
Prenatal Nutrition Module



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*A companion publication, **Prenatal Nutrition Module Answer Key**,
stock number 13-81-2, is also available from DSHS.*

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Introduction

No two women are alike and, likewise, no two pregnancies are alike. Some pregnancies are problem-free, while others have complications. Many pregnancies are planned; others are unintended. Some women become pregnant when they're over 40; some are barely teenagers. Sometimes women are pregnant with twins; some women experience pregnancy loss. Many women love being pregnant; others do not.

But in light of all these differences, one thing is the same: pregnancy has a profound effect on a woman's body. Her metabolism, hormones, body weight, and nutrient needs change dramatically as a few tiny cells in her body miraculously divide and develop into a new life.

At WIC, we want to help pregnant women eat a healthful diet, gain the right amount of weight, and make positive lifestyle choices in order to have the healthiest pregnancies possible. This module reviews nutrient needs during pregnancy along with recommendations for gaining weight. Also, it addresses various lifestyle habits as well as medical risks that can affect a pregnant woman's health and the outcome of her pregnancy.

How to Use This Module

The module is divided into five parts. After reading the information in each part, answer the questions at the end before going on to the next part. After you complete the questions, have your supervisor check them. *Answers to the self-test questions appear in a companion publication, DSHS stock no. 13-81-2.* If you don't answer the questions correctly, you'll need to reread the pertinent section(s) and find the correct answer(s). After reading this module, you will be more prepared to help pregnant women make healthier choices for themselves and their growing babies.



Eating Right for a Healthy Pregnancy

Part 1

Objectives

A woman's daily food choices and eating habits can make a world of difference in her pregnancy and her baby's health. A growing fetus depends totally on the mother to provide all the essential nutrients for growth and development. Also, the mother needs plenty of nutrients to support the physical changes taking place in her own body.

After reading this part of the module, you'll be able to:

- identify correct statements about calories and protein for pregnant women;
- identify folic acid's main role in prenatal nutrition;
- list sources of folate;
- identify correct statements regarding vitamin A, vitamin C, calcium, iron, and water for pregnant women;
- identify foods especially high in calcium;
- recognize sources of fiber;
- identify correct statements about prenatal supplements;
- define the eating practices of different types of vegetarians;
- list three sources of iron for vegetarians; and
- distinguish information about different key nutrients for vegetarians.

Eating for Two? Extra Calories During Pregnancy

Since a pregnant woman provides for her own nutrient needs as well as the needs of her developing baby, it is true that she's "eating for two." But that doesn't mean she needs twice as much food. In fact, most women can probably get what they need by simply adding a healthful snack or small meal to their daily intake.

In general, calorie needs don't increase until the start of the second **trimester**. At that point, a woman's calorie needs will depend on her pre-pregnancy weight, her rate of weight gain, her physical activity, etc. On average, a pregnant woman needs about 340 extra calories a day during the second trimester, and 450 extra calories a day during the third trimester. But these are just estimates, not standard recommendations for every pregnant woman.

It's important to think about where those extra calories come from. Consider, for example, a small order of fries and a 12-ounce soda — about 370 calories total. Sure, this snack would provide extra calories, but it's certainly not a smart

choice for a woman trying to nourish herself and a growing fetus. A better option would be a turkey sandwich on whole-grain bread and a glass of milk. The sandwich and milk would have about the same number of calories as the fries and soda, but with more protein, fiber, and other nutrients.

So, while pregnancy is a time when a woman needs to eat a little extra, that doesn't mean the sky is the limit. In general, most women who respond to their appetites without overeating will get the right

number of calories they need. And, by choosing a balanced variety of foods and limiting things like sweets, sodas, and fried foods, they'll get the right nutrients, too.



Most pregnant women can get the extra calories they need by adding a healthy snack to their day, like a sandwich and milk.

Protein

Protein is important for growth, and a pregnant woman's protein needs steadily increase as the fetus grows and the

woman gains weight. Starting with the second trimester, a pregnant woman needs an extra 25 grams of protein a day.¹

Americans tend to eat more protein than they need, so a pregnant woman who chooses a variety of foods to supply her extra calories will probably meet her protein needs without much problem.

Table 1.1 lists ballpark figures that show the amount of protein in different foods. Now, stop and think about the turkey sandwich mentioned earlier. The bread and turkey would have about 20 grams of protein, and a glass of milk would add another 8 grams. That adds up to 28 grams of protein — plenty of extra protein for a pregnant woman. For more specific information on meeting protein needs, refer to Part 1 of the *Basic Nutrition Module*, stock no. 13-33.

Vitamin Requirements During Pregnancy

During pregnancy, requirements increase for many vitamins, including vitamins A and C and most of the B vitamins. A pregnant woman who eats enough fruits, vegetables, and fortified bread and cereal products is usually able to meet her

Table 1.1 *Estimated Protein Content of Various Foods*

dairy (8 oz. milk or 1-1½ oz. cheese)	8 grams
meat (1 oz.)	7 grams
beans (½ cup)	7 grams
nuts (1 oz. nuts or 1 tbsp. peanut butter)	4 grams
bread (1 slice bread or 1 portion cereal)	3 grams
rice (½ cup).....	2 grams
vegetables (½ cup cooked or 1 cup raw)	2 grams
fruits	0 grams

¹ Nutrient recommendations in this module are based on the National Academy of Sciences' Dietary Reference Intakes, a recently published set of nutrient-based reference values. From that set of values, we used the Recommended Dietary Allowances for pregnant women, which are designed to meet the needs of 97 to 98 percent of all pregnant women. The Food and Nutrition Board recommends using the RDAs when planning the intake of individuals.

needs for extra levels of vitamins. Also, many physicians prescribe prenatal supplements to help cover vitamin requirements. WIC focuses on three important vitamins during pregnancy: folate, vitamin A, and vitamin C.

Folate — The recommendation for folate increases from 400 µg/day before pregnancy to 600 µg/day during pregnancy. Studies suggest that folate can help prevent up to 70 percent of **neural-tube defects**, a group of birth defects involving the brain and spinal column. The neural tube of the fetus develops and closes within the first 30 days of pregnancy, so an adequate intake of folate is especially important just before conception and during the first few weeks of pregnancy.

Excellent sources of naturally occurring folate include lentils, beans, spinach, asparagus, and orange juice — a serving of any of these foods has about 135 µg of folate. Also, folic acid, the synthetic form of this vitamin, is added to enriched cereal and grain products such as breads, pasta, noodles, rice, and hominy grits. Most breakfast cereals contain 100 µg per serving of folic acid per serving, and some supply 400 µg per serving. Also, many daily multivitamins provide 400 µg of folic acid, while prenatal vitamins often have 1000 µg of folic acid.



Five servings a day of different fruits and vegetables provide folic acid, vitamin A, vitamin C, and other key nutrients.

To help reduce the risk of neural-tube defects, women of childbearing age should meet their daily folate requirements by choosing sources of synthetic folic acid (multivitamins, fortified foods), and by eating a diet with foods high in folate.

Vitamins A and C — WIC emphasizes getting enough vitamin A and vitamin C, partly because of increased needs during pregnancy, but also because many people simply don't eat enough fruits and vegetables, the main sources of these two vitamins.

The best sources of vitamin A are orange and dark green fruits and vegetables, including sweet potatoes, carrots, mangoes, spinach, cantaloupe, and turnip greens. Vitamin C is found in many fruits and vegetables, including guavas,

strawberries, kiwis, citrus fruits, broccoli, and bell peppers, just to name a few. Be aware that high temperatures and long cooking times destroy vitamin C, so fresh, uncooked fruits and vegetables generally provide more vitamin C than cooked or canned produce. Also, steaming retains more vitamin C than boiling.

A pregnant woman needs an average daily intake of 770 µg of vitamin A (750 µg for teens) and 85 mg of vitamin C (80 mg for teens). By eating at least five servings of fruits and vegetables each day, a woman can meet her needs for these two vitamins, plus she'll take in other important nutrients like folic acid, fiber, and water.

Mineral Requirements During Pregnancy

As with vitamins, most mineral requirements increase during pregnancy. This is especially true for pregnant teens, who are still growing and have higher requirements for minerals related to growth (calcium, phosphorus, zinc, and magnesium).

During pregnancy, WIC emphasizes two key minerals: iron and calcium. Not only are these two minerals important in women's health, but many women, both pregnant and non-pregnant, don't get enough of these minerals on a daily basis.

Iron — During pregnancy, iron helps both the mother's blood and the baby's blood carry oxygen. A woman's blood volume increases by about 50 percent during her pregnancy, so it's no surprise that the recommendation for iron also increases (from 18 mg/day before pregnancy to 27 mg/day during pregnancy).² If a woman doesn't get enough iron to meet her needs, her red blood cells can't carry as much oxygen, and over time, **iron-deficiency anemia** can develop. See page 4-5 of this module for more on iron-deficiency anemia.

Meeting iron needs is hard enough for women who aren't pregnant, so it can be a real challenge during pregnancy. Animal products such as beef, chicken and pork are good sources of **heme iron**. Dried beans, tofu, dried fruits, and fortified cereals provide **non-heme iron**. Foods cooked in



The recommendation for iron increases to 27 mg/day during pregnancy. For many women, it's hard to get that much iron from diet alone.

² The RDA for pregnant women is 27 mg/day. However, according to risk criteria for WIC eligibility, a pregnant woman who is not taking 30 mg/day of iron in the form of a dietary supplement is considered to be at risk.

cast-iron pots are also a source of dietary iron. And during pregnancy, a prenatal supplement can help provide the additional iron that a woman needs. **Table 1.2** lists the iron content of various foods.

The body absorbs only a small percentage of iron from foods, so pregnant women should learn about ways to increase iron absorption. Vitamin C helps the body absorb iron, so it's a

Table 1.2 *Approximate Iron Content of Various Foods*

Total [®] cereal	¾ cup	18.0
soybeans, cooked	½ cup	4.4
blackstrap molasses	1 tbsp.	3.5
lentils, cooked	½ cup	3.3
potato, baked with skin	1 medium	2.6
kidney beans, cooked	½ cup	2.6
beef (ground, extra lean, cooked)	3 oz.	2.4
garbanzo beans, cooked	½ cup	2.4
navy beans, cooked	½ cup	2.3
black-eyed peas, cooked	½ cup	2.2
northern beans, cooked	½ cup	1.9
tofu, firm	3 oz.	1.8
black beans, cooked	½ cup	1.8
pinto beans, cooked	½ cup	1.8
almonds	¼ cup	1.5
figs, dried	¼ cup	1.4
split peas, cooked	½ cup	1.3
sesame seeds	1 tbsp.	1.3
raisins	¼ cup	1.1
chicken (without skin, cooked)	3 oz.	1.0
pork (cooked)	3 oz.	0.9
bread	1 slice	0.8
apricots	¼ cup	0.7
turnip greens, cooked	½ cup	0.6
peanut butter	2 tbsp.	0.6
mustard greens, cooked	½ cup	0.5
fish (cooked)	3 oz.	0.5
dried plums (prunes)	5 medium	0.4

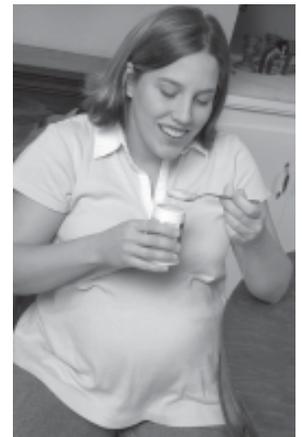
Sources: USDA National Nutrient Database for Standard Reference, Release 16-1, and product labels.

good idea to enjoy vitamin C-rich foods along with foods that contain iron. Also, eating heme-iron foods during a meal increases the absorption of non-heme iron. Lastly, coffee and tea decrease iron absorption, so if a woman's iron stores are low, she should avoid drinking these beverages with high-iron foods.

Calcium — Calcium is crucial for bone health, not only during pregnancy, but also before and after pregnancy. The recommended intake for a woman is 1000 mg per day, regardless of whether she's pregnant, not pregnant, or breastfeeding. Teens, however, need more calcium since their bones are still growing. The recommendation for teenage girls under age 19 is 1300 mg per day. This applies to pregnant, non-pregnant, and breastfeeding teens.

Many women and teens don't get enough calcium to meet their needs. Dairy products are rich sources of calcium: an 8-ounce of glass of milk has about 300 mg of calcium, as does 8 ounces of yogurt, or 1½ ounces of cheese. However, many women and teens avoid dairy products in an effort to cut back on fat and calories. Fortunately, there are plenty of low-fat and fat-free dairy products available, as well as various *non-dairy* sources of calcium, such as calcium-enriched soy milk and tofu.

Table 1.3 lists the approximate calcium content of various foods. The body absorbs calcium better in amounts of 500 mg or less, so it is best to consume calcium-rich foods at different times of the day, instead of all at once.



Yogurt and other dairy products are excellent sources of calcium.

Water (Fluids)

Most people don't think of it as an essential nutrient, but water is necessary for health and survival. Also, drinking water during pregnancy can help reduce constipation. Experts recommend that pregnant women drink at least eight cups of fluids every day. Factors such as hot Texas temperatures can increase fluid needs. While water should account for most of the fluids women take in, foods and other beverages also add to daily fluid intake.

Table 1.3 Approximate Calcium Content of Various Foods

<i>Dairy Sources of Calcium</i>		
cheddar cheese	1½ oz.	305
low-fat yogurt	1 cup	300
skim milk	1 cup	300
ice cream	½ cup	90
low-fat cottage cheese (2% milk fat)	½ cup	80
parmesan cheese	2 tsp.	60
<i>Non-Dairy Sources</i>		
Total® cereal	¾ cup	1000
calcium-fortified orange juice	1 cup	350
canned sardines with bones	3 oz.	350
calcium-enriched soy milk	1 cup	300
blackstrap molasses	1 tbsp.	170
pudding, made with milk	½ cup	150
calcium-fortified bread	1 slice	150
spinach, cooked	½ cup	120
firm tofu (set with calcium sulfate)	3 oz.	100
turnip greens, cooked	½ cup	100
almonds	¼ cup	90
sesame seeds	1 tbsp.	90
soybeans, cooked	½ cup	90
navy beans, cooked	½ cup	65
northern beans, cooked	½ cup	60
figs, dried	¼ cup	60
okra, sliced, cooked	½ cup	60
pinto beans, cooked	½ cup	35
broccoli, cooked	½ cup	30

Sources: USDA National Nutrient Database for Standard Reference, Release 16-1, and product labels.

Fiber

In 2002, the Food and Nutrition Board of the National Academy of Sciences published its first recommendations for fiber, stating that 28 grams of fiber a day is an adequate intake for a pregnant woman. Many Americans only get around 12–15 grams of fiber a day. Fiber adds bulk to the

stool, which can reduce constipation during pregnancy. Another plus is that high-fiber foods are generally low in fat.

Fiber is in the walls of plant cells and forms the tough structural parts of plants. So eating more fiber means eating more fruits, vegetables, legumes, and whole-grain breads and cereals. Processing tends to lower the fiber content. For example, apple juice and orange juice have very little fiber compared to whole apples and oranges. Also, foods made with refined flour are lower in fiber compared to foods made with 100 percent whole-wheat flour.

Because fiber absorbs water, it's important to drink plenty of fluids when adding fiber to the diet. For more on fiber, refer to the section on carbohydrates in Part 1 of the *Basic Nutrition Module*, stock number 13-33.

Prenatal Vitamin-Mineral Supplements

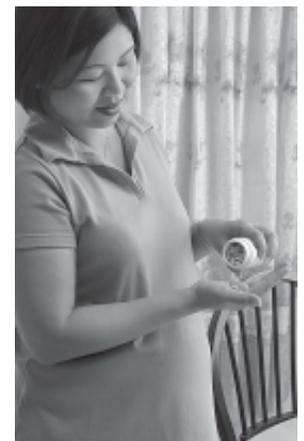
Many doctors routinely prescribe a prenatal vitamin-mineral supplement during pregnancy. Prenatal supplements are especially helpful for meeting iron needs, since many pregnant women don't get all the iron they need through diet alone. Likewise, a prenatal vitamin provides extra folic acid during pregnancy, as well as other nutrients. But remember — even though a daily vitamin-mineral pill can help fill in the gaps, it's not a substitute for a healthful diet.

There are no standards that define what has to be in a supplement in order for it to be called a prenatal supplement. Most varieties have higher levels of iron and folic acid compared to regular multivitamin-mineral pills. Some brands also provide calcium, but usually just a portion of a woman's daily calcium needs (about 10 to 25 percent). Prescribed prenatal vitamins generally provide safe levels of nutrients for pregnant women. Be aware that other types of nutritional or herbal supplements may contain excessive levels of nutrients or other compounds. (For more on nutritional and herbal supplements, refer to page 3-9 of this module.)

Prenatal supplements are especially important for pregnant women with special nutrient needs. For example, vegetarians who don't consume any animal products often need a



Beans are among the best sources of fiber (about 7 grams of fiber in ½ cup). Brown rice, bread, and vegetables add even more fiber to the meal.



Compared with regular vitamin-mineral supplements, most brands of prenatal supplements contain higher levels of iron and folic acid.

prenatal supplement in order to get enough iron, zinc, and vitamin B₁₂. Also, women who smoke or who abuse drugs or alcohol during their pregnancy need additional levels of nutrients.

Some women may complain that their prenatal supplement causes constipation or nausea. For constipation, suggest drinking more fluids and adding more fiber to the diet. And taking a supplement soon after a meal or before going to bed can help reduce stomach upset. A woman can also talk to her doctor about trying a different brand of prenatal supplement.

WIC staff should encourage participants to take prenatal vitamins as recommended by their health-care providers. But do keep in mind that a prenatal supplement is just what it says it is — a *supplement* to a healthful diet, not a replacement.

The Big Picture: Foods, Not Nutrients

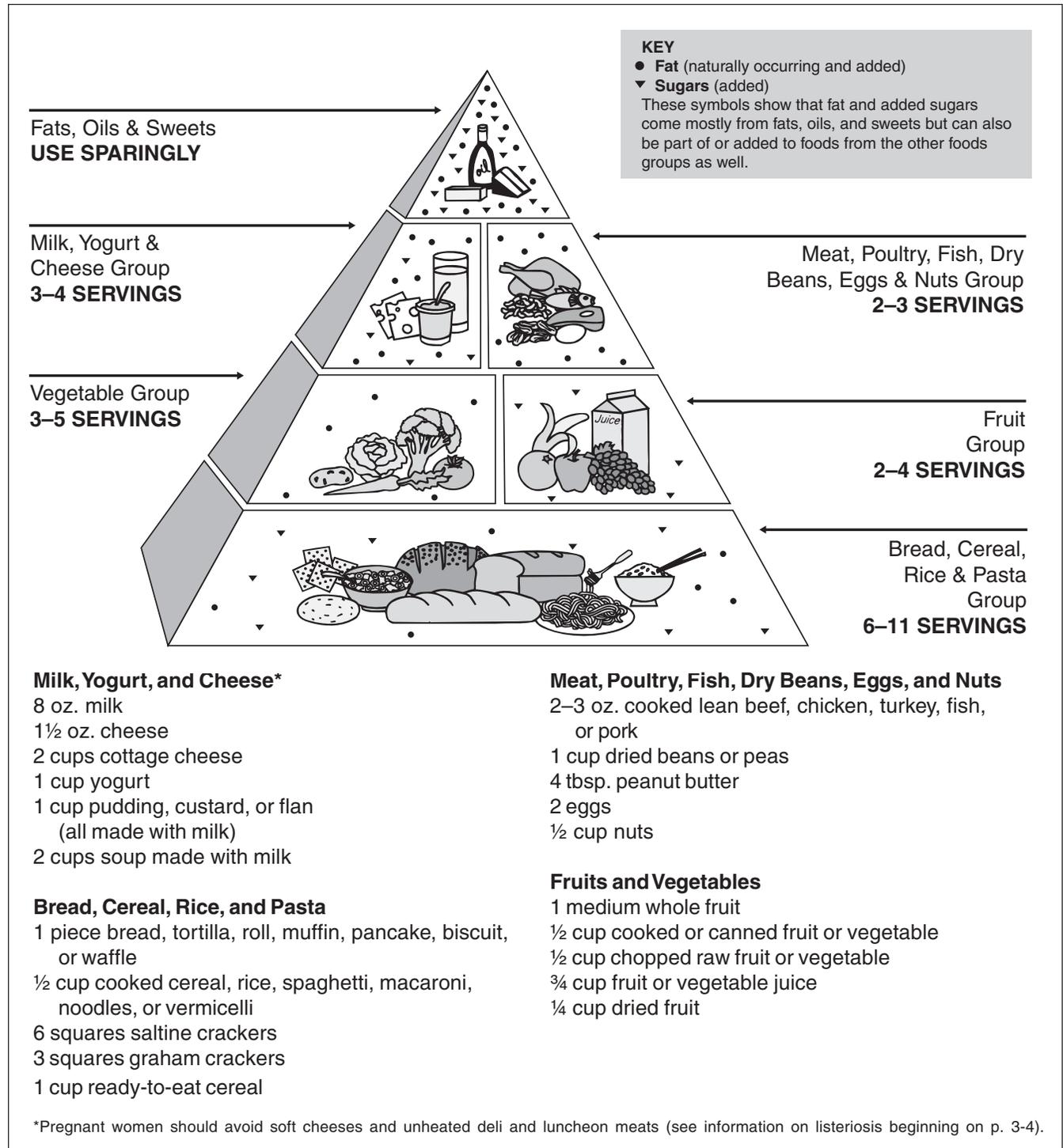


When talking to participants, offer practical tips that focus on food choices, food preparation, and a healthy lifestyle.

While it's important to learn about specific nutrients, the reality is that pregnant women eat foods, not nutrients. That's something to remember during counseling. Sometimes we focus too much on a single vitamin or mineral, talking about why that nutrient is so important. Instead, it might be better to offer tips about healthful food choices, recipes for delicious and low-fat meals, and ideas for adding new foods to a family's diet. Granted, some participants have specific health risks, so you'll need to talk about a certain nutrient, like iron. But even then, it's helpful to provide practical ideas that will help a participant take in more of that nutrient, while also making healthier food choices overall.

A pregnant woman needs to eat a balanced variety of wholesome foods with plenty of fruits, vegetables, whole grains, protein-containing foods, and low-fat dairy products. The Food Guide Pyramid for Pregnant Women (**Figure 1.1**) outlines the types of foods and a range of servings that pregnant women should get from each food group. By following the pyramid and eating a variety of foods, a woman should get the additional nutrients she needs for both herself and her growing baby.

Figure 1.1 Food Guide Pyramid for Pregnant Women



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

Vegetarian Diets During Pregnancy

By making careful food choices, **vegetarians** can meet their nutrient needs during pregnancy. The goal is to get enough of the key nutrients typically provided by animal products. A lot depends on how restrictive the diet is. **Vegans** are the most restrictive since they don't eat any animal products at all.

Lacto-vegetarians include dairy products in their diet, but no other animal products. **Lacto-ovo-vegetarians** consume both eggs and dairy products. Prenatal vitamin-mineral supplements can be especially important in helping pregnant vegetarians meet their needs. Also, fortified foods can make important contributions to nutrient intake, especially for vegans. Here's a brief summary of key nutrients that vegetarians need to consider:



There are different types of vegetarians. Some eat eggs or dairy products, while others do not.

- **Iron** — Good sources of iron for vegetarians include fortified breakfast cereals, blackstrap molasses, legumes, tofu, dried fruits, and enriched pasta and bread. And remember, eating vitamin C-rich foods along with foods high in iron increases iron absorption. Often, a pregnant woman following a vegetarian diet needs supplemental iron to meet her requirements.
- **Vitamin B₁₂** — Lacto-vegetarians and lacto-ovo-vegetarians can get Vitamin B₁₂ from eggs and milk. But vegans need either supplemental B₁₂ or foods fortified with B₁₂, such as breakfast cereals, soy products, or vegetarian burger products. Also, nutritional yeast provides vitamin B₁₂. Be aware that plant foods aren't reliable sources of B₁₂. For example, seaweed, miso, tempeh, tamari, sauerkraut, spirulina, and algae are often cited as good sources of vitamin B₁₂, but they generally contain an inactive form of the vitamin that the body can't use.
- **Calcium** — Lacto-vegetarians and lacto-ovo-vegetarians can rely on dairy products for calcium, while vegans often choose calcium-enriched soy milk to meet their calcium needs. Other products with added calcium include certain brands of orange juice, grapefruit juice, bread, and cereal. Smaller amounts of calcium are found in soy cheese,

blackstrap molasses, sesame seeds, tahini (sesame butter), almonds, almond butter, tempeh, and certain vegetables (kale; collard, mustard, and turnip greens; broccoli; okra; rutabaga). Supplemental calcium may be necessary if dietary intake is poor.

- **Vitamin D** — Vitamin D is another nutrient that lacto-vegetarians and lacto-ovo-vegetarians can get from eggs or milk. Vegans can get this vitamin from certain brands of soy milk, breakfast cereals, and margarine (check the labels). Also, the human body produces vitamin D through sun exposure, but it's best not to rely on this source, since things like sunscreen, skin color, smog, and winter temperatures all cut down on exposure to the sun.
- **Zinc** — Zinc is essential for growth and development, and zinc needs are slightly increased during pregnancy. Zinc is most abundant in meat, seafood, and liver, and to a lesser extent in milk and eggs. Vegans can get zinc from legumes, tofu, miso, tempeh, nuts, seeds, wheat germ, and whole grains, although zinc from plant sources is less available to the body.

Summary

- A pregnant woman is “eating for two,” but she doesn't need twice as many calories. Most women can get enough extra calories by simply adding a healthful snack or small meal to their daily intake. It's important to limit things like sweets, sodas, and fried foods.
- Starting with the second trimester, a pregnant woman should get an extra 25 grams of protein a day.
- Vitamin and mineral needs increase during pregnancy. WIC emphasizes vitamin A, vitamin C, folic acid, iron, and calcium. Folic acid is especially important just before conception and during early pregnancy to help prevent neural-tube defects. Iron is important for preventing iron-deficiency anemia, but meeting increased iron needs through diet alone can be difficult during pregnancy. Calcium is crucial for bone health, not only during

pregnancy, but also before and after. Teens need extra calcium for growth.

- Pregnant women should drink at least eight cups of fluids every day and aim for 28 grams of fiber a day from fruits, vegetables, and whole-grain breads and cereals. Fiber can reduce constipation during pregnancy.
- Many doctors routinely prescribe a prenatal vitamin-mineral supplement for pregnant women. Prenatal supplements help meet increased needs for iron, folic acid, and other nutrients. However, a daily multivitamin-mineral is not a substitute for a healthful diet.
- Keep in mind that pregnant women eat food, not nutrients. The Food Guide Pyramid for Pregnant Women (**Figure 1.1**) outlines the types of foods pregnant women need, and a range of servings they should get from each food group.
- Vegetarians need to make careful choices to meet nutrient needs during pregnancy, paying attention to iron, vitamin B₁₂, calcium, vitamin D, and zinc. Prenatal supplements and fortified foods can help vegetarians, especially vegans, meet their nutrient needs.

Self-Test Questions

1. *Check all* that are correct. A pregnant woman:

- needs twice as many calories because she is “eating for two.”
- can generally get the extra calories she needs by adding a healthful snack or small meal to her daily intake.
- should eat lots of desserts and fried foods because she needs lots of extra calories.

2. Mark the following statements **TRUE** or **FALSE**.

- Starting with the second trimester, a pregnant woman should get an extra 25 grams of protein a day.
- Vegetarians can't meet their protein needs during pregnancy since they don't eat animal products.
- Americans typically don't eat enough protein daily.
- One cup of milk provides about 8 grams of protein.

3. *Fill in* the blanks.

Experts recommend that all women of childbearing age get adequate amounts of synthetic folic acid daily from multivitamins or fortified foods, in addition to getting food folate from a varied diet. This is to help reduce the risk of _____ -

_____ .

4. *List* three good sources of food folate or folic acid:

5. *Check all* that are correct. To maximize her intake of vitamins A and C, a pregnant woman should:

- eat plenty of beef, chicken, and pork.
- steam vegetables instead of boiling them.
- eat at least five servings of fruits and vegetables each day.

6. All of the foods listed below are sources of calcium. *Circle* the *four* items that have at least 300 milligrams of calcium per serving.

- | | |
|--------------------------|--|
| low-fat yogurt (1 cup) | calcium-fortified orange juice (1 cup) |
| skim milk (1 cup) | almonds (¼ cup) |
| broccoli, cooked (½ cup) | canned sardines with bones (3 oz.) |

7. Mark the following statements **TRUE** or **FALSE**.

- _____ Calcium needs are highest during the teenage years.
- _____ Only dairy foods provide significant amounts of calcium.

8. *Check* the answer that best completes the statement. During pregnancy, a woman's iron requirements:

- decrease, because she doesn't have her monthly periods.
- stay the same.
- increase, due to her increased blood volume during pregnancy.

9. Mark the following statements **TRUE** or **FALSE**.

- _____ Drinking water during pregnancy can help reduce constipation.
- _____ Hot Texas temperatures don't affect fluid requirements.
- _____ Foods and beverages other than water add to daily fluid intake.

10. For each pair of foods, *circle* the food that has the most fiber.

black beans / jelly beans

apple juice / apple slices with the skin on

“honey wheat” bread made with enriched flour / 100% whole-wheat bread

popcorn / marshmallows

11. *Check all* the statements that are correct.

- _____ There are very strict standards that define what has to be in a vitamin-mineral supplement in order for it to be called a prenatal supplement.
- _____ Most prenatal supplements have higher levels of iron and folic acid compared to regular multivitamin-mineral pills.
- _____ Most prenatal vitamins supply over 100 percent of a pregnant woman's daily calcium needs.

12. *Fill in* the blanks using the following terms:

Vegans

Lacto-vegetarians

Lacto-ovo-vegetarians

_____ eat eggs and dairy products, but no other animal products.

_____ do not eat any animal products whatsoever.

_____ include dairy products in their diet, but no other animal products.

13. Below are some key nutrients that vegetarians need to consider, especially during pregnancy. Match each nutrient to the statement it belongs with. (*Write the letter of the appropriate phrase in each blank.*)

a. iron

b. vitamin B₁₂

c. calcium

d. vitamin D

___ Milk, eggs, and sun exposure are the main sources of this vitamin.

___ Vitamin C increases the absorption of this mineral.

___ This vitamin is primarily found in animal products. Vegans can get it from fortified foods and nutritional yeast.

___ Dairy products are the main source of this mineral. Non-dairy sources include tofu and enriched soy milk.

14. *List* three sources of iron for vegetarians.



Weight Gain for a Healthy Pregnancy

Part 2

Objectives

The amount of weight a woman gains during her pregnancy can have a major effect on both the baby's health and the mother's health. In general, women who start out at a normal weight and then gain the recommended amount during pregnancy tend to have healthier pregnancies and healthier infants — plus, they tend to return to a healthier weight postpartum.

So how do you figure out how much weight a pregnant woman should gain? And what sort of advice do you give to a woman whose weight gain isn't staying on track? After reading this part of the module, you'll be able to:

- identify correct statements regarding weight gain during pregnancy;
- list three concerns for pregnant women who are overweight or obese;
- state the recommended weight-gain ranges for women with different BMIs;
- list five components that make up a pregnant woman's weight gain;
- identify correct statements about maternal fat stores; and
- make suggestions for slowing down the rate of weight gain.

Pre-pregnancy Weight

Before she becomes pregnant, a woman's weight status sets the stage for certain outcomes of her pregnancy. A healthier pre-pregnancy weight increases the chances of a healthier pregnancy. Unfortunately, many women are either underweight or overweight before they get pregnant, meaning they're at greater risk of complications and poor pregnancy outcomes.

Women who are underweight or very short have a higher risk of delivering a **low-birthweight** baby or an infant with restricted growth. Also, there's a cycle related to low birthweight: baby girls who are born at low birthweights tend to grow up and deliver low-birthweight infants themselves.

Overweight and obese women have a different set of risks. First, there's a greater chance that their infants will be **large for gestational age**, and there's a slightly higher risk of birth defects, including neural-tube defects. Also, overweight and obese women have higher rates of gestational diabetes, high blood pressure, cesarean delivery, and inpatient hospitalization during pregnancy.



Being at an appropriate weight before getting pregnant increases a woman's chances of having a healthy pregnancy and a healthy baby.

Weight Gain During Pregnancy

The amount of weight gained *during* pregnancy can also affect pregnancy risks and outcomes. For example, poor weight gain can result in **premature** birth or restricted growth of the infant. And gaining too much weight during pregnancy can lead to postpartum overweight or obesity. Timing is important too — most of a pregnant woman's weight gain should occur during the second and third trimesters.

There's no standard weight-gain recommendation that's right for all women. Instead, the right amount to gain depends on a woman's **Body Mass Index** (BMI) before she became pregnant. As of this writing, WIC follows the 1990 Institute of Medicine recommendations for weight gain during pregnancy (see **Table 2.1**). Healthy-weight women with

BMI's from 19.8 through 26.0 should gain 25 to 35 pounds. Thinner women with lower BMI's should gain more weight, and women at higher BMI's should gain less weight. No one, not even women who are obese, should attempt to lose weight during pregnancy. Lastly, it's recommended that women carrying twins gain 35 to 45 pounds and women carrying triplets gain 50 pounds (for more on multifetal pregnancies, see page 4-8 of this module).

Unfortunately, according to researchers, 60 to 70 percent of pregnant women gain either too much weight or not enough. So it's important for WIC staff to help pregnant women work toward their individual weight-gain goals.



Only about a third of pregnant women gain weight according to the recommended ranges. Most women gain too much or too little.

Rate of Weight Gain

Weight gain during the first trimester (0–13 weeks) should start out very slowly. It's normal to gain only 2 to 4 pounds by week 13. Then, during the second trimester (14–28 weeks) and third trimester (29–40 weeks), most women should gain about one pound per week. Underweight women should try to gain a little more, while overweight women should gain a little less. In WIC, we track a woman's weight gain using the Prenatal Weight Gain Grid (Form WIC-4). This grid is a tool that helps you to visually compare a woman's actual weight gain to her recommended weight gain.

Table 2.1 *Recommendations for Weight Gain During Pregnancy*

Pre-Pregnancy BMI	BMI Category	Recommended Weight Gain
< 19.8	underweight	28–40 lbs.
19.8–26.0	normal	25–35 lbs.
26.1–29.0	overweight	15–25 lbs.
> 29.0	obese	15 lbs.

Source: Adapted from National Institutes of Health, National Heart, Lung and Blood Institute. 1998. *Clinical Guidelines on the Identification, Evaluation and Treatment of Overweight and Obesity in Adults*. Washington, DC: NIH publication no. 98-4083.

Components of Weight Gain

If a pregnant woman is hesitant about gaining weight, it helps to explain that she is not just gaining fat. In fact, most of the additional weight is made up of increased blood, fluids, and the baby itself (see **Figure 2.1**). And, while women do add body fat during pregnancy, a certain amount of fat is important. It helps support the baby's growth, plus fat stores supply energy during labor, delivery, and breastfeeding.

Postpartum Weight Loss

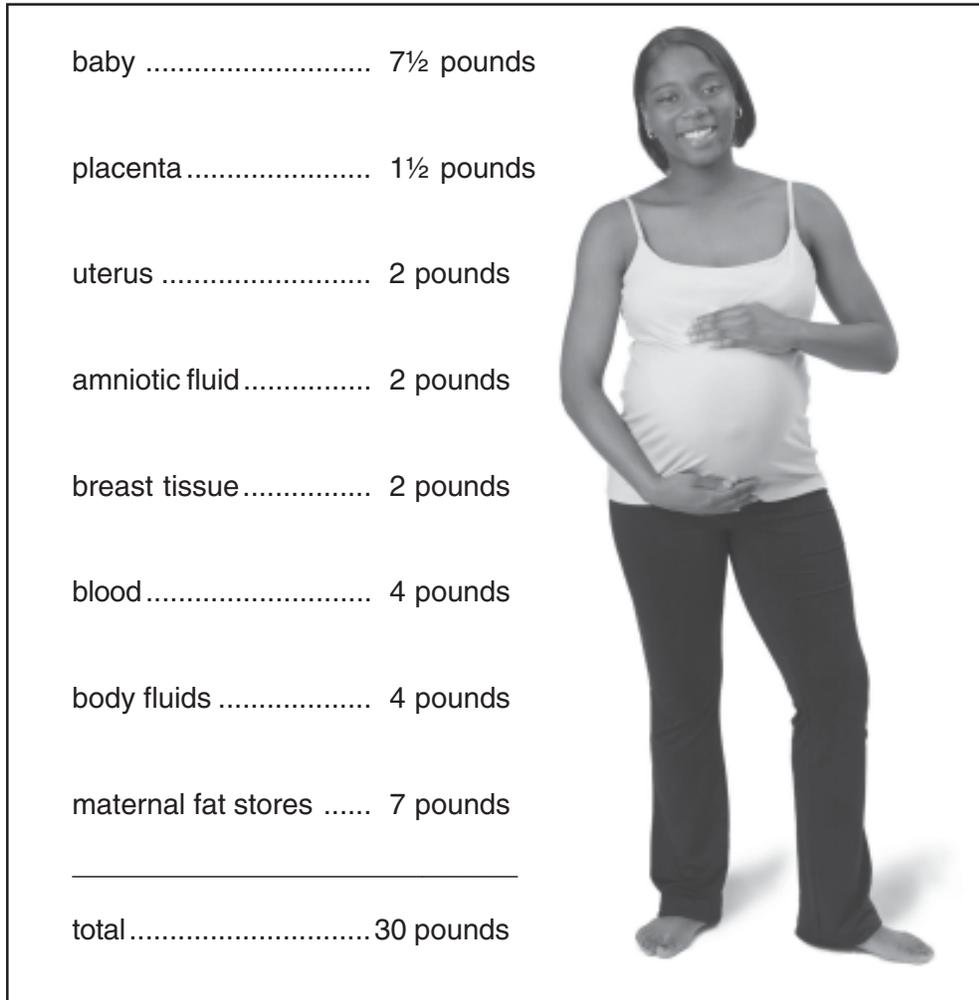
Many pregnant women are anxious to know how quickly they'll lose their extra weight after the baby is born. It's common for new moms to immediately lose 10–13 pounds as a result of delivery. Then, there should be a gradual return to pre-pregnancy weight by about six months postpartum. Weight loss doesn't happen overnight but, in time, most women do return to a weight that's within two to four pounds of their pre-pregnancy weight. A key factor in reaching a healthy postpartum weight is to avoid gaining excess weight during pregnancy. Also, it's important to eat right and stay active after the baby is born.

Helping Pregnant Women Gain the Right Amount of Weight

The weight gain goal for most pregnant women is to gain “not too much, but not too little.” For some, this may be easier said than done. Here are some practical guidelines and counseling tips to use when talking to a pregnant participant:

- Review her pregnancy weight gain goal, based on her pre-pregnancy BMI. For example, if she was at a healthy weight status before pregnancy, then she should try to gain somewhere between 25 and 35 pounds by the end of her pregnancy.
- As part of her assessment, you'll plot her current weight on the prenatal weight-gain grid (Form WIC-4). This grid will show if she's gaining weight too quickly, too slowly, or if she's on track. Then, discuss her current weight gain as it relates to her overall goal. For example, if she was

Figure 2.1 Typical Distribution for a 30-Pound Weight Gain During Pregnancy



underweight to begin with, and she's not gaining enough weight according to the weight-gain grid, you'd want to strongly emphasize how gaining weight can make a difference in her baby's birthweight and health.

- Make sure that you're familiar with the participant's health status and be aware of any medical conditions that could impact her diet, weight gain, or pregnancy. WIC staff should reinforce any special dietary instructions from the participant's health-care provider, and when needed, refer participants to a registered dietitian.

- Ask the participant what concerns she has about her diet, eating habits, or weight gain. It's important to connect with the participant and address the issues that she's most interested in.
- Review the basics of a healthy diet, using the Food Guide Pyramid for Pregnant Women (see **Figure 1.1**, page 1-11). You'll want to tailor the discussion to the woman's situation and diet history. Is she underweight? Overweight? Does she eat nothing but fast food and sodas? Discuss appropriate portion sizes, the suggested number of servings from the various food groups and healthful food choices and snack ideas. (Using the above example of an underweight woman with poor weight gain, you could suggest adding nuts, dried fruit, dry milk powder, grated cheese, and other ingredients to foods as a way to increase calories.)
- Consider her activity level and, if appropriate, suggest increasing it with her physician's approval. Moderate activities or exercises, such as taking a daily walk, can help almost all pregnant women (underweight, normal weight and overweight), in a number of ways. For more information and guidelines on exercise during pregnancy, see page 3-2 of this module.



- Encourage her to think before she eats. Remind her that, over a period of nine months, her food choices can truly make a difference in her health and the health of her baby.

The points listed above are just a general outline of what a WIC staff person might discuss when talking to a participant. The reality is that every participant is different

and each woman will have her own questions about medical conditions, food habits, and other factors that influence her pregnancy and her weight gain. The key is to help participants identify what's important to them regarding their pregnancy and diet, and then help them come up with specific goals and practical ways to achieve those goals.

WIC staff can help improve pregnancy outcomes by helping pregnant women stay within the recommended weight-gain ranges.

Summary

- A woman's weight status *before* pregnancy is an important factor in her pregnancy. Underweight, overweight, and obese women all have higher rates of complications and poor outcomes compared to healthy-weight women.
- Weight gain *during* pregnancy is also a factor. Poor weight gain during pregnancy can result in prematurity or restricted growth of the infant. Excess weight gain can lead to postpartum overweight or obesity.
- Recommendations for weight gain are based on pre-pregnancy BMI. Normal-weight women should gain 25 to 35 pounds. Most women should gain about one pound per week throughout the second and third trimesters.
- For participants who are hesitant about gaining weight, explain the importance of weight gain, fat stores and weight-gain distribution.
- Most women return to a weight that's within two to four pounds of their pre-pregnancy weight.
- When talking with a pregnant participant, a WIC counselor should review the participant's weight-gain goal based on her pre-pregnancy BMI. Then, discuss her current weight gain as it relates to her goal, addressing both diet and activity level. The key is to help participants identify what's important regarding their pregnancy and diet, and help them come up with practical ways to achieve goals.

Self-Test Questions

1. Mark the following statements **TRUE** or **FALSE**.

_____ A woman's pre-pregnancy weight is not related to her risk of pregnancy complications or poor birth outcomes.

_____ Most women should gain about 12 pounds during the first trimester.

_____ Underweight women have a greater chance of delivering a low-birthweight baby or an infant with restricted growth.

2. Women who are overweight or obese are at greater risk of certain complications and poor pregnancy outcomes. *List* three.

3. *Check one* of the following choices. Weight-gain recommendations are based on a woman's pre-pregnancy:

___ age.

___ BMI.

___ shoe size.

___ parity.

4. *Fill in* the blanks.

A woman of normal weight (with a pre-pregnancy BMI of 19.8-26.0) should gain _____ to _____ pounds during pregnancy.

5. *List* at least five components that make up a pregnant woman's weight gain.

6. *Check all that apply.* Maternal fat:

accounts for almost all of the weight gained during pregnancy.

helps support the baby's growth.

supplies energy during labor, delivery, and breastfeeding.

7. Marissa is 21 years old and has come to WIC for her initial certification. She is starting her 20th week of pregnancy. She is 5 feet 4 inches tall and her pre-pregnancy weight was 155 pounds. Based on her pre-pregnancy BMI, she's in the "overweight" category.

a. How much weight should Marissa gain? _____

b. Her current weight is 166 pounds. How many pounds has Marissa gained? _____

c. According to the prenatal weight-gain grid, by week 20 she should have gained between five and eight pounds. How would you describe her current rate of weight gain? *Check one:*

She is on track. She is gaining too slowly. She is gaining too quickly.

d. Marissa explains that she is a full-time student and her meals usually consist of sandwiches, burgers, fries, sodas, and late-night pizzas with friends. She likes fruits and vegetables, but doesn't eat them much because she doesn't know how to cook. She says she knows that it's important to eat enough during pregnancy and adds that she's enjoyed "eating extra food for the baby." As for physical activity and exercise, she used to ride her bike to school, but quit after she found out she was pregnant.

Marissa is very interested in slowing down her weight gain and staying within the recommended range. *List* three practical suggestions could you discuss with Marissa.



Positive Health Habits for a Healthy Pregnancy

Part 3

Objectives

Pregnancy is often a time of joy and excitement, but many mothers-to-be also worry about their growing babies and the possibility of birth defects or other complications. A pregnant woman can't control things like her age or specific genetic traits, but she can make conscious decisions about her lifestyle, health habits, and other behaviors that influence the health and development of her baby.

After reading this part of the module, you'll be able to:

- list at least five positive health habits for a healthy pregnancy;
- recognize appropriate guidelines for physical activity during pregnancy;
- identify correct statements about periodontal disease in pregnant women;
- list the early signs of periodontal disease;
- identify correct statements about smoking during pregnancy;
- respond to common myths about drinking during pregnancy with factual information;
- identify correct statements about using medications and supplements during pregnancy; and
- list three basic food-safety practices for pregnant women.

Prenatal Care

It's a fact — women who get prenatal care are more likely to have healthier babies and fewer complications during labor and recovery compared to women who don't get prenatal care. And it's never too early to start. In fact, experts now encourage women to see a doctor *before* getting pregnant. That way, a woman can take steps toward improving her diet, quitting smoking, and addressing any illnesses or other concerns.



WIC staff play an important role in prenatal care by making referrals and reminding women to keep their prenatal appointments.

As soon as a woman thinks or knows she is pregnant, she should see a health care provider, such as an obstetrician, family practitioner, or nurse-practitioner. Prenatal care usually starts out as monthly visits that increase to once a week or more at the end. At each visit, there are exams and tests to check the health of the mother and baby. These include measuring the uterus, listening to the baby's heartbeat, taking the mother's blood pressure and weight, and checking for symptoms such as protein or sugar in the urine, blurred vision, leg cramps, abdominal cramps, or unusual headaches.

The mother may also undergo an ultrasound and genetic tests during the pregnancy (for a list of various prenatal tests, see **Appendix**).

WIC staff can help participants by encouraging them to keep their prenatal appointments, and by making referrals for women not receiving regular medical care.

Exercise and Physical Activity

These days, health professionals recommend moderate activity during pregnancy, but a woman should always check with her doctor first to make sure that exercise is okay for her. Some women at high risk for complications may need to avoid or restrict physical activity. Still, for most women, being active is a good idea, as long as they follow these guidelines:

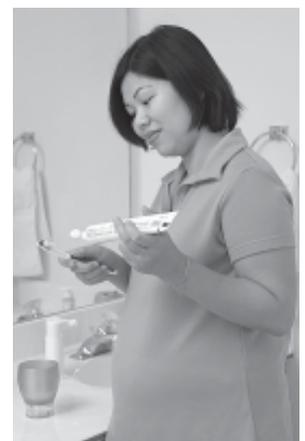
- **Choose safe activities** — Walking, swimming, riding a stationary bicycle, and joining a prenatal aerobics class are all great choices. Pregnant women should avoid activities that involve jerky, bouncy, or high-impact movements. They should also avoid sports such as downhill skiing, rock climbing, and horseback riding. And, after the first trimester, pregnant women should avoid any exercise that requires lying on the back, since that can affect blood circulation.
- **Don't overdo it** — Moderate exercise is the key for staying fit during pregnancy. A pregnant woman should stop exercising if she feels dizzy, faint, overheated, or in pain. Also, it's important to start each session with a slow warm-up and then finish with a cooling-down period.
- **Stay cool** — Overheating in the first trimester may increase the risk of certain birth defects, so pregnant women shouldn't use hot tubs, saunas, or steam rooms, and they should avoid outdoor activities in hot weather.
- **Drink plenty of water** — One suggestion is to drink at least one 8-ounce glass of water for every half hour of exercise. Overall, women should drink at least eight glasses of water or other fluids each day.



Dental Health

We all know that proper brushing, flossing, and regular dental checkups are key steps to preventing cavities and gum disease. But, for a pregnant woman, dental health is also important for her growing baby.

Periodontal disease, commonly called gum disease, is a bacterial gum infection that, if left untreated, causes gums to pull away from the teeth, eventually destroying the bone and leading to tooth loss. But periodontal disease in pregnant women does more than just harm the woman's gums — it can impact the baby's health, too. As with other infections, the body of a person with gum disease makes certain substances and chemicals to fight the infection. In pregnant women, it



Periodontal disease during pregnancy can be very dangerous for a woman and her fetus, so daily dental care is extremely important.

appears these substances travel through the body to the uterus, increasing the risk for premature delivery, low birthweight, and **preeclampsia**.

So it's extremely important for pregnant women to brush and floss daily and to visit a dentist. This is especially true for women who already have **gingivitis** (inflamed, red, and bleeding gums) – the early signs of periodontal disease. And, as with other health habits, WIC staff can play a key role by educating pregnant women about the importance of dental health.

Food Safety

Various bacteria in foods can lead to foodborne illnesses, often causing vomiting, diarrhea, etc. These symptoms are awful for anyone who experiences them, but they can be even more severe for a pregnant woman. And, in some cases, a pregnant woman can pass a foodborne infection on to her baby.

The good news is that pregnant women can easily avoid common foodborne illnesses at home by following these basic practices:

- Don't eat raw or undercooked eggs, meat, poultry, fish, or shellfish.
- Don't consume raw sprouts or unpasteurized milk, cheese, or juices.
- Thoroughly wash hands, utensils, and kitchen surfaces.
- Keep raw meats and their juices separate from other foods.
- Use a cooking thermometer to ensure thorough cooking.
- Properly chill all leftovers and other foods that should be refrigerated.



Thoroughly washing hands before and during food preparation is a key step in keeping foods safe.

Playing it safe in the kitchen will prevent most foodborne illnesses, but pregnant women also need to know about other specific food safety concerns, such as *listeriosis*, *toxoplasmosis*, and *methylmercury* in fish.

Listeriosis is an illness related to eating soft cheeses and cold deli-style meats and poultry. Pregnant women are 20 times

more likely than other adults to contract listeriosis. An infected mother can pass the illness on to her fetus, causing premature delivery, miscarriage, stillbirth, or other serious health problems. To prevent listeriosis, pregnant women should not eat soft cheeses such as feta, brie, camembert, or blue-veined or Mexican-style cheeses (queso blanco, queso fresco, queso de hoja, queso de crema, asadero, etc.). It is safe to eat hard cheeses, semi-soft cheeses (such as mozzarella), processed cheeses, cream cheese, cottage cheese, and yogurt. Also, pregnant women should reheat hot dogs, luncheon meats, and cold cuts until steaming hot.

To avoid listeriosis, pregnant women should not eat soft cheeses such as feta, brie, camembert, or blue-veined or Mexican-style cheeses.

Toxoplasmosis is caused by a parasite found in cat litter, as well as raw or undercooked meat (especially pork, lamb, and venison). If a pregnant woman becomes infected, her fetus is at risk for severe disease. To prevent toxoplasmosis, a pregnant woman should cook all meat thoroughly. Also, she should have someone else change a cat's litter box, or wear gloves if she changes it herself. And, since some cats use gardens and sandboxes as litter boxes, a pregnant woman should wear gloves when gardening or handling soil.

Methylmercury and other substances can be present at high levels in certain fish. In large quantities, these substances can harm a fetus's developing brain and nervous system. In March 2004, the U.S. Food and Drug Administration and Environmental Protection Agency issued the following recommendations for women who are or might become pregnant, breastfeeding women, and young children:

- Do not eat shark, swordfish, king mackerel, or tilefish. These fish tend to be high in mercury.
- Eat up to 12 ounces (two average meals) a week of a variety of fish and shellfish that are usually low in mercury. Five of the most commonly eaten fish that are low in mercury are shrimp, canned light tuna, salmon, pollock, and catfish.
- Tuna steaks and canned albacore ("white") tuna generally have higher levels of mercury than canned light tuna. When choosing her two meals of fish and shellfish, a woman should limit her intake of albacore or tuna steak to 6 ounces per week (one average meal).

To avoid high levels of mercury, pregnant women should not eat shark, swordfish, king mackerel, or tilefish.

- Before eating fish caught from local waters, check with the Texas Department of State Health Services' Seafood and Aquatic Life Group at (512) 719-0215 to find out which fish are safe to eat.
- When feeding fish and shellfish to young children, serve smaller portions. Otherwise, the above recommendations apply.

Caffeine



Most health professionals agree that pregnant women should limit their intake of coffee.

Caffeine is a stimulant found in coffee, tea, colas, chocolate, cocoa, and some over-the-counter and prescription drugs. Many studies have looked at caffeine intake during pregnancy, but the methods and results are sometimes controversial. For example, some researchers don't account for harmful practices like smoking and alcohol. Also, caffeine levels in coffee vary, so results are hard to compare. In a recent in-depth review of the research, scientists sorted through 68 studies on caffeine. The reviewers found no convincing evidence that caffeine increases the risk of low birthweight, congenital anomalies, or miscarriage.

On the other hand, caffeine does cross the placenta, and most health professionals agree that pregnant women should avoid large amounts of this stimulant. The American Dietetic Association suggests pregnant women avoid taking in more than 300 mg of caffeine a day. That's equal to about three 6-ounce cups of coffee or seven 12-ounce cans of caffeinated soda.

Adults get most of their caffeine from coffee, sodas, and tea. These drinks offer little nutrition, especially for a pregnant woman. What's more, caffeine is a diuretic, which means more frequent urination. Also, coffee and tea have substances that reduce iron absorption. So, there are lots of good reasons to cut back on sodas and coffee during pregnancy or, better yet, cut them out all together. Another option is to choose decaffeinated beverages. And, for those coffee lovers not willing to switch to decaf, suggest drinking coffee that's half regular, half decaffeinated.

Smoking

During pregnancy, smoking interferes with the oxygen supply to the fetus, and smoking is linked to prematurity, miscarriage, low birthweight, and other conditions. What's more, research suggests that babies born to mothers who smoked during pregnancy are more likely to be smokers themselves when they grow up. Still, even with these risks, smoking during pregnancy is a major public-health problem. Researchers estimate that approximately 13 to 22 percent of women continue to smoke throughout their pregnancies.

There is some good news: many women do quit smoking during pregnancy. In fact, the quit rate among pregnant women is much greater than the quitting rate in the general population of women. But, by 12 months postpartum, most of them start smoking again. WIC staff can help by talking to women about the risks of smoking during pregnancy, as well as the dangers of starting up again after delivery (refer to the *Postpartum Nutrition Module*, stock number 13-42).

While the ideal goal is for a woman to quit smoking entirely, she may be unwilling to quit, or she may say that she's been unable. In those cases, suggest she cut down on the number of cigarettes she smokes per day. Explain that the fewer cigarettes she smokes the less chance there will be of smoking-related problems for her and her baby. Also, if she stops or cuts back significantly before the third trimester, there's a better chance her baby will be born at a normal weight. If a smoker is concerned about gaining too much weight, discuss some ideas for eating right and staying active during her pregnancy. Also, WIC staff can refer participants to the American Cancer Society's "Quit Line" toll-free at 1 (866) 667-8278. By calling the Quit Line, a participant can receive materials and phone counseling designed specifically for pregnant smokers.

Alcohol

Drinking alcohol during pregnancy can cause a number of problems, including serious birth defects, collectively known

as **fetal alcohol syndrome**. Babies born with FAS are usually small and underweight, and they typically have many physical, mental, and behavioral problems and they may be mentally retarded. FAS can't be reversed, but it can be prevented, simply by not drinking during pregnancy.

But many women do drink during their pregnancies. According to the Centers for Disease Control and Prevention, about one in 30 pregnant women reports drinking at levels that are especially risky to the fetus (seven or more drinks per week, or five or more drinks on any one occasion).

Scientists don't know how much alcohol it takes to harm a fetus. Also, it's not just the amount that matters — frequency, timing, individual tolerances, episodes of binge drinking, and genetics also play a role. Since researchers don't know if there's a minimum amount of alcohol that's safe, the best advice is not to drink any alcohol at all during pregnancy.

Because many pregnancies are unplanned, it's common for a woman to drink alcohol before she knows she is pregnant. Often, women in this situation will stop drinking right away, but some women also become quite distressed, worried that they've harmed their unborn baby. WIC staff can help by being supportive and explaining to participants that this is a very common concern. Many other women with these same worries have given birth to healthy babies. Also, it helps to assure participants that, because they stopped drinking alcohol as soon as they learned they were pregnant, they're giving their baby a chance to develop and grow normally.

But some women who know they are pregnant choose to drink anyway. Some mistakenly think that beer, wine, and wine coolers are safe to drink since these beverages don't count as "hard liquor." They need to know drinking any kind of alcohol during pregnancy can be harmful. Some women may say they routinely drank during a previous pregnancy without harming their baby. But every pregnancy is different — alcohol may hurt one baby more than another. And some women think it's okay to drink once they reach the third trimester, assuming the first and second trimesters are more critical. It is true that the first trimester is an especially



The sooner a woman stops drinking during pregnancy, the better the chances are that her baby will be born at a normal weight with minimal or no physical harm.

sensitive time because the baby's organs are forming, but alcohol can damage the fetus at every stage of pregnancy, including the third trimester. So, again, the safest advice is to avoid alcohol completely during pregnancy. WIC staff can help reduce alcohol-related birth defects by promoting this message and teaching women about the risks of drinking during pregnancy.

Illegal Drugs

In a national study published in 2002, slightly fewer than 4 percent of pregnant women reported using illicit drugs during the month prior to the survey. This was a much lower rate compared with non-pregnant women in the same age group, who had a rate of over 8 percent. However, about 15 percent of pregnant teens reported using illicit drugs, which was similar to the rate for non-pregnant teens.

It's difficult to study how specific drugs affect pregnancy since many women who use illegal drugs also smoke, drink alcohol, or use multiple drugs. However, all types of illegal drugs can have devastating effects on a woman and her unborn baby. For example, smoking marijuana, like smoking cigarettes, means less oxygen for the baby. Also, some studies link marijuana to lower birthweights and to attention deficits. Cocaine has been linked to miscarriages, and both cocaine and heroin can cause the death of the mother or fetus.

Of course, the only safe recommendation is avoiding all illicit drug use during pregnancy. Sometimes being pregnant is the one factor that will motivate a woman to quit a drug habit or seek help. It helps for WIC staff to have a non-judgmental and sincere attitude when talking to participants about drugs, and to offer support and referrals when needed.

Nutritional and Herbal Supplements

While regular prenatal vitamins generally provide safe levels of nutrients for pregnant women, some nutritional supplements supply megadoses of nutrients (levels in excess

of 10 times the amount the body needs). Taking excessive amounts of nutrients without medical supervision is dangerous. Depending on the supplement and the dosage, the effects can include anything from hair loss, fatigue, or gastrointestinal distress to more serious results such as kidney stones, nerve damage, and birth defects. For example, megadoses of vitamin A from supplements can cause fetal deformities of the face and head such as cleft lip, heart malformations, and brain disorders, or even fetal death.

Likewise, various herbal products can cause problems during pregnancy. A number of supplements, including blue cohosh, juniper, pennyroyal, and sage can promote uterine contractions that, in turn, could increase the chance of miscarriage or premature labor.

Women should be aware that the Food and Drug Administration does not approve over-the-counter vitamins, minerals, or other nutritional supplements before they are sold. The same goes for the hundreds of other diet supplements and herbal preparations commonly available in health-food and grocery stores, and on the Internet.

When a participant asks about some sort of herbal or nutritional supplement, or she says she is using one, it's important to find out why. Some women may be treating themselves for a chronic medical condition, or perhaps they're experiencing nausea, vomiting, heartburn, or constipation related to their pregnancy. Also, some cultures commonly use herbal preparations for various purposes.

Scientists are now doing more research on certain types of herbal and nutritional supplements, to help to answer questions about the safety and effectiveness of various products. In the meantime, advise participants to talk with their doctor before taking any type of nutritional or herbal supplement.

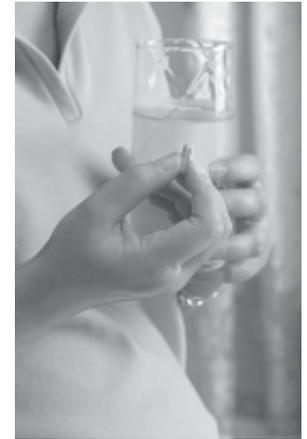
Medications

As with nutritional supplements, a woman shouldn't take any sort of medication during pregnancy, not even an

over-the-counter treatment, unless she checks with her doctor first. Even aspirin is not usually recommended during pregnancy.

Some drugs are extremely dangerous for a human fetus. For example, Accutane (generic name: isotretinoin) is a drug approved to treat the most serious forms of acne. This drug is a synthetic form of vitamin A that can cause birth defects and even fetal death, similar to taking megadoses of vitamin A supplements.

On the other hand, many medications are necessary and helpful during pregnancy. For example, if a woman with diabetes doesn't take her medicine during pregnancy, she increases the odds of miscarriage and stillbirth. So, if a woman is taking medication for diabetes, asthma, high blood pressure, or any other medical condition, she should contact her doctor as soon as she knows she is pregnant to discuss the drugs she's taking. She shouldn't decide on her own to cut down on the amount of a prescribed medication or stop taking it altogether. Instead, her doctor can recommend a safer medication if needed and determine the lowest effective dose.



Pregnant women should always talk to a doctor before taking any over-the-counter medication or supplement. Some can be dangerous.

Summary

- Women who get adequate prenatal care are more likely to have healthier babies and fewer complications during labor and recovery.
- A woman should stay physically active during pregnancy, with her doctor's approval. Guidelines include: choosing safe activities, staying cool, not overdoing it, and drinking plenty of water.
- Periodontal disease (gum disease) in a pregnant woman increases the risk for premature delivery, low birthweight, and preeclampsia. Pregnant women should brush and floss daily and visit a dentist.
- Foodborne illnesses can be severe for a pregnant woman — plus, she can pass a foodborne infection on to her baby. General food-safety practices prevent most illnesses, but

pregnant women also need to take precautions to avoid listeriosis and toxoplasmosis, as well as methylmercury in fish.

- Caffeine during pregnancy is controversial, but a recent scientific review showed no convincing evidence that caffeine increases the risk of low birthweight, congenital anomalies, or miscarriage. However, caffeine does cross the placenta, and pregnant women should limit their intake of it.
- Smoking during pregnancy interferes with the oxygen supply to the fetus and is linked to prematurity, mental retardation, miscarriage, low birthweight, and other conditions. For those unwilling to quit, suggest cutting back, and refer them to the American Cancer Society's "Great Start" Program at 1 (866) 667-8278.
- Drinking alcohol during pregnancy can cause serious birth defects, known as fetal alcohol syndrome. All types of alcohol can be harmful during pregnancy, and alcohol may hurt one fetus more than another. Also, alcohol can damage the fetus at every stage of pregnancy, including the third trimester.
- All types of illegal drugs can have devastating effects on a woman and her unborn baby. Many women who use illegal drugs also smoke, drink alcohol, or use multiple drugs.
- Nutritional and herbal supplements can be dangerous for both the woman and the fetus. For example, megadoses of vitamin A can cause birth defects.
- A woman shouldn't take any type of medication during pregnancy, not even an over-the-counter treatment, until she checks with her doctor. Some drugs are extremely dangerous for a human fetus. Other drugs used to treat certain medical conditions can actually help prevent complications during pregnancy.

Self-Test Questions

1. *List five positive health habits for a healthy pregnancy.*

2. *Check all that apply.* A pregnant woman who wants to be physically active should:

check with her doctor first.

try things like downhill skiing, rock climbing, and horseback riding, since she won't have time to do these things after the baby is born.

avoid exercise that requires lying on her back after the first trimester.

stay cool — avoid hot tubs, saunas, steam rooms, and activities outside in hot weather.

push herself to the limit. No pain, no gain.

3. *Check all that apply.* Periodontal disease in pregnant women:

can harm a woman's gums and teeth.

causes bleeding gums in the unborn fetus.

increases the risk for premature delivery, low birthweight, and preeclapmsia.

is a genetic disorder that cannot be prevented.

4. What are the early signs of periodontal disease?

5. Mark each of the following statements **TRUE** or **FALSE**.

_____ Smoking during pregnancy is no longer a public-health problem, since very few women in the U.S. smoke during their pregnancies.

_____ The “Quit Line” offers materials and counseling for women who want to quit their jobs.

6. *Fill in* the blank.

Drinking alcohol during pregnancy can cause a number of problems, including serious birth defects, collectively known as _____.

7. Read each Myth and then *respond* with a factual statement.

Myth: “It’s OK to drink beer, wine, and wine coolers during pregnancy, since they aren’t really ‘hard liquor.’”

Fact:

Myth: “It’s bad to drink early in your pregnancy but, once you reach the third trimester, it’s OK to drink.”

Fact:

8. *Check all that apply.* When a woman finds out she is pregnant, she should:

___ stop taking all medications during her entire pregnancy.

___ contact her doctor to discuss any medications she’s taking.

___ take aspirin as needed, but quit taking all other over-the-counter drugs.

___ use her own judgment about cutting down on the dose of a prescription medication.

9. *Check all that apply.* When a participant asks about using some sort of herbal or nutritional supplement, it's important to:

___ find out why she wants to use a supplement.

___ recommend the least expensive brand.

___ explain that some supplements may contain very high levels of nutrients or other substances that could be dangerous during pregnancy.

___ advise her to talk with her doctor before taking any type of supplement.

10. *List* three basic food-safety practices for pregnant women.

11. *Circle* the correct word or phrase.

To prevent listeriosis, pregnant women should not eat (soft cheeses / hard cheeses), plus they should (reheat / completely avoid) hot dogs, luncheon meats, and cold cuts.

To prevent toxoplasmosis, a pregnant woman should (freeze / cook) all meat thoroughly. Also, she should have someone else (change the cat's litter box / do the laundry), or wear gloves if she does it herself.

Methylmercury may be present in high levels in certain (cheeses / fishes). If eaten on a regular basis, methylmercury can harm the (mother's / fetus's) developing brain and nervous system.

12. Mark each of the following statements **TRUE** or **FALSE**.

_____ Caffeine crosses the placenta.

_____ Caffeine can lead to more frequent urination, plus coffee and tea contain substances that reduce iron absorption.

_____ Most health experts agree that pregnant women should avoid large amounts of caffeine.



Medical Conditions and Other Risk Factors

Part 4

Objectives

Certain factors can make pregnancy riskier for both the mother-to-be and her fetus. Some conditions, like type 2 diabetes, can exist before pregnancy. Others, like gestational hypertension, can develop during pregnancy. And still other kinds of risk factors, like being an adolescent or a victim of domestic violence, increase the chance of complications.

Fortunately, participants who get early and routine prenatal care can learn how to manage various medical conditions, deal with certain risk factors, and hopefully avoid complications. After reading this part, you'll be able to:

- identify the correct definition of diabetes;
- recognize various risks of gestational diabetes;
- identify precautions and risks related to diabetes during pregnancy;
- identify the ways that the **human immunodeficiency virus** is passed on from person to person;
- choose correct statements related to hypertension during pregnancy;
- recognize the cause of iron-deficiency anemia;
- identify correct statements related to anemia and pica during pregnancy;
- choose correct statements about depression during pregnancy;
- list two reasons that teen pregnancies are considered to be high risk;
- identify key factors for a healthy multifetal pregnancy; and
- recognize correct statements about domestic violence during pregnancy.

Diabetes

Diabetes occurs when the body doesn't produce enough **insulin**, or when the body isn't able to use the insulin that it does make. As a result, blood levels of glucose get too high. High blood glucose during pregnancy can lead to problems for both the woman and her fetus.

There are different types of diabetes. (See **Box 4.1.**) Some women may have either **type 1 diabetes** or **type 2 diabetes** before getting pregnant. Another form of diabetes, called **gestational diabetes**, develops *during* pregnancy. Gestational diabetes typically disappears after delivery, but it puts a woman at greater risk of developing type 2 diabetes, plus she's got a higher risk of developing gestational diabetes again in a future pregnancy. Gestational diabetes occurs in about 4 to 7 percent of all pregnancies. Most women are tested for gestational diabetes between 24 and 28 weeks of gestation.

For a pregnant woman who has any type of diabetes, the key to avoiding problems is to control her blood sugar. If she

Box 4.1 *Types of Diabetes*

Type 1 diabetes — Type 1 diabetes is lifelong disease usually diagnosed in children, and it accounts for 3 percent of all new cases of diabetes. These patients can't make their own insulin, so they must take insulin every day in the form of medication.

Type 2 diabetes — This is the most common type of diabetes. It occurs when the cells no longer respond to the insulin that the body makes. (The cells become "insulin resistant.") Risk factors include obesity, poor diet and lack of exercise. It used to be called "adult-onset diabetes," but these days, many children and teens develop type 2 diabetes.

Gestational diabetes — Occurs when a woman can't make and use all the insulin she needs during pregnancy. It can lead to fetal complications, including macrosomia. It usually disappears after delivery, but increases a woman's risk of developing type 2 diabetes, plus puts her at higher risk of gestational diabetes in future pregnancies.

keeps her blood sugar within normal range, she has a good chance of having a healthy baby. If she doesn't control her blood sugar, she's more likely to develop high blood pressure, urinary tract infections, or other serious complications. Potential problems for the baby include an increased risk of birth defects and **macrosomia** (a term that refers to a very large baby). A pregnant woman with diabetes should follow these steps to help control her blood sugar:

- Visit her doctor on a regular basis to have her glucose levels monitored and get medication if needed.
- Check her own glucose levels regularly and keep a record for her physician (some women need to check glucose levels several times a day).
- Follow a balanced diet with a wide variety of healthful foods. Generally, these women need smaller meals with snacks throughout the day, including a bedtime snack. A registered dietitian should provide in-depth counseling for women who need nutritional guidance.
- Stay physically active, with her physician's approval. Regular exercise can keep blood glucose levels in check.
- If using insulin, take insulin shots on a regular basis as prescribed. Also, it's important to carefully balance diet and insulin doses in order to avoid very high or very low glucose levels.



To increase her chances of having a healthy baby, a pregnant woman with diabetes needs to keep her blood sugar within a normal range.

HIV and AIDS

The Centers for Disease Control and Prevention estimates that each year about 12,000 women in the U.S. become infected with HIV. Most of these women are of childbearing age. In 2001, about 75 percent of new infections among women were acquired through heterosexual sex.

HIV is the virus that causes **AIDS**, or acquired immune deficiency syndrome. Once a person becomes infected, his or her body begins to make antibodies to fight the virus. When a blood test can detect these antibodies, then the person is "HIV positive." Being HIV positive doesn't mean a person has AIDS. AIDS refers to the most advanced stages of HIV



infection, so it can take many years for the syndrome to develop. People with AIDS can't fight off diseases as healthy people do, and so they're more likely to get infections, cancers, and other life-threatening illnesses.

A person who is HIV positive can pass the virus along to others. This can happen during unprotected sex, by sharing needles, through blood transfusions, by contact with open wounds, or through mother-to-child transmission. A major concern is that many women don't realize they're infected, so a woman can unknowingly pass the virus on to her baby, either during pregnancy, delivery, or breastfeeding.

In the United States, approximately 25 percent of pregnant HIV-infected women who do not receive medication pass the virus to their babies. But, when these women get treatment, only about 2 percent transmit the virus to their newborn. The problem is that many women either don't acknowledge or don't realize they're practicing behaviors that put them at risk, so they don't get tested to see if they have the virus. That's why groups like the March of Dimes support routine voluntary testing of all pregnant women.

Pregnant WIC participants who have HIV or AIDS may require in-depth nutritional counseling from a registered dietitian. WIC staff can offer general nutrition information that supports instructions from an R.D. and from the participant's health-care provider.

High Blood Pressure and Preeclampsia

Simply put, blood pressure is the amount of force that the blood exerts against the arteries as the heart pumps and relaxes. A normal blood-pressure reading is less than 120/80. If the top number is greater than 140 mm Hg or the bottom number is greater than 90 mm Hg, then the person has high blood pressure, or **hypertension**.

Hypertension during pregnancy can be mild, with only a slight rise in blood pressure, or it can be more severe, affecting the mother's kidneys and other organs, and leading to low birthweight and prematurity.

Some women have high blood pressure before getting pregnant. This condition is known as “chronic hypertension.” A woman who is taking medication for chronic hypertension should continue doing so during pregnancy, according to her doctor’s instructions. Other women who have no history of high blood pressure develop hypertension during pregnancy. This is known as **gestational hypertension**. Gestational hypertension goes away after the baby is born.

In some cases, hypertension during pregnancy leads to a serious condition called **preeclampsia**. Women with preeclampsia suffer from headaches, swelling in the hands and face, weight gain of about a pound or more per day, blurred vision, abdominal pain, and protein in the urine. Preeclampsia, in turn, can lead to **eclampsia**, which causes seizures in the woman and can lead to coma. Both preeclampsia and eclampsia can be life threatening for the mother and the fetus, so women who develop preeclampsia are closely monitored. Sometimes doctors prescribe bed rest to help control the pressure. The only cure for preeclampsia is delivery of the baby.



Checking blood pressure is a routine part of prenatal care, since hypertension can lead to serious problems during pregnancy.

Problems related to high blood pressure occur in 6 to 8 percent of all pregnancies in the United States. Women at higher risk include those with chronic hypertension, obese women, women who are pregnant with multiples, and women with diabetes. There’s no sure way to prevent high blood pressure during pregnancy. It used to be a common practice to instruct women to cut back on their salt intake in hopes of preventing it, but studies show that sodium restriction doesn’t help. The most important thing a woman can do is to get early and regular prenatal care. That way, a health-care provider can routinely check her blood pressure and other health indicators. WIC staff can help by encouraging participants to keep their prenatal appointments.

Iron-Deficiency Anemia

Iron-deficiency anemia develops when the body’s iron stores get too low. The body needs iron to make **hemoglobin**, a

protein that carries oxygen from the lungs to body tissues for energy production. Without enough iron, the level of hemoglobin drops, so less oxygen gets to the body's cells. As a result, a person may feel tired, weak, and irritable — symptoms of iron-deficiency anemia.

In the United States, about 20 percent of all women of childbearing age have iron-deficiency anemia, compared with only 2 percent of adult men. The main reason is that women lose blood (and therefore iron) during their monthly periods. But pregnancy also increases a woman's risk for anemia because iron needs are so high during pregnancy.

Pregnant women are usually tested for anemia during their prenatal care. Also, when a pregnant woman is certified for the WIC program, WIC staff screen for anemia by checking either the **hematocrit** or the hemoglobin level in her blood. If a measurement is low, then staff will refer her to her health-care provider for further tests. Treatment usually involves taking a daily iron supplement, and eating plenty of iron-rich foods.

It's generally thought that iron-deficiency anemia doesn't pose a serious threat to a fetus, unless the anemia is severe. However, some recent studies suggest that iron-deficiency anemia in pregnant women may be linked to lower birthweights and prematurity.



WIC staff screen pregnant women for anemia by checking the level of hematocrit or hemoglobin in the blood.

Pica

Pica refers to eating nonfood substances like clay, dirt, baking soda, starch, ashes, chalk, coffee grounds, cigarette ashes, paint chips, or large quantities of ice. Pica is common among pregnant women, and it probably occurs more often than people realize. It's likely that pica is underreported since it can be embarrassing for women to talk about, plus many health-care professionals don't ask about it.

A study performed in four different Texas WIC clinics showed that, out of 281 pregnant women, approximately 54 percent ate ice, 15 percent ate freezer frost, and 8 percent ate other substances including baking soda, baking powder,

cornstarch, laundry starch, baby powder, clay, or dirt. Women in all three groups had lower hemoglobin levels compared to pregnant women who did not report pica.

The health risks related to pica depend on the substance that's eaten, the amount, and the frequency. Pica can lead to anemia, lead poisoning, small-bowel obstruction, infections from parasites, and other problems. And, while eating ice might seem like a harmless form of pica, it's still a concern because ice can cause tooth fractures, and large amounts of ice can take the place of nutritious foods in the diet.

Researchers still don't know exactly what causes pica. It's likely that there are a number of factors involved, including psychological, behavioral, physiological, and cultural factors. Regardless of why it occurs, it's important to ask pregnant women (especially those with anemia) if they eat or crave nonfood substances. For those who do, WIC counselors should take a non-judgmental and sincere approach in discussing the health risks of pica and encourage participants to talk with their doctors about it. The goal is to help these women change their eating patterns and avoid serious problems.

Depression During Pregnancy

While postpartum depression has gained a lot of attention in recent years, there's been less talk about depression *during* pregnancy. Yet it is a common problem. A recent review suggests that about 13 percent of pregnant women experience depression (compared to about 8 percent in the general female population). More alarmingly, the review estimates that 25 to 28 percent of pregnant women of low socioeconomic status experience depression.

Pregnancy is a time of hormonal changes, plus it's a major event that comes just before a huge transformation in a woman's life. Some women have their first episodes of depression during pregnancy, while other women with a history of depression or other mental-health disorders are more likely to have a relapse during pregnancy. This is

especially true for women who stop taking maintenance antidepressants before trying to conceive or after learning they're pregnant.

Depression can severely impact a woman's job performance, her interactions with family, friends, and health professionals, and her daily routine. Also, depression can endanger the health of both the woman and the fetus through poor self-care, risky behaviors, poor weight gain, noncompliance with prenatal care, and poor pregnancy outcomes. What's more, depression during pregnancy often leads to postpartum depression.

Treatment is a key issue. The first treatment of choice for many women is some form of psychotherapy or behavioral therapy. Therapy alone, without medication, can work for many women, but patients with more severe symptoms may need treatment with antidepressants. No antidepressants are approved by the Food and Drug Administration for use during pregnancy, but there is growing evidence that certain antidepressant drugs can be used safely during pregnancy. Still, the data are limited, especially regarding long-term effects on the infant after birth. So a doctor and the patient must weigh the risk of fetal exposure against the risk of non-treatment. And regardless of the treatment plan, a pregnant woman with depression (or the risk of relapse) should be followed closely.

Keep in mind that depression is an issue for many pregnant women. WIC staff members are not qualified to diagnose depression but, if a participant says she's feeling depressed, staff members can play a key role by referring her to her doctor. Also, WIC staff can be supportive by encouraging positive health habits and nutritious foods.

Multifetal Pregnancies

Multifetal pregnancies are more common these days, mainly because **fertility treatments** are now more common. Being pregnant with more than one fetus increases the risk of complications such as preeclampsia, iron-deficiency anemia, kidney problems, and cesarean delivery. And the infants of a

multifetal pregnancy run a higher risk of problems like low birthweight, prematurity, congenital abnormalities, and cerebral palsy. But with early and regular prenatal care and good nutrition, it is possible for a woman to have a successful multifetal pregnancy without major problems and to give birth to happy, healthy babies.



Weight gain is a key factor for a healthy multifetal pregnancy, since higher weight gains are linked to higher birthweights. It seems advisable for women

pregnant with multiples to gain a little weight during the first trimester (about 5 pounds), and then gain around 1.5 pounds per week during the second and third trimesters. Overall, women carrying twins should gain between 35 to 45 pounds, with underweight women gaining at the high end of the range and overweight women gaining at the low end. Women carrying triplets should gain about 50 pounds.

To support weight gain, a woman carrying multiples needs enough extra calories. There's no specific calorie level that fits all situations, but available research suggests that women get an extra 150 calories per day above what's needed for a **singleton pregnancy**. Since calorie needs vary, the best way to monitor energy intake is to follow a woman's weight gain during her pregnancy.

And, of course, it's not just a matter of taking in extra calories. Women pregnant with multiples appear to have higher needs for protein, iron, and calcium, and a number of other nutrients. WIC should encourage these women to eat enough servings from each food group, and to include plenty of nutrient-dense foods. Also, they should take their prenatal supplements as prescribed.



Teenage Pregnancies

The teen pregnancy rate in Texas far exceeds the national rate. From a nutritional standpoint, teenage pregnancy is risky. To begin with, teens are still growing, so they have higher requirements for nutrients related to growth, namely calcium, phosphorus, zinc, and magnesium. Also, being pregnant increases the daily requirements for most nutrients including iron, zinc, folic acid, vitamin A, vitamin C, and others. What's more, it's likely that there's increased competition for nutrients between the pregnant teen and her fetus.

So, while nutrition should be a top priority for pregnant teens, teens have a reputation for choosing foods that are low in key vitamins and minerals, and high in fat, saturated fat, and simple sugars. Also, dieting is common. Based on data from the National Health and Nutrition Examination Survey III, 52 percent of normal-weight adolescent girls considered themselves overweight.

What's more, teens often engage in risky health behaviors such as having unsafe sex, and experimenting with or using alcohol, drugs, or cigarettes. Also, they are less likely to get early and regular prenatal care.

So it's no surprise that teens are at higher risk of giving birth to premature or low-birthweight infants. Also, babies of teenage moms have more health problems, are hospitalized more, and are more likely to experience behavioral and social problems, poor nutrition, abuse, neglect, and inadequate health care.

The WIC counselor may be one of the few persons in a pregnant teen's life whom she can talk to without being judged or criticized. WIC encourages the teen mom to get early prenatal care, eat a healthy diet, and breastfeed her baby. Also, WIC agencies in Texas network with programs in middle schools and high schools such as the **Pregnancy Education and Parenting Program**, a state-funded program. These programs work together to provide support groups for pregnant teens, encourage teen moms to continue their education, and train teen breastfeeding moms to become

breastfeeding peer counselors to other pregnant and postpartum teens.

Domestic Violence

In their lifetimes, as many as one-third of all women are physically assaulted by a partner or an ex-partner. In Texas, 140 women were killed by their partner or ex-partner in 2003. That averages to more than two women per week.

During pregnancy, at least 4 to 8 percent of women report violence, but a great deal of violence goes unreported. This suggests that **domestic violence** is a more common risk factor for pregnant women than gestational diabetes, neural-tube defects, or preeclampsia.

Domestic violence can involve sexual, physical, or emotional abuse, or a combination of any of these. Victims of abuse can be of any age, religion, race, income level, or educational background. Adolescents are at increased risk for violence, and alcohol is strongly linked to increased episodes of violence.

Some people wonder why women stay in abusive relationships. In many cases, leaving an abusive situation can be highly dangerous. A woman may be stalked and hurt or killed by her abuser. She can become homeless. She can lose custody of her children. These are all realistic fears.

But pregnancy is a time when a woman may be motivated to change her situation in order to protect her child. Pregnancy typically means more contact with health professionals, so it's a chance for women who may have been isolated to talk more openly with someone who can help.

Unfortunately, some doctors don't screen their patients for domestic violence unless they see apparent symptoms or signs of abuse. WIC routinely screens all pregnant women during certification by asking, "Are you afraid that someone you know may injure or harm you?" Simply asking this question can be a key step that sparks a change in a woman's life. Even if an abused woman doesn't reveal any information right away,



During pregnancy, a woman might decide to talk about her abuse since she has more contact with health professionals. WIC staff should be discreet, compassionate, and supportive.

she'll know that the WIC program will offer support and referrals if she chooses to talk about her abuse in the future.

Trust is a key factor for a victim who wants to talk about her situation, so it's very important for WIC staff to be discreet, compassionate, and sincere. Also, remember that a woman experiencing violence is the best judge of her present situation and of her own safety. It's up to the woman to choose when — or whether — to disclose the violence or to leave an abusive relationship.

What to Say and What *Not* to Say

If a participant says she is being abused, your initial response can be a powerful intervention. Here are some suggestions of what to say:

- “This is not your fault.”
- “No one deserves to be treated that way.”
- “I’m sorry you’ve been hurt.”
- “Help is available to you.”

It's also important to know what *not* to say. Avoid comments that suggest the woman is at fault or that it would be easy for her to leave her situation. Examples of questions *not* to ask include:

- “Why don’t you just leave?”
- “What did you do to make him so angry?”
- “Why do you keep going back?”

WIC staff should be supportive, but staff members should not provide counseling to a woman in an abusive situation. Instead, staff should refer the woman to other agencies and individuals who are trained in dealing with domestic violence. Provide the participant with phone numbers of local shelters, counseling services, and domestic violence advocacy organizations. And, when possible, give her names of individuals she can ask for when making those phone calls.

National Domestic Violence Hotline

In all cases of domestic violence, staff should provide women with the toll-free number for the National Domestic Violence Hotline: 1 (800) 799-SAFE (7233) or 1 (800) 787-3224 (TTY). The hot line is staffed 24 hours a day and has bilingual staff available. The hot line can link the caller directly to the nearest shelter or crisis line. WIC clinics can post the hot line's number in restrooms where women can read them discreetly, along with other phone numbers for local shelters and services.

Emergency Situations

In some cases, the woman may be in a very dangerous situation. Find out if the violence or threats of violence have become more frequent or more serious. Also ask whether there are weapons in the home. If guns are present, if threats to kill have been made, or if violence has become more intense, it is an emergency situation and it's important to form a safety plan before the participant leaves the clinic. Local shelters typically have 24-hour hot lines and staff that can help in such a situation. Also, some clinics have a specially trained nurse, social worker, or health-care worker who can help form a safety plan. Local hospitals can also provide assistance.

By being sensitive, compassionate, and supportive, WIC staff can play a key role in helping pregnant women and other participants who are victims of domestic violence.

Summary

- Some women may have type 1 or type 2 diabetes before pregnancy. Others may develop gestational diabetes *during* pregnancy. Gestational diabetes typically disappears after delivery, but leaves the woman at risk of developing type 2 diabetes and gestational diabetes in the future. A pregnant woman with any type of diabetes needs to control her blood sugar to reduce risk of complications.

- HIV is the virus that causes AIDS. Many women don't realize they're HIV-infected, so a woman can unknowingly pass the virus on to her baby during pregnancy, delivery, or breastfeeding. If pregnant women with HIV get diagnosed and treated, only about 2 percent of them will transmit the virus to their newborn.
- Hypertension during pregnancy can be mild, or it can lead to severe symptoms and preeclampsia. Preeclampsia can lead to eclampsia, which causes seizures and can be fatal. Regular prenatal care is the key to identifying and controlling hypertension during pregnancy.
- Iron-deficiency anemia occurs when the body's iron stores get too low, and the person feels tired, weak, and irritable. Pregnant women are at risk for anemia because iron needs increase. Treatment involves a daily iron supplement and iron-rich foods.
- *Pica* refers to eating nonfood substances such as clay, dirt, baking soda, starch, or large amounts of ice. Pica is common during pregnancy, and it can cause anemia, lead poisoning, and other problems. Even ice is a concern, as it can cause tooth fractures and take the place of other foods.
- Depression during pregnancy is a problem for many women, especially those of lower socioeconomic status. Women with a history of depression may relapse during pregnancy, especially if they stop taking maintenance antidepressants. In addition to psychotherapy or behavioral therapy, there are some antidepressants that appear to be safe for use during pregnancy, but the data are limited.
- Being pregnant with more than one fetus increases a woman's risk of complications such as preeclampsia, iron-deficiency anemia, and cesarean delivery. Infants of a multifetal pregnancy run a higher risk of problems such as low birthweight, prematurity, congenital abnormalities, and cerebral palsy. Adequate weight gain is a key factor: women carrying twins should gain from 35 to 45 pounds. Women carrying triplets should gain about 50 pounds.
- Teens need extra nutrients to support growth, plus pregnancy increases nutrient needs. But many teens eat

poorly, engage in risky health behaviors, diet often, and are less likely to get regular prenatal care. So teens are at higher risk of giving birth to premature or low-birthweight infants.

- Domestic violence can involve sexual, physical, or emotional abuse. Leaving an abusive situation can be dangerous. If a participant says she is being abused, WIC staff should let her know that help is available and provide phone numbers of local resources and the toll-free number for the National Domestic Violence Hotline: 1 (800) 799-SAFE (-7233). If the woman is in extreme danger, it's important to form a safety plan.

Self-Test Questions

1. *Circle* the correct word or phrase.

Diabetes occurs when the body doesn't produce (insulin / glucose / vitamin D), or when the body isn't able to use the (insulin / glucose / vitamin D) that it does make.

2. *Check all that apply.* Women who develop gestational diabetes during pregnancy have an increased risk of:

- complications during pregnancy.
- developing type 2 diabetes at some point in the future.
- developing gestational diabetes during a future pregnancy.

3. *Check all that apply.* A pregnant woman with diabetes:

- is at risk for complications if she doesn't control her blood sugar.
- must stop all types of physical activity.
- should monitor her glucose levels regularly.

4. *Check all that apply.* A person who is HIV positive can pass the virus along to others in the following ways:

- through unprotected sex
- by using the same toilet
- through blood transfusions
- by mother-to-child transmission during pregnancy, delivery, or breastfeeding
- by using the same drinking fountain

5. Mark the following statement **TRUE** or **FALSE**.

_____ Most women who practice high-risk behaviors related to HIV are aware that they've put themselves at risk, and most of these women get tested to see if they have the virus.

6. Mark each of the following statements **TRUE** or **FALSE**.

_____ A woman who takes medication for chronic high blood pressure should continue doing so during pregnancy, according to her doctor's instructions.

_____ When a woman with no history of high blood pressure develops high blood pressure during pregnancy, it's known as *anemia*.

_____ There's no sure way to prevent high blood pressure during pregnancy, so the most important thing is to get early and regular prenatal care.

7. *Check all that apply.* Gestational hypertension:

___ develops during pregnancy and then becomes a chronic, lifelong condition for the woman.

___ can be mild, with only a slight rise in blood pressure.

___ can be prevented by following a low-salt diet.

8. *Check one* of the following choices. Iron-deficiency anemia develops when:

___ the body's calcium stores get too low.

___ the body's iron stores get too low.

___ the level of glucose in the blood gets too high.

___ a woman's blood pressure gets too high.

9. Mark each of the following statements **TRUE** or **FALSE**.

_____ When a pregnant woman is certified for the WIC program, WIC staff screen for anemia by checking either her hematocrit or her hemoglobin level.

_____ Treatment of iron-deficiency anemia usually involves taking a daily insulin shot.

10. Mark each of the following statements **TRUE** or **FALSE**.

_____ *Pica* refers to eating nonfood substances like clay, dirt, baking soda, starch, ashes, chalk, or large quantities of ice.

_____ Pica probably occurs much less often than people think.

_____ Pica can lead to anemia, lead poisoning, small-bowel obstruction, infections from parasites, and other problems.

_____ Eating ice is a harmless form of pica and shouldn't be seen as a problem.

11. *Check all that apply.* Depression during pregnancy:

___ can impact the health of both the woman and the fetus.

___ is not treatable.

___ is common in women of low socioeconomic status.

12. *List two reasons that teen pregnancies are considered to be high risk.*

13. *Check all that apply.* A woman pregnant with twins should:

- get early and regular prenatal care.
- gain 20 pounds or less to avoid postpartum obesity.
- gain between 35 and 45 pounds.

14. Mark each of the following statements **TRUE** or **FALSE**.

- Leaving an abusive situation is always the safest choice for a woman.
- Many physicians don't screen their patients for domestic violence unless they suspect that abuse may be a problem.
- Victims of domestic violence always have apparent symptoms or signs of abuse.



Common Discomforts of Pregnancy

Part 5

Objectives

Pregnant women commonly experience discomforts such as nausea, heartburn, and constipation. Even though these problems are usually not serious, they can be extremely unpleasant and can affect the daily lives of pregnant women. Fortunately, WIC staff can offer suggestions that, in many cases, provide some degree of relief. After reading this part, you'll be able to:

- identify correct statements about nausea and vomiting during pregnancy;
- list three tips to pass along to women to help them manage nausea and vomiting;
- identify appropriate suggestions for indigestion or heartburn during pregnancy;
- list three tips for women who have constipation; and
- indicate how WIC staff should advise a pregnant participant who complains of various discomforts.

Nausea and Vomiting of Pregnancy

Researchers aren't sure what causes the nausea and vomiting that pregnant women often experience. Even though it's called "morning sickness," nausea and vomiting related to pregnancy can occur any time of day. And for many women it can last all day. Also, researchers have found that some women's nausea is similar in intensity to the nausea experienced by chemotherapy patients. And while it's a common belief that these symptoms go away by the end of the first trimester, some women continue to experience nausea well into the second trimester. For many pregnant women, nausea, with or without vomiting, interferes with their daily activities and routines, sometimes to the point where they feel like they can't function normally.

Still, most cases of nausea and vomiting are not harmful to the mother or the baby. And, oftentimes, women can reduce or avoid certain triggers that make their symptoms worse. Here are tips to pass along:

- Avoid strong, offensive smells. Get plenty of fresh air, especially in the bedroom, kitchen, and eating areas.
- Try eating smaller, more frequent meals.
- Avoid spicy, greasy, or fried foods.
- After waking up, try eating crackers, dry toast, or a handful of dry cereal. Then rest in bed for a while before slowly getting up.
- Drink liquids between meals, not with them. Avoid drinks with caffeine. Try cold, sweet beverages or drinks that are bubbly.
- Find out by trial and error which foods lessen the nausea, and eat those foods to avoid an empty stomach.
- Never take medicine for nausea without a doctor's approval. Also, talk with a doctor before trying any sort of alternative treatment.

Fewer than 1 percent of pregnant women experience **hyperemesis gravidarum**, or severe nausea and vomiting. These women are typically unable to keep down any foods

or fluids and become dehydrated and acidotic, often losing weight. This is a serious condition requiring medical treatment.

Heartburn and Indigestion

In some women, certain pregnancy hormones relax the valve between the esophagus and the stomach, allowing digestive juices and food from the stomach to rise into the esophagus. This causes **heartburn** — a burning feeling in the chest. Also, hormonal changes can slow the whole digestive process, increasing the time for the stomach to empty. This can cause **indigestion** — a bloated, gassy, full feeling. Here are some suggestions for participants who experience indigestion or heartburn:

- Eat small, low-fat meals and snacks.
- Don't overeat.
- Avoid spicy foods and greasy or fried foods.
- Don't bend over or lie down for one to two hours after eating.
- Wear clothes that are loose around the waist.
- Avoid soft drinks and drinks with caffeine.
- Never take antacids or other medicine for heartburn or indigestion without talking with your doctor first.

Constipation

Another common pregnancy problem is **constipation** (infrequent bowel movements with hard, dry stools). The slower digestion that occurs during pregnancy may be one cause. In some cases, iron supplements may be the culprit. Also, in late pregnancy, the weight of the baby and the uterus puts more pressure on the rectum, making the problem worse. Here are some tips for women who experience constipation:

- Drink eight to 10 glasses of water every day.
- Eat whole-grain breads, cereals, and grains.
- Eat plenty of fruits and vegetables.

- Eat dried fruit like prunes, apricots, and raisins, or drink prune juice.
- Get plenty of exercise. Walking is best.
- Never take a laxative or home remedy for constipation without your doctor's approval.

Other Common Problems During Pregnancy

There are many other common discomforts a woman may experience during her pregnancy, including frequent urination, dizziness, varicose veins, hemorrhoids, leg cramps, tender breasts, backache, congestion, nosebleeds, bleeding gums, fatigue, and headaches.

Fortunately, most of these problems don't pose a serious health threat for the mother or the fetus, although some can be quite disruptive to day-to-day activities. Also, some symptoms can signal a more serious problem such as gestational diabetes or gum disease. WIC staff should encourage women to talk to their doctor about any discomforts they have.

In general, many expectant mothers learn to take it all in stride, knowing that pregnancy is a unique, wondrous, but sometimes very uncomfortable experience that, fortunately, only lasts for nine months.



Summary

- Nausea and vomiting can occur at any time of day, can be very intense, and can last past the first trimester. Women should avoid offensive smells, get fresh air, eat smaller meals, and get up slowly. Hyperemesis gravidarum (severe nausea and vomiting) leads to dehydration, acidosis, and weight loss, and requires treatment.
- In some women, hormonal changes can lead to heartburn and indigestion. Suggestions for relief include eating small, low-fat meals and snacks, not bending over or lying down for one to two hours after eating, and wearing loose clothes.
- Constipation may result from the slower digestion during pregnancy, or from iron supplements. Tips include drinking enough water; eating plenty of whole-grain breads, cereals, fruit (including dried fruit), and vegetables; getting exercise; and not taking a laxative or remedy for constipation without a doctor's approval.
- Other discomforts during pregnancy include frequent urination, dizziness, varicose veins, and hemorrhoids, among others. Most problems don't pose a serious health threat for the mother or the fetus, but staff should encourage women to talk to their doctors about any discomforts.

Self-Test Questions

1. *Check all that apply.* The nausea and vomiting symptoms that pregnant women commonly experience:

only happen during the morning hours.

can be intense — similar to the nausea and vomiting experienced by chemotherapy patients.

always go away by the end of the first trimester.

2. *List three tips to pass along to women to help them manage their nausea and vomiting.*

3. *Check all that apply.* Which are good suggestions for pregnant women who experience indigestion or heartburn?

Eat large meals that are high in fat.

Wear clothes that are loose around the waist.

Avoid spicy foods and greasy or fried foods.

Don't take antacids or other medicine without talking with a doctor first.

Bend over for one hour immediately after eating.

4. *List* three tips for women who experience constipation.

5. *Check one* of the following choices. If a pregnant participant complains of symptoms such as leg cramps, hemorrhoids, backache, or nosebleeds, WIC staff should:

- immediately send her to the nearest hospital emergency room.
- assure her that these are common complaints during pregnancy and she should just ignore them.
- encourage her to talk to her doctor about any discomforts she's having.
- encourage her to try over-the-counter treatments or alternative therapies so that she won't have to bother seeing a doctor.

Appendix

Common Prenatal Tests

All pregnant women receiving prenatal care have certain routine tests during pregnancy. Also, some women have additional tests depending on medical history, age, family background, or exam results or screening results. This table summarizes some of the more common prenatal tests.

Test	Description
urine test	At almost every doctor visit, a pregnant woman will have her urine tested to check for levels of bacteria, sugar, and protein. High levels of sugar in the urine can indicate diabetes. Protein in the urine can be a sign of a urinary-tract infection or, in later pregnancy, a sign of preeclampsia.
blood test	All pregnant women have their blood tested at least once during the pregnancy to check for things like: <ul style="list-style-type: none">• blood type (A, B, AB, or O)• antibody screen (Rh positive or negative)• anemia• a history of rubella (German measles)• syphilis• hepatitis B• HIV (with the woman's permission)
alpha-fetoprotein test	<i>Labs used to measure alpha fetoprotein in a stand-alone test, but these days it's typically included in a combined test called the "multiple marker screening test," described below.</i>

(continued)

Test	Description
<p>multiple marker screening test (also called the “triple screen”)</p>	<p>Around the 16th week of pregnancy, most pregnant women typically have this blood test to screen for certain serious birth defects, including Down syndrome and neural-tube defects. The multiple-marker screening test measures the levels of three substances found in the mother’s blood:</p> <ul style="list-style-type: none"> • alpha-fetoprotein — a protein produced by the fetus • estriol — an estrogen produced by both the fetus and the placenta • human chorionic gonadotropin — a hormone produced in the placenta <p>This is simply a screening test and only reveals the possibility that a problem might exist. If the levels of these substances are abnormal, the doctor will usually recommend doing a diagnostic test — either an ultrasound or an amniocentesis. In most cases, the follow-up test will show that the initial screening test was a false alarm and that the baby is fine.</p>
<p>glucose screening test</p>	<p>Between 24 and 28 weeks of pregnancy, most pregnant women take a glucose screening test to check for gestational diabetes. After the woman drinks a special sugar mixture, a health-care provider takes a blood sample to check the level of glucose in the blood. If the blood-sugar level is high, the woman takes a glucose tolerance test. The glucose tolerance test is a similar but longer test, and is used to diagnose gestational diabetes.</p>
<p>ultrasound</p>	<p>Most pregnant women have their first ultrasound around the 16th week of pregnancy, but it can be done anytime. Sound waves are used to create an image of the fetus, which is</p>

Test	Description
	<p>displayed on a computer monitor. A doctor can check the size, location, number, and age of fetuses, fetal movement, breathing, and heartbeat. Also, an ultrasound is used to detect Down syndrome, neural-tube defects such as spina bifida and anencephaly, and other birth defects.</p> <p>(<i>Note:</i> In January 2004, the Food and Drug Administration began warning consumers about businesses that use ultrasound technology to create “keepsake” images. These are three-dimensional images and videos of babies in the womb that simply serve as memorabilia. The FDA views this as an unapproved use of a medical device, and states that performing prenatal ultrasounds without following state and federal guidelines puts a mother and her unborn baby at risk.)</p>
amniocentesis	<p>This test uses amniotic fluid to diagnose chromosomal abnormalities and genetic birth defects, including neural-tube defects. It’s usually offered to women at higher risk of having a baby with certain serious birth defects, typically around 15 to 18 weeks of pregnancy.</p> <p>Using an ultrasound as a guide, a doctor inserts a thin needle through the abdomen and into the amniotic sac. A small amount of amniotic fluid and cells are removed and analyzed. There is a small risk of miscarriage (1 in 200 or less) associated with the procedure.</p>
chorionic villus sampling (CVS)	<p>This test samples cells that line the placenta (chorionic villus cells) to detect chromosomal abnormalities and genetic birth defects. Since this procedure does not collect amniotic fluid,</p>

(continued)

Test	Description
<p>chorionic villus sampling (continued)</p>	<p>CVS cannot be used to test for neural-tube defects. It's usually offered to women at higher risk of having a baby with certain serious birth defects, and is typically done around 10 to 12 weeks of pregnancy. That means that a woman is able to obtain the results of a CVS earlier on compared with an amniocentesis.</p> <p>Using an ultrasound as a guide, a doctor inserts either a thin needle through the abdomen, or a thin plastic tube through the vagina and cervix. A small sample of chorionic villus cells is removed and tested. There may be a slightly higher risk of miscarriage compared to amniocentesis (1 in 100 or less) and there appears to be a very slight risk of birth defects involving missing or shortened fingers or toes (about 1 in 3000).</p>
<p>Group B strep test</p>	<p>One of every four or five pregnant women is a carrier of Group B streptococcus, a type of bacterium, which can cause life-threatening infections in newborns.</p> <p>The Group B strep test is performed at 35 to 37 weeks of pregnancy, in order to predict whether the mother will have GBS at delivery. A health-care provider takes a swab of the vagina and rectum to see if the woman carries the bacterium. Results take 24 to 48 hours. If she is a carrier, she should be treated with antibiotics at the time of labor and delivery. Likewise, if a woman starting labor has certain risk conditions of GBS and her test results are unknown (or if the test wasn't done), she may be treated with antibiotics.</p>

Glossary

AIDS (acquired immune deficiency syndrome): A disease caused by infection with the human immunodeficiency virus (HIV). The disease affects the immune system and makes the infected person vulnerable to life-threatening conditions (such as pneumonia). “AIDS” refers to the most advanced stage of an HIV infection. It can take years for an infection to progress to this stage.

anencephaly: A defect in which the upper portion of the neural tube doesn’t close during the early stages of fetal development, resulting in the absence of a large part of the brain and skull. Many of these pregnancies spontaneously abort or result in stillbirth. An infant born with anencephaly is usually blind, deaf, unconscious, and unable to feel pain, and the baby usually dies within a few hours or days after birth.

Body Mass Index: A tool for indicating weight status. For persons ages 20 years or older, BMI falls into one of these categories: *underweight*, *normal*, *overweight*, or *obese*. An adult’s BMI is calculated thus: $BMI = \text{weight (in kilograms)} / \text{height (meters)}^2$. For children and teens, BMI is plotted on gender- and age-specific charts.

caffeine: A substance that acts as both a stimulant and a diuretic. Caffeine is found in coffee, tea, colas, chocolate, cocoa, and some over-the-counter and prescription drugs.

constipation: Infrequent bowel movements with hard, dry stools.

diabetes: A condition that occurs when the body doesn’t produce enough insulin or when the body isn’t able to use the insulin it does make, leading to high levels of glucose in the blood (hyperglycemia). (*See also gestational diabetes, type 1 diabetes, and type 2 diabetes.*)

domestic violence: The threat or use of violence to gain power and control over a spouse, partner, or family member. The violence can be physical, sexual, or emotional. The

perpetrator is usually an intimate partner (spouse, partner, boyfriend, or girlfriend), a family member (such as a parent or guardian), or in some cases a more casual acquaintance.

eclampsia: Seizures during pregnancy, usually after the 20th week. Eclampsia can be fatal for both the mother and the fetus. (*See also* **preeclampsia**.)

fetal alcohol syndrome (FAS): A group of physical and mental birth defects associated with a woman's use of alcohol during pregnancy. Babies with FAS are typically small, have decreased mental functioning, and have certain facial abnormalities, including a small upper jaw; a short, upturned nose; a smooth, thin upper lip; and narrow eyes with skin folds over the inner corners. Other defects, including heart defects and limb abnormalities, may also be present. FAS can be prevented by not drinking during pregnancy.

fertility treatments: Specialized medical treatments designed to help a couple conceive a child.

gestational diabetes: A high level of blood glucose during pregnancy, which can lead to complications for the fetus, including fetal **macrosomia**, hypoglycemia, and jaundice. Treatment involves controlling blood glucose through diet and, in some cases, medication. Gestational diabetes usually disappears after delivery, but a woman with a history of gestational diabetes has an increased risk of developing type 2 diabetes, and she has a higher chance of developing gestational diabetes again in future pregnancies.

gestational hypertension: Elevated blood pressure during pregnancy, diagnosed after 20 weeks gestation, and without protein in the urine. Previously known as *pregnancy-induced hypertension*, or *PIH*.

gingivitis: Red, swollen, and bleeding gums caused by the bacteria in plaque, a sticky film that forms on the teeth. Hormonal changes during pregnancy make women more susceptible to gingivitis during pregnancy. But it is bacteria, not hormones, that causes gingivitis.

heartburn: A burning feeling in the chest, caused by digestive juices and food from the stomach going up into the esophagus.

heme iron: The type of iron found in animal foods. Heme iron is present in the hemoglobin and myoglobin of meat. (*See also non-heme iron.*)

hematocrit: A measurement that indicates the number of red blood cells and the size of red blood cells present in the blood. Used to assess iron status.

hemoglobin: A protein in the blood that carries oxygen. A hemoglobin test measures the total amount of hemoglobin in the blood and can be used to assess iron status.

HIV (human immunodeficiency virus): A virus that gradually destroys the immune system, resulting in infections that are hard for the body to fight. An HIV infection in its most advanced stages is known as **AIDS**.

hyperemesis gravidarum: Extremely severe and persistent nausea and vomiting during pregnancy, which often leads to dehydration, acidosis, and weight loss.

hypertension (*high blood pressure*): High blood pressure — defined as a systolic pressure (top number) over 140 mm Hg, or a diastolic blood pressure (bottom number) over 90-mm Hg.

Blood pressure is affected by many factors, including the amount of blood being pumped, the size and condition of the arteries, the amount of water in the body, the condition of the kidneys, and hormone levels.

indigestion: A bloated, gassy, full feeling; abdominal discomfort.

insulin: A hormone that controls the level of sugar (glucose) in the blood by allowing glucose to leave the bloodstream and enter the cells. People who can't make insulin must take insulin every day in the form of medication.

iron-deficiency anemia: A condition that develops when the body doesn't have enough iron to make adequate amounts of **hemoglobin**. Without enough hemoglobin, the cells don't get enough oxygen, and the person feels tired, weak, and irritable — symptoms of iron-deficiency anemia.

lacto-ovo-vegetarians: Vegetarians who eat eggs and dairy products in addition to a plant-based diet (no meat, poultry, or fish).

lacto-vegetarians: Vegetarians who consume dairy products in addition to a plant-based diet (no eggs, meat, poultry, or fish).

large for gestational age: Having a birthweight ≥ 9 pounds (≥ 4000 g) or ≥ 90 th percentile weight for gestational age at birth, based on a generally accepted intrauterine growth reference. Being large for gestational age may result from maternal diabetes and may lead to obesity in childhood that can extend into adult life.

listeriosis: A disease caused by the bacterium *Listeria monocytogenes*. Most infections in humans come from contaminated foods, namely soft cheeses, patés, and unheated deli-style meats and poultry. Pregnant women are 20 times more likely to contract listeriosis compared to other adults, and a woman can pass the infection on to her fetus, causing miscarriage, premature delivery, stillbirth, or other serious problems.

low birthweight: Having a birthweight ≤ 5 pounds, 8 ounces (≤ 2500 grams).

macrosomia: Refers to a very large fetus. Women who are obese or have diabetes during their pregnancy are at higher risk of having a very large baby. Very large infants have a higher incidence of birth injuries, congenital anomalies, and developmental and intellectual retardation.

methylmercury: A form of mercury that is present in the marine food chain as a result of industrial pollution. Larger fish that are higher on the food chain accumulate higher levels of methylmercury. If eaten at high levels, methylmercury can harm a fetus's or child's developing nervous system.

multifetal pregnancy: A pregnancy in which the woman is carrying two or more fetuses.

neural-tube defects: Serious birth defects involving incomplete development of the brain and spinal column. Specific examples include anencephaly and spina bifida.

Adequate amounts of folic acid at the time of conception and early pregnancy reduce the risk of neural-tube defects.

non-heme iron: Iron that is present in plant foods. The body only absorbs about 2 to 20 percent of non-heme iron from foods. (*See also* **heme iron**.)

periodontal disease (gum disease): Inflammation and infection of the tissues around the teeth, which, if left untreated, leads to bone destruction and tooth loss.

Gingivitis represents the early stage of periodontal disease.

pica: Eating nonfood substances like clay, dirt, baking soda, starch, ashes, chalk, coffee grounds, cigarette ashes, paint chips, or large quantities of ice.

preeclampsia: A condition during pregnancy that involves elevated blood pressure, protein in the urine, and swelling. Also, headaches, weight gain, abdominal pain, and blurred vision are common. Preeclampsia occurs in about 6 to 8 percent of all pregnancies, and can lead to **eclampsia** if not treated. Treatment involves bed rest and delivery as soon as possible. The condition disappears after delivery.

Pregnancy, Education, and Parenting Program: A statewide program to help school-age parents to become self-sufficient and to reduce the number of students who drop out of school due to pregnancy or parenthood. The program includes individual and peer counseling; self-help programs; career counseling and job-readiness training; child care; instruction in child development, parenting, and home and family living; and assistance in obtaining services from government agencies or community-service organizations.

premature: Said of an infant born at less than 37 weeks gestation. Also referred to as “preterm.”

singleton pregnancy: A pregnancy in which the woman is carrying only one fetus (versus a **multifetal pregnancy**).

spina bifida: A type of birth defect that results from incomplete closure of the spine during the first month of fetal development. In some cases, the spinal cord sticks out through the back and is covered by skin or a membrane. These infants have surgery to close the back soon after birth. Paralysis and hydrocephalus are common, as well as bowel and bladder dysfunction. Still, with medical treatment now available, most children born with spina bifida survive and reach adulthood.

toxoplasmosis: An infection caused by a parasite found in cat litter and in raw or undercooked meat (especially pork, lamb, and venison). Most infected people show no symptoms, but a pregnant woman can pass the infection on to her fetus, which can lead to serious problems, including central-nervous-system disorders, an enlarged spleen and liver, jaundice, anemia, and other serious problems. Pregnant women should cook all meat thoroughly and, if they have a cat, have someone else change its litter box.

trimester: A term of approximately 3 months in the prenatal gestation period, with the specific trimesters defined as follows — first trimester: 0–13 weeks, second trimester: 14–26 weeks, third trimester: 27–40 weeks. The first day of the last menstrual period serves as the beginning of the first week of pregnancy.

type 1 diabetes: Occurs when the pancreas produces too little insulin to properly control blood sugar levels, resulting in high blood glucose. These patients can't make their own insulin, so they must take insulin every day. Type 1 diabetes is a chronic (lifelong) disease that is typically diagnosed in children; it accounts for 3 percent of all new cases of diabetes each year.

type 2 diabetes: Occurs when the body's cells no longer respond to the insulin that the body makes (the cells become "insulin resistant"), resulting in high blood glucose. Type 2 diabetes is the most common form of this disease. Obesity, poor diet, and lack of exercise are associated with the

development of type 2 diabetes. It used to be called *adult-onset diabetes*, but the term no longer applies, since these days many children and adolescents develop type 2 diabetes.

vegetarian: A general term referring to people who eat a diet based on foods of plant origin. Many vegetarians also consume eggs or dairy products. (*See also* **lacto-vegetarians**, **lacto-ovo vegetarians**, and **vegans**.)

vegans: Vegetarians who eat only foods of plant origin. They do not consume any animal products whatsoever.

Bibliography

Part 1: Eating Right for a Healthy Pregnancy

- American College of Obstetricians and Gynecologists. 2000. *Planning your pregnancy and birth*. 3rd ed. Washington: ACOG.
- American Dietetic Association, Dietitians of Canada. 2003. Position of the American Dietetic Association and Dietitians of Canada: Vegetarian diets. *J. Am. Diet. Assoc.* 103(6): 748-65.
- Bailey, L. B. 2000. New standard for dietary folate intake in pregnant women. *Am. J. Clin. Nutr.* 71(5): 1304S-07S.
- Beth Israel Deaconess Medical Center, Women's Health Information. Vitamin supplements. Available online at: <http://www.bidmc.harvard.edu/obgyn/preg_nut_supplements.asp>. Accessed July 30, 2003.
- Duyff, R. L. 1996. *The American Dietetic Association's complete food and nutrition guide*. Minneapolis: Chronimed.
- Food and Nutrition Board. 2002. *Dietary reference intakes for energy, carbohydrates, fiber, fat, protein and amino acids (macronutrients)*. Washington: National Academy Press.
- Kaiser, L. L., and L. Allen. 2002. Position of the American Dietetic Association: Nutrition and lifestyle for a healthy pregnancy outcome. *J. Am. Diet. Assoc.* 102(10): 1479-90.
- King, J. 2000. Physiology of pregnancy and nutrient metabolism. *Am. Soc. Clin. Nutr.* 71(5): 1218S-25S.
- March of Dimes Task Force on Nutrition and Optimal Human Development. 2002. *Nutrition today matters tomorrow*. Wilkes-Barre, PA: March of Dimes.
- Messina, V., V. Melina, and A. R. Mangels. 2003. A new food guide for North American vegetarians. *J. Am. Diet. Assoc.* 103(6): 771-75.
- National Institute of Child Health and Human Development. Care before and during pregnancy — prenatal care.

Available online at: <http://www.nichd.nih.gov/womenshealth/prenatal_care.cfm#medem1>. Accessed January 19, 2004.

National Women's Health Information Center. *Pregnancy and nutrition*. Available online at: <<http://www.4woman.faq/preg-nutr.htm>>. Accessed June 11, 2003.

Texas Department of Health, Bureau of Nutrition Services. 2001. *Basic nutrition module*. Stock no. 13-33.

U.S. Department of Agriculture, Agricultural Research Service. 2004. USDA National Nutrient Database for Standard Reference, Release 16-1. Nutrient Data Laboratory Home Page available online at: <<http://www.nal.usda.gov/fnic/foodcomp>>.

U.S. Department of Agriculture, Center for Nutrition Policy and Promotion. 1996. *The food guide pyramid*. Home and Garden Bulletin 252. Washington: USDA.

Part 2: Weight Gain for a Healthy Pregnancy

Abrams, B., S. I. Altman, and K. E. Pickett. 2000. Pregnancy weight gain: Still controversial." *Am J. Clin. Nutr.* 71(5): 1233S-41S.

American College of Obstetricians and Gynecologists. 2000. *Planning your pregnancy and birth*. 3rd ed. Washington: ACOG.

Hickey, C. A. Sociocultural and behavioral influences on weight gain during pregnancy. *Am J. Clin. Nutr.* 71(5): 1364S-70S.

Institute of Medicine. 1990. *Nutrition during pregnancy: Part I: Weight gain; Part II: Supplements*. Washington: National Academy Press.

March of Dimes Task Force on Nutrition and Optimal Human Development. 2002. *Nutrition today matters tomorrow*. Wilkes-Barre, PA: March of Dimes.

- Olson, C. M. Weight gain in pregnancy: A major factor in the development of obesity in childbearing women? Available online at: <<http://www.cce.cornell.edu/food/expfiles/topics/olson2/olson2overview.html>>.
- Schieve, L. A., M. E. Cogswell, and K. S. Scanlon. 1998. Trends in pregnancy weight gain within and outside ranges recommended by the Institute of Medicine in a WIC population. *Maternal and Child Health J.* 2(2): 111–16.
- Texas Department of Health. 2003. 131: Low maternal weight gain. *Texas nutrition risk manual*. Available online at: <<http://www.tdh.texas.gov/wichd/nut/risk-nut.htm>>. Accessed April 28, 2004.

Part 3: Positive Health Habits for a Healthy Pregnancy

- American College of Obstetricians and Gynecologists. 2000. *Exercise during pregnancy*. Washington: ACOG Patient Education Pamphlet AP119.
- . 2002. *Illegal drugs and pregnancy*. Washington: ACOG Patient Education Pamphlet AP104.
- Bogges, K. A., et al. 2003. Maternal periodontal disease is associated with an increased risk for preeclampsia. *Obstetrics & Gynecology* 101(2): 227–31.
- Center for the Evaluation of Risks to Human Reproduction. 2003. Caffeine. Available online at: <<http://cerhr.niehs.nih.gov/genpub/topics/caffeine-ccae.html>>. Accessed January 21, 2004.
- Centers for Disease Control and Prevention, Division of Parasitic Diseases. Toxoplasmosis fact sheet. Available online at: <http://www.cdc.gov/ncidod/dpd/parasites/toxoplasmosis/factsht_toxoplasmosis.htm>. Accessed January 15, 2004.
- Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. 2001. *Women and smoking*:

- A report of the Surgeon General, at a glance.* Available online at: <http://www.cdc.gov/tobacco/sgr/sgr_forwomen/ataglace.htm>. Accessed September 9, 2002.
- Christian, M. S., and R. L. Brent. 2001. Teratogen update: Evaluation of the reproductive and developmental risks of caffeine. *Teratology* 64(1): 51-78.
- Clausson, B., et al. 2002. Effect of caffeine exposure during pregnancy on birth weight and gestational age. *Am. J. Epidemiol.* 155(5): 429-36.
- Jeffreys, R., and K. Nordahl. 2002. Preconception, prenatal, and postpartum exercise. *Healthy Wt. J.* 16(3): 36-38.
- Kaiser, L. L., and L. Allen. 2002. Position of the American Dietetic Association: Nutrition and lifestyle for a healthy pregnancy outcome. *J. Am. Diet. Assoc.* 102(10): 1479-90.
- Law, K. L., et al. 2003. Smoking during pregnancy and newborn neurobehavior. *Pediatrics* 111(6): 1318-23.
- Leviton, A., and L. Cowan. 2002. A review of the literature relating caffeine consumption by women to their risk of reproductive hazards. *Food Chem. Toxicol.* 40(9): 1271-310.
- Listeriosis and pregnancy: What is your risk? Available online at: <http://www.fsis.usda.gov/OA/pubs/lm_tearsheet.html>. Accessed May 7, 2004.
- Mattison, D. Herbal supplements: Their safety, a concern for health care providers. March of Dimes Fact Sheet. Available online at: <http://www.marchofdimes.com/professionals/681_1815.asp>. Accessed January 21, 2004.
- Meadows, M. 2001. Pregnancy and the drug dilemma. *FDA Consumer Magazine.* 35(3): 16-20. Available online at: <http://www.fda.gov/fdac/301_toc.html>. Accessed August 12, 2003.
- National Center on Birth Defects and Developmental Disabilities, Centers for Disease Control. 2002. Alcohol use in pregnancy. Available online at: <<http://www.cdc.gov/ncbddd/fas/factsheets.htm>>. Accessed January 28, 2004.

- National Institute on Alcohol Abuse and Alcoholism. 2001. Drinking and your pregnancy. NIH Publication No. 96-4101. Available online at: <<http://www.niaaa.nih.gov/publications/brochure.htm>>. Accessed June 11, 2003.
- National Institutes of Health, Office of Dietary Supplements. Dietary supplements: Background information. Available online at: <<http://ods.od.nih.gov/factsheets/generalbackground.html>>. Accessed June 23, 2003.
- . Vitamin A and carotenoids. Available online at: <<http://dietary-supplements.info.nih.gov/factsheets/cc/vita.html>>. Accessed January 23, 2003.
- National Women's Health Information Center. Fetal alcohol syndrome." Available online at: <<http://www.4woman.gov/faq/fas.htm>>. Accessed June 11, 2003.
- . Pregnancy and medications. Available online at: <<http://www.4woman.gov/faq/pregmed.htm>>. Accessed June 11, 2003.
- Offenbacher, S. S., et al. 2001. Maternal periodontitis and prematurity. Part I: Obstetric outcome of prematurity and growth restriction. *Ann. Periodontol.* 6(1): 164-74.
- . Maternal periodontitis and prematurity. Part II: Maternal infection and fetal exposure. *Ann. Periodontol.* 6(1): 175-82.
- Pomerleau, C. S., R. J. Brouwer, and L. T. Jones. 2000. Weight concerns in women smokers during pregnancy and postpartum. *Addict. Behav.* 25(5): 759-67.
- Rothman, K. J., et al. 1995. Teratogenicity of high vitamin A intake. *New England Journal of Medicine* 333(21):1369-73.
- Schwarz, R. H. Your healthy pregnancy: Fitness for 2. Available online at: <<http://www.4women.gov/editor/jun00/jun00/htm>>. Accessed April 9, 2003.
- Texas Fetal Alcohol Syndrome Consortium. Myths about fetal alcohol syndrome. Available online at: <<http://www.main.org/texasfasc/myth.html>>. Accessed January 21, 2004.

U.S. Food and Drug Administration. Advice for women who are pregnant, or who might become pregnant, and nursing mothers, about avoiding harm to your baby or young child from mercury in fish and shellfish. Available online at: <<http://www.fda.gov/oc/opacom/mehgadvisory1208.html>>. Accessed January 7, 2004.

Williams, R. 1999. Healthy pregnancy, healthy baby. *FDA Consumer Magazine* 33(2): 18-22. Available online at: <http://www.fda.gov/fdac/features/1999/299_baby.html>. Accessed April 9, 2003.

U.S. Department of Health and Human Services. Substance Abuse and Mental Health Services Administration. 2002. *Results from the 2001 National Household Survey on Drug Abuse: Volume I. Summary of national findings*. NHSDA Series H-17, DHHS Publication no. SMA 02-3758. Rockville, MD: DHHS. Available online at: <<http://www.samhsa.gov/oas/nhsda/2klnhsda/vol1/shapter2.htm#2.gender>>. Accessed August 12, 2003.

Part 4: Medical Conditions and Other Risk Factors

Allen, L. H. 2000. Anemia and iron deficiency: Effects on pregnancy outcome. *Am. J. Clin. Nutr.* 71 (5 Suppl): 1280S-4S.

American College of Obstetricians and Gynecologists. 2000a. *High blood pressure during pregnancy*. Washington: ACOG Patient Education Pamphlet AP034.

———. 2000b. *Planning your pregnancy and birth*. 3rd ed. Washington: ACOG.

American Diabetes Association. Diabetes and pregnancy. Available online at: <<http://www.diabetes.org/gestational-diabetes/pregnancy.jsp>>. Accessed January 22, 2004.

———. 2001. Gestational diabetes mellitus. *Diabetes Care* 24(1): S77-S79.

- Bennett, H. A., et al. 2004. "Prevalence of depression during pregnancy: Systemic review." *Obstet. Gynecol.* 103(4): 698-709.
- Brown, J. E., and M. Carlson. 2000. Nutrition and multifetal pregnancy. *J. Am. Diet. Assoc.* 100(3): 343-48.
- Buist, A. 2003. Promoting positive parenthood: Emotional health in pregnancy. *Aust. J. Midwifery* 16(1): 10-14.
- Centers for Disease Control and Prevention. National diabetes fact sheet. Available on line at: <<http://www.cdc.gov/diabetes/pubs/general.htm>>. Accessed January 22, 2004.
- Centers for Disease Control and Prevention, American College of Obstetricians and Gynecologists. 2000. Intimate partner violence during pregnancy: A guide for clinicians. Slide set. Available at <http://www.cdc.gov/nccdphp/drh/violence/ipvdp_state_coal.htm> Accessed December 2, 2003.
- Cogswell, M. E., et al. 2003. Iron supplementation during pregnancy, anemia, and birth weight: A randomized controlled trial. *Am. J. Clin. Nutr.* 78(4): 773-81.
- Coker, A. L., et al. 2000. Physical health consequences of physical and psychological intimate partner violence. *Arch. Fam. Med.* 9(5): 451-57.
- Corbett, R. W., C. Ryan, and S. P. Weinrich. 2003. Pica in pregnancy: Does it affect pregnancy outcomes? *Am. J. Matern. Child Nurs.* 28(3): 183-89.
- Cunningham, E. and W. Marcason. 2001. How do I help patients with pica? *J. Am. Diet. Assoc.* 101(3): 318.
- Food and Nutrition Board. 2002. *Dietary reference intakes for energy, carbohydrates, fiber, fat, protein and amino acids (macronutrients)*. Washington: National Academy Press.
- Gazmararian, J. A, et al. 1996. Prevalence of violence against pregnant women: A review of the literature. *JAMA* 275(24): 1915-20.
- Kaiser, L. L., and L. Allen. 2002. Position of the American Dietetic Association: Nutrition and lifestyle for a healthy pregnancy outcome. *J. Am. Diet. Assoc.* 102(10): 1479-90.

- Koniak-Griffin, D., and C. Turner-Pluta. 2001. Health risks and psychosocial outcomes of early childbearing: A review of the literature. *J. Perinat. Neonatal. Nurs.* 15(2): 1–17.
- Lenders, C. M, T. F. McElrath, and T. O. Scholl. 2000. Nutrition in adolescent pregnancy. *Curr. Opin. Pediatr.* 12: 291–96.
- Mattar, F., and B. M. Sibaa. 1999. Prevention of preeclampsia. *Semin. Perinatol.* 23(1):58–64.
- March of Dimes. Anemia. Available online at: <http://www.marchofdimes.com/pnhec/188_1049.asp>. Accessed August 19, 2003.
- . Quick reference and fact sheet: HIV and AIDS in pregnancy. Available online at <http://www.marchofdimes.com/professionals/681_1223.asp>. Accessed August 13, 2003.
- . Quick reference and fact sheet: Teenage pregnancy. Available online at <http://www.modimes.org/HealthLibrary/334_569.htm>. Accessed April 9, 2002.
- National Institute of Child Health and Human Development. Are you at risk for gestational diabetes? Available online at: <http://www.nichd.nih.gov/publications/pubs/gest_diabetes.htm>. Accessed June 11, 2003.
- National Women’s Health Information Center. Anemia. Available online at: <<http://www.4woman.gov/faq/anemia.htm>>. Accessed August 19, 2003.
- Neumark-Sztainer, D., et al. 2002. Overweight status and eating patterns among adolescents: Where do youths stand in comparison with the Healthy People 2010 objectives? *Am. J. Public Health* 92(5): 844–51.
- Nonacs, R., and L. S. Cohen. 2003. Assessment and treatment of depression during pregnancy: An update. *Psychiatr. Clin. North Am.* 26(3): 547–62.
- Rasmussen, K. 2001. Is there a causal relationship between iron deficiency or iron-deficiency anemia and weight at birth, length of gestation and perinatal mortality? *J. Nutr.* 131(2S): 590S–601S.

- Rainville, A. J. 1998. Pica practices of pregnant women are associated with lower maternal hemoglobin level at delivery. *J. Am. Diet. Assoc.* 98(3): 293-96.
- Rodriguez, M.A., H. M. Bauer, E. McLoughlin, and K. Grumbach. 1999. Screening and intervention for intimate partner abuse: Practices and attitudes of primary care physicians. *JAMA* 282: 468-74.
- Rose, E. A., J. H. Porcerelli, and A. V. Neale. 2000. Pica: Common but commonly missed. *J. Am. Board Fam. Pract.* 13(5): 353-58.
- Story, M., D. Neumark-Sztainer, and S. French. 2002. Individual and environmental influences on adolescent eating behaviors. *J. Am. Diet. Assoc.* 102(3 Suppl): S40-S51.
- Strauss, R. S. 1999. Self-reported weight status and dieting in a cross-sectional sample of young adolescents: National health and nutrition examination survey III. *Arch. Pediatr. Adolesc. Med.* 153(7): 741-47.
- Stuart, S., and M. W. O'Hara. *IPT for perinatal depression*. Available online at: <<http://www.interpersonalpsychotherapy.org>>. Accessed March 30, 2004.
- Texas Council on Family Violence. What a battered woman faces when she leaves. Available online at: <http://www.tcfv.org/info_battered_woman_faces.html>. Accessed August 26, 2003.
- . 2004. *Family violence statistics in Texas*. Austin: Texas Council on Family Violence.
- Texas Department of Health. 2003. 131: Low maternal weight gain. *Texas Nutrition Risk Manual*. Available online at: <<http://www.tdh.texas.gov/wichd/nut/risk-nut.htm>>. Accessed April 28, 2004.
- U.S. Department of Health and Human Services, National Institutes of Health, National Institute of Allergy and Infectious Diseases. 2003. HIV infection in women. Available online at: <<http://www.niaid.nih.gov/factsheets/womenhiv.htm>>. Accessed August 14, 2003.

———. 2004. *HIV/AIDS statistics*. Available online at: <<http://www.niaid.nih.gov/factsheets/aidsstat.htm>>. Accessed January 27, 2004.

U.S. Department of Health and Human Services, Public Health Service and National Institutes of Health, National Heart, Lung, and Blood Institute. High blood pressure in pregnancy. Available online at: <http://www.nhlbi.nih.gov/health/public/heart/hbp/hbp_preg.htm>. Accessed August 19, 2003.

Young, S. A., N. Campbell, and A. Harper. 2002. Depression in women of reproductive age: Considerations in selecting safe, effective therapy. *Postgrad. Med.* 112(3): 45–50.

Part 5: Discomforts of Pregnancy

American College of Obstetricians and Gynecologists. 2000. *Planning your pregnancy and birth*. 3rd ed. Washington: ACOG.

Kaiser, L. L., and L. Allen. 2002. Position of the American Dietetic Association: Nutrition and lifestyle for a healthy pregnancy outcome. *J. Am. Diet. Assoc.* 102(10): 1479–90.

Lacroix, R., E. Eason, and R. Melzack. 2000. Nausea and vomiting during pregnancy: A prospective study of its frequency, intensity, and patterns of change. *Am. J. Obstet. Gynecol.* 182(4): 931–37.

Texas Department of Health. 1998. *Help for common problems during pregnancy*. Stock no. 13-172.

Appendix: Common Prenatal Tests

American College of Obstetricians and Gynecologists. 1999. *Amniocentesis and chorionic villus sampling*. Washington: ACOG Patient Education Pamphlet AP107.

———. 2000. *Planning your pregnancy and birth*. 3rd ed. Washington: ACOG.

- March of Dimes. 2004. The who, why, when of prenatal testing. *Mama Magazine* 26-28. White Plains, NY: March of Dimes.
- Mayo Clinic. 2002. Prenatal testing: What's involved and who should consider it. Available online at: <<http://www.mayoclinic.com/invoke.cfm?id=PR00014>>. Accessed April 27, 2004.
- Nemours Foundation. 2000. Prenatal tests. Available online at: <http://kidshealth.org/parent/system/medical/prenatal_tests.html>. Accessed April 27, 2004.
- Rados, Carol. 2004. FDA cautions against ultrasound "keepsake" images. *FDA Consumer Magazine* 38(1): 12-16 Available online at: <http://www.fda.gov/fdac/features/2004/104_images.html>. Accessed April 27, 2004.