Vitamin D

This sheet is about exposure to vitamin D in pregnancy and while breastfeeding. This information is based on published research. It should not take the place of medical care and advice from your healthcare providers.

What is vitamin D?

Vitamin D is a nutrient that helps the body to absorb calcium. Calcium helps to keep a person's bones strong and is thought to play a part in the regulation of the parathyroid and thyroid glands.

Most people's bodies can make vitamin D with exposure to ultraviolet (UV) rays from sunlight. Vitamin D is also found in some foods, such as fatty fish (salmon, trout, tuna, and mackerel), egg yolks, cheese, and some milk. Vitamin D is also available as a dietary supplement. Vitamin D deficiency or insufficiency (not having enough vitamin D) can increase the chance of certain health issues. For example, vitamin D deficiency is the most common cause of rickets, a bone disease that causes softening and weakening of the bones.

There are several forms of vitamin D. There are 2 major forms: vitamin D2 (ergocalciferol) and vitamin D3 (cholecalciferol). Vitamin D2 is mostly human-made and is added to food. Vitamin D3 is made in a person's body and is found in animal products. Both vitamin D2 and D3 can be found in supplements or fortified foods. Vitamin D3 might be easier for the body to use.

The Endocrine Society recommends that women who are pregnant get vitamin D through foods, prenatal vitamins, or other supplements. Talk with your healthcare providers about all supplements/vitamins that you take. Have the bottles or photos of the labels with you so that all ingredients and their recommended daily levels can be reviewed. Products that contain herbal supplements are typically not recommended during pregnancy. For more information on herbal products please see our fact sheet at: https://mothertobaby.org/fact-sheets/herbal-products-pregnancy/.

How much vitamin D is needed during pregnancy?

The Recommended Dietary Allowance (RDA) is the amount of nutrients people should aim to get each day. The Tolerable Upper Intake Level (UL) is the highest level of daily nutrient intake that is not expected to increase health risks for most people in the general population.

	Recommended daily allowance (RDA)	Upper limit (UL)
Pregnant and age 14 years or older	15 mcg / 600 IU	100 mcg / 4,000 IU

It is not recommended to take more than the RDA in a day unless it has been prescribed by your healthcare provider.

When looking at daily intake, remember to count amounts from foods, drinks, and supplements. There are resources available online that list amounts of vitamin D typically found in foods, such as the USDA National Nutrient Database for Vitamin D here: https://ods.od.nih.gov/pubs/usdandb/VitaminD-Food.pdf. Labels on supplements will list the amount of vitamin D in the product. Be sure to talk with your healthcare providers about your specific nutritional needs before, during, and after pregnancy.

I take vitamin D. Can it make it harder for me to get pregnant?

Taking vitamin D at the RDA and staying below the UL is not expected to make it harder to get pregnant. In 1 study, taking vitamin D up to the daily UL was associated with an increased chance to get pregnant among women who have experienced infertility (inability to get pregnant after 1 year of trying).

It is not known if taking more than the UL of vitamin D can make it harder to get pregnant. Low levels of vitamin D have been associated with an increased chance of infertility.

Does taking vitamin D increase the chance of miscarriage?

Miscarriage is common and can occur in any pregnancy for many different reasons. There is mixed information about low levels of vitamin D (blood levels of vitamin D below 50 nmol/L) and a possible increased chance of miscarriage. In 1 study of over 1,600 women that looked at low levels of vitamin D during pregnancy, an increased chance of miscarriage was reported. However, another study among 5,000 women did not find an increased chance of miscarriage with low levels of vitamin D during pregnancy. Another study found that women who had multiple miscarriages had lower blood concentrations of vitamin D compared to those who had not had multiple miscarriages. Because there can be many causes of miscarriage, it is hard to know if a supplement, a medical condition, or other factors (such as age, health, or other exposures) caused a miscarriage.

Does taking vitamin D increase the chance of birth defects?

Birth defects can happen in any pregnancy for different reasons. Out of all babies born each year, about 3 out of 100 (3%) will have a birth defect. It is not known if high or low levels of vitamin D might affect the chance of birth defects. It is not known if high or low levels of vitamin D increase the chance of birth defects.

In 27 case reports of infants exposed to high levels of vitamin D (blood levels of vitamin D above 125 nmol/L) during pregnancy, there was no reported increase in the chance of birth defects.

Data from 2 studies with 192 women suggest a link between neural tube defects (birth defects where the spinal cord or brain did not form correctly) and low levels of vitamin D. This is not enough data to know if low levels of vitamin D increase the chance of birth defects.

Does taking vitamin D in pregnancy increase the chance of other pregnancy-related problems?

Limited information suggests taking vitamin D within the RDA is not expected to increase the chance of pregnancy-related problems, such as preterm delivery (birth before week 37) or low birth weight (weighing less than 5 pounds, 8 ounces [2500 grams] at birth).

High levels of vitamin D (blood levels of vitamin D above 125 nmol/L) have not been linked to an increased chance of pregnancy-related problems. There are case reports of infants having hypercalcemia (high levels of calcium) after being exposed to high levels of vitamin D during pregnancy. However, no increase in hypercalcemia or hypercalciuria (high levels of calcium in the urine) was reported in a clinical trial of vitamin D supplementation of 2000 IU vs 4000 IU during pregnancy.

Having low levels of vitamin D in pregnancy might increase the chance of low birth weight, low infant calcium levels (hypocalcemia), or preeclampsia (high blood pressure and problems with organs, such as the kidneys), which can lead to seizures (called eclampsia). Low levels of vitamin D have been associated with preterm birth among non-white but not white women who are pregnant.

Having low levels of vitamin D has been associated with a higher chance of developing gestational diabetes in some studies. Other studies have not found an association between low vitamin D levels and gestational diabetes.

Some studies have suggested that low levels of vitamin D in pregnancy might increase the chance for dental cavities in children before the age of 6 years. Other studies have not found an association with low vitamin D and dental cavities.

Does taking vitamin D in pregnancy affect future behavior or learning for the child?

No behavioral or learning differences were reported in 27 case reports of children exposed to high levels of vitamin D (blood levels of vitamin D above 125 nmol/L) during pregnancy,

Some studies have suggested that low levels of vitamin D in pregnancy might increase the chance for the child to have attention deficit hyperactive disorder (ADHD), lower language skills, or autism spectrum disorder. However, many factors are involved when a person develops one or more of these conditions. That makes it hard to study these outcomes, and most of these studies did not look at other factors such as underlying medical conditions, family history, medications used, or other exposures. Overall, there is not enough evidence to say that low levels of vitamin D in pregnancy increase the chance of ADHD, lower language skills, or autism spectrum disorder.

Breastfeeding while taking vitamin D:

Vitamin D is a normal part of breast milk. Women who are breastfeeding should continue to get the daily recommended amount of vitamin D unless otherwise directed by their healthcare provider. The RDA for breastfeeding is the same as for pregnancy.

	Recommended daily allowance (RDA)	Upper limit (UL)
Breastfeeding and age 14 years or older	15 mcg / 600 IU	100 mcg /4000 IU

Women who are breastfeeding should talk to their healthcare provider and their child's pediatrician about their specific nutritional needs before, during, and after breastfeeding. Be sure to talk to your healthcare provider about all your breastfeeding questions.

If a man takes vitamin D, could it affect his fertility or increase the chance of birth defects?

There are some studies that have suggested that low levels of vitamin D (blood levels of vitamin D below 50 nmol/L) could affect male fertility (ability to make healthy sperm). Studies in humans have not been done to see how vitamin D levels in males might affect the chance of birth defects in a partner's pregnancy. In general, exposures that men or sperm donors have are less likely to increase risks to a pregnancy. For more general information, please see the MotherToBaby fact sheet Paternal Exposures at https://mothertobaby.org/fact-sheets/paternal-exposures-pregnancy/.

Please click here for references.

Questions? Call 866.626.6847 | Text 855.999.3525 | Email or Chat at MotherToBaby.org.

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