nutrition Education appointments. However, if a woman would like to be weighed, you can add additional measurements to the Anthropometric panel. This will allow you to track and assess a woman's weight gain over time.
3. If the woman's EDD changes later in the pregnancy, update the EDD by editing the Pregnancy panel. Do not create a new pregnancy record! Growth charts will adjust automatically.

At the first visit, if the pre-pregnancy weight is <u>not</u> known:

1. Ask questions that might help you determine an approximate weight. Sometimes women have trouble remembering what they weighed before pregnancy or they may have purposefully never weighed themselves. Some questions you might ask are:
   - *Did the doctor or clinic staff weigh you when you found out you were pregnant? What was that weight?*
   - *Do you think you gained any weight between the time you became pregnant and when you first got weighed?*
   - *Has your dress or pants size changed since you got pregnant?*
2. Visually assess the woman's weight status category to decide if she was most likely underweight, normal weight, overweight, or obese before conception.
3. Calculate the number of weeks' gestation.
4. Refer to a prenatal weight gain chart for her weight status category and determine the mid-point for the excepted weight gain based on her weeks' gestation.
5. Subtract the expected weight gain from the woman's current weight and record this figure as the pre-pregnancy weight. Indicate this is an estimated pre-pregnancy weight gain on the Participant Care Plan.

<u>Example:</u> Stacey is at WIC for her certification appointment. She doesn't own a scale and hasn't seen a doctor yet, so it's difficult for her to estimate her pre-pregnancy weight. Today, she weighs 140 lbs. Based on a visual assessment, the CPA feels that Stacey most likely had a normal BMI before pregnancy. She is now 22 weeks along. A weight gain chart for women with normal BMIs tells the CPA that a weight gain between 10-16 lbs. is recommended. The CPA charts Stacey at the midpoint of these numbers, estimating she's gained about 13 lbs. 13 lbs. are then subtracted from her current weight of 140 lbs. – leaving an estimated pre-pregnancy weight of 127 lbs.

What Prenatal Weight Gain Charts Can Tell Us

Evaluating one plotted weight
Weight plotted at one point tells us how a woman's weight has changed since she became pregnant.

Some participants may report their weight from an earlier doctor's visit to save time. Because of the variation in scales, unless the information is written down by the medical provider, it is required that the participant be weighed again on the WIC clinic scale.

If the pre-pregnancy weight is inaccurate, we cannot accurately assess weight gained. However, if multiple weights are taken and recorded during the pregnancy, we will have a starting point to compare and assess future measurements. Again, this is not required.

Evaluating several plotted weights
Several measurements plotted at different weeks of pregnancy give more reliable information to help determine the pattern of weight gain and if the woman is gaining a healthy amount of weight.

Unexpected weight changes
For all pregnant women, slow and steady weight gain between the two lines on the Prenatal Weight Gain Chart is recommended. Most weight gain occurs in the second and third trimester. If a woman is gaining more than the recommended amount, do not recommend she stop gaining weight. Rather, encourage slow and steady weight gain throughout the remainder of her pregnancy.

Rapid weight changes are a red flag for concern. Reasons for unexpected changes may include errors in measuring or recording weights, differences in clothing, severe nausea and/or vomiting, gaining extra body fluid, eating too much or too little, and when a woman is expecting twins or triplets.

If a woman's weight increases or decreases significantly, first weigh her again to make sure she was weighed accurately. If the weight change recorded was accurate, assess her health and diet status. She may need to be referred her prenatal care provider.

Identification of Anthropometric Indicators of Nutritional Need

Now you can use accurate heights and weights, BMI, and the Prenatal Weight Gain Charts to determine if WIC participants have anthropometric indicators of nutritional risk. Remember, any one of these indicators make pregnant women eligible for WIC and identify the type of education and counseling the woman should receive.

NRF 101 Underweight (*Low Risk)*
Definition: A woman whose pre-pregnancy BMI is less than 18.5.

Example: Halima, a pregnant woman, is 64 inches tall and weighed 103 pounds before she became pregnant; her BMI is 17.8. Based on her BMI, Halima is underweight.

Underweight pregnant women are more likely to deliver a baby who is low birth weight or growth impaired. These babies tend to have more health problems after birth. An underweight woman is also more likely to have complications during the pregnancy and delivery. These complications include an increased risk of pre-birth hemorrhage, premature rupture of membranes necessary for pregnancy, anemia, endometriosis (inflammation of the uterus lining), and caesarean delivery.

An underweight woman may have had a poor diet prior to her pregnancy. During the pregnancy, if she continues to eat poorly this may result in an inadequate intake of calories and nutrients. After delivery, if she continues to eat poorly she may become anemic.

Your Role
Follow the prenatal nutrition protocols (which will be discussed in Part VII) and try to determine the potential cause of her low weight status. Potential causes might include concerns about body image, poor appetite, availability of food, feelings about food, excessive activity, and health problems. Review the dietary assessment. Some questions might be:

- How is your appetite?
- How do you feel about gaining weight during your pregnancy?
- Do you ever skip meals or eat less because there isn't enough money for food?

If you are able to determine the cause of her low weight status, provide solutions. For example, if access to enough food is limited because of lack of money, provide information on SNAP (food assistance), if she isn't already receiving, and information on food banks/pantries.

NRF 111: Overweight ***(Low Risk)***
Definition: A woman whose pre-pregnancy BMI is greater than 25.

Example: Mona, a pregnant woman, is 64 inches tall and weighed 165 pounds before she became pregnant. Her BMI is 27.6, so she is considered overweight.

An overweight woman is more likely to have complications during pregnancy and delivery. These complications include conditions such as gestational diabetes, high blood pressure, premature delivery, birth defects, birth of a very large baby, and blood clot difficulties. The heavier a pregnant woman is, the greater the chance she may develop some of these problems. Maternal overweight and obesity prior to pregnancy is strongly linked to an increased risk of obesity in the child. Pregnancy is not a time to lose weight. It is recommended that women who are overweight gain 15-25 pounds and women who are obese gain 11–20 pounds. Excessive weight gain during pregnancy puts the mother and the baby at future risks. Overweight and obese women may not necessarily have adequate nutrient stores since the quality of the diet may not have been adequate.

Your Role
Follow the prenatal nutrition protocols and gather information about the participant's beliefs about nutrition during pregnancy. A healthy diet and appropriate physical activity is especially important for these women since dieting or weight reduction is NOT advised during pregnancy. Ask about lifestyle and activity level, food availability and resources, eating behaviors, and feelings about gaining weight during pregnancy. Encourage nutrient-rich foods and limiting unnecessary high-calorie foods.

NRF 131 Low Maternal Weight Gain (*High Risk)*

Definition: ***(Does not apply to multi-fetal pregnancies.)***

- At any point in a **singleton** pregnancy, weight that plots beneath the bottom line of the appropriate weight gain range for her respective pre-pregnancy weight category.
- *OR* Weight gain in the 2nd or 3rd trimester (14–40 weeks gestation) is lower than the following recommendations for her respective pre-pregnancy weight category:

Pre-pregnancy Weight Classification	BMI	Total Weight Gain
Underweight	<18.5	<1 lb./week or <4 lbs./month
Normal Weight	18.5 - 24.9	<0.8 lb./week or <3 lbs./month
Overweight	25.0-29.9	<0.5 lb./week or <2 lbs./month
Obese	≥ 30.0	<0.4 lb./week or <1.5 lbs./month

Note: This NRF is user-assigned. Check the box *'131 – Low Maternal Weight Gain'* on the Anthropometric panel.

When a woman doesn't gain the recommended amount of weight per month in her 2nd or 3rd trimester, she should be risked with low maternal weight gain. This applies even if the woman is above her recommended weight gain curve.

Women who do not gain adequate weight during pregnancy tend to give birth to babies with smaller than average birth weights and with fetal growth restriction. Lower birth weight and fetal growth restriction are indicators of poor health for a baby, which can have lasting effects throughout the baby's entire life.

The supplemental foods and nutrition education provided by WIC should improve maternal weight status and infant outcomes.

Your Role

Collect information addressing food resources, food and beverage intake, and lifestyle behaviors. Ask if she is concerned about her low weight gain or why she might be losing weight. If she seems reluctant to gain weight, remind her how important her weight gain is to the health of her baby.

Depending on the issues, you may need to provide information on any of the factors that can contribute to poor weight gain. Provide educational materials as appropriate.

She may simply need advice on what to eat in order to gain weight. Focus on healthy eating habits and choosing a variety of foods from the different food groups. Also, rather than trying to completely change her diet, recommend that she try to increase her intake of snacks throughout the day. Some nutritious snack foods that are also high in calories include nuts, peanut butter, milk shakes, smoothies, cheese, tortilla chips and guacamole, yogurt, and trail mix. Adding powdered milk or shredded cheese to meals during preparation will also increase the caloric content of the meals.

NRF 133 High Maternal Weight Gain ***(Low Risk)***

Definition: ***(Does not apply to multi-fetal pregnancies.)***

At any point in a **singleton** pregnancy, weight plots above the appropriate curve on the Prenatal Weight Gain Chart.

> Note: This NRF is user-assigned. Check the box *'133 – High Maternal Weight Gain'* on the Anthropometric panel.

Gaining too much weight during pregnancy is an indicator of nutritional risk. Women who have high weight gain during pregnancy often give birth to high birth weight babies. If the baby is too large, there is significant risk of injury to the woman and baby during delivery. Too much weight gain during pregnancy and high birth weight of the baby increases risk of obesity during childhood and later in life. High maternal weight gain is associated with other complications of pregnancy including high blood pressure, gestational diabetes, preeclampsia, and eclampsia. Women who gain extra weight in pregnancy also have extra weight to lose after delivery. If extra weight is not lost after delivery, a woman may enter a subsequent pregnancy overweight.

Your Role

Follow the prenatal nutrition protocols (see part VII) first. Excessive weight gain may be caused by eating too many calories for the amount of activity the person engages in. However, excessive weight gain during pregnancy may result from edema or fluid retention associated with preeclampsia. Identifying the cause of excessive weight gain may be difficult, but it is necessary for determining whether medical or dietary management is needed.

Summary

The Prenatal Weight Gain Chart serves as a visual aid for you throughout a participant's entire pregnancy. The Weight Gain Chart allows you to see the pattern of weight gain and therefore better prepares you to offer appropriate education and counseling. The chart may serve as a teaching tool for the participant to help explain weight recommendations.

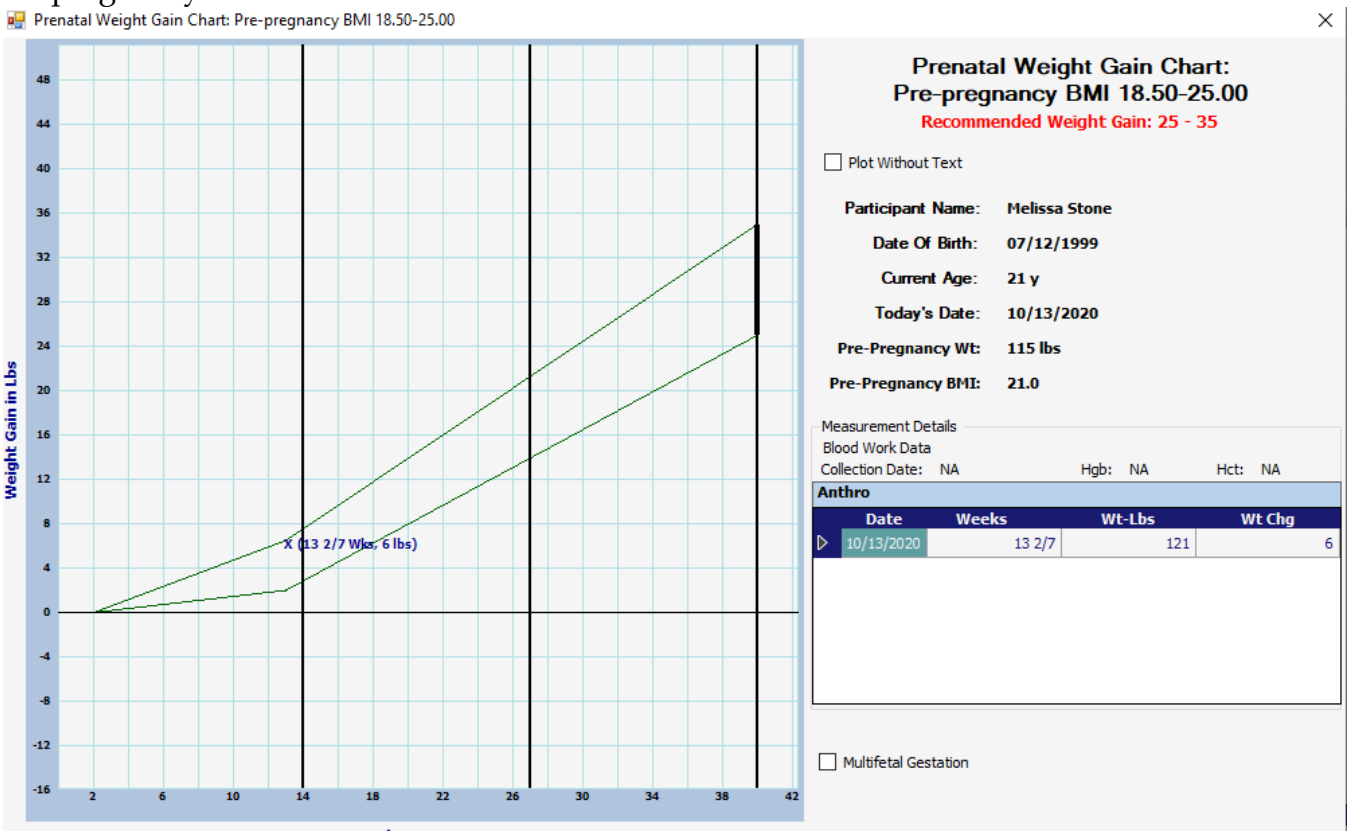
SELF-CHECK: PRACTICE YOUR KNOWLEDGE

1. Answer the following questions based on a singleton pregnancy.
    a. What is the recommended range for weight gain for a normal weight woman during pregnancy?
    b. What is the recommended range for weight gain for an underweight woman during pregnancy?
    c. What is the recommended range for weight gain for an overweight woman during pregnancy?
    d. What is the recommended range for weight gain for an obese woman during pregnancy?

True or False? (T or F)

2. ____ Pregnancy is an excellent time for an overweight woman to lose weight and she should be encouraged not to gain any weight during her pregnancy.

3. ____ It is important to know a woman's pre-pregnancy BMI before determining how much weight she should gain during her pregnancy.
4. Melissa Stone comes to your clinic for her first visit today, October 13. She is 13 weeks pregnant and was 21 years old at conception. Her due date is April 18. She is 5'2", weighs 121 pounds at this visit, and reports her pre-pregnancy weight was 115 pounds. Her pre-pregnancy BMI is 21.

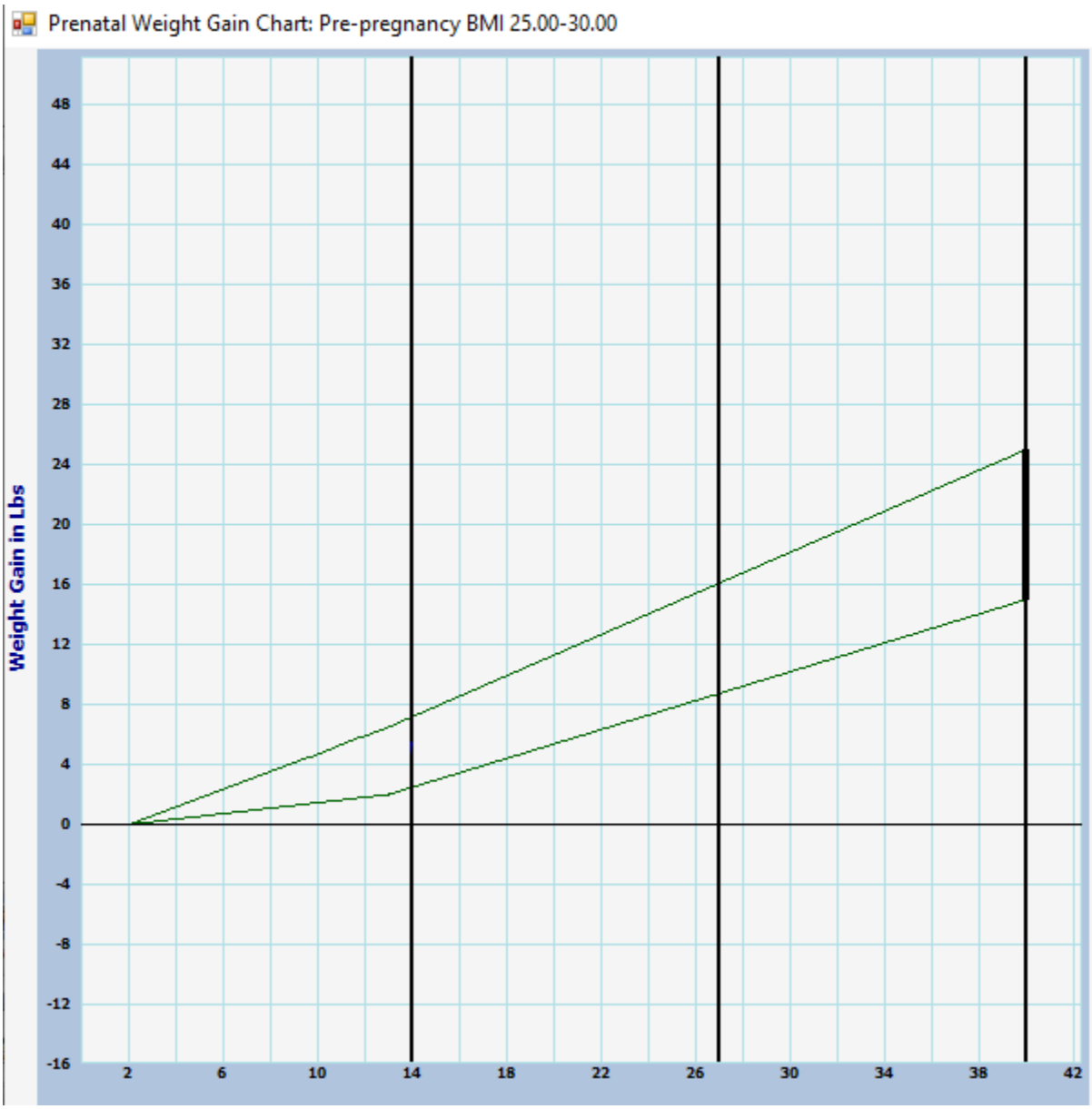


Which NRF(s) should be assigned to Melissa?

- 111– overweight pre-pregnancy
- 131– low maternal weight gain
- 133– high maternal weight gain
- None apply

5. Alexandra arrives at your clinic and reports that she is 11 weeks pregnant. This is her first time at WIC and she has not yet been to her doctor during this pregnancy. After measuring and weighing her, you determine she is 5'4" and weighs 170 pounds at this visit. When asked about her pre-pregnancy weight, she says she has no idea what she weighed before her pregnancy. Alexandra does not think she has gained too much weight, but say that her appetite has been good and some of her clothes feel tight.

Below is a blank prenatal weight gain chart to help you answer some questions about Alexandra



a. What do you record as her pre-pregnancy weight?
b. What range of total weight gain do you recommend for her?
c. Which NRF(s) would you assign? (Select all that apply)
    - 101– underweight pre-pregnancy
    - 111– overweight pre-pregnancy
    - 131– low maternal weight gain
    - 133– high maternal weight gain
    - None apply

ANSWERS

1. a. 25-35 pounds
   b. 28-40 pounds
   c. 15-25 pounds
   d. 11-20 pounds

2. False. No one should attempt weight loss or maintenance during pregnancy. An overweight woman should gain between 15-25 pounds during pregnancy.

3. True.

4. No growth risk factors apply. Melissa had a normal pre-pregnancy BMI and her weight gain is within the expected weight gain range.

5. a. 166.5 pounds; According to the weight gain chart, by 11 weeks, a weight gain of 2-5 lb. is excepted. The mid-point would be 3.5 lb. This would be subtracted from today's weight of 170 lb. to find the estimated pre-pregnancy weight.
   b. 15-25 pounds
   c. NRF 111, because her pre-pregnancy BMI is >25

Section III: Dietary Indicators of Nutritional Need

Nutritional Needs of Pregnancy
While a pregnant woman does not have to eat for two, she does require more calories and certain nutrients than a non-pregnant woman.

Every pregnant woman can make sure that her baby gets the best possible start by eating a balanced diet that includes a variety of food from the different food groups. The **Eating for You and Your Baby** handout (found at the end of this module) contains a sensible, easy-to-follow guide that encourages women to choose the right amount of foods. The guide includes recommendations about portion sizes and amounts for pregnant women, gradual weight gain, physical activity, seafood, and other tips. These guidelines are available to help you educate the pregnant woman about her diet. For more individualized recommendations, women can visit www.choosemyplate.gov.

For more information, refer to the WIC Basic Nutrition Module.

Calories
Calories provide energy for the body to function. Extra dietary energy is required to meet the increased growth needs of pregnancy (1). Extra calories support new tissue formation and contribute to maternal fat stores. They also support the increased metabolic needs of pregnancy.

During the first trimester, most women do not need to increase the number of calories they consume. According to ACOG, women who begin their pregnancy at a normal weight need an additional 340 calories/day during the second trimester and 450 calories/day during the third trimester. Women who were underweight prior to pregnancy, are extremely active, or are expecting multiples may need more calories. Women who are overweight or obese, as well as those who experience a drastic decrease in activity level, may need less.

It is important that these extra calories come from nutrient-dense foods. A peanut butter sandwich on whole grain bread and a small orange or a 12-ounce can of soda and ten French fries will each supply about 300 calories. The sandwich and orange are better choices because in addition to the calories, they provide fiber, healthy fats, protein, and vitamins.

Protein
Protein is needed to build and maintain every cell of the body. As the pregnancy begins, protein is needed to build all the tissues that will support the fetus. This includes the placenta, amniotic fluid, breasts, uterus, and blood. Protein is also essential for the growth and development of the fetus. It is recommended that non-pregnant women consume 0.88 grams of protein per kilogram of body weight daily. During pregnancy, that recommendation increases to 1.22 grams/kg (weeks 16-35) and 1.52 grams/kg closer to delivery (week 35 onward) (2).

Many protein-rich foods contain other essential nutrients such as iron, vitamin B_6, and zinc. Animal sources of protein, such as whole-fat milk and red meats, can provide too much fat if eaten regularly. For normal and overweight women who are gaining adequate weight,

encourage consumption of lean animal products, low fat and nonfat dairy products, and vegetable proteins (such as beans, lentils, and peas).

The chart below shows grams of protein in commonly consumed foods. Adding just 1 or 2 servings of these foods daily will help women meet their protein needs.

Protein Rich Foods

Meat & Poultry 7 grams/oz.	**Peanut Butter** 7 grams/2 Tbsp.
Seafood 6 grams/oz.	**Cow's Milk** 8 grams/cup
Eggs 6 grams/egg	**Cottage Cheese** 14 grams/0.5 c.
Lentils 9 grams/0.5 cup	**Greek Yogurt** 12-18 grams/5 oz.
Beans 8 grams/0.5 cup	**Tofu** 3 grams/oz.

Water

The body needs additional water during pregnancy to stay hydrated and support the fetus. Water also helps to prevent constipation, hemorrhoids, excessive swelling, and urinary tract or bladder infections – all of which can be common in pregnancy. Dehydration can also lead to premature labor.

It is recommended that pregnant women consume 8-10 cups of fluid daily to stay hydrated and support the fetus. Participants can gauge if they are drinking enough by monitoring their urine; pale yellow or clear urine is a sign they are staying hydrated. Drinking to thirst is not reliable, since by the time a person is thirsty, they are already headed towards dehydration. Fluids can come from drinking water, milk, and juice, as well as water from foods. Beverages high in added sugars should be limited as these provide empty calories.

During the last few months of pregnancy, some women may have edema (swelling or puffiness) in the ankles and feet. Pregnant women should never restrict water or use diuretics (water pills) to try to decrease edema. Diuretics can cause a dangerous imbalance in the sodium and potassium levels in the baby. Edema will be discussed later in this module.

SELF-CHECK: PRACTICE YOUR KNOWLEDGE

True or False? (T or F)

1. ____ Some women may put on more weight than they expected during pregnancy because they become less active.

2. ____ Water should be restricted in pregnancy when a woman has edema.

ANSWERS

1. True. A woman who has experienced a drastic decrease in physical activity does not need as many calories as a woman who remains highly active.
2. False**.** There is no reason to restrict water during pregnancy. Restricting water can be very dangerous.

Nutrients of Concern

NRF 427D Inadequate vitamin/mineral supplementation recognized as essential by national public health policy *(Low Risk)*

Definition: Consumption of less than 27 mg of iron as a supplement daily by pregnant women. Consumption of less than 150 mcg of supplemental iodine per day by pregnant and breastfeeding women. Consumption of less than 400 mcg of folic acid from fortified foods and/or supplements daily by a non-pregnant woman.

Iron

Maternal iron deficiency is the most common nutrient deficiency during pregnancy. 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 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 smaller, light-colored red blood cells. A woman who is anemic can look pale; she may complain of fatigue, slowness, and irritability (3). She may also report that her appetite has dropped and that she has headaches and dizziness.

We can determine if there is enough hemoglobin in the blood by doing a hemoglobin test. Some health care providers may perform a hematocrit test instead of a hemoglobin test. A low hemoglobin or hematocrit level can indicate an iron deficiency. More information about hemoglobin testing can be found in the Screening Module.

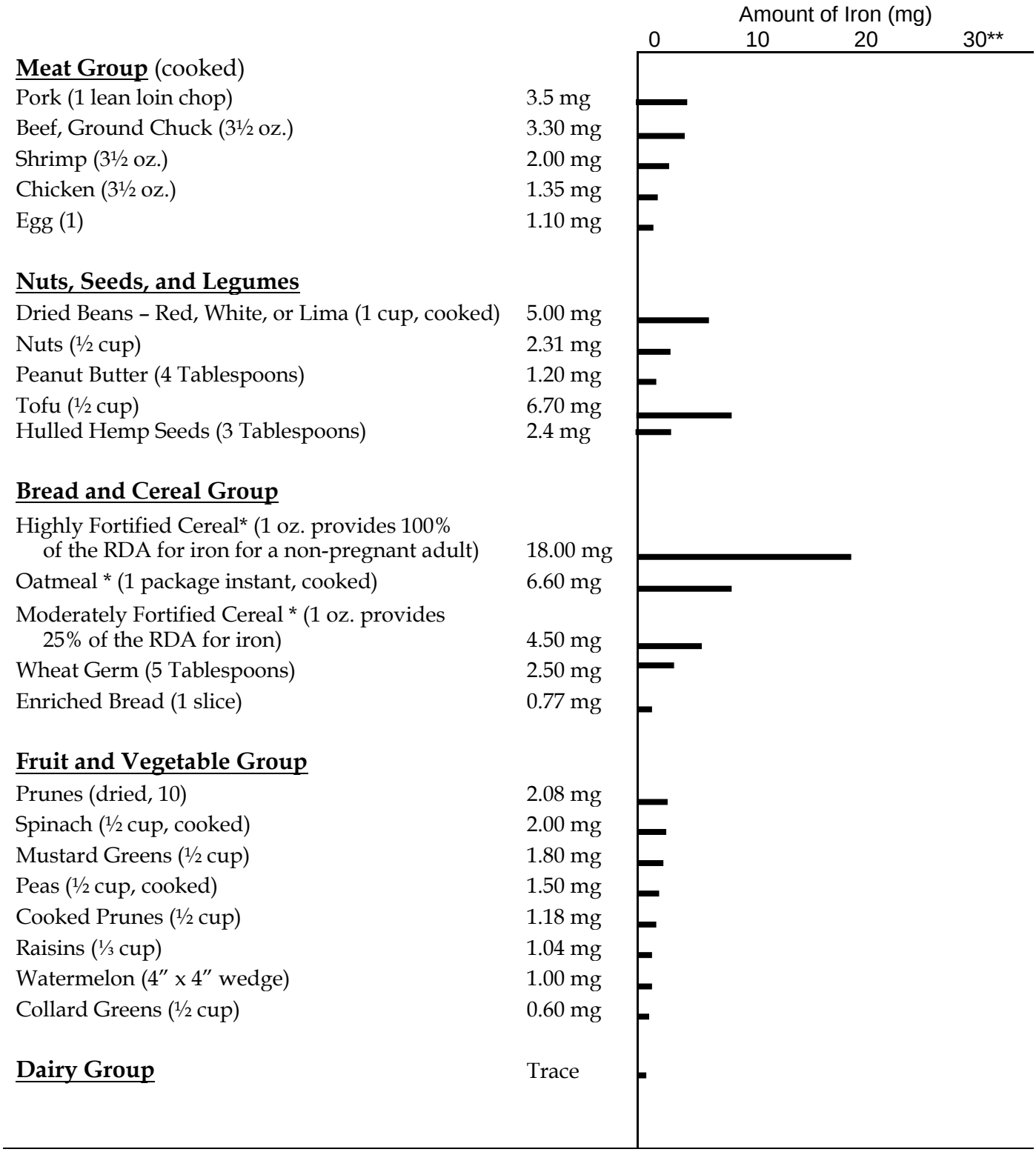
In our discussion of weight gain during pregnancy, we mentioned that several pounds are due to an increase in blood volume and other fluids. Because a woman's blood volume increases dramatically throughout pregnancy, her hemoglobin may actually drop during the second and third trimesters. Her red blood cells are essentially diluted. This drop is normal. However, extra iron is required during pregnancy to form new red blood cells, which are needed to carry oxygen to and carbon dioxide from the baby's tissues and to provide an extra supply of blood to compensate for the losses at delivery.

Anemia during pregnancy is associated with the delivery of low birth weight babies and an increased risk of infant mortality (death). Anemia late in pregnancy is a predictor of pre-term delivery. Many women begin pregnancy without enough iron stores to meet the needs of pregnancy. For these reasons, 27 mg of iron per day is recommended during pregnancy, which most prenatal vitamins contain. If a woman is diagnosed with anemia, her health care provider may prescribe an iron supplement in addition to her daily prenatal vitamin.

Iron Content in Foods

The following is a list of foods and their iron content. The black bars indicate the milligrams of iron in each food. Note that some foods contain much more iron than others, and that milk is a very poor source of iron. The body better absorbs iron in animal products (heme-iron) than the iron in plant products (non-heme iron). Even though some plant foods may contain more iron than animal foods, the absorption may be much less.

Meeting the Daily Mark for Iron



*Iron fortification is different for each cereal. READ THE LABEL to find out the amount of iron contained in a box of cereal. For a cereal to be approved by the WIC Program, it must contain a minimum of 28 mg of iron per 100 g of dry cereal. This is equivalent to 8 mg of iron per 1 oz. serving of cereal.

**The Recommended Daily Allowance (RDA) of iron for a pregnant woman is 30 mg/day.

One way to increase the body's absorption of non-heme iron from vegetables and grains is to eat them at the same meal as foods containing heme iron, like meat, or with vitamin C-rich foods (4). Thus, it is important to get enough vitamin C each day. Foods high in vitamin C include oranges and orange juice, grapefruit and grapefruit juice, strawberries, cantaloupe, and broccoli. Another way to slightly increase the amount of iron in a person's diet is to cook with an iron skillet. Taking iron supplements at the same time as vitamin C-rich foods with iron also enhance iron absorption.

Some substances in foods inhibit the absorption of iron including tannins (in tea), phytates (in bran), oxalic acid (in spinach), and calcium (in milk). Again, by eating meat or vitamin C at the same meal, you can help limit the effect of these inhibitors.

Your Role

Because a pregnant woman can easily become anemic, it is important to encourage her to eat foods rich in iron and to take a prenatal vitamin with iron. Offer suggestions on ways to improve the absorption of iron, such as:

- Pairing non-heme iron sources (whole grains, beans, legumes) with heme iron sources (meat, poultry, seafood)
- Pairing iron rich foods with foods that contain vitamin C (citrus fruits, strawberries, broccoli, cauliflower, peppers, potatoes) or take her prenatal vitamin with a glass of juice
- Do not consume the following foods at the same time as an iron supplement; they will block iron absorption:
    - Milk
    - Coffee
    - Tea
    - Leafy Greens
    - Whole Grains
    - Legumes
    - Nuts

It is best to recommend supplements be taken an hour before, or two hours after, a meal with juice or water (not milk, tea, or coffee). If the participant reports that she is nauseated, tell her iron supplements are best tolerated when taken at bedtime.

A history of poor dietary intake of iron, heavy blood loss, or closely spaced pregnancies can be indicators of iron deficiency. Women with low hemoglobin or hematocrit values should receive education on the recommendations for iron supplementation and dietary sources of iron. Assign Risk 427D and refer to their health care provider if they are not receiving iron in either a prenatal vitamin/mineral supplement or an individual iron supplement. Pregnant women with a hemoglobin <9mg should be referred to a health care provider for further evaluation.

Iodine

Iodine is an essential element that enables the thyroid gland to produce thyroid hormones. The RDA for everyone over 14 years old is 150 mcg. This number increases sharply during pregnancy and lactation. The RDA for iodine is 220 mcg during pregnancy and 290 mcg during lactation (5). When a woman with iodine deficiency becomes pregnant, she risks

miscarriage, stillbirth, and mental retardation in her baby. Even what is considered a mild iodine deficiency can hamper the growth of children's brains, reduce their IQ, and cause learning disabilities. Children with iodine deficiency and its resulting hypothyroidism can suffer from stunted growth, with mental retardation and problems in movement, speech, or hearing. Worldwide, iodine deficiency actually affects some 50 million children. Taking too much iodine has side effects as well. It is not recommended to take more than the recommended amount of iodine.

For a long time, iodine deficiency was not a concern in the United States, primarily because Americans were commonly using iodized salt. Now, the major source of salt for many people in this country is the salt used in processed foods – which typically does not contain iodine. If iodized salt is used in processed food, this will be listed in the ingredient list.

Nutrition studies from the early 1970s found that just 2.6% of US citizens had iodine deficiency (6). Recent NHANES studies from 2007-2014 showed median urinary iodine concentrations of 119mgc/L for the general population and 144 mcg/L for pregnant women. According to the World Health Organization, a median urinary iodine concentration of 150–249 mcg/L indicates adequate iodine nutrition during pregnancy, while values less than 150 mcg/L are considered insufficient.

The iodine content of foods is dependent on the amount of iodine in the soil. Seafood contains iodine from seawater. Dairy is also a good source of iodine in the US because iodine is added to cattle feed. Because the iodine content of foods is dependent on many factors, the content may vary. The values of iodine in the foods listed below are approximate.

Food	Serving	Iodine (mcg)
Iodized Salt	1 gram (1/4 tsp = 1.5 gm)	76
Cod	3 oz.	158
Plain, Greek yogurt	1 cup	116
Cow's Milk	1 cup	85
Potato with peel, baked	1 medium	60
Seaweed, nori	10 grams	232

Your Role

The American Thyroid Association recommends that women receive prenatal vitamins containing 150 mcg of iodine daily during pregnancy and lactation. The iodine content of prenatal vitamins in the United States is not mandated, thus not all prenatal vitamins contain iodine. Pregnant and breastfeeding women should be advised to review the iodine content of their vitamins and discuss the adequacy of the iodine with their health care provider. During a WIC appointment, if the client does not know the iodine content of her prenatal vitamins, advise the client to discuss with her healthcare provider. Assign Risk NRF 427D if it is known that the client's prenatal vitamin does not contain iodine.

Folic Acid

Folic acid, or folate, is a B vitamin that is necessary for normal cell growth. Folic acid also prevents up to 50% of neural tube birth defects (NTD), such as Spina Bifida (7). Any woman who does not get enough folate has a greater chance of having a baby with NTD.

The neural tube forms within the first month of development. By day 22 or 23 of the pregnancy, usually before the woman knows she is pregnant, the neural tube has formed and closed. NTDs occur when the neural tube does not close properly. Once this process is completed, there is no way to correct it.

Neural Tube Defects (NTDs) and Folic Acid: Questions & Answers

What are NTDs?

Serious birth defects that affect the brain and spinal cord.

Who is at risk for having a baby with NTDs?

Any woman of childbearing age.

What causes NTDs?

Researchers are not exactly sure, however, inadequate nutrition (especially folate), poverty, diabetes, obesity, drugs, and alcohol use have been linked.

Folate-rich Foods

8 oz. orange juice	75 mcg
1 cup dark leafy greens	100 mcg
8 strawberries	100 mcg
½ cup cooked (dried) beans	100 mcg
1 cup Multi-grain Cheerios (Enriched)	400 mcg

Folic acid is part of the U.S. fortification program and is included in bread, pasta, rice, breakfast cereals, and other grain products labeled as "enriched." However, it is very difficult to get enough folate by diet alone. The CDC recommends that all women of childbearing age should consume 400 mcg of synthetic folic acid daily and eat a healthy, varied diet. The recommended level is increased to 600 mcg during pregnancy (8).

It is important to remember that folic acid will not prevent 100% of the NTDs, but it can prevent many of them. Women with a history of having a baby with an NTD are at greater risk and may be prescribed up to 4,000 mcg, or ten times the usual amount, by their healthcare provider. Foods naturally rich in folate include green, leafy vegetables, such as collards, spinach, and romaine lettuce; fruits such as oranges, strawberries, and kiwis; orange juice; dried beans and peas.

SELF-CHECK: PRACTICE YOUR KNOWLEDGE

1. What two nutrients are necessary for healthy blood and need to be supplemented during pregnancy?

   a. _____
   b. _____

2. Describe some of the symptoms of a woman who has iron-deficiency anemia.

   _____
   _____
   _____

3. Fill in each blank with the correct word:
   a. A low _____level can indicate iron deficiency.
   b. Vitamin _____ helps the body absorb iron.

4. List five iron-rich foods:
   _____
   _____
   _____
   _____
   _____

5. When is it most important that a woman has an adequate intake of folic acid to prevent neural tube defects?

True or False? (T or F)

6. ____ If a woman does not know if her prenatal vitamins contain iodine, she should check because not all prenatal vitamins contain iodine.

ANSWERS

1. Iron and Folic Acid

2. A woman who is anemic can look pale; she may be tired, listless, and irritable; she may report headaches, dizziness, and a drop in appetite.

3. a. Hemoglobin or Hematocrit
   b. Vitamin C

3. Look at the chart on page 25 for those foods, which are high in iron.

4. Within the first month of pregnancy (and before pregnancy).

5. True. Women should check the iodine levels in their prenatal vitamins because not all prenatal vitamins contain iodine.

Calcium

Calcium is important for everyone, but especially for the pregnant woman and her baby. Calcium is needed for strong bones and teeth, blood clotting, and enzyme activity. It is also essential for the heart, nerves, and muscles to develop and work properly. As the fetus grows, its demand for calcium also increases (9).

The fetus is totally dependent on the mother for calcium needs. Fortunately, during pregnancy a woman can efficiently absorb calcium from the foods she eats. Non-pregnant women typically absorb only about 15-20 percent of the calcium they consume. By the second and third trimesters, this number may increase to over 50 and 70 percent, respectively (10).

Women's calcium requirements do not change during pregnancy but are different depending on age. Teenagers that are 14-18 year olds should consume 1,300mg/day. Women that are 18-50 years old should consume 1,000 mg/day. One cup of cow's milk (whole, 2%, 1%, or fat free) has about 300 mg of calcium. Refer to the table below for a list of calcium containing foods.

Approximate Calcium Content of Various Foods

Food	Serving Size	Calcium (mg)
Total ® cereal	¾ cup	1000
Calcium-fortified orange juice	8 oz.	350
Low fat yogurt	1 cup	300
Cheddar cheese	1.5 oz.	300
Fat free milk	1 cup	300
Fortified soy milk	1 cup	299
Canned sardines with bones	3 oz.	265
Firm tofu, set with calcium salts	1 cup	200
Calcium-fortified bread	1 slice	200
Blackstrap molasses	1 Tbsp.	170
Pudding, made with milk	½ cup	150
Spinach, cooked	½ cup	120
Turnip greens, cooked	½ cup	100
Almonds	¼ cup	90
Sesame seeds	1 Tbsp.	90
Ice cream	½ cup	85
Low fat cottage cheese (1% milk fat)	½ cup	80
Parmesan cheese	1 Tbsp.	70
Pinto beans, cooked	½ cup	50
Okra, cooked	½ cup	50
Corn tortillas, made with lime-processed corn	2 tortillas	40
Broccoli, cooked	½ cup	35

*Actual calcium varies among brands, especially for tofu, yogurt, and other processed foods. Read the labels to determine calcium levels in various brands. Source: USDA Nutrient Database for Standard Reference.

For some women it is not always easy to meet the recommended daily requirements from dairy products. Some women do not like milk. It is necessary, then, not only to stress the importance of calcium, but also to offer food choices other than white, cow's milk that will help meet calcium needs. Chocolate milk and milk based smoothies are acceptable alternatives for many women who do not like the taste of milk. Adding cheese to casseroles, sandwiches, and baked foods during preparation may also help satisfy calcium requirements.

Lactose Intolerance
Lactose intolerance is a type of food intolerance—it's not an allergy. People should talk to their doctor about their symptoms rather than self-diagnosing the condition.

Women with lactose intolerance may limit their intake of dairy because their body cannot digest the main sugar (lactose) in milk. Depending on the degree of lactose intolerance, people may be able to eat a variety of lactose-containing foods. Some of the symptoms of lactose intolerance include gas, bloating, and diarrhea. Here are some tips to increase tolerance:

- Offer small servings of lactose-containing foods versus large servings
- Eat dairy products with other foods instead of on an empty stomach
- Eat active-culture foods (such as yogurt). The "friendly" bacteria in the cultures help break down lactose
- Use enzyme tablets and lactose-reduced milks. These are available and can greatly increase tolerance
- Heated milk may be easier to digest than cold milk
- Aged or hard cheeses are lower in lactose

There are other foods that contain calcium and don't contain lactose such as greens, baked beans, canned fish with bones, and calcium-fortified foods (e.g., orange juice and soy milk).

Vitamin/Mineral Supplements During Pregnancy
Prenatal vitamins are widely used during pregnancy. Expectant mothers need more food to meet their energy needs. When good dietary choices are made, those extra calories also help with meeting the increased micronutrient needs of pregnancy.

So, is supplementation needed during pregnancy? Nutrients like iron and folate may be missing from the diets of even the most food-conscious individuals. Universal supplementation is recommended for the high risk population we serve. Vitamin and mineral supplementation is especially important for those with food insecurity, poor eating habits, anemia, those carrying two or more fetuses, women following strict vegan or vegetarian diets, and individuals with alcohol, tobacco, and other substance dependency. A good rule of thumb is to assume that some nutrients are lacking, unless you have proof that they're not. Encourage all clients who are not taking a prenatal vitamin to discuss this with their doctor.

Choosing a Vitamin
If a woman has not been prescribed prenatal vitamins, remind her that generic versions are just as effective. The supplement should contain the nutrients listed below (11). These are typically contained in prenatal supplements.

Iron:	30 mg	**Calcium:**	250 mg	**Folic Acid:**	400 mcg
Zinc:	15 mg	**Iodine:**	150 mcg	**vitamin C:**	50 mg
Copper:	2 mg	**vitamin B_6:**	2 mg	**vitamin D:**	400 IU

Once a woman has obtained a quality vitamin, it's important she remembers to take it daily. If a woman reports struggling with remembering to take her vitamin, offer suggestions such as:
- Keep vitamins by their toothbrush, cell phone charger, or something else used daily
- Keep vitamins on a counter instead of a cupboard so they are visible

- Use a pill box
- Set a daily reminder on their phone

Some women may voice difficulty swallowing a prenatal vitamin and want to instead choose an over the counter "chewy". While this option does contain vitamins, it is usually lacking in the minerals she needs during her pregnancy and should be discouraged.

You may also hear women say that prenatal vitamins make them sick; contributing to nausea or GI distress. These discomforts are often related to the high iron content in the vitamin. It is not recommended for women to stop taking their vitamins, especially early in the pregnancy when the fetus is undergoing critical periods of growth. During the first trimester, you might suggest a children's or standard woman's multivitamin, as long as it contains adequate folic acid. Later in the pregnancy, she would want to return to the prenatal vitamin as her body's need for iron increases.

Other Considerations: Vegetarian and Vegan Diets

Research shows that vegetarian and vegan diets can be nutritionally adequate in pregnancy. Depending on the type of diet a woman follows, she might need to adjust her eating habits. Special nutrient considerations for those who limit or exclude animal products may include:

- Calcium: Sources of calcium include fortified non-dairy milks (such as soy), calcium fortified orange juice, leafy green vegetables, dried beans or peas, and tofu.
- Vitamin D: For vegetarians, vitamin D can be obtained through fortified milk, eggs, and fish (pescatarians). Adequate amounts of vitamin D can also be obtained through exposure to the sun or a supplement as prescribed by a health care providers.
- Vitamin B_{12}: Vitamin B_{12} is found in animal products only. Vitamin B_{12} must be obtained from regular use of fortified foods, such as fortified soy and rice beverages, some breakfast cereals, meat substitutes, or a daily vitamin B_{12} supplement.
- Iron: Sources of iron include enriched grain products (cereal, pasta, rice), eggs, leafy green vegetables, sweet potatoes, dried beans and peas, raisins, prunes, and peanuts.

Excessive Intake of Dietary Supplements, Vitamins, or Minerals

NRF 427A - Consuming dietary supplements with potentially harmful consequences *(Low Risk)*

Examples of dietary supplements which when ingested in excess of recommended dosages may be toxic or have harmful consequences:

- Single or multiple vitamins
- Mineral supplements
- Herbal or botanical supplements/remedies/teas

Most nutrient toxicities occur through excessive supplementation of particular nutrients, such as vitamin A, B_6, and niacin. Certain dietary supplements can be toxic to the mother and/or her fetus when taken in excess amounts. Large doses of vitamin A, for instance, may cause birth defects. Besides nutrient toxicities, nutrient-nutrient and drug-nutrient interactions may adversely affect health.

The Food and Drug Administration (FDA) oversees both dietary supplements and medicines, but they are not regulated in the same way (12). The most noticeable difference is that supplements do not need to be reviewed or approved by the FDA before they hit the market. Supplement companies need evidence that their products are safe and their labeling needs to be truthful. But, they don't have to give this evidence to the FDA before marketing the product. If the FDA finds a product to be unsafe once the product is available to consumers, action will be taken to remove or recall the product.

There are times when women, in an effort to do the best they can for their health and the health of their unborn child, may take additional dietary supplements such as vitamins, minerals, or botanical (including herbal) remedies or teas.

Many herbal and botanical remedies have cultural implications and are related to beliefs. The incidence of herbal use in pregnancy ranges from 7-55% with Echinacea and ginger being the most common.

Some herbal teas may be safe; however, others have undesirable effects during pregnancy. Herbal supplements such as blue cohosh and pennyroyal stimulate uterine contractions, which may increase the risk of miscarriage or premature labor. The March of Dimes and the American Academy of Pediatrics recommend cautious use of teas because of the lack of safety testing in pregnant women.

In general, it is safest to stay close to the RDA when taking daily supplements. Additionally, dietary supplements do not take the place of a nutritionally adequate diet. Food provides the full variety of nutrients as well as fiber and other healthful substances.

Your Role

During the nutrition interview, ask if the woman is taking a daily prenatal vitamin as well as any other vitamins and minerals. If the woman replies "yes" to the other vitamins and minerals, ask questions to learn if she is taking a potentially excessive amount of a vitamin or mineral. For instance:

- Why are you taking this supplement?
- Who recommended that you take it?
- Have you spoken with your prenatal provider about taking it?
- How often do you take it?
- How many or how much do you take at once?
- What type of tea do you drink? (Non-herbal teas include black, green, and oolong teas – these do contain caffeine so should be limited. Herbal teas are made from roots, berries, flowers, seeds, and leaves from different plants (but not actual tea leaves). True herbal teas do not contain any caffeine, but we know little on the impact many have on a developing fetus and should be avoided.)

Use of additional daily supplements, not recommended by a physician, should be discouraged. Some reasons for this are that:

- Safe upper limits for many vitamins and minerals are not yet known, especially during pregnancy
- Products containing hidden drugs are sometimes marketed as dietary supplements

- Dietary supplements may contain ingredients that have strong biological effects which may conflict with medications or medical conditions
- Almost nothing is known about the long-term metabolic effects of consuming these substances
- Advertising claims made for many supplements are not proven by scientific research

The Food and Drug Administration does regulate dietary supplements, but they are regulated like food, not drugs.

Recommend to the woman that she stop taking the supplement until she discusses it with her prenatal provider at her next visit.

Individual Dietary Preferences and Concerns

Many factors play a role in shaping a person's food habits, and these factors must be considered if dietary counseling is to be realistic and appropriate for a participant. You must make every effort to be knowledgeable about the cultural food habits as well as the individual preferences and practices of the WIC participants you serve. It is important to identify the participant's favorite foods, and to offer her ways to incorporate these foods into a balanced diet.

Note: The Cultural Toolkits located on the WIC Web Portal contain helpful information about food habits from around the world!

A person's income level, cultural background, religious beliefs about food, climate, and philosophical attitudes toward food may influence his or her eating habits. Recognize that a woman's eating habits during pregnancy may reflect information that has been transferred along generations. For example, some women avoid milk because they believe milk will make their baby grow large and be difficult to deliver.

Participants with lower incomes require special attention since a nutritionally adequate diet is difficult to obtain when there is not enough money to purchase the needed foods. Efforts should be made to provide education and information on topics such as budgeting, shopping, and meal planning. Refer participants to other food programs such as SNAP (Food Assistance) and community food banks.

Restrictive Diets

NRF 427B - Consuming a diet very low in calories and/or essential nutrients; or impaired caloric intake or absorption of essential nutrients following bariatric surgery (High Risk)

Definition includes:

- Strict vegan diet
- Low-carbohydrate, high-protein diet
- Macrobiotic diet
- Any other diet restricting calories and/or essential nutrients

Pregnant women consuming highly restrictive diets are at greater risk for nutrient deficiencies. Restricted intake during pregnancy may lead to inadequate prenatal weight gain, increased risk of birth defects, and suboptimal fetal development leading to chronic health problems for the unborn baby. Examples of nutrients associated with negative health outcomes are:

- Low iron intake leading to increased risks of maternal anemia, preterm birth, or low infant birth weight
- Low folic acid leading to neural tube defects

Some participants may be vegetarians with religious and/or personal beliefs about food. Nutrients & food sources to focus on for vegetarians:

- Protein: beans, nuts, nut butters, peas, soy products (tofu, tempeh, veggie burgers). Milk products and eggs are also good sources for the some vegetarians.
- Iron: iron-fortified breakfast cereals, spinach, kidney beans, black-eyed peas, lentils, whole wheat breads, peas, and some dried fruits (dried apricots, prunes, and raisins).
- Calcium: fortified breakfast cereals, soy products (tofu, soy-based beverages), calcium-fortified orange juice, and some dark green leafy vegetables (collard greens, turnip greens, bok choy, and mustard greens). Milk products are excellent sources of calcium for some vegetarians.
- Zinc: beans, zinc-fortified breakfast cereals, wheat germ, and pumpkin seeds. Milk products are a zinc source for some vegetarians.
- Vitamin B_{12}: milk products, eggs, and vitamin B_{12} fortified foods such as breakfast cereal, soy based beverages (soy milk), and veggie burgers.

The vegan diet, which excludes all animal products, can be used successfully in pregnancy. A thorough nutrition assessment is required to ensure adequate nutrition. Unless a vegan has a good understanding of a healthy vegan diet, several nutrients are of concern, such as protein, iron, omega-3 fatty acids, vitamin B_{12}, vitamin D, calcium, zinc, and iodine.

Your Role

Collect information and obtain the participant's viewpoint of her diet. Assess the participant's diet by doing a thorough nutrition assessment. Respond to her viewpoint without criticism. Keep in mind that, generally, the more restrictive the diet, the greater the nutritional risk. Summarize what the participant is doing right and discuss areas for improvement. Provide reasons why changes may be beneficial to the baby and mother. Build a bridge between the participant and the WIC Program perspectives.

NRF 401 Failure to Meet Dietary Guidelines for Americans *(Low Risk)*

Participants who meet income, residency, and categorical eligibility requirements may be presumed to be at nutritional risk based on failure to meet Dietary Guidelines for Americans. For this criterion, Failure to Meet Dietary Guidelines is defined as consuming fewer than the recommended number of servings from one or more of the basic food groups (grains, fruits, vegetables, milk products, and meat or beans) based on an individual's estimated energy needs.

Note: This risk factor may only be assigned to the individual when a complete nutrition assessment has been performed and when no other risks (subjective or objective) are identified.

SELF-CHECK: PRACTICE YOUR KNOWLEDGE

1. List two recommendations you might make to a woman who states she doesn't like the taste of milk.

   _____

   _____

2. List three recommendations you might make to a woman who has lactose intolerance.

   _____

   _____

   _____

3. Name at least three factors which can influence an individual's eating habits and preferences.

   _____

   _____

   _____

True or False? (T or F)

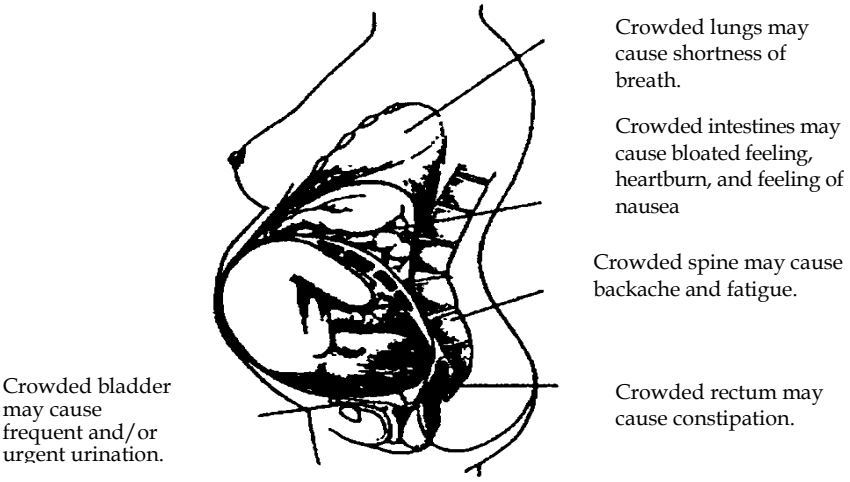
4. ___ If a pregnant woman takes a vitamin/mineral supplement, it is not important that she eats a well-balanced diet.

ANSWERS

1. Try adding flavoring to milk (chocolate or strawberry) or incorporating other dairy foods (like cheese) to casseroles and other foods.
2. Offer small servings of lactose-containing foods.
   Eat dairy products with other foods.
   Active-culture foods (such as yogurt) help break down lactose.
   Enzyme tablets and lactose-reduced milks are available and can greatly increase tolerance.
   (The WIC Program provides lactose-reduced food packages.)
   Heated milk may be easier to digest than cold milk.
   Aged cheeses are lower in lactose.
3. Any 3 of the following factors: income level, cultural background, religious beliefs, climate, philosophical attitudes about food.
4. False. Vitamin/mineral supplements cannot take the place of a nutritionally adequate diet.

Section IV: Special Concerns During Pregnancy

Let's look at some of the concerns that many pregnant women have during their pregnancy. Nausea, vomiting, heartburn, indigestion, and constipation are all common concerns. Other areas of concern during pregnancy are oral health and foodborne illness.



Morning Sickness or Nausea

One of the most notorious problems during pregnancy is nausea and vomiting, or morning sickness. It often occurs during the early months of pregnancy and usually resolves after the first trimester. The following pages contain some counseling suggestions to share that may be helpful to women suffering from morning sickness or nausea. Morning sickness does not always occur in the morning; many women experience nausea only in the evening or throughout the entire day. Nausea can be caused by strong odors like cigarette smoke, gasoline, perfumes, and many cooking odors. Certain foods can cause nausea as well. Foods that are fried, high in fat, and spicy, as well as caffeinated beverages, like coffee and tea, are common offenders.

Some women vomit during pregnancy. The vomiting can be so severe and happen so often that the pregnant woman may become dehydrated or lose weight. If severe enough, this condition is called hyperemesis gravidarum. It requires medical attention and is a nutrition risk factor.

NRF 301 - Hyperemesis Gravidarum *(High Risk)*

Definition: severe and persistent nausea and vomiting during pregnancy which may cause ≥5% weight loss and fluid and electrolyte imbalances. This nutrition risk is based on a chronic condition, not single episodes. Hyperemesis gravidarum is a clinical diagnosis, made after other causes of nausea and vomiting have been excluded.

Your Role

For women with nausea, offer the handout, *Tips to control nausea when pregnant*. You can also make these suggestions:

- Before going to bed: Be sure to have fresh air in the room. Place some dry, ready-to-eat cereal, crackers, or dry bread within reach of the bed.
- Before getting up in the morning: Eat some dry cereal or crackers before getting out of bed. Nausea can be worse on an empty stomach.
- When getting up: Get up very slowly. Avoid sudden movements when getting out of bed.
- For meals: Eat several small meals a day instead of three large ones. Women are more likely to feel nauseated when their stomach is empty or too full.
    - Open a window while you cook to get rid of the odor of cooking foods or opt for cold foods which don't have a strong odor
    - Eat slowly and try to eat while relaxed
    - Try salty and sour combinations of food
    - The smell or taste of fresh lemon and ginger can sometimes help with nausea
    - Drink milk, juice, and water in between meals
- Foods to avoid: Fat and greasy foods may upset the stomach. Strong smelling foods may worsen nausea. If a woman reports these foods bother her suggest avoiding:
    - Fried foods, fatty meats, and foods cooked with grease or oils. Limit the following: butter, margarine, gravy, bacon, salt pork, oils, mayonnaise, salad dressings, pie crusts, and pastries.
    - Highly seasoned foods. Try preparing cold foods such as sandwiches or cereal. Limit the following: foods cooked with garlic, onion, pepper, chili, and other spices.
- When taking PNV: Take vitamin right before eating or sleeping.

Counseling Focus
While it's true that improved eating habits lead to better pregnancy outcomes, eating well with frequent vomiting can be more harmful overall. So help the participant learn how to cope with the nausea. When feeling nauseated, she should ask herself:

What food or beverage would ease this nausea? Something salty, sour, bitter, tart, sweet, crunchy, lumpy, soft, smooth, mushy, hard, fruity, wet, dry, bland, spicy, aromatic, hot, cold, thin, or thick?

Interestingly, some new food ideas may occur to her. These ideas may consist of a novel food or one that falls into the "junk food" category. "Junk food" can contribute needed calories for the time being and she can resume a healthier diet when she feels better. Many times nausea can be kept to a minimum when she is able to eat the food almost at the moment she decides she wants that food.

Heartburn
Heartburn happens when the acidic digestive juices in the stomach back up and cause a burning feeling in the chest and throat. This usually happens after meals or in the evening. It is common during the second and third trimesters. It is called heartburn because if it is felt near the heart, but it has nothing to do with the heart.

One cause of heartburn is the pressure on the stomach by the growing uterus and fetus. Another cause of heartburn is that the hormones of pregnancy relax the top part of the stomach so that the stomach contents flow back into the esophagus.

Over-the-counter drugs (such as antacid tablets) should not be used unless prescribed by a doctor. Instead, offer the following suggestions to a pregnant woman that may help relieve her heartburn:

- Eat 5 or 6 small meals per day
- Limit fatty and fried foods
- Limit or avoid coffee if it triggers heartburn
- Avoid spicy foods
- Drink fluids between meals/snacks
- Wear clothes that are loose around the waist
- Do not lie down when heartburn occurs because this can make it worse
- Avoid eating close to bedtime

Constipation

Constipation may occur during pregnancy due to the normal hormonal changes of pregnancy, which make the food move more slowly through the intestines. Lack of exercise or too little fiber or fluids in the diet can also promote this condition. Sometimes women who receive supplements with higher amounts of iron complain of constipation. Never encourage the use of over-the-counter drugs, e.g., laxatives, to relieve constipation. Instead, offer the handout, *Tips to prevent constipation*, and the following suggestions to help relieve constipation:

- Eat more fruits and vegetables, including the skins
- Try dried fruits or prune juice
- Choose whole grain cereals and breads
- Participate in light exercise regularly; daily if possible
- Eat meals at regular times
- Drink more water

Fluid Retention and Swelling

Fluid retention during pregnancy is normal and often leads to swelling, particularly in the ankles and feet (1). The swelling is called edema. Although most common in the third trimester, it can occur at any point in the pregnancy.

As the baby grows, it puts pressure on the blood vessels that lead to the mother's legs. This causes the fluid from the blood to move into the surrounding tissues. This extra fluid flows to the lowest part of the body and collects in the ankles and the feet.

This may cause a woman to gain extra weight. It is not caused by eating too much food or calories.

In the past, women were often told to restrict their intake of sodium (salt) and to take diuretics (drugs that increase water and sodium loss from the body) to reduce the fluid retention and swelling. We know now the harm of this advice. Pregnant women actually have a slightly increased need for sodium because of the expanded blood volume.

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 result in a sodium deficiency in the pregnant woman. Therefore, these practices should be discouraged. Sodium restriction is no longer recommended except in cases involving other physical problems.

Excessive sodium intake, however, is not acceptable for anyone, including the pregnant woman. A diet of minimally processed food can be safely salted "to taste." Advise the participant that foods containing large amounts of sodium should be consumed in moderation. Foods high in sodium include potato chips, corn chips, canned soups, salad dressings, salted nuts, ham, luncheon meats (cold cuts), and bacon.

To help with the discomfort of swelling, recommend that women put their feet up throughout the day and wear comfortable shoes and loose-fitting clothes.

Swelling or edema in other parts of the body, such as the eyelids, could be a sign of a more serious problem called Pregnancy-Induced Hypertension (PIH). Women with PIH need immediate medical attention.

Pregnancy-Induced Hypertension (PIH)
A condition characterized by acute elevation of blood pressure, edema, and proteinuria (2). Sometimes occurs in the latter half of pregnancy. PIH includes gestational hypertension, preeclampisa, and eclampsia. Women with nutritional deficiencies, obesity, family history of hypertension, multi-fetal gestation, and those <20 or >40 years old have an increased incidence of PIH.

NRF 345 - Hypertension and Prehypertension ***(High Risk)***
Hypertension, commonly referred to as high blood pressure, is defined as persistently high arterial blood pressure with systolic blood pressure above 140 mm Hg or diastolic blood pressure above 90 mm Hg. People with high blood pressure can be asymptomatic for years. Untreated hypertension leads to many degenerative diseases, including congestive heart failure, end-stage renal disease, and peripheral vascular disease.

Prehypertension is defined as blood pressure readings between 130/80 to 139/89 mm Hg. People with prehypertension are twice as likely to develop hypertension.

There is no cure for hypertension, but it can be managed through lifestyle changes including limiting sodium intake, exercising regularly, achieving and maintaining a healthy weight, and smoking cessation.

Oral Health

Oral disease can negatively affect the outcome of a pregnancy. Women who have dental carries (cavities/tooth decay) or periodontal disease (gum disease/pyorrhea) are more likely to give birth prematurely or to a low birth weight baby (3). Dental carries and periodontal disease are both infectious diseases caused by bacteria.

Pregnancy can affect a woman's overall oral health and actually contribute to disease due to hormonal and dietary changes. During pregnancy, hormones change the quantity and quality of saliva; women have less saliva overall to neutralize bacterial acids and the saliva itself becomes more acidic – making an environment prime for tooth decay. Dietary changes, such as eating to control nausea or more frequent snacking, may result in women eating carbohydrate rich foods more often.

Decay Equation

In order to have a cavity there must be 1) a susceptible tooth that is not well protected by saliva or fluoride 2) acid-producing bacterial plaque 3) sugary and starchy foods (fermentable carbohydrates) in the mouth

Plaque/Bacteria + Carbohydrate = Acid
Acid + Tooth = Tooth Decay

Each time a person consumes carbohydrates, acid attacks the tooth for at least twenty minutes. The more frequently they eat or drink carbohydrates (especially sweets), the longer the teeth are exposed to acid. Sweets with a sticky consistency stay on the teeth even longer, increasing the length of the acid attack.

Your role in WIC is to encourage the pregnant woman to:

- Brush teeth twice a day
- Eat a balanced diet
- Stop smoking
- Have regular dental check-ups

NRF 381 - Oral Health Conditions ***(Low Risk)***

Assign for a woman when chronic dental or oral problems are present, such as:

- Severe tooth decay, periodontal disease, tooth loss, and/or ineffectively replaced teeth, which impair the ability to ingest food in adequate quantity or quality
- Gingivitis of pregnancy

Food Safety

Pregnant women are at an increased risk for foodborne illness due to a weakened immune system. This is natural and important in order for the unborn child to thrive within the mother's body. However, a weakened immune system makes the pregnant woman more susceptible to food borne illnesses (4). The unborn baby is also at risk because of their immature immune system. Women can become infected with bacteria, viruses, and parasites from eating contaminated foods. The symptoms are usually vomiting, diarrhea, and abdominal pain, but neurological and "non-specific" symptoms may occur as well. Food borne illness during pregnancy can cause miscarriage, premature delivery, health problems, and even death for both the mother and unborn child.

More resources and information are available on the WIC Works website.

Foodborne risks

Listeria

Listeria is a bacteria that can be transmitted to the unborn child through the placenta even if the mother is not showing signs of illness. Listeria is found in foods such as soft cheeses and

unpasteurized milk products. It is also found in undercooked poultry, hot dogs, and sandwich meats. It can result in miscarriage, life-threatening blood infections, meningitis or even death of the newborn baby.

Toxoplasma
Toxoplasma is a parasite found in undercooked meat, unwashed fruits and vegetables, cat-litter boxes, or outdoor places where cat feces can be found. It can cause blindness, mental retardation, and hearing loss in babies. Some children can develop brain or eye problems years after birth.

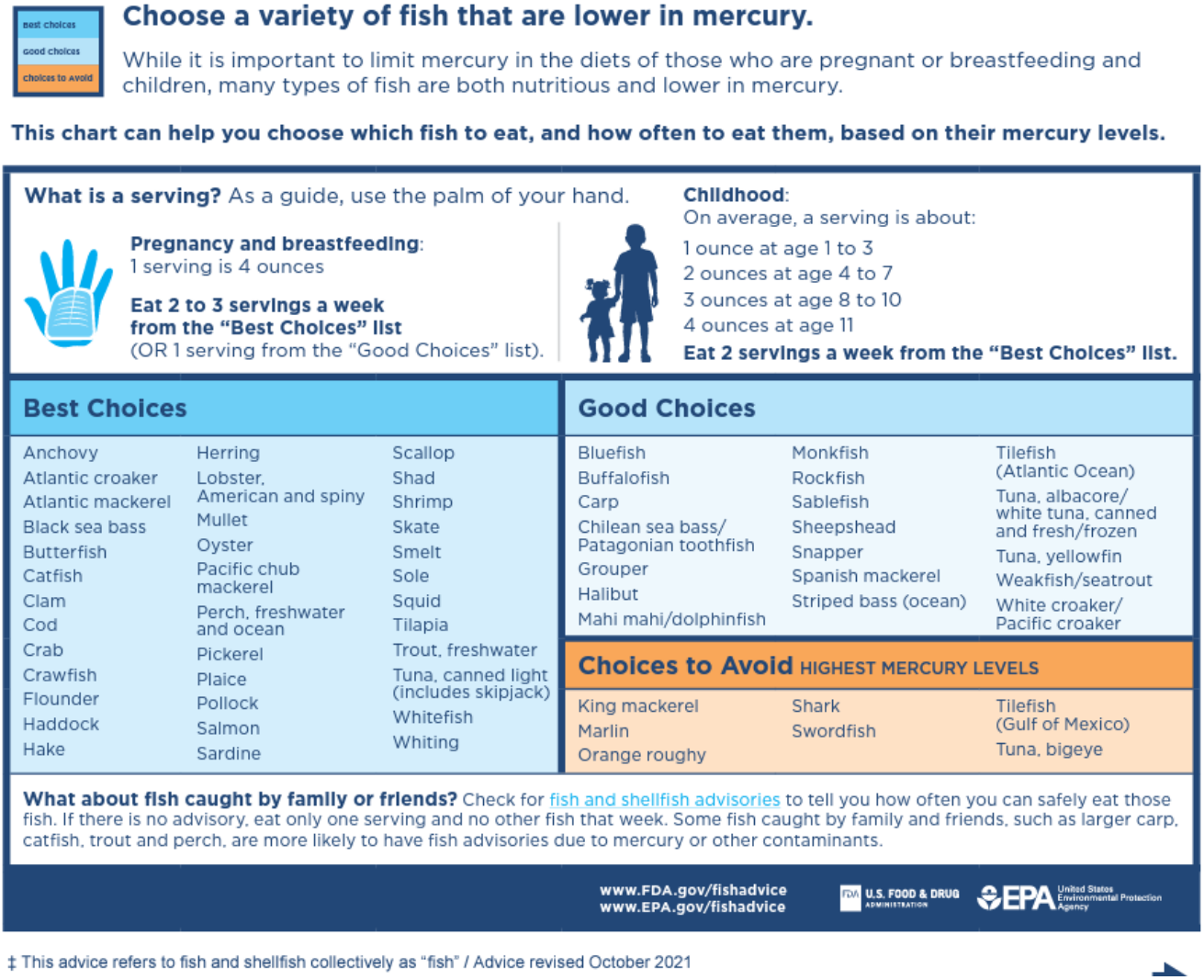
Methylmercury
Methylmercury is a metal found in certain fish and shellfish such as sword fish, tilefish, king mackerel, shark, marlin and orange roughy. In addition, white albacore tuna also has some methylmercury. Exposure to methylmercury can harm the unborn child's developing nervous system.

NRF 427E - Pregnant women ingesting foods that could be contaminated with pathogenic microorganisms ***(High Risk)***
Examples include:

- Raw fish or shellfish, including oysters, clams, mussels, and scallops
- Refrigerated, smoked seafood, unless it is an ingredient in a cooked dish, such as a casserole
- Raw or undercooked meat or poultry
- Hot dogs, luncheon meats (cold cuts), fermented and dry sausage, and other deli-style meat or poultry products unless reheated until steaming hot
- Refrigerated pate or meat spreads
- Unpasteurized milk or foods containing unpasteurized milk
- Soft cheese such as feta, Brie, Camembert, blue-veined cheeses, and Mexican style cheese such as queso blanco, queso fresco, or Panela (unless labeled as made with pasteurized milk)
- Raw or undercooked eggs or foods containing raw or undercooked eggs; including certain salad dressing, cookie and cake batters, sauces, and beverages such as unpasteurized eggnog
- Raw sprouts such as alfalfa, clover, and radish
- Unpasteurized fruit or vegetable juice

Advice about Eating Fish
The Food and Drug Administration and the Environment Protection Agency have issued advice regarding eating fish (5)**.** Fish are a high quality protein source, and lower mercury fish are a good choice for everyone. This advice is especially helpful for women who are pregnant or might become pregnant, breastfeeding women, and young children.

Use the chart below to offer guidance to women and parents about which fish to eat each week. Eating a variety of fish is better for women and their children than always eating the same type.



- 2 to 3 servings a week of fish in the "Best Choices" category, based on a serving size of four ounces, in the context of a total healthy diet or
- 1 serving a week of fish in the "Good Choices" category
- Do not eat or serve young children fish in the "Choices to Avoid" category (if these are consumed, choose fish with lower mercury levels going forward)

SELF-CHECK: PRACTICE YOUR KNOWLEDGE

1. Increasing exercise and consuming more liquids, whole grains, fruits, and vegetables would be appropriate suggestions for a person with which of the following condition(s): (circle the correct answers)

   a. Nausea

   b. Constipation

c. Heartburn

2. List at least three suggestions to relieve nausea during pregnancy.

True or False? (T or F)

3. ____A pregnant woman who suffers from heartburn should take antacid tablets from the drugstore without consulting her doctor first.

4. ____A pregnant woman who suffers from constipation should use a laxative.

5. ____Salt should be restricted for pregnant women who appear to be retaining water.

6. ____A pregnant woman with gum disease has an increased risk of having a premature baby.

7. ____A pregnant woman's weakened immune system makes her more susceptible to food borne illness.

ANSWERS

1. b
2. Refer to suggestions under Morning Sickness, Heartburn, and Constipation for a complete listing. Suggestions include small meals rather than large ones, limiting fatty foods, avoiding spicy foods, and eating something like crackers before getting out of bed.
3. False. A pregnant woman should not take any over-the-counter medications unless advised by her doctor.
4. False. A pregnant woman should not take any over-the-counter medications unless advised by her doctor.
5. False. Salt should not be restricted because pregnancy increases the need for sodium, although excessive sodium use should not be condoned.
6. True
7. True

Substances that Affect the Pregnant Woman and Fetus

Below are other concerns of pregnancy that are not common to all women.

NRF 427C - Compulsively ingesting non-food items (pica) ***(High Risk)***

Examples of non-food items are:

- Ashes
- Baking soda
- Burnt matches
- Carpet fibers
- Chalk
- Cigarettes
- Charcoal
- Clay
- Coffee grounds
- Dust
- Paint chips
- Play-Doh
- Soil
- Starch (laundry or cornstarch)

Sometimes pregnant women eat things that are not food, such as clay, laundry starch, or dirt. This is called pica; it is the craving for and eating of non-food items. According to the National Eating Disorders Association, pregnant women who are craving nonfood items should only be diagnosed with pica when their cravings lead to ingesting nonfood items, and the ingestion of those items poses a potential medical risk, either due to the quantity or type of item being ingested (6).

The cause of pica is not known, but it has been related to certain nutritional deficiencies (especially zinc and iron) as well as culture, physiological changes in the body (such as pregnancy), and mental states (7). Some women feel that their babies will not be normal unless they eat clay or dirt, just as their mothers and grandmothers believed.

What's wrong with eating these things? Pica can lead to lead poisoning (when paint chips or other lead containing substances are eaten), anemia, poor nutrition (because the non-food item takes the place of nutritious food from the diet), stomach and intestinal blockage, and parasitic infections. Consumption of substances such as mothballs or paint chips can lead to toxic conditions that could result in death.

Your Role

Discuss reasons why pica is a risk during pregnancy and help the participant to decide on some healthy changes she can make to avoid pica. These may include making sure she takes her prenatal vitamin prescribed by her health care provider and choosing healthy snacks to substitute for the non-food items. Encourage her to talk with her health care provider about the items she is eating.

Alcohol

NRF 372A – Alcohol Use (*High Risk)*

Definition: Any **current** alcohol use (during pregnancy).

Alcohol is the second most widely used drug in the United States. It is easy to get and is so socially acceptable that most people don't consider it a drug. Alcohol contains ethanol, which decreases nerve and brain activity. For a pregnant woman and her fetus, this can have serious consequences because it causes further slowing of body functions already affected by the hormonal changes of pregnancy.

The hormone progesterone relaxes the muscles and tissues of the digestive and circulatory system. If alcohol further relaxes these systems, the fetus will not receive adequate amounts of food and oxygen. Alcohol enters the fetal blood stream in the same concentration as the mother's blood. Because the fetus is so much smaller than the mom, alcohol has a much greater effect on the fetus compared to the mother.

Even small amounts of alcohol consumed during a pregnancy can increase the risks of miscarriage, vaginal bleeding, early separation of the placenta from the uterus, and preterm labor.

Drinking alcohol during pregnancy can lead to Fetal Alcohol Spectrum Disorder (FASD), a group of conditions that can impact a person's growth and development throughout their lifetime (8). FASD occurs when alcohol in the mother's blood passes to the baby through the umbilical cord. The effects of FASD can be mild or severe, and include diagnoses such as:

- Low body weight
- Poor coordination
- Hyperactive behavior
- Difficulty with attention
- Poor memory
- Difficulty in school (especially with math)
- Learning disabilities
- Speech and language delays
- Intellectual disability or low IQ
- Poor reasoning and judgment skills
- Sleep and sucking problems as a baby
- Vision or hearing problems
- Problems with the heart, kidneys, or bones
- Shorter-than-average height
- Small head size
- Abnormal facial features, such as a smooth ridge between the nose and upper lip (this ridge is called the philtrum)

Fetal Alcohol Spectrum Disorder (FASD): A group of conditions that can occur in a person whose mother used alcohol during pregnancy. These effects can include physical problems and problems with behavior and learning.

There is no safe level of alcohol a pregnant woman can drink without harming the fetus. Warnings about the possible effects of alcohol are printed on every alcohol container and bottle. Pregnant women should be informed that it is dangerous to drink while pregnant.

Studies show the more alcoholic beverages a woman drinks, the greater the risk to her baby. Heavy drinkers may develop nutritional deficiencies and more serious diseases, like cirrhosis of the liver, certain cancers, and heart disease.

Your Role

Pregnant women must be provided written information about the dangers of using tobacco, alcohol, and street drugs during pregnancy and lactation. Refer women who admit to using harmful substances for further counseling and treatment. Your agency should have a list of substance abuse centers in your area that participants can be referred to.

Advise occasional drinkers to stop drinking alcohol. Do not advise pregnant women who are heavy drinkers to stop on their own. This step should be taken only under the supervision of a physician or skilled alcohol treatment specialist. Educate on the effects of alcohol and provide a referral to a resource for help.

Illegal Drugs

NRF 372B - Illegal Drug Use ***(High Risk)***
Definition: Any **current** illegal drug use.

A woman who uses illegal drugs during pregnancy puts herself and her fetus at a terrible risk. Many common drugs—both prescription and over-the-counter—that are usually harmless can poison an unborn baby. Even mega doses of vitamins are dangerous to the growing fetus. Fetal toxicity with maternal overdose of five essential nutrients (vitamin A, vitamin D, vitamin C, vitamin B_6, and iodine) has been documented. Only medications approved by a physician for use during pregnancy should be taken.

Drugs are especially toxic to the fetus during the first half of pregnancy. During this time, organs and tissues (such as arms, heart, brain, and kidneys) are being formed and are more susceptible to malformation. In addition, this is also the time when the woman may not realize she is pregnant. In the second half of pregnancy, drugs may negatively affect the growth of the baby.

Illegal drugs (e.g., crack, heroin, methamphetamines, etc.) can be especially dangerous. They can cause addiction of the fetus and severe withdrawal discomfort of the baby after birth. Babies born to addicted mothers are at greater risk for low birth weight, hepatitis, intrauterine growth retardation, and infant death.

Most hospitals test babies after birth for drugs. If a baby tests positive for any illegal substance at birth, Iowa law says the Department of Human Services must be notified (9).

What about Marijuana?

While medical marijuana is legal in Iowa, recreational use is not. Marijuana use during pregnancy may harm the baby and may make it more difficult for the child to pay attention and learn as they grow. There is no known safe amount of marijuana use during pregnancy.

Your Role

Pregnant women must be provided written information about the dangers of using tobacco, alcohol, and street drugs during pregnancy and lactation. Refer women who admit to using harmful substances for further counseling and treatment.

Since nutritional deficiencies may be present with substance users, it is important to provide diet counseling to improve food intakes. Stopping drug use at any time, even late in pregnancy, can decrease harm to the developing fetus. Refer to the Orientation Module for information on specific drugs and their effects.

Summary

All pregnant women on WIC must be provided accurate and understandable information about the dangers of alcohol and drug use. Participants who report using alcohol and/or drugs must be informed that stopping the use of these substances increases the chances for a normal delivery and a healthy baby. If you don't already know, find out what resources your agency has available for pregnant women addressing the importance of avoiding alcohol, tobacco, and other drugs.

Cigarettes

NRF 371 – Nicotine and Tobacco Use (Low Risk)
Definition: Any use of products that contain nicotine and/or tobacco to include but not limited to cigarettes, pipes, cigars, electronic nicotine delivery systems (e-cigarettes, vaping devices), hookahs, smokeless tobacco (chewing tobacco, snuff, dissolvables), or nicotine replacement therapies (gums, patches).

Tobacco smoke contains nearly 4,000 chemicals, including 60 cancer-causing poisons. The 2020 America's Health Ranking report showed a maternal smoking rate of 11.6% in Iowa; almost twice the national rate of 6% (10)! Pregnant women who smoke increase their chance of having a low birth weight baby by up to 39 percent. Low birth weight is directly associated with stillbirths and newborn deaths. Smoking even one low-nicotine cigarette a day greatly increases the chance of having a low birth weight baby.

The primary goal of weight gain during pregnancy is to deliver a healthy weight baby. Smoking makes this goal harder to achieve. Why? When inhaling smoke, toxic substances such as carbon monoxide compete with oxygen. Nicotine causes blood vessels to constrict which decreases the nutrient supply to the fetus. Also, smoking decreases appetite, thus affecting weight gain. Smoking during pregnancy is the leading cause of premature births.

Fortunately, pregnancy and the period before and after it provide a special window of opportunity when pregnant women have a unique motivation to quit smoking. You have an enormous opportunity to improve the health of mothers and their babies by helping pregnant smokers quit by asking them about their use of tobacco, advising them to stop, offering support, and referring them to smoking cessation resources.

Ask your participant about her smoking status during her appointment. Congratulate those who have quit and encourage continued abstinence.

Advise her in a clear, strong, and personalized manner about the risks of smoking and the benefits of quitting for herself and her baby. In the recent past, women were encouraged to cut back if they couldn't quit. While smoking fewer cigarettes results in mom and baby ingesting fewer chemicals, it still puts them both at risk. The best choice is to not smoke.

Share with her that while quitting is hard, cutting out tobacco is one of the best ways to keep her baby healthy. The benefits of quitting during a pregnancy include:

- Increasing the flow of oxygen to the baby
- Reducing the risk of premature birth and low birth weight
- Decreasing the chance of sudden infant death syndrome (SIDS) after birth

Your Role

Advise mothers to stop smoking, offer information, and refer to smoking cessations resources. If the participant brings up reasons why she finds quitting difficult you can offer some of the suggestions below to help her overcome those challenges.

Challenge	Coping Strategies

Negative Moods	• Participate in physical activity like walking • Try deep breathing • Talk to a friend • Write in a journal • Remind yourself that you are a non-smoker
Being around other smokers	• Spend more time with friends who don't smoke • Ask others not to smoke around you • Establish a "smoke-free" zone in the house or car • Walk away from smokers when you feel like smoking
Triggers	• Identify and anticipate situations that prompt cravings such as social gatherings, being on the phone, or stressful situations • Change your routine • Immediately brush your teeth • Take a walk after meals and after waking • Engage in distracting activities: take a walk, knit, garden, read, or listen to music
Stress	• Change your behavior or lifestyle to reduce stress • Use physical activity like walking
General	Any smoking (even a single puff) increases the likelihood of a full relapse. Withdrawal symptoms, including negative moods, urges to smoke, and difficulty concentrating, are normal and will only last a few weeks at most. Most people try to quit several times before they are successful. A "slip" is not a failure; learn from it and try again.

If she is ready to quit, encourage her to set a date, tell family and friends, remove tobacco products from the home, and to contact the Iowa Quitline.

Prenatal Smoking Cessation Resources

Quitline Iowa: quitlineiowa.org or 1.800.QUIT.NOW (1.800.784.8669)

QuitLine Iowa is a tobacco cessation program funded by the Iowa Department of Public Health, Division of Tobacco Use Prevention and Control. Quitline Iowa is a toll free, statewide tobacco cessation program. Quitline Iowa is staffed with trained coaches ready to provide:

- Information about the health consequences of tobacco use
- An individualized quit plan
- On-going support through optional follow-up phone calls, email, and text support
- Participants may be eligible for nicotine replacement therapies (NRT)

Additional Resources:

- CDC – Office on Smoking and Health: Cessation
- American Lung Association: How to Quit
- US Surgeon General 2010 Report: How Tobacco Causes Disease (fact sheet)

- American Cancer Society: Smoking Cost Calculator

Postpartum Maintenance
Encourage mothers to stay tobacco-free. Up to 35% of women who stop smoking during pregnancy remain nonsmokers. The great news is that if they abstain from smoking tobacco their baby will be less likely to get chest colds, coughs, ear infections, and asthma. Their baby is at a lower risk for SIDS, will breathe easier, grow better, and be less likely to become cigarette smokers.

NRF 904 - Environmental Tobacco Smoke Exposure ***(Low Risk)***
Definition: Environmental tobacco smoke (ETS) exposure is defined (for WIC eligibility purposes) as exposure to smoke from tobacco products inside enclosed areas, like the home, place of child care, etc. ETS is also known as secondhand, passive, or involuntary smoke (1). The ETS definition also includes the exposure to the aerosol from electronic nicotine delivery systems

Secondhand Smoke
Secondhand smoke is a combination of the smoke in the air from a burning cigarette and the smoke exhaled by a person that is smoking. Secondhand smoke causes substantial health risks for exposed pregnant woman including upper respiratory infections, periodontal disease, increased severity of asthma and wheezing, and an increased risk for lung cancer and cardiovascular diseases.

The risks for a baby being born to a mother exposed to secondhand smoke include lower birth weight, decreased lung function, and sudden infant death syndrome (SIDS). To lessen the negative health effects from secondhand smoke, all smokers should be asked to restrict smoking to outside the home.

Thirdhand Smoke
Thirdhand smoke is residual nicotine and other chemicals left on indoor surfaces by tobacco smoke (11). People are exposed to these chemicals by touching or breathing in residue left on contaminated surfaces. This residue is thought to react with common indoor pollutants to create a toxic mix including cancer causing compounds, posing a potential health hazard to nonsmokers.

Thirdhand smoke clings to clothes, furniture, drapes, walls, bedding, carpets, dust, vehicles, and other surfaces long after smoking has stopped. The residue from thirdhand smoke builds up on surfaces over time. To remove the residue, hard surfaces, fabrics and upholstery need to be regularly cleaned or laundered. Thirdhand smoke can't be eliminated by airing out rooms, opening windows, using fans or air conditioners, or confining smoking to only certain areas of a home.

Nonsmoking adults might be at risk of tobacco-related health problems when they inhale, swallow, or touch substances containing thirdhand smoke. Infants and young children might have increased exposure to thirdhand smoke due to their tendency to place objects in their mouths objects.

Thirdhand smoke is a relatively new concept, and researchers are still studying its possible dangers. In the meantime, the only way to protect nonsmokers from thirdhand smoke is to create a smoke-free environment.

Blood Lead

NRF 211 - Elevated Blood Lead Levels *(High Risk)*
Definition: A blood lead level of greater than or equal to (≥) 5 µg/deciliter within the past 12 months .

Lead poisoning is a public health problem that is entirely preventable. It is most common in children, but can occur in adults as well. In pregnant women, lead crosses the placenta and can have a detrimental effect on a developing fetus. Lead poisoning is defined as a blood lead concentration of ≥ 5 µg/deciliter. Symptoms of lead poisoning are often mild or nonexistent, but the effects on learning and behavior can be significant.

The main sources of lead exposure in our environment are from residual deposits (such as in soil, dust, old paint, and plaster), certain occupations or hobbies which involve lead, imported pottery and containers used for serving or storing food, and some imported candies or medicines (12). Women who are at greater risks for lead poisoning are those who live in older homes, have pica (are eating lead-containing substances), those who use lead-containing imported containers for food storage or preparation, and women who work in battery plants, construction, or refurnishing furniture.

Adequate intake of calories and nutrients, specifically calcium, iron, and vitamin C, decreases the absorption of lead in adults.

Your Role
Occasionally, a pregnant WIC participant will share with you that she is craving and eating nonfood items, such as clay. In this situation, she may benefit from referrals to her health care provider for lead testing as well as information on how to reduce her exposure to lead. You can reinforce healthy eating habits to promote adequate intake of calories and nutrients which may help decrease the body's absorption of lead.

The handout, Fight Lead Poisoning with a healthy diet, can also be provided to women who have a known or possible high blood lead level.

Caffeine

Caffeine is a drug, and in many people, it produces the side effects of nervousness, acid reflux, difficulty in sleeping, and frequent urination. Caffeine is found predominantly in coffee, tea, cocoa, chocolate, and some soft drinks. It is also contained in some medicines used for pain relief, migraine headaches, colds, and to help keep you awake. The Food and Drug Administration (also called FDA) requires that labels on medicine list the amount of caffeine added to medicine.

Caffeine stimulates the central nervous system. During pregnancy, it takes longer for caffeine to clear the body. Normally, the half-life (the amount of time it takes a substance to decrease to half of its initial value) of caffeine is about 6 hours. During pregnancy, it's closer to 11 hours. Caffeine crosses the placenta. A fetus cannot metabolize caffeine the same way its mother can, so this poses risks (13).

There is evidence that mothers who consume more than 200-300 mg/day are more likely to have low birth weight infants. Some babies can be born addicted to caffeine. There is conflicting evidence as to whether or not caffeine can lead to birth defects, miscarriage, or stillbirth. At this point caffeine consumption is not used as a nutrition risk factor for pregnant women on the WIC Program. It appears that small amounts of caffeine (no more than 12 oz. of coffee per day) are probably safe for the growing fetus. It is best to recommend that caffeine-containing products be limited during pregnancy. Use the chart to help you identify how many milligrams of caffeine are contained in the foods and drinks listed. Note the serving size of each entry.

Caffeine Content of Selected Beverages & Foods

Coffee (5 oz. cup)	
Brewed	95 mg
Instant	65 mg
Tea (5 oz. cup)	
Brewed	40 mg
Instant	30 mg
Iced (12 oz.)	70 mg
Cocoa (5 oz. cup)	4 mg
Chocolate Milk (8 oz.)	5 mg
Soft Drinks	
Cola (12 oz.)	45 mg
Milk chocolate (1 oz.)	6 mg

Source: FDA, Food Additive Chemistry Evaluation Branch

SELF-CHECK: PRACTICE YOUR KNOWLEDGE

True or False? (T or F)

1.____ During pregnancy, a safe level of alcohol intake is not more than one drink per day.

2.____ Pregnant women should only take medication which has been approved by their physician.

3. A woman who smokes during pregnancy increases her chances of delivering a _____ than normal baby.
   a. Smaller
   b. Larger

4. Place an "X" by the following substances if they are considered nutrition risk factors for a pregnant woman. Beside your "X," indicate if it is a *low* or *high risk* NRF.

_____Pica _____Alcohol

_____Caffeine _____Tobacco

_____Cocaine _____Marijuana

ANSWERS

1. False. No level of alcohol during pregnancy is considered safe.

2. True

3. a. Smaller

4. X high Pica X high Alcohol
   (not a risk) Caffeine X low Tobacco
   X high Cocaine X high Marijuana

Section V: Clinical Indicators of Nutritional Need

Pregnant women can have physical or medical conditions which increase their risk of poor health and poor birth outcomes. These conditions include:

- Pregnancy at a young age
- Closely-spaced pregnancies
- Multi-fetal gestation
- Breastfeeding pregnant woman
- Medical problems such as gestational diabetes or HIV
- History of pregnancy complications

Word to Know

Menarche: The initiation of female's first menstrual period.

NRF 331 - Pregnancy at a young age ***(High Risk)***
Definition: < 20 years at time of conception. Because actual date of conception is difficult to determine, the applicant's age at the last menstrual period (LMP) may be used to determine pregnancy before her 21st birthday.
331a - LMP before age 16 years
331b - LMP at ≥ 16 and ≤ 20 years
Note: For breastfeeding and postpartum women, with most recent pregnancy.

The adolescent period represents a time of rapid growth and development, accompanied by an increased need for energy and nutrients. If an adequate diet is not consumed during the adolescent years, the body will not have the required building materials with which to reach its full potential for growth and development.

The timing and rate at which children develop into adults is quite variable. For most adolescents, the typical age of menarche is between 10 and 16 years old, most often around the age of 12. Once a girl reaches the age of menarche, she will continue to grow for up to 4 more years. A pregnant adolescent who is still in this period of growth will have increased energy and nutrient needs, compared to an adolescent or woman who has completed her growth.

Studies suggest that pregnancy at a young age is associated with an increased incidence of anemia, infection, prematurity, high blood pressure, placental problems, and delivery of low birth weight babies (1). The younger the mother, the greater the risks. Young pregnant women are least likely of all age groups to get early and regular prenatal care.

There may also be social risk factors associated with pregnancy at a young age such as not accepting the pregnancy, body image, unfinished education, and living in an unstable family environment. These social factors can negatively influence her nutritional status.

Nutritional Requirements
The needs for calcium are increased for the woman pregnant at a young age. The Dietary Reference Intake for calcium is 1300 mg daily for pregnant and lactating women aged 18 years and younger. (For women aged over 18 years the requirement for calcium is 1000 mg.) Low calcium intakes of young women are well documented.

The average intake of calcium for girls aged between 12-19 years is about 800 mg, putting them at risk especially during pregnancy for not being able to support the development of

bone mass. Young pregnant women can meet their calcium needs by having at least 4 cups of milk a day.

Energy requirements are generally greater for young pregnant women than their non-pregnant peers. The current recommendation for the pregnant woman is to increase her daily average intake by 340 and 450 calories during the second and third trimesters. For the younger woman, the energy intake may be even higher; in most cases young women should not consume below 2,000 calories a day during pregnancy. Because energy needs vary, the best way to determine an adequate intake is to observe satisfactory weight gain.

Eating Behaviors of Young Women

Young women tend to be motivated in their food choices not by nutritional or health concerns but by factors of availability, sociability, and status. Put simply, they eat what is available, tastes good, and what their friends like to eat. In addition, lack of nutrition education, failure to understand the effect of present dietary habits on future health status, and busy school or social schedules may leave young women with inadequate time and motivation to prepare or eat the most nutritious foods.

Something to Consider

Alternatives to typical breakfast foods: tortilla with melted cheese, peanut butter and jelly sandwich, hard-cooked egg, packet of nuts and raisins, granola or cereal bars and fruit, graham crackers with peanut butter, yogurt with nuts and raisins, and dry cereal.

Common eating behaviors of many young women to investigate and counsel on include skipping meals, consuming unhealthy snack foods, relying on convenience and fast foods, and being overly concerned about weight.

Meal skipping, particularly breakfast, is a common practice that often starts in adolescence. Studies show that skipping breakfast can decrease the total number of calories and nutrients consumed in a single day. Lack of time, wanting to sleep more, and lack of appetite are common reasons to skip breakfast. For the pregnant woman, nausea, fatigue, and other pregnancy-related complaints may further contribute to it. You can inform her that she is likely to have more energy during the day if she consumes breakfast. Offer breakfast ideas that may fit into her lifestyle, such as less conventional breakfast foods (sandwiches or leftovers that are easy to prepare) and tips for coping with nausea.

Snacking is a good practice for the growing young woman, especially if she is pregnant. It is important that snacks contribute nutrients to build a healthy baby. High fat, high sugar, and low nutrient dense snacks will contribute mostly toward weight gain and will not complement the diet with the needed nutrients. Encourage healthier snack choices such as fruit, whole wheat crackers, carrot or other raw vegetable sticks, pretzels, nuts, yogurt, cheese sticks, and juice. Most of these can easily fit into a backpack or purse.

On average, young women visit fast food restaurants twice a week. Depending on the choices a person makes, fast food meals can be high in fat and calories and low in fiber. Offer ideas to improve the food choices (e.g., choose milk or juice, salads, grilled foods, baked potatoes, or smaller size hamburger). Recommend splitting large servings with a friend, such as French fries. Offer ideas rather than trying to convince her not to eat at fast food restaurants. Bringing a piece of fruit or raw vegetables from home can help to "round out" the fast food meal.

It is important to discuss and reinforce the positive aspects of the diet and address only those that may be harmful or compromise the nutritional quality of the diet or growing baby.

A young woman's weight concerns can surface during the WIC appointment. Women may describe unbalanced or unusual food patterns related to their concerns about gaining weight. Special attention should be given to the woman regarding the reasons for weight gain, the components of weight gain, and if there appears to be continued concern, she may need additional support to deal with the weight gain.

Your Role
Working with pregnant teens is a challenge! A pregnant teen may need to learn many things—the importance of eating nutritious food, gaining an appropriate amount of weight, avoiding harmful substances, and taking care of herself.

How you present this information to the pregnant teen can make a difference in how successful you are in getting through to her. It is important to try to talk with the teen alone, without the influence of her mother, friends, etc. If this is not possible on the first visit, try it the second visit.

Avoid lecturing and giving too many instructions. Provide information and alternatives. Avoid using the word "should" because it is a guilt word that some teens associate with parents.

Be positive. By highlighting the positive, the negative will diminish. Thank the teen for coming to WIC and for keeping appointments.

Eating Disorders

NRF 358 – Eating Disorders ***(High Risk)***
Definition: Eating disorders (anorexia nervosa and bulimia) are characterized by a disturbed sense of body image and morbid fear of becoming fat. Symptoms are manifested by abnormal eating patterns including, but not limited to:

- Self-induced vomiting
- Purgative abuse
- Alternating periods of starvation
- Use of drugs such as appetite suppressants, thyroid preparations, or diuretics
- Self-induced marked weight loss

Concerns about weight and food intake often appear for the first time during adolescence. Preoccupation with weight, early dieting, and exercise may trigger eating disorders such as anorexia nervosa and bulimia. While specific causes of eating disorders remain a mystery, clinicians believe that sociocultural, neurochemical, and psychological factors are all contributing factors. Adolescent dieting can be the start of an eating disorder when intensified by adolescent turmoil, negative body image, and poor self-identity. Poor pregnancy outcomes are associated with eating disorders. Potential risks associated with eating disorders during pregnancy include poor nutrition, dehydration, cardiac irregularities, gestational diabetes, and labor complications. Risks of the infant include poor growth, premature birth, low birth weight, respiratory distress, and feeding difficulties (2, 3).

Anorexia Nervosa
Anorexia nervosa is characterized by self-starvation, extreme weight loss, preoccupation with food, an extreme fear of weight gain, and may include a rigid exercise routine. Anorexia nervosa can be life threatening. It can cause delays in puberty, development, and heart and kidney problems. In adolescence, it can contribute to decreases in bone mass and increase the risk of fractures. The young woman with anorexia nervosa strives for perfection and control over her life and associates gaining weight with being out of control. Part of the recovery from the disease is gaining an understanding of growth as a normal physical process.

Bulimia
Bulimia, like anorexia, involves a preoccupation with food and body weight. However, bulimia manifests itself in secretive binge-eating episodes followed by self-induced vomiting or other forms of purging. The disease usually occurs in later adolescence after a series of unsuccessful weight loss attempts. Individuals with bulimia usually appear to be near normal weight and are very difficult to identify. Because of repeated vomiting, bulimia is associated with fluid and electrolyte imbalances, eroded tooth enamel, and damaged esophagus.

Treatment of eating disorders requires a multidisciplinary approach with nutrition falling under intervention and education. WIC's role is to help identify the possibility of eating disorders and make appropriate referrals for the participant to seek help in their community.

Your Role
Understand that eating disorders are an illness, not a lifestyle choice. Eating disorders are not exclusive to just one age, race, or body type. According to the National Institute of Mental Health, eating disorders can affect people of all ages, racial/ethnic backgrounds, body weights, and genders. Eating disorders frequently appear during the teen years or young adulthood but may also develop during childhood or later in life.

People with eating disorders are at higher risk for suicide and medical complications. They often have other mental disorders (such as depression or anxiety) or problems with substance use. It is critical they be referred to a provider as soon as possible for psychological and medical assistance.

Medical Conditions

Some medical conditions are considered nutrition risk factors (NRFs) on the WIC Program. These medical conditions must have been diagnosed by a healthcare provider (M.D., physician's assistant, nurse practitioner, etc.). However, the diagnosis can be self-reported by the participant or parent/guardian; WIC does not need to see a written diagnosis. Some medical conditions listed include:

- Cancer
- Celiac Disease
- Central Nervous System Disorders
- Depression
- Developmental, Sensory, or Motor Disabilities
- Eating Disorders
- Diabetes Mellitus
- Fetal Alcohol Spectrum Disorders

- Fetal Growth Restriction
- Food Allergies
- Gastrointestinal Disorders
- Genetic and Congenital Disorders
- Gestational Diabetes (or history of)
- Hyperemesis Gravidarum
- Hypertension or Prehypertension
- Hypoglycemia
- Inborn Errors of Metabolism
- Infectious Disease (acute or chronic)
- Lactose Intolerance
- Nutrient Deficiency Disease
- Oral Health Conditions
- Recent Major Surgery, Trauma, or Burns
- Renal Disease
- Thyroid Disorders

Your Role

Individuals with these medical conditions can develop nutritional deficiencies. Deficiencies may result for a variety of reasons such as vomiting, chronic diarrhea, malnutrition, infections, poor absorption, and altered metabolism. The WIC Program provides key nutrients through foods and education that may help restore nutritional status and promote rehabilitation when nutrient losses are present. As with all nutrition risk factors, you will assess dietary intake and growth or weight gain. You should provide education on eating a balanced diet and reinforce good eating habits. You can work with the participant to identify the best food package to meet the identified nutritional needs, such as lactose-reduced food packages or special formula packages. Staff should also make referrals to community resources and health care providers when appropriate.

NRF 352a Infectious Diseases – Acute

A disease which is characterized by a single or repeated episode of relatively rapid onset and short duration. Infectious diseases come from bacteria, viruses, parasites, or fungi and spread directly or indirectly from person to person. Infectious diseases may also be zoonotic, which are transmitted from animals to humans, or vector-borne, which are transmitted from mosquitoes, ticks, and fleas to humans. These diseases and/or conditions include, but are not limited to: hepatitis A, hepatitis E, meningitis (bacterial/viral), parasitic infections, listeriosis, pneumonia, and bronchitis (3 episodes in last 6 months).

The infectious disease must be present within the past six months, and diagnosed, documented, or reported by a physician or someone working under a physician's orders, or as self-reported by applicant/participant/caregiver.

NRF 352b Infectious Diseases - Chronic ***(High Risk)***

Conditions likely lasting a lifetime and require long-term management of symptoms. Infectious diseases come from bacteria, viruses, parasites, or fungi and spread directly or indirectly, from person to person. Infectious diseases may also be zoonotic, which are transmitted from animals to humans, or vector-borne, which are transmitted from mosquitoes, ticks, and fleas to humans. These diseases and/or conditions include, but are not limited to: HIV, AIDS, Hepatitis B, Hepatitis C, and Hepatitis D.

Both chronic and acute infectious diseases can lead to: 1) poor appetite, 2) low nutrient absorption, 3) accelerated nutrient utilization, and/or 4) rapid nutrient loss, depending on the individual's nutritional state before becoming infected and the individual's diet during the improvement period.

The Human Immunodeficiency Virus (HIV) is a chronic virus that reduces an individual's ability to fight off infections and diseases. HIV is transmitted only through blood, semen, pre-seminal fluid, rectal fluids, vaginal fluids, and breast milk from an HIV-infected person. HIV can lead to Acquired Immunodeficiency Syndrome (AIDS) if left untreated. Individuals who are aware of their HIV status and are undergoing antiretroviral therapy (ART) to stop the replication of the virus, can typically live decades – while those unaware of their status or who are not on ART, can usually remain in this stage about five to ten years before progressing to the AIDS stage.

Being tested is the only way individuals know they are infected with HIV. Many people infected with the virus display no symptoms for as long as ten years or more. The Centers for Disease Control and Prevention (CDC) currently estimates that 1 in 6 people in the United States infected with HIV do not know they have the virus and therefore recommends that everyone between the ages of 13-64 get tested at least once as part of a regular health screening. The CDC recommends that all pregnant women be tested early in their pregnancy, via an "opt-out" testing measure – which is when pregnant women are told that an HIV test will be included in the standard group of prenatal tests and that they may decline the test (4). Unless the HIV test is specifically declined, they will be tested for the virus.

An early diagnosis in pregnant women can reduce the transmission of HIV in babies to 1%, if the expectant mother:

- Receives Active Antiretroviral Therapy (ART) during pregnancy, labor, and delivery
- Delivers the baby by caesarean, or C-section
- Gives baby HIV medicine for 4-6 weeks following delivery
- Avoids breastfeeding

There is a 20% chance of transmission if the HIV positive, expectant mother does none of the prevention measures listed above.

Pregnant women who are HIV-infected need routine prenatal care, but may also have special needs to be addressed. Nutritional status is compromised in AIDS because of the frequent infections associated with the disease. Symptoms such as coughing, labored breathing, vomiting, and chronic diarrhea cause nutritional status to deteriorate. Eating and swallowing are often very painful because of oral and gastrointestinal lesions.

Although not curative, nutritional support may maximize the body's ability to fight infection and possibly delay the onset of symptoms in women infected with HIV.

WIC can impact the spread of HIV/AIDS by making referrals to participants for early and late gestation testing, given that some populations served by WIC are most at risk for contracting HIV.

Your Role

WIC staff should encourage all pregnant, postpartum, and breastfeeding women on the importance of knowing their HIV status.

- Provide information regarding the risks of transmitting HIV from mother to baby during pregnancy and delivery and the importance of getting early medical treatment to reduce the risk to their baby.

- Provide referral information for local HIV testing, education, and counseling services. (Each clinic should have a list of places to refer women for HIV testing, treatment, and counseling.)
- Refer HIV-infected women who are not under treatment to a health care provider.
- Educate mothers with HIV/AIDS to avoid breastfeeding.
- Refer mothers with HIV/AIDS to the WIC High Risk Counselor within 30 days to evaluate their nutritional status and provide appropriate counseling.

Treat all women with infectious diseases just as you would non-infected participants. HIV cannot be spread through casual contact in the WIC clinic. When collecting hemoglobin, use the same universal precautions* (i.e., medical gloves, etc.) that are used for other participants. See your clinic supervisor if you are unaware of the methods used in universal precautions.

***Universal Precautions**: Limits occupational exposure to blood and other potentially infectious materials. The Level 1 Screening Module reviews Universal Precautions.

More information visit:

- http://www.womenshealth.gov/hiv-aids/

NRF 343 - Diabetes Mellitus ***(High Risk)***
Definition: A metabolic disease characterized by inappropriate hyperglycemia resulting from defects in insulin secretion, insulin action, or both.

NRF 302 - Gestational Diabetes ***(High Risk)***
Definition: Any degree of glucose/carbohydrate intolerance with onset or first recognition during pregnancy as diagnosed by a physician and self-reported by the applicant/participant.

Gestational Diabetes is a form of diabetes that appears during pregnancy. It usually begins about midway through the pregnancy. It is noted by an excess of glucose (a sugar that provides energy to the body) in the blood. In a normal pregnancy, the body makes additional insulin to carry glucose in the body's cells so that it can be used. Sometimes even this extra insulin is not enough, and the woman develops gestational diabetes. Most women with gestational diabetes have no symptoms. Women with gestational diabetes have a greater risk of delivering a baby that is very large and may have metabolic complications. Diet and physical activity are very important for the treatment of gestational diabetes. The better a woman controls her diabetes the more likely she is to have a healthy baby without complications.

Women are typically screened for gestational diabetes between the 24th and 28th week of pregnancy. Once gestational diabetes is diagnosed, many women control their blood sugar with diet alone. Those who cannot control their blood sugar levels through diet alone require insulin injections or oral medications.

Once the baby is delivered, most women's blood sugar will return to normal. Women with gestational diabetes are at increased risk of developing diabetes mellitus later in life. It is important they understand the value of maintaining a normal weight from now on.

Your Role
Follow normal prenatal nutrition protocols (see part VII). Encourage following diet plans recommended by a certified diabetes educator.

Note: A woman with gestational diabetes in a current pregnancy, and who had gestational diabetes in a previous pregnancy, would be risked for both risk factors (NRF 302 Gestational Diabetes and NRF 303 History of Gestational Diabetes).

Other Clinical, Health, or Medical Conditions

NRF 332 - Short Interpregnancy Interval ***(Low Risk)***
Definition: Interpregnancy interval (IPI) of less than 18 months from the date of a live birth to the conception of the subsequent pregnancy.

An IPI less than 18 months has been associated with increased risk for adverse maternal and infant health outcomes. An interval of 18-24 months has been associated with the lowest relative risk. The lowest relative risk for an IPI following a miscarriage or abortion is unclear, so this risk only applies following a live birth.

Pregnancy stresses a woman's nutritional stores. She needs enough time between pregnancies to "rebuild" these stores.

Your Role
Follow normal pregnancy protocols discussed in Part VII. Use the short interconceptual period to reinforce to the woman the importance of adequate nutritional and prenatal care.

NRF 335 – Multifetal Gestation ***(High Risk)***
Definition: A pregnant woman carrying more than one fetus.

Women carrying more than one fetus have a greater chance complications in pregnancy. A multi-fetal pregnancy imposes increased nutritional needs due to greater fetal weight and the expansion of plasma blood volume. The mother's heart rate, breathing, kidney, and liver functions are affected. Multi-fetal pregnancies are associated with low birth weight, fetal growth restriction, placental and cord abnormalities, preeclampsia, anemia, shorter gestation, and an increased risk of infant mortality.

Your Role
In addition to normal pregnancy protocols, these women may need education and counseling to ensure they get enough calories and nutrients for themselves and their fetuses, and that they gain enough weight.

Remember: Because current weight gain recommendations for multi-fetal gestations are provisional, Low Maternal Weight Gain and High Maternal Weight Gain Nutrition Risk Factors are not assigned to women with multi-fetal gestations. Refer to Section II of this module for more information on recommended weight gain for multifetal pregnancies.

NRF 338 - Pregnant Woman Currently Breastfeeding ***(High Risk)***
Definition: A pregnant woman currently breastfeeding another child.

If no medical contraindications exist, a well-nourished mother should be able to provide for the nutritional needs of the nursing child and the unborn baby. Breastfeeding during pregnancy can influence a woman's ability to meet the nutrient demands for her growing fetus and her nursing child. It may be necessary for the mother to consume extra calories of nutrient dense foods to ensure adequate weight gain. When a woman breastfeeds during pregnancy, she may benefit from nutrition counseling with a dietitian.

The hormones of pregnancy can decrease a woman's milk supply and change the composition of the milk (5). This is normal; nursing or pumping more frequently may not affect milk supply the way it would in a non-pregnant woman. Another typical concern is that oxytocin

(the hormone released during breastfeeding) can cause premature contractions, which could lead to a premature birth. However, for low risk pregnancies, there is little evidence of this. Women with a history of premature labor, miscarriage, or who are carrying multiples should talk to their health care provider.

Your Role
Discuss with the woman her feelings about breastfeeding while pregnant. Let the mother know of changes that could lead to her older child weaning themselves – such as a decrease in milk supply or a change in taste. Provide nutrition education tailored to the mother, encouraging a balanced diet that supports adequate weight gain. Encourage the woman to talk to her health care provider immediately about continuing to nurse during pregnancy if she is worried about uterine bleeding or pain, premature contractions, and continued weight loss during pregnancy.

Complications of Previous Pregnancy

A medical problem in a past pregnancy may indicate additional nutritional need. These problems include gestational diabetes, preeclampsia, preterm delivery, delivery of a low birth weight baby or large for gestational age baby, fetal death, or delivery of a baby with neural tube defects, cleft lip, or cleft palate.

Women with a history of these problems have a greater chance of the problems recurring in their current pregnancy.

Nutrition Risk Factors - Complications of Previous Pregnancy:
NRF 303 - History of Gestational Diabetes
NRF 304 - History of Preeclampsia
NRF 311a - History of Preterm Delivery (infant born ≤ 36 weeks/6 days gestation)
NRF 311b – History of Early Term Delivery (infant born ≥ 37 weeks/0 days and ≤ 38 weeks/6 days gestation)
NRF 312 - History of Low Birth Weight (≤ 5 pounds 8 ounces)
NRF 321 – History of Spontaneous Abortion, Fetal or Neonatal Loss
NRF 337 - History of Birth of a Large for Gestational Age Infant (≥ 9 pounds)
NRF 339 – History of Birth with a Nutrition Related Congenital or Birth Defect

SELF-CHECK: PRACTICE YOUR KNOWLEDGE

1. List two reasons why a pregnant teen is at higher nutritional risk than older pregnant women.

_____

_____

2. Put a check next to the factors below which present nutritional risks for pregnancy.

a.____ Mother is normal weight prior to conception
b.____ Inadequate prenatal weight gain
c.____ Medical conditions, such as iron-deficiency anemia or gestational diabetes
d.____ Mother is pregnant with more than one fetus
e.____ Mother is 45 years old
f.____ Mother is underweight prior to conception
g.____ Mother is 15 years old

True or False? (T or F)

3. ____ Certain medical conditions are considered to be nutritional risks. These nutritional risks affect a woman's nutritional needs and/or her food habits. Women with these risks need special consideration for nutrition counseling.

4. ____ Using drugs, alcohol, or cigarettes during pregnancy is okay because the mother's body can filter out harmful substances so they do not reach the baby.

ANSWERS

1. Any two of the following reasons: they may not have yet completed their own growth; poor eating habits; influence of social risk factors.

2. The following factors should be checked: b, c, d, f, g

3. True

4. False

Section VI: Social Indicators of Nutritional Need

Some pregnant women are at nutritional risk based upon their living accommodations and/or their ability to take care of themselves. Situations where the WIC Program identifies the woman as being at nutritional risk include homelessness, migrancy, or recent placement in foster care. Generally, in situations where shelter is temporary, a woman is less able to ensure that she has access to adequate nutritious food, food storage, and cooking facilities.

NRF 801 – Homelessness ***(Low Risk)***
Definition: A woman or child who lacks a fixed and regular nighttime residence; or whose primary nighttime residence is: a supervised publicly or privately operated shelter (including a welfare hotel, a congregate shelter, or a shelter for victims of domestic violence) designed to provide temporary living accommodations; an institution that provides a temporary residence for individuals intended to be institutionalized; a temporary accommodation in the residence of another individual not exceeding 365 days; or a public or private place not designed for, or ordinarily used as, a regular sleeping accommodation for human beings.

NRF 802 – Migrancy ***(Low Risk)***
Definition: Categorically eligible women, infants, and children who are members of families which contain at least one individual whose principal employment is in agriculture on a seasonal basis, who has been so employed within the last 24 months, and who establishes, for the purposes of such employment, a temporary abode.

NRF 901 - Recipient of Abuse ***(Low Risk)***
Definition: Battering within the past 6 months as self-reported, or as documented by a social worker, health care provider, or on other appropriate documents, or as reported through consultations with a social worker, health care provider, or other appropriate personnel.

"Battering" generally refers to violent physical assaults on women. Battering during pregnancy is associated with increased risks of low birth weight, pre-term delivery, and chorioamnionitis (a bacterial infection occurring before or during labor), as well as poor nutrition and health behaviors. Battered women are more likely to have a low maternal weight gain, be anemic, consume an unhealthy diet, and abuse drugs, alcohol, and cigarettes.

NRF 902 - Women with Limited Ability to Make Appropriate Feeding Decisions and/or Prepare Food ***(Low Risk)***
Definition: A woman with limited ability to make appropriate feeding decisions and/or prepare food. Examples include, but are not limited to, a woman with the following:

- Documented or self-reported misuse of alcohol, use of illegal substances, use of marijuana, or misuse of prescription medications
- Mental illness, including clinical depression*
- Intellectual disability*
- Physically disabled to a degree which restricts or limits food preparation abilities
- ≤ 17 years of age

* Presence of the condition diagnosed, documented, or reported by a physician or psychologist or someone working under a physician's orders, or as self-reported by applicant/participant/caregiver.

NRF 903 - Foster Care ***(Low Risk)***
Definition: Entering the foster care system during the previous 6 months or moving from one foster care home to another during the previous 6 months.

Your Role
Follow the normal pregnancy protocols to identify nutritional needs. Discuss with the woman ways the WIC Program can assist her in meeting her nutritional needs.

Work with the woman to select a food package that will fit her ability to store and prepare food.

For women who are homeless or migrants, find out if they are aware of local resources in the community. These families can often benefit from more than just WIC foods and education. You can help by giving families information about agencies that help families with these challenges.

Occasionally, a pregnant woman on the WIC Program will be in foster care. Sometimes a pregnant teen lives with a foster parent. Foster children have a high frequency of mental and physical problems that are often the result of abuse and neglect happening before foster care. They are often more likely to have inadequate nutrition. You can provide a baseline nutritional assessment of the participant and provide nutrition education, as well as make referrals to resources to support the foster parent and participant's ability to have a healthy pregnancy.

Women who have limited ability to make feeding decisions and/or prepare food are at risk for neglecting their own nutritional needs. Certain physical handicaps, such as blindness, paraplegia, or mental illness, may limit her ability to prepare foods. You can provide education, referrals, and coordinate services to help the woman receive the assistance she needs to have a healthy pregnancy.

SELF-CHECK: PRACTICE YOUR KNOWLEDGE

1. Name two reasons why being homeless or a migrant would put a pregnant woman at nutritional risk.

_____

_____

ANSWERS

1. Difficulty storing foods (fresh or frozen) would limit types of foods purchased.
   Limited access to cooking facilities.

Section VII: WIC Prenatal Protocols

Now that you have some background information on the importance of adequate nutrition and weight gain during pregnancy, let's review the Protocols for Normal Pregnancy.

These protocols are steps for assessing the anthropometric and nutritional status of the pregnant woman and for counseling on the top one or two priorities.

Normal Pregnancy Protocols

1. Assessment at Certification Visit
   - Perform a thorough nutrition assessment covering the following areas:
     - Growth – pre-pregnancy BMI, weight change
     - Iron Status – check hemoglobin
     - Medical History – previous pregnancies, medical conditions, health concerns, allergies, or disabilities
     - Nutrition practices – typical eating and drinking habits
     - Lifestyle – physical activity, substance abuse, smoking, or exposure to secondhand smoke
     - Personal Factors – culture, family structure, education, home, and environments
   - Assign Nutrition Risk Factors (NRFs) during the Assessment on the appropriate panels in the Focus computer system
2. Counseling Points
   - Review the Rights and Responsibilities
   - Encourage:
     - A good prenatal diet based on healthy eating habits and choosing a variety of foods from the different food groups
     - Appropriate weight gain
     - Use of prenatal vitamin/mineral supplements to include 27 mg of iron and 400 micrograms of folic acid. Encourage a diet rich in folate as a complement to the supplement.
     - Prenatal care from a physician or clinic
     - Plenty of fluids
   - Discourage and warn of the possible dangers of:
     - Alcohol, drugs, cigarettes
     - Medicines, including over-the-counter medications, unless prescribed by a physician who knows of the pregnancy
     - Secondhand tobacco smoke
   - Ask participant what she has heard about breastfeeding
     - **If participant seems interested in breastfeeding,** address any concerns or barriers to breastfeeding she may have. Dispel any myths. Determine her sources of support for breastfeeding. Discuss nipple evaluation and refer to prenatal provider if appropriate.
     - **If participant seems undecided about breastfeeding**, address any concerns or barriers to breastfeeding she may have. Dispel any myths. Discuss the

advantages of breastfeeding. Determine her sources of support for breastfeeding. Discuss nipple evaluation and refer to prenatal provider if appropriate.

- **If participant says she wants to bottle-feed**, ask her how she came to that decision. Address concerns, barriers, and myths. Discuss advantages of breastfeeding. Determine sources of support. If participant is possibly interested in breastfeeding, discuss nipple evaluation and refer to prenatal provider if appropriate.

Did you know?
Breastfeeding is recognized as the best feeding method! Breast milk is nutritionally complete, promoting optimal growth and development, and protecting against many infant and childhood illnesses. Moms also benefit. Breastfeeding lowers a woman's risk for breast and ovarian cancers, type 2 diabetes, and hypertension.

The prenatal period is the best time to help a woman learn about the many benefits of breastfeeding, as well as "how to" breastfeed. Because breastfeeding is so important to the health of mothers and infants, WIC regulations require staff provide breastfeeding education at each prenatal visit and in the early postpartum period.

3. Behavior Change Goal
   - Assess the participant's interests and consider the Stages of Change model. Interactively set 1-2 goal(s) with the participant and help identify any anticipated barriers to achieving the goal.
4. Referral
   - Prenatal care (if not receiving)
   - Family Planning Services as appropriate
   - Other community services as needed, such as Medicaid, La Leche League, child birth classes, Food Assistance, or Social Services
   - Drug or alcohol abuse treatment programs, as appropriate
5. Documentation
   - Document referrals made, pamphlets provided, client comments/follow up on goals and referrals, assessment/counseling/plan, and behavior change goals set

6. Follow Up at Next Visit
    - Review behavior change goal from previous visit. Praise participant for any attempted change
    - Advise to continue eating a good prenatal diet
    - If participant plans to breastfeed, discuss the following topics:
        - How to breastfeed
        - Positioning and latch
        - Frequency of breastfeeding
        - Length of feedings
    - If participant is undecided about breastfeeding:
        - Ask if she has thought anymore about breastfeeding
        - Determine barriers and address them
        - Dispel myths
        - Review advantages
        - If the participant is willing to hear more about breastfeeding, discuss the following topics:
            - How to breastfeed
            - Positioning and latch
            - Frequency of feedings
            - Length of feedings
    - For the participant who plans to bottle-feed:
        - Ask her what she's heard about breastfeeding and dispel myths
        - If she states that she will definitely bottle feed, support her decision
        - If she appears open to the possibility of breastfeeding, or is interested in hearing more about it, discuss the following topics:
            - How to breastfeed
            - Positioning and latch
            - Frequency of feedings
            - Length of feedings
    - Follow up on referrals as appropriate
    - Note: Participants who are at high-risk must be scheduled for at least one individual education contact by a licensed dietitian and have a nutrition care plan.

7. Follow Up at Subsequent Visits
    - For the participant who plans to breastfeed, or is interested in learning more about it, discuss one of the following breastfeeding-related topics at each subsequent WIC visit:
        - What the participant can do while in the hospital
        - Positioning and latch (brief review)
        - What she can expect the first few weeks
        - How to avoid common problems:
            - Sore nipples
            - Engorgement
            - Participant's sources of postpartum support
            - Mention food package for exclusively breastfeeding women

SELF-CHECK: PRACTICE YOUR KNOWLEDGE

1. Without looking at the prenatal protocols just listed, see how many counseling points you can list for a certification visit. (Nutrition education should be limited to 3 counseling points or fewer during an actual appointment.)

2. What are four topics around breastfeeding that you can cover during prenatal follow-up visits?

ANSWERS

1 & 2: If you were unable to name at least 4 protocols, take some time to review the text before proceeding.

Section VIII: Postpartum Nutrition and General Guidelines

Postpartum: The "Fourth" Trimester

Postpartum women refers to women who have delivered a live baby, as well as those who have miscarried or had an abortion. The postpartum period is a time of dramatic emotional and physical change for women, yet it is most often treated as an after-thought in nutrition and healthcare. So much time is spent talking about the baby and preparing for delivery, that we often forget the new mom's needs.

Just as adequate nutrition and a healthy lifestyle are important during pregnancy, it is also important during the postpartum period. A good diet is important to rebuild the nutrient stores that were depleted during pregnancy. A healthy lifestyle after the birth of the child may improve the outcome of the next pregnancy and the health of the next child.

This section will review six healthy tips for new moms. It reviews the nutrient needs of the non-breastfeeding, postpartum woman. Although breastfeeding is the optimal way to feed a baby, some women may be unable to or may choose not to breastfeed. Refer to the Breastfeeding Module for the nutrient needs of the postpartum breastfeeding woman.

The postpartum period continues to be a special time for the mother and it is important to convey this message to her. The new mother will be experiencing many physical and emotional changes. Some of these changes may be linked to her nutritional status and diet. It is very important to stress the positive effects of good nutrition during the postpartum period.

Replenishing the body's nutrient stores is important for the health status of the mother. A thorough nutrition assessment (focused on growth, iron status, medical history, nutrition practices, lifestyle, and personal factors) will help you identify whether or not a postpartum woman may be at nutritional risk. Many of the same nutrition risk factors of pregnancy will apply to the postpartum woman. Some of these include:

- Young age
- Underweight
- Overweight
- Anemia
- Elevated blood lead
- Closely spaced pregnancies
- Complication during the most recent pregnancy
- Using drugs or alcohol
- Following highly restrictive diets
- Certain medical conditions
- Inadequate diet
- A multi-fetal pregnancy during the most recent pregnancy
- Pica
- Any of the social indicators of nutritional risk

Equally important at this time is the fact that a mother's nutritional status after a pregnancy can affect the outcome of future pregnancies. So it is critical that the mother practice healthy nutrition habits even after the postpartum period since the benefits of maintaining a good nutritional state are extended to her future pregnancies. For example, it is recommended that all women of childbearing age take a multivitamin with folic acid daily, in addition to eating a healthy diet that includes foods rich in folic acid to help prevent neural tube defects.

NRF 427D - Inadequate vitamin/mineral supplementation recognized as essential by national public health policy ***(Low Risk)***
Definition: Consumption of less than 400mcg of folic acid from fortified foods and/or supplements daily by non-pregnant women.

NRF 363 - Pre-Diabetes ***(High Risk)***
Definition: An impaired fasting glucose (IFG) and/or impaired glucose tolerance (IGT), as diagnosed by a physician and self-reported by the applicant/participant.

Pre-diabetes is a condition that occurs when a person's blood glucose levels are higher than normal, but not high enough for a diagnosis of diabetes. More than 88 million adults in the United States have pre-diabetes (1). People with pre-diabetes may experience some adverse effects of diabetes such as heart disease, kidney disease, and eye disease. The good news is that people with pre-diabetes can successfully prevent or delay the onset of type 2 diabetes through lifestyle changes.

Pre-diabetes is diagnosed using either the Fasting Plasma Glucose (FPG) test or the Oral Glucose Tolerance Test (OGTT). A person with pre-diabetes has a FPG level between 100 and 125 mg/dl or a 2-hour glucose level between 140 and 199 mg/dl. Either the FPG or the OGTT test may be used to identify pre-diabetes with equal accuracy. Doctors may refer to pre-diabetes as Impaired Glucose Tolerance or Impaired Fasting Glucose depending on which test they use. During pregnancy, Impaired Fasting Glucose and Impaired Glucose Tolerance are diagnosed as Gestational Diabetes.

Lifestyle changes which include exercise and mild weight loss can decrease the chance that a person with pre-diabetes will develop Type 2 diabetes by up to 60%. For some, early intervention can return elevated blood sugar levels to the normal range. You can play an important role by encouraging physical activity, healthy eating, and breastfeeding to help postpartum women return to their pre-pregnancy weight after pregnancy. The WIC food package, emphasizing whole grains, fruits and vegetables, and low fat dairy products, further assists mothers in reducing their risk of diabetes.

A few points to keep in mind when risking for pre-diabetes versus gestational diabetes are:

- Pre-diabetes is assigned to breastfeeding and non-breastfeeding postpartum women only
- Participants may self-report the medical diagnosis of pre-diabetes
- Impaired Fasting Glucose and Impaired Glucose Tolerance are other names for pre-diabetes and, if identified, are used to assign pre-diabetes to breastfeeding and non-breastfeeding postpartum women
- During pregnancy, Impaired Fasting Glucose and Impaired Glucose Tolerance are diagnosed as *gestational diabetes* (NRF 302)

- Women risked with gestational diabetes during pregnancy should not automatically be assigned pre-diabetes after delivery. They must have a diagnosis from their medical provider or self report the medical diagnosis in order to be risked as pre-diabetes
- Breastfeeding and non-breastfeeding postpartum women who were diagnosed with gestational diabetes during pregnancy should be assigned gestational diabetes (303) as a "Complications of Previous Pregnancy" risk

Postpartum Weight Loss

During the first six weeks of the postpartum period, the woman's weight is not a good indicator of whether the woman is truly overweight or not. She will still be retaining extra body fluids produced during pregnancy that helped to form the extra blood volume needed to nourish the baby. If a woman gained an adequate amount of weight during pregnancy, her postpartum weight will probably be more than her pre-pregnancy weight. Besides the maternal fluids just mentioned, she will most likely be carrying some extra fat. Average postpartum weight retention (weight gained during pregnancy and not lost during the postpartum period) is about 1-8 lb. up to 2 ½ years postpartum (2). This may help explain why the number of live births a woman has can influence her long-term body weight by retaining a small amount of weight with each pregnancy.

NRF 133 - High Maternal Weight Gain ***(Low Risk)***

Definition for Breastfeeding or Not Breastfeeding Women:
Total gestational weight gain during most recent singleton pregnancy of:

- Greater than 40 pounds for underweight women
- Greater than 35 pounds for normal weight women
- Greater than 25 pounds for overweight women
- Greater than 20 pounds for obese women

Note: This risk factor does not apply to multi-fetal pregnancies (twins, triplets, etc.).

Higher weight gain during pregnancy is associated with greater postpartum weight retention. The added health risks of being overweight or obese include heart disease, diabetes, gallbladder disease, sleep apnea, osteoarthritis, several reproductive cancers, infertility, and miscarriages. It can cause complications with future pregnancies. For these reasons, high maternal weight gain is a risk factor on the WIC Program. You have an opportunity to offer sound nutritional advice on diet and to encourage moderate and appropriate physical activity.

Most women want to get back to their pre-pregnancy weight as soon as possible. Not realizing the importance of replenishing their nutrient stores during this postpartum period, many will go on "crash" diets or adopt inadequate eating patterns. Because of this, postpartum women should be counseled soon after delivery (or even before) about weight loss, the need to eat a balanced diet, and how they can sensibly achieve a desirable weight when it is appropriate.

Another good reason not to restrict calories severely during the postpartum period is because, generally, new mothers are already tired from the demands of a newborn baby. Going on a weight reduction diet puts even more demands on the mother's body.

Some weight loss may occur naturally during the weeks just following delivery. This is fine as long the woman is eating a well-balanced, nutritious diet. She should be counseled on careful, slow weight loss while eating a variety of foods from all the food groups.

Your Role
Encourage healthy, sustainable habits which mothers can incorporate into their lifestyles. Suggestions that you may use when assisting a woman with healthy, gradual weight loss include:

- Cut down on high-calorie foods such as cookies, cakes, candies, chips, and soda pop
- Reduce saturated fat intake by:
  - Baking, broiling, or steaming food, instead of frying
  - Choosing lean meats, fish, and poultry
  - Incorporating more plant based proteins, such as beans and peas
  - Using nonfat or low fat dairy products
  - Increase consumption of fresh fruits and vegetables and whole grains
- Increase physical activity and exercise
- Avoid fad diets or quick weight loss programs
- Avoid liquid diets or supplements

Similarly to how some women follow cultural pregnancy diets, many women may also have traditional beliefs about eating during the postpartum period.

Teen Postpartum Weight Loss
Adolescents in the postpartum period should receive special attention regarding the weight loss issue. It may be more difficult to convince this age group to maintain a good diet during the postpartum period. They still may be very unhappy with their weight 3-6 months after delivery, even though their new weight may be a result of their own normal growth and maturation that occurred during their pregnancy, and not due to the actual pregnancy itself.

It may help the teenager accept and understand her new weight if you take the time to thoroughly assess her prior and current weight status by looking at her pre-pregnancy weight, the total amount of weight she gained during pregnancy, and her current BMI.

Encourage healthy eating, active living, self-respect, and an appreciation for differences in body size.

Alcohol
Postpartum women who choose to drink alcohol put themselves and their baby's health at risk, particularly if they are drinking heavily. Alcohol may impair people's judgment which can lead to accidents or injuries. Alcohol may become a substitute for nutritious food. Excess alcohol consumption depletes the body of nutrients, destroys brain cells, and can increase a person's risk for certain cancers, as well as diseases of the liver and pancreas.

Your Role
For women who drink alcohol, encourage moderation (such as limiting alcohol to one drink per day).

Offer information and referrals to all women who drink alcohol. Remind all women who are capable of becoming pregnant that consuming alcohol can put a fetus at risk for birth defects. Unfortunately the harmful effects to a fetus often occur before a woman even knows she is pregnant.

Healthy Tips for New Moms

There are six "Healthy Tips" or educational messages that you can reinforce to the postpartum woman. Let's examine each tip in more detail.

Healthy Tip #1: ***Eat Right***
Help mothers choose nutritionally adequate diets. Review healthy eating habits and choosing a variety of foods from the food groups to help women plan meals. For more individualized recommendations, women can visit http://www.choosemyplate.gov.

In general, a diet for most healthy women should emphasize:

- Whole grains
- Eating a variety of fruits and vegetables
- Low fat or fat free milk
- Lean protein

Refer to the WIC Basic Nutrition Module for a more detailed explanation.

Healthy Tip #2: ***Eat Foods Rich in Folate Every Day***
As discussed previously, folate is a B vitamin that can help prevent birth defects of the brain and spinal cord called neural tube defects (NTDs) when taken before pregnancy. Since NTDs originate in the first month of pregnancy before many women know they are pregnant, it is important that the woman have enough folate in her system before pregnancy. One way to ensure that women have an adequate intake of folate in addition to a healthy diet is to take a multivitamin with folic acid daily. You may wish to provide the handout, Every Woman Needs Folic Acid.

* Note: If a postpartum woman is not consuming 400mcg of folic acid then risk factor code 427D must be assigned. See risk factor explanation on page 26.

Healthy Tip #3: ***Be Active***
Exercise is important for everyone. Encourage women to ask their health care provider first to find out when they can begin exercising. Usually a light, reasonable exercise regime, such as walking, can be suggested. Encourage the mom to take walks with the baby.

Once exercise is approved by the health care provider, recommend that the mom try to exercise 3 to 4 times a week, starting at 10 minutes and working up to 20 to 30 minutes each time. A regular routine of exercise is very important to regaining body tone, encouraging weight loss, and improving a new mother's overall spirits.

Healthy Tip #4: ***See a Health Care Provider***
Encourage the postpartum mother to visit her prenatal provider about 6 weeks after delivery. This is an opportunity for the provider to evaluate the woman's recovery as well as discuss

birth control methods. Also, if the new mother is feeling sad or angry after the birth of her baby, she can talk with her provider about her feelings. The provider can evaluate her for more serious conditions, such as postpartum depression, and offer resources to help her with the adjustments of having a new baby.

Healthy Tip #5: ***Make Time for Being a New Mom***
Once the baby arrives, often the attention is switched from the mom to caring for the new baby. Encourage the postpartum mom to take time for herself each day to help her to be a good mother and decrease stress. Some suggestions to offer include:

- Take a walk
- Take a warm bath
- Talk to a friend or relative
- Read a magazine or book

Since the new mother is probably tired with her routine dramatically altered, encourage her to fix meals that require little preparation time or, better yet, enlist the assistance of other adults in the household.

Healthy Tip #6: ***Stay Smoke-Free and avoid exposure to secondhand and thirdhand smoke***
Praise women who quit smoking during pregnancy. Giving up cigarettes is one of the best things they can do for themselves and their baby. Unfortunately, many women who quit smoking during pregnancy start again after delivery. One way to help new mothers stay tobacco free is to talk with them about other ways to deal with the stress of being a new parent. Offer resources in the community to help the new mom if she is struggling with smoking.

Secondhand and thirdhand smoke are also health risks for both moms and babies. They can cause breathing difficulties and are associated with higher rates of Sudden Infant Death Syndrome (SIDS), asthma, and increased incidence of respiratory and middle ear infections. One of the best ways to reduce exposure to secondhand and thirdhand smoke is to ask those who smoke to only do so outside the house (or car). It is also recommended that smokers wash their hands and cover or change their clothes while smoking to reduce the infant's exposure to thirdhand smoke.

Normal Postpartum Protocols

Just as with pregnancy, the WIC Program has protocols for providing care to the postpartum woman. These protocols guide you through the assessment process and educational points of a certification visit. Let's review the protocols for normal postpartum nutrition education and counseling.

1. Assessment at Certification Visit
    - Perform a thorough nutrition assessment covering the following areas:
        - Growth - check postpartum weight
        - Iron Status – check hemoglobin
        - Medical History – medical condition, health concerns, allergies, or disabilities
        - Nutrition Practices – typical eating and drinking habits

        - Lifestyle – physical activity, substance abuse, and exposure to secondhand smoke
        - Personal Factors – culture, family structure, education, living, work situations, and income
    - Assign subjective Nutrition Risk Factors (NRFs)
2. Counseling Points
    - Review the Participant Rights and Responsibilities
    - Review Nutrition Interview
    - Encourage:
        - A good postpartum diet based on healthy eating habits and choosing a variety of foods from the different food groups
        - Ample fluids
        - Rest and relaxation
        - Resume moderate exercise when cleared to do so by a physician
        - Postpartum check with physician or clinic, including making family planning decisions
    - Discourage exposure of mom and baby to secondhand tobacco smoke which can cause breathing difficulties and more respiratory and ear infections
    - Discuss woman's weight loss plans, if any
    - Provide information on the dangers of drugs and other harmful substances
3. Behavior Change Goal Setting
    - Assess the participant's interests and consider the Stages of Change model. Interactively set 1-2 goal(s) with the participant and help identify any anticipated barriers to achieving the goal
    - Be sure to document the goals discussed in the Care Plan. Reminder: this is a required field.
4. Referral
    - Refer to other community services as needed, such as Family Planning, Medicaid, parenting classes, Food Assistance, Social Services, drug or alcohol abuse treatment programs, etc.
5. Documentation
    - Document referrals made, pamphlets provided, client comments/follow up on goals and referrals, assessment/counseling/plan, and behavior change goals set.
6. Follow Up at Next Visit
    - Review behavior change goal from previous visit. Praise participant for any attempted change. Advise to continue following good postpartum diet.
    - Follow up on referrals as appropriate

Exit Nutrition Counseling

Before the end of a postpartum or breastfeeding woman's certification period you must provide nutrition education and a pamphlet that reinforces specific health messages, this is called Exit Counseling.

Exit Counseling reinforces important health messages previously received, such as:

- The importance of folic acid intake in reducing neural tube defects in future pregnancies

- Continued breastfeeding as the preferred method of infant feeding
- The importance of children's immunizations
- The health risks associated with using alcohol, tobacco, and other drugs
- The need for a well-balanced diet

Note: The handout, Make Healthy Choices for You and Your Family, addresses all of these topics. Any CPA can provide exit counseling.

SELF-CHECK: PRACTICE YOUR KNOWLEDGE

1. Why is it important for non-breastfeeding, postpartum women to consume an adequate diet?

_____
_____
_____

2. Name the 6 healthy tips to reinforce with postpartum women.

_____
_____
_____
_____
_____
_____

True or False? (T or F)

3. ___ During the postpartum period, a woman should consume 400mcg of folic acid from fortified foods and/or supplements daily.

ANSWERS

1. To replenish the body's nutrient stores that were depleted during pregnancy.
2.
   - Eat right
   - Eat foods rich in folate every day
   - Be active
   - See a health care provider
   - Make time for being a new mom
   - Stay smoke-free and avoid exposure to secondhand smoke

3. True

Training Activity

Now that you have completed this module, please take the Prenatal & Postpartum Module on-line post-test located on the Web Portal Training Personnel page. **Good Luck!**

EATING FOR YOU AND YOUR BABY

Your baby grows best when you eat healthy foods. Limit fats and sugars in your diet to help you gain just the right amount of weight. The right weight gain depends on your weight when you became pregnant. Your doctor and WIC staff will talk to you about what is best for you. Your recommended amount of weight gain is _____ pounds. It is best to gain weight gradually. For most women, this means gaining 1 to 4 pounds during the first 3 months and then 2 to 4 pounds each month from the 4th to the 9th month.

Food Group	1st Trimester	2nd & 3rd Trimesters	What counts as 1 cup or 1 ounce?
Eat this amount from each group daily.*			
Fruits	2 cups	2 cups	1 cup fruit or 100% juice ½ cup dried fruit
Vegetables	2 ½ cups	3 cups	1 cup raw or cooked vegetables or 100% juice 2 cups raw leafy vegetables
Grains	6 ounces	8 ounces	1 slice bread 1 ounce ready-to-eat cereal ½ cup cooked pasta, rice or cereal
Protein Foods	5 ½ ounces	6 ½ ounces	1 ounce lean meat, poultry or seafood ¼ cup cooked beans ½ ounce nuts or 1 Tbsp. peanut butter 1 egg
Dairy	3 cups	3 cups	1 cup milk 8 ounces yogurt 1 ½ ounces natural cheese 2 ounces processed cheese

*If you are not gaining weight or gaining too slowly, you may need to eat a little more from each food group. If you are gaining weight too fast, you may need to cut back by decreasing the amount or change the types of food you are eating.

BEING PHYSICALLY ACTIVE

Unless your doctor tells you not to be physically active, include 2 ½ hours each week of physical activity such as walking, jogging or swimming. This could be done 10 minutes at a time throughout the week. Avoid activities with a high risk of falling or injury.

SEAFOOD

Seafood is part of a healthy diet. Omega-3 fats in seafood can have important health benefits for you and your developing baby. Eat 8-12 ounces of a variety of seafood each week from choices that are lower in mercury. (Examples: salmon, sardines, trout or light canned tuna).

HEALTHY PREGNANCY TIPS

- Make half your plate fruits and vegetables
- Make at least half your grains whole grains
- Move to low-fat or fat-free milk, yogurt or cheese
- Go to all of your doctor appointments
- Drink several glasses of water every day
- Take your prenatal vitamin and any other medicine or vitamin/supplements your doctor recommends
- Cut back or stop smoking and ask others not to smoke around you
- Avoid beer, wine, liquor and illegal drugs

WHERE DOES THE PREGNANCY WEIGHT GO?

- Baby ..... 7 - 7 ½ lbs.
- Amniotic fluid ..... 2 lbs.
- Placenta ..... 1 - 2 lbs.
- Uterus ..... 2 lbs.
- Maternal blood ..... 3 lbs.
- Breasts ..... 1 lbs.
- Maternal fluid, fat & other tissues... 9 - 17 lbs.

FOR MORE INFORMATION

Talk to your local WIC agency staff. For contact information, call **515-281-6650,** or visit http://idph.iowa.gov/wic/how-to-apply or www.signupwic.com.

Adapted from USDA's Tips for Pregnant Moms FNS-451 December 2016.
This institution is an equal opportunity provider. November 2019

Pregnancy and Postpartum Works Cited

Section I: The Importance of Nutrition & Prenatal Care

1. "Pre-Pregnancy Care and Prenatal Care." *Eunice Kennedy Shriver National Institute of Child Health and Human Development*, U.S. Department of Health and Human Services, www.nichd.nih.gov/health/topics/preconceptioncare.
2. Trusty, Stephanie. "Fetal Growth and Development." Maternal Core Training, Iowa Department of Public Health. 27 March 2019, Des Moines Area Community College. Conference Presentation.

Section II: Anthropometric Indicators of Nutritional Need

1. "Weight Gain during Pregnancy." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 7 Dec. 2020, www.cdc.gov/reproductivehealth/maternalinfanthealth/pregnancy-weight-gain.htm
2. "Pregnancy Weight Gain: What's Healthy?" *Mayo Clinic*, Mayo Foundation for Medical Education and Research, 4 Jan. 2020, www.mayoclinic.org/healthy-lifestyle/pregnancy-week-by-week/in-depth/pregnancy-weight-gain/art-20044360.
3. Institute of Medicine and National Research Council Committee to Reexamine IOM Pregnancy Weight Guidelines; Rasmussen KM, Yaktine AL, editors. "Weight Gain During Pregnancy: Reexamining the Guidelines." Washington, DC: National Academies Press; 2009. Available from: https://www.ncbi.nlm.nih.gov/books/NBK32813/ doi: 10.17226/12584
4. "Nutrition During Pregnancy." *ACOG*, www.acog.org/womens-health/faqs/nutrition-during-pregnancy.

Section III: Dietary Indicators of Nutritional Need

1. "Healthy Weight during Pregnancy." *EatRight*, www.eatright.org/health/pregnancy/prenatal-wellness/healthy-weight-during-pregnancy.
2. Stephens, Trina V et al. "Protein Requirements of Healthy Pregnant Women during Early and Late Gestation Are Higher than Current Recommendations." *The Journal of Nutrition*, Volume 145, Issue 1, January 2015, Pages 73-78, https://doi.org/10.3945/jn.114.198622
3. "Anemia in Pregnancy." *Lucile Packard Children's Hospital Stanford,* Stanford Children's Health, www.stanfordchildrens.org/en/topic/default?id=anemia-in-pregnancy-90-P02428.
4. Tan, Verena. "How to Increase the Absorption of Iron From Foods." *Healthline*, Healthline Media, 3 June 2017, www.healthline.com/nutrition/increase-iron-absorption.
5. "Iodine Deficiency." *American Thyroid Association*, www.thyroid.org/iodine-deficiency/.
6. "Iodine Fact Sheet for Health Professionals." *NIH Office of Dietary Supplements*, U.S. Department of Health and Human Services, ods.od.nih.gov/factsheets/Iodine-HealthProfessional/.
7. "Folate Fact Sheet for Health Professionals." *NIH Office of Dietary Supplements*, U.S. Department of Health and Human Services, ods.od.nih.gov/factsheets/Folate-HealthProfessional/.

8. "Recommendations: Women & Folic Acid." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 13 Aug. 2019, www.cdc.gov/ncbddd/folicacid/recommendations.html.
9. "Calcium Fact Sheet for Health Professionals." *NIH Office of Dietary Supplements*, U.S. Department of Health and Human Services, ods.od.nih.gov/factsheets/Calcium-HealthProfessional/.
10. Kumar, Ashok, and Simar Kaur. "Calcium: A Nutrient in Pregnancy." *Journal of obstetrics and gynaecology of India* vol. 67, 5 (2017): 313-318. doi:10.1007/s13224-017-1007-2
11. De Bellefonds, Colleen. "Why Are Prenatal Vitamins So Important?" *What to Expect*, 16 Apr. 2020, www.whattoexpect.com/getting-pregnant/health-and-wellness/foods-to-enjoy/prenatal-vitamins.aspx.
12. "Dietary Supplements: What You Need to Know." *NIH Office of Dietary Supplements*, U.S. Department of Health and Human Services, ods.od.nih.gov/HealthInformation/DS_WhatYouNeedToKnow.aspx/.

Section IV: Special Concerns during Pregnancy

1. "Swelling During Pregnancy." *American Pregnancy Association*, 27 Aug. 2020, americanpregnancy.org/healthy-pregnancy/pregnancy-health-wellness/swelling-during-pregnancy-1017/.
2. "Pregnancy Induced Hypertension." *Children's Wisconsin*, childrenswi.org/medical-care/fetal-concerns-center/conditions/pregnancy-complications/pregnancy-induced-hypertension.
3. Brinkman, Mary Kay. "Pregnancy and Oral Health." Maternal Core Training, Iowa Department of Public Health. 27 March 2019, Des Moines Area Community College. Conference Presentation.
4. Center for Food Safety and Applied Nutrition. "What Is Foodborne Illness? Food Safety for Moms to Be." *U.S. Food and Drug Administration*, FDA, www.fda.gov/food/people-risk-foodborne-illness/what-foodborne-illness-food-safety-moms-be.
5. Center for Food Safety and Applied Nutrition. "Advice About Eating Fish." *U.S. Food and Drug Administration*, FDA, www.fda.gov/food/consumers/advice-about-eating-fish.
6. "Pica." *National Eating Disorders Association*, 22 Feb. 2018, www.nationaleatingdisorders.org/learn/by-eating-disorder/other/pica.
7. Bahtia, M.S. "Pica as a Culture Bound Syndrome." *Delhi Psychiatry Journal*, vol. 17, 1. April 2014.
8. "Basics about FASDs." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 7 May 2020, www.cdc.gov/ncbddd/fasd/facts.html.
9. Wood KE, Smith P, Krasowski MD. Newborn drug testing practices in Iowa birthing hospitals. J Neonatal Perinatal Med. 2017;10(4):445-450. doi: 10.3233/NPM-16153. PMID: 29286931.
10. "Health of Women and Children." *America's Health Ranking,* United Health Foundation, https://www.americashealthrankings.org/explore/health-of-women-and-children/measure/maternal_morbidity/state/IA
11. "The Dangers of Thirdhand Smoke." *Mayo Clinic*, Mayo Foundation for Medical Education and Research, 21 Aug. 2020, www.mayoclinic.org/healthy-lifestyle/adult-health/expert-answers/third-hand-smoke/faq-20057791.

12. "Environmental Health and Medicine Education: Lead Toxicity." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, www.atsdr.cdc.gov/csem/csem.asp?csem=34.
13. "Caffeine Intake During Pregnancy." *American Pregnancy Association*, 1 Sept. 2020, americanpregnancy.org/pregnancy-health-wellness/caffeine-intake-during-pregnancy-946.

Section V: Clinical Indicators of Nutritional Need

1. "Help Your Teen Cope with Pregnancy." *Mayo Clinic*, Mayo Foundation for Medical Education and Research, 6 Aug. 2019, www.mayoclinic.org/healthy-lifestyle/tween-and-teen-health/in-depth/teen-pregnancy/art-20048124.
2. "Pregnancy and Eating Disorders." *National Eating Disorders Association*, 22 Feb. 2018, www.nationaleatingdisorders.org/pregnancy-and-eating-disorders.
3. "Eating Disorders." *National Institute of Mental Health*, U.S. Department of Health and Human Services, www.nimh.nih.gov/health/topics/eating-disorders/index.shtml.
4. "Pregnant Women, Infants, and Children." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 26 Aug. 2020, www.cdc.gov/hiv/group/gender/pregnantwomen/index.html.
5. "Breastfeeding During Pregnancy and Tandem Nursing." *La Leche League International*, 6 Aug. 2020, www.llli.org/breastfeeding-info/breastfeeding-pregnancy-tandem-nursing/.

Section VI: Social Indicators of Nutritional Need

N/A

Section VII: WIC Prenatal Protocols

N/A

Section VIII: Postpartum Nutrition and General Guidelines

1. "Prediabetes - Your Chance to Prevent Type 2 Diabetes." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 11 June 2020, www.cdc.gov/diabetes/basics/prediabetes.html.
2. Linné Y, Rössner S. Interrelationships between weight development and weight retention in subsequent pregnancies: the SPAWN study. Acta Obstet Gynecol Scand. 2003 Apr;82(4):318-25. doi: 10.1080/j.1600-0412.2003.00150.x. PMID: 12716315.