REPRODUCTIVE HEALTH OUTCOMES & ENVIRONMENTAL HEALTH IN UTAH
Reproductive Health Outcomes and Environmental Health in Utah is another installment of educational reports produced by the Utah Environmental Epidemiology Program. This report provides an overview of reproductive health from family planning and preconception to delivery.

In addition to what is provided in this report, you can find more information through Utah’s Indicator-Based Information System for Public Health (IBIS-PH) at https://ibis.health.utah.gov and the Utah Environmental Public Health Tracking Network (UEPHTN) at http://epht.health.utah.gov. These free, online resources provide important information about the public health of Utah. If you have any questions, please do not hesitate to contact us at the Utah Department of Health.

I would like to thank all agencies within Utah who share data, maintain public information sources, and promote public and environmental health. Protecting the health of Utah is a collaborative effort that requires the input of many to achieve a common goal. I invite you to read this report and use it to promote health in your home and community.

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• Utah Birth Defects Network

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In 2016, the U.S. birth rate was 12.2 births per 1,000 population.¹ Utah’s birth rate for 2016 was 16.6 births per 1,000 Utah residents.¹ Utah has high birth rates. Higher birth rates mean an increased need for preconception, prenatal, neonatal, and postpartum care. Use this educational booklet to help you understand what you can do to keep you and your family healthy at all stages of pregnancy.
Recently, there have been significant advances in medicine and prenatal care in the United States. Despite these advancements, the United States still experiences poorer birth outcomes than many other developed countries.\(^1\) American-born babies are born early, at low birth weights, and with other disabling conditions at higher rates compared with other developed countries. Good preconception health and proper preconception healthcare can contribute to better birth outcomes.\(^2\)

Preconception health refers to the health of men and women during the years they can have children. Preconception health focuses on getting healthy before a pregnancy. This is important for many reasons. First, research shows women who are healthiest before pregnancy have the best birth and maternal outcomes.\(^2\) Second, getting healthy before pregnancy is important because about half of all pregnancies in the U.S. are unplanned.\(^2\)

In 2015, 21.3% of births in Utah were unintended.\(^3\) Unintended pregnancies are associated with poorer health outcomes and increased health care costs.\(^3\) Most women find out they are pregnant between weeks four and seven.\(^4\) The following chart shows vulnerability of the fetus to birth defects throughout 38 weeks of pregnancy. As the chart indicates, significant development occurs during the first four to seven weeks of pregnancy when women might not know they are pregnant, reinforcing the importance of good preconception health.

<table>
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<th>Period of the Embryo</th>
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<td>Weeks 20-36</td>
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<td>Week 38</td>
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Adapted from the Centers for Disease Control and Prevention Fetal Development Chart
Oftentimes, preconception health is only considered a need for women. In actuality, preconception health focuses on both men and women getting and staying healthy over the course of their reproductive years. In fact, there are things men can do to decrease adverse birth outcomes:

1. Create a reproductive life plan that includes goals for having or not having children, and how to achieve these goals
2. Prevent and treat sexually transmitted infections
3. Stop smoking, using street drugs, and/or binge drinking
4. Avoid or limit exposure to pesticides, heavy metals, and other toxins
5. Avoid overheating the testicles because elevated temperatures can impair sperm production and function
6. Reach and maintain a healthy weight
7. Learn your family history
8. Get help for violence
9. Get mentally healthy
10. Support your partner

Both men and women can practice good preconception health by seeking preconception healthcare. Preconception healthcare is medical care received by a man or woman that concentrates on the areas of health that contribute to having a healthy pregnancy and baby. Preconception healthcare includes screenings, diagnosis, treatment, counseling, and follow-up care. The Centers for Disease Control and Prevention (CDC) recommends a minimum of one pre-pregnancy checkup at least 3 months before pregnancy for women who are planning on becoming pregnant. The purpose of this checkup is to ensure that women are in optimal health for pregnancy and do not enter pregnancy with unmanaged health conditions. A Healthy People 2020 objective is to increase the number of women who receive preconception care services. Between 2012 and 2014, only 20.8% of women in Utah reported a preconception health visit with a healthcare provider.

There are a number of factors other than medical health that can impact a woman’s ability to conceive, carry, and deliver a healthy baby. Some of these factors include, age of mother, genetics, mental health status, socioeconomic status, lifestyle, access to health care, and social or physical environments. Families can improve outcomes by identifying factors during preconception health care checks and learn ways to manage chronic conditions, modify behavior, and avoid certain risks.\(^1\) The Utah Pregnancy Risk Assessment Monitoring System (PRAMS) reported the following maternal lifestyles during the preconception time period in Utah during the years 2012-2016.

The following graph shows responses to the question, “In the month before you got pregnant, were you covered by any of these insurance plans?”

![Graph showing insurance status before pregnancy in Utah, 2012-2016.](https://ibis.health.utah.gov/query/result/prams/InsurBefPreg_09/InsurBefPreg_09.html)

A chronic condition is a physical or mental health condition that lasts more than one year and causes functional restrictions or requires ongoing monitoring or treatment. Nearly half (45%, or 133 million) of all Americans suffer from at least one chronic disease. Managing chronic diseases before and during pregnancy is very important because chronic diseases significantly increase the chances of poor maternal and newborn outcomes in pregnant women. During preconception visits, healthcare providers can screen for chronic illnesses and provide information about how to manage conditions.

**OVERWEIGHT & OBESITY**

Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health. Overweight is defined as a BMI of 25 or more; obesity is defined as a BMI of 30 or more. BMI is calculated by dividing weight in kilograms by the square of height in meters. Being overweight significantly increases the risk of many chronic diseases, including heart disease, stroke, hypertension, type 2 diabetes, osteoarthritis, and some cancers. At an individual level, BMI can be used as a screening tool but is not diagnostic of the health of an individual. A trained healthcare provider should perform appropriate health assessments in order to evaluate an individual’s health status and risks.

Overweight and obesity are significant issues in Utah. More than half of Utah adults (60.7%) are considered overweight and of those who are overweight more than a third are also considered obese, which means they have a BMI over 30. In 2016, 21.0% of Utah women who delivered a baby were obese prior to becoming pregnant. Rates of obese women prior to pregnancy have almost doubled from 1995 (10.8%) to 2016 (21.0%).

![OBESE BMI PRIOR TO PREGNANCY](https://ibis.health.utah.gov/indicator/view/ObePre.Year.html)
OVERWEIGHT AND OBESITY CONTINUED

Obesity can create challenges for women who are trying to become pregnant. Obesity is associated with menstrual cycle disturbances, decreased fertility, and increased risk of miscarriages. Women who are obese prior to pregnancy have longer hospital stays and higher utilization of medical care during pregnancy.

Being overweight during pregnancy also increases the risk of adverse birth outcomes along with an increased chance of gaining excess weight during pregnancy. Women who gain excess weight during pregnancy have an increased risk for having large or gestational age infants, cesarean delivery, and long term weight retention. Adverse perinatal outcomes associated with maternal obesity include neural tube defects, preterm delivery, diabetes, cesarean delivery, and hypertensive and thromboembolic disease.

A preconception health care visit should include counseling for overweight and obese women. Some healthcare providers recommend women use effective birth control until they reach a healthy weight. Being active and eating healthy are important behaviors to maintain a healthy weight.

UNDERWEIGHT

Women who are underweight (BMI less than or equal to 18.5) should also discuss potential health concerns with a medical professional. Women who are underweight have an increased risk of infertility. Underweight women are also more likely than women of normal weight to have a preterm delivery or a low-birthweight infant. All women with low BMI should be screened and assessed for eating disorders and distortions of body image.
Diabetes is a disease in which blood glucose (commonly known as blood sugar) levels are higher than normal. Most of the food we eat is converted into glucose for our body to use as energy. The pancreas makes a hormone called insulin, which helps move glucose into the cells in our body. Diabetes either doesn't allow the body to make enough insulin or keeps the insulin from working in the body as it should.

There are three types of diabetes, as illustrated in the table below. Type 2 diabetes is the most common type of diabetes. Type 2 diabetes does not allow your body to use insulin properly. Type 1 diabetes is much less common. Only 5% of people with diabetes have type 1. In type 1 diabetes, your body does not produce insulin. Type 1 and type 2 diabetes have different causes. Two factors, however, are important in both: a predisposition to the disease and an environmental trigger. In type 1, for example, genetics play a role but environmental factors, such as exposure to certain viruses, may trigger the disease. Type 2 diabetes has a stronger link to family history and lineage than type 1, but also relies on environmental factors to develop. Lifestyle, for example, influences the development of type 2 diabetes. Finally, gestational diabetes occurs when pregnant women who have never had diabetes before have high blood glucose levels during pregnancy.

<table>
<thead>
<tr>
<th>Type of Diabetes</th>
<th>What happens in the body?</th>
<th>Diagnosis Period</th>
<th>Diabetes Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1 Diabetes</td>
<td>The pancreas does not produce insulin.</td>
<td>Usually diagnosed in childhood or early adulthood.</td>
<td>Blood glucose can be controlled by medication (insulin injections), exercise, nutrition and emotional support.</td>
</tr>
<tr>
<td>Type 2 Diabetes</td>
<td>The body does not use insulin properly.</td>
<td>Usually diagnosed in adults.</td>
<td>Some people can control type 2 diabetes by eating healthy and being active. Others may need to take medication (oral and insulin injections).</td>
</tr>
<tr>
<td>Gestational Diabetes</td>
<td>The body is not able to make and use all the insulin it needs for the pregnancy.</td>
<td>Diagnosed in women during pregnancy.</td>
<td>Some women can control gestational diabetes with a special meal plan and physical activity. Others need to monitor glucose daily and take insulin injections.</td>
</tr>
</tbody>
</table>

Gestational diabetes usually disappears after pregnancy, although 5 to 10 percent of women with gestational diabetes may have actually had undiagnosed type 2 diabetes. Women with gestational diabetes tend to have a higher risk of developing diabetes later in life. At least 40 percent of mothers with gestational diabetes will develop diabetes within 20 years. Mothers with gestational diabetes are more likely to have large babies (more than 4,000 grams, or 8 pounds 13 ounces), a risk factor for unselected cesarean section delivery and adverse birth outcomes. Infants born to women with gestational diabetes have a higher risk of developing diabetes and obesity themselves. The prevalence of gestational diabetes in Utah has risen steadily since 1990, increasing from 1.4 percent to 5.7 percent of births in 2015.
A small percentage of babies are born to mothers with diabetes prior to pregnancy. However, they experience an unequal rate of poor birth outcomes. Babies born to women with type 1 and 2 diabetes, especially uncontrolled diabetes, are at a higher risk for birth defects, stillbirth/miscarriage, large birthweight (>9lbs), low blood sugar after birth, jaundice, and obesity later in life.

There are risks for the mother as well. Women with uncontrolled diabetes are more likely to experience preeclampsia, preterm labor, a cesarean delivery, gum disease, bladder and other infections, and worsening of preexisting conditions such as eye, kidney, heart, and nerve problems.

Getting diabetes under control before pregnancy is crucial because high blood glucose levels and ketones, which can be poisonous at high levels, pass through the placenta to the baby. This is especially concerning during the first trimester when the baby’s organs are forming and most women do not know they are pregnant yet. Experts recommend good control of blood glucose three to six months before pregnancy.

A preconception healthcare visit provides an opportunity to make sure blood glucose levels are under control, consider complications that may exist due to diabetes such as high blood pressure, heart disease, and kidney, eye, and nerve damage, test the function of the thyroid, and discuss medications and supplements to ensure they are safe to continue using during pregnancy. Some medications used to treat diabetes and complications of diabetes are not recommended for use during pregnancy.

PERCENTAGE OF UTAH BIRTH RECORDS INDICATING GESTATIONAL DIABETES BY YEAR, 1997-2015

Asthma is a condition that makes breathing difficult. It is usually triggered by exposure to something in the environment that causes the airways to react. During an asthma attack, the lung airways tighten and fill with fluid. The resulting effects are chest tightness, wheezing, breathlessness, and coughing. Asthma attacks can vary in severity and triggers vary from person to person.

Asthma triggers can come from a variety of sources, such as outdoor allergens, chemicals used in certain occupations, vigorous exercise, or even some medical conditions. Some common triggers include:

- Dust mites
- Pollen
- Secondhand smoke
- Mold
- Air pollution and smoke
- Strenuous exercise
- Pets
- Cockroaches

Asthma affects people of all ages, but it most often starts during childhood. In the United States, more than 25 million people are known to have asthma. About seven million of these people are children. According to PRAMS data, 8.21% of women in Utah reported having asthma three months prior to getting pregnant for years 2012-2016. This is important to be aware of because uncontrolled asthma complicates 4-8% of pregnancies. Asthma is one of the most common serious medical problems to complicate pregnancy.

Controlling asthma prior to conception is extremely important because research shows women with severe asthma prior to pregnancy are more likely to experience worsened symptoms during pregnancy. When a pregnant woman has an asthma attack, she may have trouble breathing, which can limit the amount of oxygen going to the baby. Lack of oxygen can lead to serious complications such as as impaired organ development and poor fetal growth. Uncontrolled asthma has been associated with other risks including placental problems, premature delivery, increased rates of cesarean delivery, low birth weight, high maternal blood pressure, and longer hospital stays. Studies have found that women with asthma may also experience depression and overweight or obesity at higher rates.

Effective asthma management includes control of exposures to factors that trigger exacerbations, adequate pharmacological management, continual monitoring of the disease, and patient education in asthma care. Some asthma medications are not recommended during pregnancy. Preconception counseling with a health care provider is necessary to discuss asthma medications that are safe to take during pregnancy.
Mental health is equally important to physical health in ensuring healthy outcomes for both mother and baby. The U.S. Department of Health and Human Services describes mental health as, “our emotional, psychological, and social well-being. It affects how we think, feel, and act. It also helps determine how we handle stress, relate to others, and make choices.” Mental health is important at all stages of life, including pregnancy.

Women are 1.7 times more likely to experience depression than men. One in eight women will suffer from depression at some point in her lifetime and it is estimated that only half of those women will ever receive a clinical diagnosis. Women with depression are more likely to report symptoms such as anxiety, somatization, increases in weight and appetite, oversleeping, and expressed anger and hostility. Furthermore, women who are already prone to depression are at increased risks during pregnancy because of endocrine changes. Depression can affect a women’s preconception, prenatal, and postnatal health.

For the combined years 2012-2014, 16% of Utah women reported visiting a health care worker to be checked for depression or anxiety in the 12 months before pregnancy. In 2016, 22.25% of new mothers reported having anxiety during the three months prior to pregnancy and 14.42% reported an actual diagnosis of depression before pregnancy.

Poor preconception mental health is associated with pregnancy complications, fetal death and low birth weight babies. A study on women’s preconception mental health found that those with poorer mental health were 40% more likely to have pregnancy complications than women without. Research also shows an association between psychiatric disorders during pregnancy and poor obstetric outcomes, higher risk of postpartum psychiatric illness, increased rates of substance abuse, and lower participation in prenatal care leading to adverse infant outcomes. Postpartum psychiatric illness left untreated is associated with adverse outcomes for the woman, her infant, and family.

Proper diagnosis and treatment of mental illness during preconception years is important for ideal health during pregnancy. It is recommended that women planning on becoming pregnant, or women who are pregnant, discuss treatment options with a mental health professional. Some psychiatric medications are not recommended for mothers who are planning on becoming or are pregnant.
Sexually Transmitted Diseases (STDs) refer to more than 25 organisms transmitted primarily through sexual activity.\(^1\) The causes of STDs are bacteria, viruses, and parasites. Commonly known STDs include chlamydia, gonorrhea, genital herpes, HIV, AIDS, HPV, syphilis, and trichomoniasis. STDs caused by bacteria or parasites can be treated with antibiotics; STDs caused by viruses have no cure but can be controlled with medication.\(^2\)

Both men and women can acquire and transmit STDs. Health concerns are often more serious for women.\(^2\) STDs can lead to reproductive health problems, fetal and perinatal health problems, cancer, and an increased risk of HIV transmission.\(^1\) An STD during pregnancy increases the risk of health problems for the baby and mother. An untreated mother can pass an STD to her child either during pregnancy or through childbirth.

Screening for STDs should be common practice during preconception health care visits. Health professionals recommend individuals who are sexually active get tested yearly or when men or women have a new sex partner, at preconception visits, and after a woman becomes pregnant.\(^1\) Men and women can take steps to prevent STDs, for example condom use, which greatly reduces the risk of acquiring or spreading STDs. Healthcare providers can provide other strategies, including vaccinations, to prevent STD acquisition.

## REDUCING RISK

Identifying risks before and during pregnancy is an important part of achieving good reproductive health. Risks can vary from person to person and couple to couple. Identifying potential risks allows women and couples to create strategies to reduce risk factors that may influence pregnancies.

## ALCOHOL USE

There is no known safe amount of alcohol consumption during pregnancy or when women are trying to get pregnant.\(^1\) Women should practice safe alcohol use at all times during their reproductive years because most women do not find out they are pregnant for up to seven weeks.\(^1\) Two to seven weeks into pregnancy is a critical time for fetal development, making alcohol consumption dangerous for the fetus. Studies have shown that 1 in 20 pregnant women drank excessively before finding out they were pregnant.\(^2\)

The CDC defines heavy drinking as consuming an average of more than one drink per day.\(^3\) Excessive heavy drinking before pregnancy is a risk factor for continued use during pregnancy. Alcohol use during pregnancy is associated with spontaneous abortions, birth defects, and developmental disorders, including fetal alcohol syndrome (FAS).\(^3\) FAS is considered the most preventable neurobehavioral and developmental abnormality.\(^3\)

Between 2013 and 2015, 25.64% of Utah mothers reported drinking during the 3 months prior to becoming pregnant.\(^2\) Women ages 18-19 and 20-24 years old reported the highest percentages during that time frame.

Women who are trying to get pregnant should stop drinking since the first weeks of pregnancy are critical in fetal development. Discontinuing alcohol use may lower the risk of having a child with physical, mental, or emotional problems.\(^2\)
Smoking can hurt both mother and baby. Smoking is linked to many negative health effects, including negative reproductive outcomes and pregnancy complications. Women who smoke are more likely to:

- Experience delayed conception
- Experience both primary infertility (first-time conception) and secondary infertility (infertility after at least one conception)
- Experience menstrual problems
- Have a miscarriage or sick baby

Harmful chemicals from smoke can pass directly through the umbilical cord to the baby. Secondhand smoke is also dangerous to a child or an infant and can cause asthma, bronchitis, other respiratory illnesses and increase the risk for sudden infant death syndrome (SIDS). One source estimates that eliminating smoking during pregnancy could reduce infant death by 5% and reduce the proportion of low birth weight babies by 10%.

According to PRAMS data, between 2012 and 2016 9.45% percent of mothers surveyed reported smoking three months prior to pregnancy. The highest percentage was reported by those ages 18-19, which is significantly higher than all other age groups except 0-17.

Interventions to assist women who smoke include counseling, medication options, and referrals to other services. The Tobacco Prevention and Control Program’s free phone-based coaching is available at 1-800-QUIT-NOW. Additional resources can be found at www.tobaccofreeutah.org.
Toxic chemicals in the environment can harm the reproductive system and negatively affect pregnancies. Research shows exposure to environmental hazards before and during a pregnancy can cause serious and long-lasting effects on reproductive health. Because environmental chemicals are found in the air, water, soil, food, and consumer products, pregnant women and women trying to get pregnant are exposed every day. Therefore, reducing exposures to toxic environmental hazards is an important risk reduction strategy. The following are some potentially toxic environmental hazards.

**MERCUY**

Mercury is a metal with several forms. People can be exposed to mercury through skin, by touching it, the air, by breathing it in, and eating or drinking contaminated food or water. Contact with mercury during and before pregnancy can have serious consequences for mom and baby. Mercury exposure is particularly dangerous for children and the developing fetus. Mercury can damage the lungs, kidneys, nervous system, and harm a developing fetus. Mercury can also cause hearing and vision problems. Children are more sensitive to mercury than adults and it can be passed during breastfeeding from mother to baby. Possible health effects passed onto the child or fetus include mental retardation, incoordination, blindness, seizures, and inability to speak.

**HOW TO STAY SAFE FROM MERCURY BEFORE AND DURING PREGNANCY:**

- Do not eat fish containing high amounts of mercury, including shark, swordfish, king mackerel, and tilefish
- Learn about dental filling options before getting a filling. Pregnant women should tell their dentist before having any dental work done
- Do not use a vacuum to clean spilled mercury
- Pregnant women should not come into contact with broken thermometers or fluorescent light bulbs
- Use safety precautions during occupational exposure
LEAD

Lead is a naturally-occurring element found in small amounts in the earth’s crust. Lead can be found in all parts of our environment – the air, the soil, the water, and even inside our homes. Lead can be found in paint and dust in older homes, especially dust after a renovation or repair, foreign candy, some makeup, glazed pots, holistic medicine made in other countries, pipes, plumbing materials, gasoline, batteries, soil, and tap water where lead pipes are present.

Lead can pass from a mother to her unborn baby. Excessive exposure to lead can increase risk for miscarriage, low birthweight, premature birth, and brain, kidney, and nervous system damage. Lead exposure can also cause the baby to have learning or behavioral problems later in life.
FIVE WAYS TO STAY SAFE FROM LEAD BEFORE & DURING PREGNANCY

1. WATCH OUT FOR LEAD IN YOUR HOME. Most lead comes from paint in older homes. When old paint cracks and peels, it makes dangerous dust. The dust is so small, you cannot see it. You can breathe in lead dust and not even know it. Home repairs like sanding or scraping paint can create dangerous lead dust. You should not be in the house while someone is cleaning up after renovations, painting, or remodeling a room with lead paint.

2. TALK TO YOUR DOCTOR. Talk to your doctor about any medicines or vitamins you are taking. Some home remedies and dietary supplements may have lead in them. It is also important to tell your doctor about any cravings you have such as eating dirt or clay (pica), because dirt or clay may have lead in it.

3. AVOID CERTAIN JOBS OR HOBBIES. Some jobs or hobbies involve lead exposure. Examples include construction or home renovation/repair in older homes, work with batteries, plumbing, or working with lead ammunition. To avoid take-home lead, it is a good idea to change into clean clothing before coming home, keep work shoes outside, and wash all work clothes separately from the rest of the family’s.

4. EAT FOODS WITH CALCIUM, IRON, AND VITAMIN C. These foods may help protect you and your unborn baby. Calcium is in milk, yogurt, cheese, and green leafy vegetables like spinach. Iron is in lean red meat, beans, cereals, and spinach. Vitamin C is in oranges, green and red peppers, broccoli, tomatoes, and juices. Use caution when eating candies, spices, and other foods that have been brought into the country by travelers, especially if they appear to be non-commercial products.

5. STORE FOOD PROPERLY. Some dishes and serving containers may contain lead. It is important to store and serve your food properly. Avoid using imported lead-glazed ceramic pottery produced in cottage industries. Avoid using pewter or brass containers and utensils to cook, serve, or store food. Avoid using leaded crystal to serve or store beverages. Do not use dishes that are chipped or cracked.

COMMON LEAD SOURCES:

- Lead-based paint chips or dust in homes built before 1978, particularly during home renovation and repair
- Water
- Imported pottery, jewelry, makeup, candies, spices, and some home remedies
- Adult hobbies or jobs including plumbing, reloading or casting bullets, target practice, fishing sinkers, jewelry making, furniture refinishing, pottery, working with lead solder, stained glass
- Soil
- Living near a mining or milling factory, smelter, oil refinery, paint, battery, or ammunition factory
PESTICIDES

Chemicals that kill bugs (insecticides), weeds (herbicides), and rodents (rodenticides) are all considered pesticides. Pesticides are manufactured in multiple ways and can be found in products such as food, bug sprays, spray cans, household cleaners, pet products, and even swimming pools. Pesticide exposure is common. In fact, people can be exposed to pesticides every day through the air and water. Excessive exposure to pesticides is a concern for adults and children, especially pregnant women.

Excessive exposure to pesticides during pregnancy can lead to birth defects, learning problems later in the baby's life, low birthweight, miscarriage, and premature birth. Some studies indicate the greatest risk of exposure to pesticides is during the first three to eight weeks of the first trimester when the neural tube development is occurring. The safest rule of thumb is that pregnant women should avoid pesticides whenever possible. This can be done by avoiding pesticides in food, at home, at work, and using insect repellants during pregnancy.

THE MARCH OF DIMES SUGGESTS THE FOLLOWING WAYS TO STAY SAFE FROM PESTICIDES BEFORE & DURING PREGNANCY

☑️ PROTECT YOURSELF FROM PESTICIDES IN FOOD
Eat organic foods if possible. These are foods that are grown without the use of pesticides. Buy fresh fruits and vegetables that are in season. They may have fewer pesticides on them when they’re in season. Wash and scrub all fruits and vegetables under running water. This helps clean away any pesticides they may have on them. Peel fruits and vegetables and throw away outer leaves of leafy vegetables. Trim fat from meat and skin from poultry (chicken, turkey, etc.) and fish.

☑️ PROTECT YOURSELF IF YOU CONTROL FOR PESTS IN YOUR HOME OR YARD
Use something other than chemicals, such as mousetraps. Be careful not to set traps in places where children can get to them. Clean up food and water that may attract pests. Wipe up spills and clean up crumbs right away. Fix leaky water pipes. If pesticide use is necessary, read the instructions and warnings on product labels for all pesticides. If you have leftover pesticides, follow state and local rules for safe disposal. Consider having someone else put the pesticide in your home. Ask them to follow the directions on the product label. After using the pesticide, open windows to air out your home and wash all surfaces where food is made.

If you use a pest-control service, ask about their pesticides. The company representative can tell you about the pesticides used and any risks they may pose to your baby’s health. Treat pest problems in your yard or garden with something other than chemicals. If you do use pesticides, only treat specific places affected by pests or weeds. Don’t spray your whole lawn or garden. Don’t spray pesticides outside on a rainy or windy day. They can blow or run into places you don’t want them to be, such as swimming pools or vegetable gardens.

☑️ PROTECT YOURSELF FROM PESTICIDES AT WORK
Talk to your boss if you are pregnant and work with pesticides. You may be able to change job responsibilities to keep you and your baby safe during pregnancy. Wear protective clothing. Shower and change your clothes and shoes before going home. Wash your work clothes at work or wash them at home separately from the rest of the laundry. Wash your hands before eating.
Zika is a disease caused by a virus transmitted primarily by Aedes mosquitoes. The virus can also be spread through sex from a person who has Zika to his or her sexual partner and from transmission of a pregnant woman to her fetus. Many people who are infected with the Zika virus won’t have symptoms or will have mild symptoms lasting for several days to a week. These symptoms include fever, rash, joint pain, red eyes, muscle pain, and headache. People usually don’t get sick enough to go to the hospital, and they very rarely die of Zika. For this reason, many people do not realize they have been infected.

The Zika virus is a serious concern for pregnant women, or women who are trying to conceive and their partners because the virus can be passed to a fetus. Zika infection during pregnancy can cause a birth defect called microcephaly, which causes an abnormally small head, and other severe fetal brain defects.

CDC recommends precautions for women and their partners thinking about pregnancy:

- If you travel to an area with Zika, talk to your doctor or other healthcare provider first and take steps to plan for travel.
- If your partner travels to an area with Zika, protect yourself from Zika during sex.

Women and men should talk to their healthcare provider about planning their pregnancies if they live in areas with active Zika virus transmission. The following table provides recommendations from the CDC regarding pregnancy planning and possible Zika virus exposure.

### POSSIBLE EXPOSURE FROM RECENT TRAVEL TO AN AREA WITH ZIKA OR SEX WITHOUT A CONDOM WITH A PARTNER WHO IS INFECTED WITH ZIKA

<table>
<thead>
<tr>
<th>Suggested timeframe to wait before trying to get pregnant</th>
<th>WOMEN: wait at least eight weeks after symptoms start, or last possible exposure before trying to conceive</th>
<th>MEN: wait at least six months after symptoms start, or last possible exposure before trying to conceive</th>
</tr>
</thead>
</table>

### POSSIBLE EXPOSURE FROM LIVING IN OR FREQUENTLY TRAVELING TO AREAS WITH ZIKA

<table>
<thead>
<tr>
<th>If you have a positive Zika test</th>
<th>WOMEN: wait at least eight weeks after symptoms start or last possible exposure before trying to get pregnant</th>
<th>MEN: wait at least six months after symptoms start, or last possible exposure before trying to conceive</th>
</tr>
</thead>
<tbody>
<tr>
<td>If no Zika testing was performed or you have a negative test</td>
<td>WOMEN &amp; MEN: Talk to your doctor or healthcare provider</td>
<td></td>
</tr>
</tbody>
</table>

18
Insect repellants are safe for women to use before and during pregnancy. In fact, insect repellent is important because you want to avoid insect bites during pregnancy due to the risks of some insects carrying infections that can be harmful to the baby.⁶

Be sure to follow the directions on the product label. There are other ways to prevent insect bites, including staying indoors in the early morning or late afternoon when mosquitoes are most likely to bite, and wearing long pants and long sleeves when going outdoors.⁶
Indoor and outdoor air pollution affects health in a number of ways, ranging from coughing and shortness of breath to exacerbating conditions such as asthma, emphysema, and bronchitis. Air pollution has also been linked to higher occurrence of heart attacks, strokes, premature birth, low birthweight, and babies with lung problems. The Environmental Protection Agency (EPA) identified indoor and outdoor pollutants of concern before and during pregnancy. These pollutants of concern include carbon monoxide, fumes from paint and household cleaners, particulate matter and ozone.

Ground-level ozone, not to be confused with the atmosphere’s protective ozone layer, is created by reactions between environmental pollutants, light, and heat. Ozone is the main component of smog and is dangerous to health and the environment. The creation of ozone is facilitated by warm weather and sunshine; therefore, ozone levels are usually higher in the summer and in the mid-afternoon.

“PM” stands for particulate matter, which is a mixture of extremely small particles and liquid droplets. PM has many different components such as acids, organic chemicals, metals, and soil. PM is measured in micrometers, so PM$_{10}$ refers to particulate matter that is 10 micrometers in diameter and PM$_{2.5}$ refers to particulate matter that is 2.5 micrometers in diameter. The important thing to understand about PM is its size. The size of the particle is directly linked with its ability to harm human health; the smaller the particle, the easier it can pass through the nose and throat and get deeply lodged into lungs. Once inhaled, PM can affect the heart and lungs, causing serious health consequences.

## SOURCES OF PM

PM$_{10}$ typically comes from mechanical grinding and the mixing of fluid and particles from a solid material. Examples of these are metals from suspended road dust and organic debris. They can simply be found by roadways and dusty industries. They are known as primary particles that are released directly into the air.

PM$_{2.5}$, also known as secondary particles, are commonly formed from combustion or photochemical reaction in the atmosphere. The reaction usually includes organic carbon, basic carbon, sulfate, nitrate, and metals. PM$_{2.5}$ can be found in smoke or haze and is released into the air from forest fires, gases from power plants, industries, vehicles, fireplaces, and wood burning stoves. The particles can form from locations that are farther away from a source.
EPA RECOMMENDATIONS TO REDUCE YOUR EXPOSURE TO INDOOR AND OUTDOOR AIR POLLUTION:

WAYS TO REDUCE EXPOSURE TO PARTICLE POLLUTION AND OZONE

• Check the air quality index (AQI) ([http://air.utah.gov](http://air.utah.gov)) and plan activities for days when particle and ozone levels are lower.
• When the AQI indicates moderate air quality (51-100), do less outdoor activity or choose an activity that requires less energy (e.g., walk rather than jog).
• When the AQI indicates poor air quality (101+) exercise indoors or plan your outdoor activity in the morning when air quality is usually better.
• Avoid exercising near high-traffic roads, regardless of the AQI.
• Burn only clean, seasoned wood.
• Maintain your woodstove annually.
• Consider upgrading an outdoor wood-fired boiler to a new EPA-qualified model[^10].

WAYS TO PREVENT EXPOSURE TO PAINT FUMES

• Pregnant women and children should avoid paint fumes and limit time spent in freshly painted areas.
• Use proper ventilation (e.g., open a window) while painting and after a room has been recently painted.
• Do not use exterior paint indoors.
• Read the labels before using products, especially when setting up a nursery.
• Use paint with zero-volatile organic compounds (VOCs) and low-VOC[^10].

WAYS TO REDUCE EXPOSURE TO CLEANING PRODUCTS

• Never mix cleaning products.
• Pregnant women should only use cleaning products in well-ventilated areas, while wearing protective gloves.
• Consider using alternative products such as baking soda and vinegar.
• Look for the Design for the Environment (DFE) logo on safer cleaning products[^10].

WAYS TO PREVENT CARBON MONOXIDE EXPOSURE

• Install carbon monoxide alarms that are Nationally Recognized Testing Laboratory approved.
• Have fuel-burning appliances (e.g., furnace flues and chimney) checked annually.
• Never use gas ovens or burners to heat a home.
• Do not use charcoal grills indoors.
• Do not use gasoline-powered engines (e.g., mowers, weed trimmers, generators) in enclosed spaces.
• Do not idle cars in the garage.
• Do not ignore symptoms (i.e., nausea, vomiting, fatigue) of carbon monoxide poisoning when around a carbon monoxide source[^10].
RADON

Radon is a cancer-causing radioactive gas. Radon comes from the natural radioactive breakdown of uranium in soil, rock, and water, and gets into the air you breathe. Long-term exposure to radon increases the risk of lung cancer. Radon is the leading cause of lung cancer among non-smokers and the second leading cause of lung cancer in the United States. Each year, about 21,000 people in the United States die of lung cancer attributed to radon exposure.

Radon is a health hazard when it gets trapped inside homes or buildings. Radon can enter homes and buildings through basement walls, cracks in foundations, wall openings around sump pumps and drains, construction joints, crawl spaces showers, and well water with high radon concentrations. Without properly reducing radon levels in the home, the risk of lung cancer increases. Over time, particles from radon can get trapped in an adult or baby’s lungs and breakdown, damaging lung tissue. The only way to know what the levels of radon are in your home is to test for radon. Test kits are inexpensive and easy to use. Visit http://deq.utah.gov/ProgramsServices/programs/radiation/radon/ to order a test kit.

SOURCES OF RADON

Uranium is a radioactive element that occurs naturally in the soil. When uranium decays, it produces a radioactive gas called radon. Outside air naturally has small amounts of radon, but its biggest threat is when radon gets trapped inside homes and buildings. As radon gets trapped inside, radon air concentration increases, increasing the risk of lung cancer.

The best way to prevent exposure to radon is to properly test your home or building. Even though underlying geologic factors play a role in radon risk, an individual’s home plays the greatest role in radon exposure. People living in a basement, an older home, or homes with a walk-in or encapsulated basement have a higher risk of radon exposure.
The body needs vitamins and nutrients to stay strong and healthy. During pregnancy, the baby relies on the mother for all the necessary vitamins and nutrients. Eating healthy before and during pregnancy should provide all the nutrients a mother needs, however, some nutrients, such as folate and iron, can be difficult to get from food alone. Taking a prenatal vitamin before and during early pregnancy ensures needed nutrients.

Prenatal vitamins are specifically for pregnant women. They include the nutrients that women need before and during pregnancy. All nutrients are important but there are six that play a crucial role in the growth and development of babies. These are folate, iron, calcium, vitamin D, DHA, and iodine.
Folate is a B vitamin that is naturally present in many foods, added to others, or available as a dietary supplement. The body uses folate to make new cells and we all need folate in our diets. Folate is especially important for pregnant women because it can help prevent major birth defects of the brain and spine. A form of folate, called folic acid, is used in dietary supplements and fortified foods.

The CDC recommends women take 400mcg per day for at least one month prior to becoming pregnant, and during pregnancy. This can be done by taking a vitamin every day with folic acid in it, or by eating a bowl of cereal that has 100% of the daily value of folic acid. For women who have had a prior birth complicated by a neural tube defect, their folate dose should be increased to 4 milligrams per day, at least one month prior to pregnancy.

**SOURCES OF FOLATE**

Folate is found naturally in a wide variety of foods, including vegetables (especially dark green leafy vegetables), fruits and fruit juices, nuts, beans, peas, dairy products, poultry and meat, eggs, seafood, and grains.
IRON

Iron is a mineral your body uses to make hemoglobin.\textsuperscript{1} Hemoglobin is a protein that helps carry oxygen from your lungs to the rest of your body. The body needs twice as much iron during pregnancy in order to make enough blood to transport oxygen to the baby.\textsuperscript{1} The CDC says women of reproductive age need 18 milligrams of iron each day while pregnant women need 27 milligrams of iron each day. Most prenatal vitamins provide this amount. Food sources of iron include lean meat, poultry, seafood, cereal, bread, leafy green vegetables, beans, nuts, raisins, and dried fruit.

Preconception visits should include screening to identify and treat anemia.\textsuperscript{2} Iron deficiency during pregnancy increases the risk of maternal and infant mortality, premature birth, and low birth weight.\textsuperscript{3}

CALCIUM

Calcium is one of the most important minerals for the human body.\textsuperscript{4} It helps form and maintain healthy teeth and bones.\textsuperscript{4} Calcium helps babies’ bones, teeth, heart, muscles, and nerves develop.\textsuperscript{1} Experts recommend 1,000 milligrams of calcium each day during pregnancy.\textsuperscript{4} Prenatal vitamins are a good source of calcium in addition to food sources. These include, milk, cheese, yogurt, broccoli, kale, and orange juice.

Calcium deficiency during pregnancy can cause health conditions such as osteoporosis later in life, which causes bones to become thin and break easily.\textsuperscript{1} This happens if you don’t get enough calcium during pregnancy because your body will take it from your bones and give it to your baby.\textsuperscript{1}
VITAMIN D

Vitamin D is important because it helps your body absorb calcium. Vitamin D also supports nerves, muscles, and the immune system to function properly. Expectant mothers need Vitamin D for both their wellbeing and for the healthy development of their baby. Vitamin D supports fetal bone development. Vitamin D deficiency has been associated with preeclampsia.

Pregnant women need 600 international units of vitamin D each day. Prenatal vitamins may not contain enough vitamin D. If not, additional supplementation should be taken daily. Foods that provide vitamin D include egg yolks, salmon and cod liver, and fortified foods such as milk or cereal.

DHA

DHA stands for docosahexaenoic acid, which is a fat called omega-3 fatty acid. DHA helps with growth and development. 200 milligrams of DHA are needed each day during pregnancy for fetal brain and eye development. Not all prenatal vitamins contain DHA, therefore, it may be necessary to take an additional DHA supplement with your doctor’s approval. Food sources of DHA include fish that are low in mercury such as herring, salmon, trout, anchovies, halibut, orange juice, milk, and eggs that have DHA.
Iodine is a mineral your body needs to make thyroid hormones. Iodine is important during pregnancy because it supports brain and nervous system development.¹

220 micrograms of iodine are needed every day during pregnancy.¹ Not all prenatal vitamins contain iodine, so it may be necessary to eat food sources of iodine or take an additional iodine supplement. Consult a healthcare provider about taking an iodine supplement. Good sources of iodine include, fish, milk, cheese, yogurt, enriched or fortified cereal and bread, and iodized salt.
<table>
<thead>
<tr>
<th>NUTRIENT</th>
<th>RECOMMENDED DAILY AMOUNT DURING PREGNANCY AND ONE MONTH PRIOR TO PREGNANCY</th>
<th>FOOD SOURCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOLATE</td>
<td>400 mcg</td>
<td>Cereal, dark green vegetables, legumes (chickpeas, beans, lentils)</td>
</tr>
<tr>
<td>IRON</td>
<td>27 milligrams</td>
<td>Lean meat, poultry, seafood, cereal, red leafy green vegetables, beans, nuts, raisins, and dried fruit</td>
</tr>
<tr>
<td>CALCIUM</td>
<td>1,000 milligrams</td>
<td>Milk, cheese, yogurt, broccoli, kale, and orange juice</td>
</tr>
<tr>
<td>VITAMIN D</td>
<td>600 international units</td>
<td>Egg yolks, salmon, cod liver, and fortified foods such as milk or cereal</td>
</tr>
<tr>
<td>DHA (omega-3 fatty acid)</td>
<td>200 milligrams</td>
<td>Fish low in mercury, such as herring, salmon, trout, anchovies, halibut, orange juice, milk, and eggs that have DHA</td>
</tr>
<tr>
<td>IODINE</td>
<td>220 micrograms</td>
<td>Fish, milk, cheese, yogurt, enriched or fortified cereal and bread, iodized salt</td>
</tr>
</tbody>
</table>
Women planning to get pregnant and who are pregnant should discuss vaccinations with their doctors. Your doctor can help you decide what vaccinations to get before pregnancy. Examples include, measles-mumps-rubella (MMR), seasonal flu and tetanus, diphtheria and pertussis (Tdap).

The CDC Advisory Committee on Immunization Practices states, “The benefits of vaccinating pregnant women usually outweigh potential risk when the likelihood disease of exposure is high, when infection would pose a risk to the mother or fetus, and when the vaccine is unlikely to cause harm.” The CDC provides the following general recommendations for vaccinating pregnant women:

<table>
<thead>
<tr>
<th>VACCINE</th>
<th>GENERAL RECOMMENDATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROUTINE</td>
<td>Base decision on risk vs. benefit</td>
</tr>
<tr>
<td>HEPATITIS A</td>
<td>Recommended in some circumstances</td>
</tr>
<tr>
<td>HEPATITIS B</td>
<td>Not recommended</td>
</tr>
<tr>
<td>HUMAN PAPILLOMAVIRUS (HPV)</td>
<td>Recommended</td>
</tr>
<tr>
<td>INFLUENZA (inactivated)</td>
<td>Not recommended</td>
</tr>
<tr>
<td>INFLUENZA (LAIV)</td>
<td>Not recommended</td>
</tr>
<tr>
<td>MEASLES-MUMPS-RUBELLA (MMR)</td>
<td>May be used if otherwise indicated</td>
</tr>
<tr>
<td>MENINGOCOCCAL (ACWY)</td>
<td>Base decision on risk vs. benefit</td>
</tr>
<tr>
<td>MENINGOCOCCAL (B)</td>
<td>No recommendation</td>
</tr>
<tr>
<td>PNEUMOCOCCAL CONJUGATE (PCV13, Prevnar 13*)</td>
<td>No recommendation</td>
</tr>
<tr>
<td>PNEUMOCOCCAL POLYSACCHARIDE (PPSV23, Pneumovax ®)</td>
<td>Inadequate data for specific recommendation</td>
</tr>
<tr>
<td>POLIO</td>
<td>May be used if needed</td>
</tr>
<tr>
<td>TETANUS-DIPTHERIA (Td)</td>
<td>May be used; Tdap preferred</td>
</tr>
<tr>
<td>TETANUS-DIPTHERIA and PERTUSSIS (Tdap)</td>
<td>Recommended</td>
</tr>
<tr>
<td>VARICELLA</td>
<td>Not recommended</td>
</tr>
<tr>
<td>ZOSTER</td>
<td>Not recommended</td>
</tr>
</tbody>
</table>

| TRAVEL AND OTHER                             |                                                            |
| ANTHRAX                                     | Low risk of exposure = not recommended                      |
| BACILLE CALMETTE-GUERIN (BCG)               | High risk of exposure = recommended                        |
| JAPANESE ENCEPHALITIS                       | Not recommended                                           |
| RABIES                                      | Inadequate data for specific recommendation                |
| SMALLPOX                                    | May be used if otherwise indicated                         |
| TYPHOID                                     | Pre-exposure - not recommended                             |
| YELLOWFEVER                                 | Inadequate data; give Vi polysaccharide                    |
|                                             | May be used if benefit outweighs risk                       |
Regular dental checkups are important before and during pregnancy. Some studies show a link between periodontitis (a serious gum disease) and premature birth and low birth weight.¹ Regular visits allow for diagnosis and treatment of any dental issues prior to or during pregnancy.

Changes women experience during pregnancy can affect the gums and teeth. Blood flow in the mouth, for example, increases during pregnancy as well as acid in your mouth and hormones.¹ These changes increase the risk of oral health problems.¹ Some problems include:

- **Gingivitis**, a mild form of gum disease that causes irritation, redness, and swelling of your gums.² High levels of the hormone progesterone can lead to gingivitis during pregnancy. Treating gingivitis is important because left untreated, it can progress to periodontitis.²
- **Periodontitis**, a serious gum infection that damages the soft tissue and destroys the bone that supports your teeth.³
- High levels of the hormones progesterone and estrogen during pregnancy can affect the tissues and bones that keep your teeth in place, leading to loose teeth.¹
- **Tooth decay**, also known as dental caries or cavities, permanently damages areas in the hard surface of the teeth, developing into tiny openings or holes.⁴ Because pregnant women have more acid in their mouths, the risk for tooth decay increases.

### Signs and Symptoms of Dental Problems During Pregnancy

- Bad breath
- Shiny, sore, or swollen gums
- Loose teeth
- Mouth sores
- Toothaches

### Ways to Keep Teeth and Gums Healthy During Pregnancy

- Brush your teeth with fluoride toothpaste and floss your teeth every day
- Rinse your mouth with water or mouthwash if morning sickness prevents you from brushing your teeth
- Go to regular dentist visits (every six months)
- Limit sweets¹
Everyone experiences stress. Experiences vary depending on the person and situations. There are different types of stress (e.g., routine stress, such as pressure at work, stress brought on by a sudden negative change, such as a divorce, or traumatic stress such as a major accident), all of which can increase physical and mental health risks.\(^1\)

Stress is not always negative. Stress can present itself as a motivator (e.g., take a test or go to an interview), or in life-saving situations to help you survive. Long-term stress, however, can harm your health.\(^1\) Health problems can occur if the stress goes on for too long and becomes chronic, or if the body’s response to stress continues after the event has diminished. Chronic stress can interrupt normal immune, digestive, sleep, and reproductive systems.\(^1\) High levels of chronic stress can also cause high blood pressure and heart disease. This type of stress can increase the chances of having a premature baby or low birth weight baby.\(^2\)
WAYS TO REDUCE STRESS DURING PREGNANCY

1. Find the underlying cause of the stress and talk to someone about it.

2. Remember that the discomforts of pregnancy are only temporary. Ask a healthcare professional for tips on how to manage them.

3. Stay healthy and fit. Eat healthy foods and get plenty of sleep and exercise.

4. Reduce the number of unnecessary activities you participate in.

5. Surround yourself with a good support network and ask for help when you need it.

6. Try relaxation activities, such as prenatal yoga or meditation.

7. Take a childbirth class so you know what to expect during labor and when your baby is born.

8. Plan ahead at work so you and your employer are prepared for your time away from work.

9. Talk to your doctor right away if you feel depressed.
PHYSICAL ACTIVITY

Physical activity is any form of exercise or movement that makes your body use energy (calories). Physical activity is critical for overall health and for getting to a healthy weight. Women who are at a healthy weight are less likely than women who weigh too much or too little to have serious complications during pregnancy, such as high blood pressure or diabetes. Women who exercise are also less likely to have a premature birth or a baby with birth defects. The baby is also less likely to have weight problems later in life.

There are many health benefits of physical activity. Physical activity lowers the risk of:

- Heart disease
- Stroke
- High blood pressure
- Breast and/or colon cancer
- Type 2 diabetes
- Osteoarthritis
- Osteoporosis

Physical activity can also:

- Improve your mood
- Help manage stress
- Help quit smoking
- Help with sleeping
- Increase energy throughout the day

The Department of Health and Human Services recommends all that all adults get at least 2½ hours each week of moderately intense physical activity. This is about 30 minutes of physical activity on 5 or more days a week. Exercise during pregnancy is equally important for most women. In fact, experts recommend most pregnant women get 2½ hours of exercise each week as well. Talk to a healthcare provider before starting a new exercise routine to ensure it is safe.
AFTER PREGNANCY
One of the most effective preventive measures a mother can take to protect the health of her infant is to breastfeed. However, the decision to breastfeed is a personal one. Women should not experience guilt or shame if they cannot or choose not to breastfeed.

Breastfeeding is important for many reasons. Breastfeeding protects your baby, has many health benefits, is less expensive than formula, can be more convenient for mothers, and provides benefits to society. Breastfeeding is especially beneficial to the health of your baby. The cells, hormones, and antibodies in breastmilk protect babies from illness. This protection is unique and changes to meet your baby’s needs. Research suggests that breastfed babies have lower risks of:

- Asthma
- Childhood leukemia
- Childhood obesity
- Ear infections
- Eczema (atopic dermatitis)
- Diarrhea and vomiting
- Lower respiratory infections
- Necrotizing enterocolitis, a disease that affects the gastrointestinal tract in pre-term infants
- Sudden infant death syndrome (SIDS)
- Type 2 diabetes

Breastfeeding also has health benefits for mothers. Breastfeeding helps a mother’s health and healing following childbirth. Breastfeeding leads to a lower risk of these health problems in mothers:

- Type 2 diabetes
- Certain types of breast cancer
- Ovarian cancer
- Breastfeeding has also been known to help women lose weight
As mentioned, breastfeeding provides benefits to society. The Department of Health and Human Services provides the following explanation:

- Breastfeeding saves lives. Recent research shows that if 90% of families breastfed exclusively for 6 months, nearly 1,000 deaths among infants could be prevented.²
- Breastfeeding saves money. The United States would also save $2.2 billion per year — medical care costs are lower for fully breastfed infants than never-breastfed infants. Breastfed infants usually require fewer sick care visits, prescriptions, and hospitalizations.²
- Breastfeeding also helps make a more productive workforce. Mothers who breastfeed miss less work to care for sick infants than mothers who feed their infants formula. Employer medical costs are also lower.²
- Breastfeeding is better for the environment. Formula cans and bottle supplies create more trash and plastic waste. Your milk is a renewable resource that comes packaged and warmed.²

The American Academy of Pediatrics (AAP) recommends women exclusively breastfeed (baby only receives breastmilk) for the first 6 months and that breastfeeding, along with complementary solid foods, continue for at least 12 months or for as long as mother and baby desire. The World Health Organization (WHO) recommends continued breastfeeding up to 2 years of age or beyond.
Women experience a number of emotions after giving birth including excitement, joy, fear, anxiety, and even depression. “Baby blues” are common among new moms, which include mood swings, crying spells, anxiety, and difficulty sleeping. Generally, baby blues last from two days after delivery up to two weeks. Postpartum depression is more severe and longer-lasting than baby blues. Postpartum depression is a mood disorder that can affect women after childbirth. Mothers with postpartum depression may have feelings of extreme sadness, anxiety, or exhaustion that may make it difficult for them to carry out daily activities. Symptoms may be present after the first weeks of giving birth or take longer, up to six months after birth.

There is no single cause of postpartum depression — both physical and emotional issues can be contributors. It is important to note that postpartum depression does not occur because of something a mother does or does not do. Hormones (estrogen and progesterone) decrease dramatically after childbirth, which may contribute to depression. Decreased hormone production by your thyroid can also lead to feelings of exhaustion and depression. Emotional causes may include sleep deprivation and anxiety. Some women have difficulty with sense of identity, loss of control, and insecurities about their physical appearance, which can all contribute to postpartum depression.

**POSTPARTUM SYMPTOMS INCLUDE:**

- Feeling sad, hopeless, empty, or overwhelmed
- Crying more often than usual or for no apparent reason
- Worrying or feeling overly anxious
- Feeling moody, irritable, or restless
- Oversleeping, or being unable to sleep even when her baby is asleep
- Having trouble concentrating, remembering details, or making decisions
- Experiencing anger or rage
- Losing interest in activities that are usually enjoyable
- Suffering from physical aches and pains, including frequent headaches, stomach problems, and muscle pain
- Eating too little or too much
- Withdrawing from or avoiding friends and family
- Having trouble bonding or forming an emotional attachment with her baby
- Persistently doubting her ability to care for her baby
- Thinking about harming herself or her baby
Women experiencing these symptoms should see a health care provider right away. Because symptoms of this condition are broad and may vary between women, a health care provider can help a new mother figure out whether the symptoms she is feeling are due to postpartum depression or something else.²

Postpartum depression can affect any woman regardless of age, race, ethnicity, or economic status. However, women may be at a greater risk for developing postpartum depression if they have one or more of the following:

- Symptoms of depression during or after a previous pregnancy
- Previous experience with depression or bipolar disorder at another time in her life
- A family member who has been diagnosed with depression or other mental illness
- A stressful life event during pregnancy or shortly after giving birth, such as job loss, death of a loved one, domestic violence, or personal illness
- Medical complications during childbirth, including premature delivery or having a baby with medical problems
- Mixed feelings about the pregnancy, whether it was planned or unplanned
- A lack of strong emotional support from her spouse, partner, family, or friends
- Alcohol or other substance abuse problems²
There are multiple effective treatments for postpartum depression that can be used alone or together. A woman’s health care provider can help her choose the best treatment(s), which may include:

- **COUNSELING/TALK THERAPY:** This treatment involves talking one-on-one with a mental health professional — a counselor, therapist, psychologist, psychiatrist, or social worker. Two types of counseling shown to be particularly effective in treating postpartum depression are:
  1. Cognitive behavioral therapy (CBT), which helps people recognize and change their negative thoughts and behaviors; and
  2. Interpersonal therapy (IPT), which helps people understand and work through problematic personal relationships.

- **MEDICATION:** Antidepressant medications act on the brain chemicals involved in mood regulation. Many antidepressants take a few weeks to be most effective. While these medications are generally considered safe to use during breastfeeding, a woman should talk to her health care provider about the risks and benefits to both herself and her baby.

Untreated postpartum depression can last for months or even years. If left untreated, depression can affect the mother’s health and interfere with her ability to connect with or care for her baby. It may also cause the baby to have problems with sleeping, eating, and behavior as he or she grows.

Strong support systems offer a number of benefits to families after childbirth. Family members or friends may be the first to recognize symptoms of postpartum depression in a new mother. Women exhibiting symptoms of postpartum depression should be referred to a health care provider. Assistance may also be necessary to care for the baby and other children in the family.

**IF YOU OR SOMEONE YOU KNOW IS IN CRISIS OR THINKING OF SUICIDE, GET HELP QUICKLY:**

- Call the toll-free 24-hour hotline of the National Suicide Prevention Lifeline at 1-800-273-TALK (1-800-273-8255); 1-800-799-4TTY (4889) or
- Call 911 for emergency services or go to the nearest emergency room
An unintended pregnancy is a pregnancy considered to be either unwanted (i.e., the pregnancy occurred when no children, or no more children, were desired) or mistimed (i.e., the pregnancy occurred earlier than desired).\(^1\) Unintended pregnancies usually occur when contraception was not used, used inconsistently, or used incorrectly.\(^1\)

Unintended pregnancies increase the risk of problems for the mom and baby. Risk increases because the woman may not be in ideal health for childbearing. Women with an unintended pregnancy, for example, could consume alcohol before they know they are pregnant, affecting the health of the baby. Therefore, it is important for all women of reproductive age to use effective contraception (birth control) correctly and consistently if they are sexually active but wish to avoid or delay pregnancy.
Many types of birth control methods are available. A brief description of birth control methods are described in the following chart:

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NATURAL FAMILY PLANNING</strong></td>
<td>Avoid the use of medications or devices to prevent pregnancies. Women identify and track the days during the menstrual cycle when pregnancy is possible and when it is not based on when the body releases an egg.</td>
</tr>
<tr>
<td><strong>INTRAUTERINE DEVICE (IUD)</strong></td>
<td>A small, “T” shaped device inserted through the vagina and cervix and placed inside the uterus. Depending on the type of IUD you decide to implant, it can last up to 10 years inside your uterus and is a highly effective form of birth control. IUDs are safe and can be used by all women, even if they have never given birth. Fewer than 1 in 100 women will become pregnant in the first year of using an IUD.</td>
</tr>
</tbody>
</table>
| **LACTATIONAL AMENORRHEA METHOD (BREASTFEEDING)** | The Lactational Amenorrhea Method (LAM) is a good option for mothers who do not want to take birth control pills during the first months after the baby is born. When you exclusively breastfeed after birth, hormones in your body change and prevent an egg from being released. Your chance of getting pregnant using this method is less than 1% if you follow LAM instructions precisely:  
  - This method can be used up to the first six months. It is not recommended for use once the baby becomes 6 months of age.  
  - The baby must be exclusively breastfed, at the breast. This means if you provide your baby with formula or use a pump for breast milk and feed your baby with a bottle, it is no longer an effective form of birth control. Use of a pacifier could interfere with this method of birth control.  
  - Your baby must breastfeed every 4 hours during the day and at least every 6 hours at night. If your baby stops feeding at night, this method is no longer effective.  
  - This method can be used for the first 6 months unless you menstruate before the first 6 months of your baby’s life. After you resume normal menstruation, this method is no longer effective. |
| **MALE AND FEMALE STERILIZATION** | Sterilization is a highly effective form of permanent birth control. Sterilization means to permanently block the ability to have a baby. It should only be considered if the couple does not want to have any more children. Reversal is costly and does not always work. There are many different types of sterilization and can be performed on a man or woman. |
| **EMERGENCY CONTRACEPTION**   | There are four different choices of emergency contraception: Copper IUD (ParaGard), Ella, Plan B, and Next Choice. These are used when other types of birth control fail or a couple has unprotected sex and there is a possibility of pregnancy. All methods of emergency contraception may be used while nursing a baby. They work by stopping the ovaries from releasing an egg or stop sperm from joining the egg. Emergency contraception can only stop a pregnancy before it starts. It does not end a pregnancy that has already started. It is not the same as an abortion pill. |
| **HORMONAL METHODS**          | There are many hormonal birth control options which are more effective in preventing pregnancy than natural family planning and barrier methods. All hormonal methods of birth control require a doctor’s visit and prescription. These methods are not safe for everyone, which is why it is important to visit with your doctor before trying these methods. Hormonal birth control can be more expensive than barrier or natural family planning, but most health insurance greatly reduces or eliminates the costs of them. Check with your insurance provider to see what they may cost you. |
| **BARRIER METHODS**           | Barrier methods prevent pregnancy by blocking sperm from entering the uterus and reaching the egg. They are easily available, widely used, and safe for most everyone including, nursing mothers, men, women, and teens. In addition, most of these methods do not require a prescription or doctor’s visit and can be found at your local grocery store. Some of these methods can be less expensive than other methods. Barrier methods are not as reliable in preventing pregnancy compared with other methods. |
| **WITHDRAWAL METHOD**         | This method is the practice of withdrawing the penis from the vagina and away from genital organs of the woman before ejaculation to avoid pregnancy. This method should only be used with sexually experienced couples as this method relies on the male to determine when he is about to ejaculate (release sperm). Some men have difficulty determining when this is about to occur. Often, sperm are released before ejaculation occurs. To practice withdrawal, the man should withdraw his penis from the vagina when he feels he is about to ejaculate, making sure the ejaculation occurs away from the woman’s genitalia. With typical use, your chances of getting pregnant are 22%. This is not considered a highly effective form of birth control. |
Birth spacing refers to the time between the birth of one baby and the beginning of the next pregnancy. There are multiple factors to consider when having another baby such as medical conditions, grief due to the loss of a baby or family member, other children in the family, and the age of the mother among others. The timing of pregnancies, however, is important as well. Planning enough time between pregnancies increases the chance of good outcomes for the mother and baby.

Research suggests that beginning a pregnancy within six months of a live birth is associated with an increased risk of:
- Premature birth
- Placental disruption (the placenta partially or completely peeling away from the inner wall of the uterus before delivery)
- Low birth weight
- Congenital disorders
- Schizophrenia

Research also suggests that there is risk associated with waiting too long between pregnancies. Waiting longer than five years after giving birth is associated with an increased risk of high blood pressure and damage to organ systems such as the kidneys.

Short intervals between births can also be bad for mother’s health. There is a greater risk of bleeding in pregnancy, premature rupture of the amniotic sac, and increased risk of maternal death.

The American College of Obstetricians and Gynecologists states that the optimal interval between delivery and a subsequent pregnancy is 18 months to 5 years. The risks and recommendations, however, do not apply to couples who have had a miscarriage. Research says that if couples are healthy, there may not be a need to wait to conceive after a miscarriage.

Families should prepare for another baby similar to preparation for your first baby, including addressing and managing health (physical and mental) problems, understanding the safety of any medications you are taking, ensuring you are up to date on immunizations, and testing for any sexually transmitted diseases. If you experience violence, abuse, or high levels of stress, seek help to resolve those issues before you get pregnant. Following good habits such as eating healthy, exercising, taking a vitamin that contains folic acid, staying away from chemicals and hazardous materials, and stopping smoking will help you to have a healthier pregnancy and newborn baby.
This section provides information about the following:

☑ Glossary
☑ Air Quality Index Chart
☑ Works Cited
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<tr>
<th>Acronym</th>
<th>Definition</th>
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<tr>
<td>AQI</td>
<td>Air Quality Index: a number used to communicate how polluted the air is or how polluted it is forecast to become</td>
</tr>
<tr>
<td>BMI</td>
<td>Body Mass Index: a person’s weight in kilograms divided by height in meters squared; a method used to determine underweight, overweight, or obesity</td>
</tr>
<tr>
<td>CDC</td>
<td>Centers for Disease Control and Prevention: a federal agency that conducts and supports health promotion, prevention, and preparedness activities in the United States, with the goal of improving overall health</td>
</tr>
<tr>
<td>Embryo</td>
<td>An unborn offspring in the process of development; a human offspring from the second to the eighth week after fertilization</td>
</tr>
<tr>
<td>Fetus</td>
<td>An unborn offspring more than eight weeks after conception</td>
</tr>
<tr>
<td>Mistimed Pregnancy</td>
<td>A pregnancy that occurred earlier than desired</td>
</tr>
<tr>
<td>Neonatal</td>
<td>Relating to a newborn</td>
</tr>
<tr>
<td>Obesity</td>
<td>A medical condition in which excess body fat has accumulated to the extent that it may have a negative effect on health; BMI above 30</td>
</tr>
<tr>
<td>Overweight</td>
<td>Weighing too much, or more than is considered normal; BMI between 25 and 29.9</td>
</tr>
<tr>
<td>Particulate Matter</td>
<td>Also known as particle pollution, or PM; a complex mixture of extremely small particles and liquid droplets that get into the air</td>
</tr>
<tr>
<td>Perinatal</td>
<td>Timeframe from the twentieth week of gestation to the twenty-eighth day of newborn life</td>
</tr>
<tr>
<td>Postpartum</td>
<td>Period of time following childbirth; after delivery</td>
</tr>
<tr>
<td>PRAMS</td>
<td>Pregnancy Risk Assessment Monitoring System: a surveillance project that collects state-specific population-based information about maternal attitudes and experiences before, during, and shortly after pregnancy. PRAMS surveillance currently covers about 83% of all U.S. births.</td>
</tr>
<tr>
<td>Preconception Health</td>
<td>Health with a focus on taking steps now to protect the health of a baby in the future</td>
</tr>
<tr>
<td>Prenatal</td>
<td>Prior to birth or giving birth</td>
</tr>
<tr>
<td>STD</td>
<td>Sexually Transmitted Disease (also referred to as Sexually Transmitted Infection): an infection that is passed from one person to another through sexual contact</td>
</tr>
<tr>
<td>Underweight</td>
<td>Below a weight considered normal or desirable: BMI below 18.5</td>
</tr>
<tr>
<td>Unintended Pregnancy</td>
<td>A pregnancy which occurs when no children, or no more children, were desired</td>
</tr>
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### AIR QUALITY INDEX CHART

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<tr>
<th>AQI Categories</th>
<th>AQI Range</th>
<th>General Meaning</th>
<th>Ozone (ppm) [8-hour]</th>
<th>Ozone Meaning</th>
<th>PM2.5 (µg/m³) [24-hour]</th>
<th>PM2.5 Meaning</th>
</tr>
</thead>
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<tr>
<td>Good</td>
<td>0-50</td>
<td>Air quality is considered satisfactory and air pollution poses little or no risk.</td>
<td>0.0 - 0.059</td>
<td>Air quality is excellent and poses little or no risk.</td>
<td>0.0 - 12</td>
<td>Air quality is excellent and poses little to no risk.</td>
</tr>
<tr>
<td>Moderate</td>
<td>51-100</td>
<td>Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.</td>
<td>0.060 - 0.075</td>
<td>Unusually sensitive individuals may experience respiratory symptoms.</td>
<td>12.1 - 35.4</td>
<td>Respiratory symptoms possible in unusually sensitive individuals, older adults, and possible aggravation of heart or lung disease in people with cardiovascular disease.</td>
</tr>
<tr>
<td>Unhealthy for Sensitive Groups</td>
<td>101 - 150</td>
<td>Members of sensitive groups may experience health effects. The general public is not likely to be affected. Sensitive groups are: • those with lung and heart disease, diabetes, or a current respiratory infection • infants and children • adults over 65</td>
<td>0.076 - 0.095</td>
<td>Increasing likelihood of respiratory symptoms and breathing discomfort in active children and adults and people with respiratory disease, such as asthma.</td>
<td>35.5 - 55.4</td>
<td>Increasing likelihood of respiratory symptoms in sensitive individuals, aggravation of heart or lung disease and premature mortality in older adults and people with cardiovascular disease.</td>
</tr>
<tr>
<td>Unhealthy</td>
<td>151 - 200</td>
<td>Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects. Sensitive groups are listed above.</td>
<td>0.096 - 0.115</td>
<td>Greater likelihood of respiratory symptoms and breathing difficulty in active children and adults and people with respiratory disease, such as asthma; possible respiratory effects in general population.</td>
<td>55.5 - 150.4</td>
<td>Increased aggravation of heart or lung disease and premature mortality in older adults and people with cardiopulmonary disease; increased respiratory effects in general population.</td>
</tr>
<tr>
<td>Very Unhealthy</td>
<td>201 - 300</td>
<td>Health alert: everyone may experience more serious health effects.</td>
<td>0.116 - 0.374</td>
<td>Increasingly severe symptoms and impaired breathing likely in active children and adults and people with respiratory disease, such as asthma; increasing likelihood of respiratory effects in general population.</td>
<td>150.5 - 250.4</td>
<td>Significant aggravation of heart or lung disease and premature mortality in older adults and people with cardiopulmonary disease; significant increase in respiratory effects in general population.</td>
</tr>
<tr>
<td>Hazardous</td>
<td>301 - 500</td>
<td>Health warnings of emergency conditions. The entire population is more likely to be affected.</td>
<td>Over 0.374</td>
<td>Severe respiratory effects and impaired breathing likely in active children and adults and people with lung disease, such as asthma; increasingly severe respiratory effects like in general population.</td>
<td>Over 250.4</td>
<td>Serious aggravation of heart or lung disease and premature mortality in older adults and people with cardiovascular disease; serious risk of respiratory effects in general population.</td>
</tr>
</tbody>
</table>

*µg/m³: micrograms per cubic meter of air ppm: parts per million
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OBESITY, OVERWEIGHT, UNDERWEIGHT

DIABETES
ASTHMA

MENTAL HEALTH

SEXUALLY TRANSMITTED DISEASES

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TOBACCO USE

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