

Vitamin D

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

What is vitamin D?

Vitamin D is a nutrient used by the body to grow and to help absorb calcium, which keeps a person's bones strong. 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 milks. Vitamin D is also available as a dietary supplement. Vitamin D deficiency (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 two major forms: vitamin D₂ (ergocalciferol) and vitamin D₃ (cholecalciferol). Vitamin D₂ is mostly human-made and is added to foods. 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.

The Endocrine Society recommends that people 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 by people who are pregnant?

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 to 18 years old	15 mcg / 600 IU	100 mcg / 4,000 IU
Pregnant and age 19 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 from 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 people 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 people that looked at low levels of vitamin D during pregnancy, an increased chance of miscarriage was reported. However, another study among 5,000 people did not find an increased chance of miscarriage with low levels of vitamin D during pregnancy. Another study found that people 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, an underlying medical condition, or other factors are the cause of 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.

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 two studies with 192 people 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 an infant 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 with non-white but not white people who are pregnant.

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. People 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 to 18 years old	15 mcg / 600 IU	100 mcg /4000 IU
Breastfeeding and age 19 years or older	15 mcg/ 600 IU	100 mcg /4000 IU

People 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 male takes vitamin D, could it affect fertility or increase the chance of birth defects?

In one study, males with low levels of vitamin D (blood levels of vitamin D below 50 nmol/L) had lower sperm motility (movement of sperm) than people with sufficient levels of vitamin D. This could affect male fertility (ability to get partner pregnant). Studies in humans have not been done to see if vitamin D levels increase the chance of birth defects above the background risk. In general, exposures that fathers or sperm donors have are unlikely to increase risks to a pregnancy. For more 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](https://mothertobaby.org).

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