

Eating Well for a Healthy Pregnancy

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A Healthy Diet and Pregnancy

A healthy diet before, during, and after pregnancy provides necessary nutrients for both mother and baby. The components of a healthy diet include plenty of fruits, vegetables, low-fat dairy, lean protein, fish, fiber, and water. These items should be the primary focus of the diet as they provide the key nutrients necessary during pregnancy—folic acid, iron, calcium, vitamin D, and omega-3 fatty acids (DHA). A healthy diet can encompass a wide variety of eating patterns and preferences and can be tailored to suit individual needs or dietary restrictions.

Important Nutrients during Pregnancy

Folic Acid

Establishing a healthy diet before becoming pregnant and continuing throughout pregnancy is important for getting the necessary amount of folic acid. Folic acid (found in supplements and fortified foods), or folate (found naturally in food sources), is an essential B vitamin required early in pregnancy for proper development of the baby's spinal cord (in the first 28 days of pregnancy, often before a mother is aware she is pregnant). This water-soluble B vitamin is found in dark green leafy vegetables, meats, fish, fortified grains and cereals, legumes, and citrus fruits. The recommendation for folic acid is 400 µg/day prior to pregnancy and 600 µg/day once pregnant [1, 2]. Since folic acid is better absorbed by the body than folate, a folic acid supplement or prenatal vitamin is recommended.

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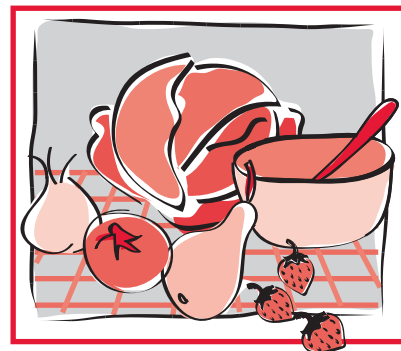
Iron

Iron is an essential nutrient for the human body. It is required for the transport of oxygen in the blood, as well as for the proper functioning of many processes in the body necessary for good health. It is well known that iron requirements increase during pregnancy to support the expanding blood volume, growth of the fetus, placenta, and other tissues associated with pregnancy. The recommendation for iron during pregnancy is 27 mg/day, almost double the requirement when not pregnant [2]. For this reason, many women find that they are iron deficient; a supplement may be recommended in addition to obtaining iron from food sources [3].

Good food sources of iron are generally from meat or seafood, including: beef, oysters, chicken, and turkey. These animal sources are known as *heme* iron, and are better absorbed by the body. Non-heme sources of iron do not come from animal products and include: iron-fortified cereals and oatmeal, beans, lentils, tofu, and spinach. Absorption of non-heme sources of iron can be boosted by pairing these items with a food rich in vitamin C, such as citrus fruits and juice, broccoli, and peppers.

Calcium & Vitamin D

Calcium and Vitamin D are essential for building the developing fetus' bones and teeth. The recommendation for calcium during pregnancy is 1000 mg/day; the recommendation for Vitamin D is 600 IU (15 µg)/day [2]. Sources of calcium include milk, cheese, and yogurt; non-dairy sources include fortified juices and milk alternatives, tofu, broccoli, and spinach. Vitamin D is not found in many food sources other than fortified milks and juices, salmon, tuna, and eggs. Exposure to sunlight can also increase vitamin D status in the body through a chemical reaction in the skin.



Quick Facts

- Pregnant women should increase their intake of a variety of fruits, vegetables, low-fat dairy, lean proteins, and fish to ensure that requirements for vitamins and minerals are met.
- Key nutrients needed during pregnancy include folic acid, iron, calcium, vitamin D, and omega-3 fatty acids (particularly docosahexaenoic acid (DHA)).
- Weight gain within recommended ranges is essential; to avoid gaining excess weight, decrease intakes of simple sugars and saturated fats.
- Follow safe food preparation practices at home and when eating out to avoid food-borne illness.

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Omega-3 Fatty Acids

The essential fatty acids, omega-6 (linoleic acid) and omega-3 (alpha-linolenic acid), cannot be synthesized in the human body and therefore must be obtained exclusively from food sources. Docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA), two types of omega-3 fatty acids, receive much attention for their beneficial health effects on both mother and infant, including: increased gestational length, increased cognition and visual performance, and decreased incidence of preterm birth, preeclampsia, and depression [4]. DHA in particular is found in large amounts in the brain and in the retina, and accumulates rapidly in the third trimester of pregnancy [4]. It is preferable to get these fatty acids from food sources.

Seafood, particularly oily fish such as salmon, is the major dietary source of DHA; flax seeds, walnuts, and vegetable oils are good sources of omega-3s, but only a small amount gets converted into DHA in the body. The current recommendation is that pregnant women should consume at least 8 – 12 ounces of fish per week in order to receive the full benefits of DHA [5-7]. Other DHA-rich food sources can include fortified foods, such as milk, eggs, yogurt, and bread.

Energy (Calories)

Contrary to the popular saying, pregnant women are not 'eating for two'. Most pregnant women do not need to increase their caloric intake in the first trimester. Calorie requirements increase somewhat in the second trimester and the most in the third trimester. The focus should be on increasing fruits and vegetables, lean protein, dairy, and fish while reducing intake of simple sugars and saturated fats. Calorie counting is usually not necessary unless there is a concern for gaining too little or too much weight.

Pregnancy increases caloric needs by:

- 0 calories in the first trimester
- 340 calories in the second trimester
- 450 calories in the third trimester
- Approximately 2200 – 2900 total kcal per day [8]

Healthy Weight Gain during Pregnancy

Pre-pregnancy Weight Status

Establishing a healthy weight before becoming pregnant is important as underweight and overweight status both pose risks for mother and baby. For women who want to become pregnant, achieving a Body Mass Index (BMI) in the 'normal' range of 18.5 kg/m² to < 25 kg/m² before becoming pregnant can help lay the groundwork for a healthy pregnancy [8]. Women who begin their pregnancy at a BMI above this can increase their risk for gestational diabetes, preeclampsia, cesarean section, and other delivery complications. Starting a pregnancy with a high BMI is also an independent predictor for excess weight gain during pregnancy, neural tube defects, infant mortality, and preterm birth [8]. The infant of an overweight woman or one who gains too much weight during her pregnancy has a greater chance of being large for gestational age, and has an increased risk for obesity and its related health problems such as cardiovascular disease and diabetes, as the child grows [9].

Underweight women will want to gain weight to ensure that they have adequate nutritional stores to support the growing fetus without depleting her stores to the point of exhaustion. Many women enter pregnancy already deficient in nutrients, particularly vitamins A, C, E, magnesium, potassium, fiber, and iron [8]. Further, the recommended intakes for these nutrients increase during pregnancy, so a higher quantity of nutrient-dense foods will need to be consumed to make up for the shortage. Underweight women can, counter-intuitively, also be setting up their infant for diabetes and weight gain in the future, since too little calories available in pregnancy predispose the child to 'store' calories rather than 'spend' them as they mature [9].

Recommendations on Weight Gain during Pregnancy

In 2009, the Institute of Medicine (IOM) revised their recommendations on weight gain during pregnancy. Women who are considered:

- Underweight (BMI <18.5 kg/m²) should gain 28-40 pounds total throughout pregnancy
- Normal (BMI 18.5-24.9 kg/m²) should gain 25-35 pounds total throughout pregnancy

Body Mass Index (BMI)

Body Mass Index (BMI) is a number calculated from a person's weight and height. BMI provides a reliable indicator of body fatness for most people and is used to screen for weight categories that may lead to health problems. Discuss with your doctor whether or not you should try to gain or lose weight before becoming pregnant depending on your pre-pregnancy BMI.

Formula for calculating BMI by hand:
[Weight (lb)/Height(inches)²] x 703

[CDC BMI Calculator](#)

- Overweight (BMI 25-29.9 kg/m²) should gain 15-25 pounds total throughout pregnancy
- Obese (BMI ≥ 30 kg/m²) should gain 11-20 pounds total throughout pregnancy

The recommendations are further divided by trimester: all women are counseled to gain 1.1-4.4 pounds during the first trimester with a range of 0.4 - 1.3 pounds gained per week thereafter depending on pre-pregnancy BMI (with underweight women being advised to gain the most and obese gaining the least) [10]. Weight loss while pregnant is not recommended.

Foods to Limit or Avoid while Pregnant

It is important during pregnancy to make every calorie count. To avoid excess weight gain, food items with 'empty' calories such as sodas and sweets should be decreased. These foods are high in simple sugars which may affect blood glucose (sugar) levels in addition to contributing excess calories

There are foods and drinks that should generally be avoided during pregnancy, including:

- **Saturated fat and sodium:** Foods high in these should be limited since they tend to be highly processed and provide few necessary nutrients.
- **Caffeine:** As tolerated when pregnant, but should be kept within a reasonable range of 300 mg or less per day (about 2 cups of coffee).

- **Alcohol:** Should not be consumed while pregnant. Some popular websites may suggest that one drink is acceptable during the third trimester but this is not backed or supported by public health agencies.
- **High-mercury fish:** Swordfish, tilefish, king mackerel and shark should not be eaten during pregnancy. Other sources of seafood, which may contain smaller amounts of mercury, such as salmon, shrimp, or tuna, should be kept to a maximum of 12 ounces per week, with no more than 6 ounces per week of albacore (white) tuna. Check local advisories about fish caught locally, in unsure, keep to 6 ounces or less per week.
- **Unpasteurized food and drink:** Raw milk, fresh-squeezed juices, or soft cheeses such as feta, brie, camembert, and queso fresco should be avoided. These items may contain bacteria normally killed during the pasteurization process. The food label will state whether the product has been pasteurized. See Colorado State University Extension fact sheet 9.372, [Food Safety During Pregnancy](#).
- **Raw sprouts:** These foods may contain bacteria in the seed shell where it is difficult to wash away. Cook sprouts or avoid them while pregnant.
- **Undercooked eggs, meat, poultry, fish, or shellfish:** Undercooked or raw foods may contain bacteria. This includes sushi, some salad dressings and sauces, and refrigerated pâtés and meat spreads. Cook all foods thoroughly and avoid items, such as dressings and sauces, which might contain raw egg.

Pregnancy and Food Safety

Food safety during pregnancy is particularly important as women's immune systems are suppressed and more susceptible to bacterial infections. Microorganisms that might be tolerated when not pregnant can cross the placenta and affect the developing fetus, particularly in the early stages of pregnancy. Of these bacteria, *Listeria monocytogenes* is probably the most common and also most familiar to pregnant women. Pregnant women are much more likely to acquire Listeriosis than the general population, so extra care should be taken when preparing foods [11].

Along with avoiding raw, undercooked, and unpasteurized foods as mentioned above, understanding and using safe food preparation practices can help decrease risk.

These practices include:

- Keeping raw meats, fruits and vegetables, and pre-cooked or ready-to-eat foods separated
- Washing hands, cutting boards, and countertops before use and in-between preparation of different types of foods
- Maintaining a clean refrigerator, at the right temperature
- Reheating deli meats and hot dogs to steaming hot before eating
- Cooking all meat, fish, poultry, and eggs thoroughly

Whether eating in or eating out, it is important to remember these simple food safety practices. A few extra precautions can ensure safety for mom, baby, and her family.

Summary

Pregnancy is a time in a woman's life when she may be more receptive to adopting healthy diet and lifestyle changes to provide the best environment for her developing baby. It is important to know which foods should be increased and which should be decreased to provide the best mix of nutrients during pregnancy. Further, knowledge of basic food safety principles will help keep mother and her baby safe from food-borne illness.

Increasing vital nutrients such as iron, calcium and vitamin D, folic acid, omega-3 fatty acids, while decreasing saturated fats, simple sugars, caffeine, and potentially unsafe food items such as high mercury fish and raw or undercooked foods will set the stage for a healthy mom and baby, for life. Continuing to practice healthy and safe food consumption and preparation throughout lactation and toddlerhood will provide numerous benefits as well.

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