

MS Society of Canada Recommendations on Vitamin D in MS

Many people affected by MS have questions about vitamin D, and whether it can prevent MS or be used to help stop the disease from getting worse.

If you or someone you know has MS, you may be wondering:

- Should people at risk of developing MS take vitamin D?
- Should adults and children living with MS take vitamin D?
- How much vitamin D is safe?

These recommendations will answer those questions and more, and help people living with MS make informed decisions about their care.

UNDERSTANDING VITAMIN D

What is vitamin D and what does it do?

- **Vitamin D is a hormone** that is produced out of cholesterol when your skin is exposed to the sun.
- **Vitamin D maintains strong bones** by helping the body absorb minerals that are needed to build and strengthen bones
- It may have a role in the **body's immune (defense) system, and heart and brain health**
- Vitamin D may be involved in the function of the **placenta during pregnancy**
- It may also play a role in how **sugars are broken down** by the body

How much vitamin D do you need every day?

The table below lists of the 2010 Health Canada recommendations for daily intake of vitamin D.

The recommended amount is given in International Units (IU), which is a standardized measure used for some vitamins.

Age group	Recommended daily intake	Maximum daily intake
Infants 0 – 6 months old	400 IU	1000 IU
Infants 7 – 12 months old	400 IU	1500 IU
Children 1 – 3 years old	600 IU	2500 IU
Children 4 – 8 years old	600 IU	3000 IU
Children and adults 9 – 70 years old	600 IU	4000 IU
Adults >70 years old	800 IU	4000 IU
Pregnant and breastfeeding women	600 IU	4000 IU



It is important to remember that too much vitamin D can be harmful – daily intake should not exceed the maximum recommended by Health Canada for each age group.

Where can you get vitamin D?

Exposure to the sun:

- **The skin makes vitamin D when it is exposed to ultraviolet rays from the sun** in the summer
- People with darker skin tend to produce less vitamin D from sun exposure, and may be more likely to have low vitamin D levels



It's still important to practice safe sun exposure – sunscreens with a sun protection factor (SPF) below 30 will still allow some vitamin D to be produced in the skin.

Food sources:

- **Fatty fish** such as salmon and mackerel
- **Egg yolks**
- **Vitamin D-fortified foods** including cow's milk, margarine, and some types of plant-based beverages like orange juice and almond milk

Supplements:

Vitamin D supplements come in 2 forms:



Vitamin D3 (cholecalciferol) – type of vitamin D made by the skin following sun exposure, and supplements



Vitamin D2 (ergocalciferol) – plant-based type of vitamin D that is often used in dairy-free milks, and supplements

- Cod liver oil containing vitamin D is another option. Because it may also contain vitamin A at levels higher than the Health Canada recommended daily intake, consult a doctor about its benefits and safety



Supplements and fortified foods should be taken with a meal that is high in healthy fats.

Vitamin D can dissolve in fats and oils, so this can help the body absorb more of the vitamin (try avocados, nuts, fatty fish, and extra virgin olive oil).

Vitamin D can be taken at any time. The amount of vitamin D absorbed by the body does not change depending on time of day it is taken.

How does your body use vitamin D?

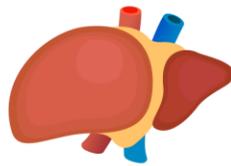
Before the body can use the vitamin D from food, supplements or the skin after sun exposure, it needs to be changed into a type that the body can use.

THIS IS A 2-STEP PROCESS:

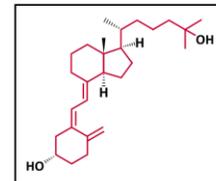
1. Vitamin D is changed to **25-hydroxyvitamin D** by the liver



Vitamin D

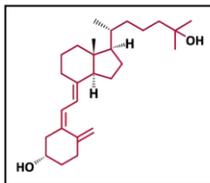


Liver

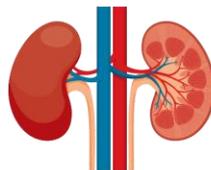


25-hydroxyvitamin D

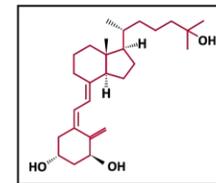
2. The kidneys then change 25-hydroxyvitamin D into the usable type called **1,25-dihydroxyvitamin D**



25-hydroxyvitamin D



Kidney



1,25-dihydroxyvitamin D

How do you measure vitamin D levels in the body?

- Measure the total amount of vitamin D a person gets from **food and supplements**
- Measure the amount of 25-hydroxyvitamin D **present in the blood** (more accurate)
 - Levels of vitamin D are measured as the number of nanomoles (nmol) of 25-hydroxyvitamin D per liter of blood (nmol/L)
 - The optimal level of 25-hydroxyvitamin D in the blood ranges from 50-125 nmol/L
 - Provinces and territories do not cover the cost of vitamin D tests for the general public. Certain health conditions are exempt from the cost, though multiple sclerosis is not currently one of them.

VITAMIN D AND MULTIPLE SCLEROSIS

Should people at risk of developing MS take vitamin D?

You're considered at higher risk of developing MS if you have a sibling, parent or child with the disease. Other factors contributing to an increased risk of developing MS include smoking and obesity.

Some studies suggest that everyone, whether or not they have a relative with MS, can decrease their chances of developing MS by making sure they are getting enough vitamin D every day.

Should adults and children with MS take vitamin D?

Vitamin D may help prevent MS from getting worse.

Talk to your doctor about whether your vitamin D levels should be checked and what you can do maintain optimal vitamin D levels.

What you need to know:

The recommended daily vitamin D intake and blood vitamin D levels for individuals with or at risk of MS are outlined in the table below:

Population	Recommended daily intake	Blood vitamin D levels
Healthy, breastfed babies	400 IU (vitamin D supplements)	
Children and teens at risk	1 –3 years: 600 – 2500 IU 4 –8 years: 600 – 3000 IU 9 years and up: 600 – 4000 IU	Keep vitamin D levels within the optimal range <ul style="list-style-type: none"> Blood vitamin D levels should be monitored
Children with a first demyelinating event		Test vitamin D levels at diagnosis <ul style="list-style-type: none"> Vitamin D levels should also be checked regularly after diagnosis
Children and teens with MS	600 – 1000 IU (vitamin D supplements)	Keep vitamin D levels within the optimal range <ul style="list-style-type: none"> Vitamin D levels should be checked every 6 months by a doctor
Adults at risk (including women of childbearing age)	600 – 4000 IU (including during pregnancy and breastfeeding)	Keep vitamin D levels within the optimal range <ul style="list-style-type: none"> Talk to your doctor about how often your blood vitamin D levels should be checked
Adults with MS		Keep vitamin D levels within the optimal range <ul style="list-style-type: none"> Talk to your doctor about having your blood vitamin D levels checked



Vitamin D alone is not considered an effective treatment for MS.

MS increases the risk of falls, bone fractures, and developing osteoporosis – taking vitamin D supplements to meet the recommended daily intake can also keep bones healthy.

How much vitamin D is safe?

General recommendations:

- **Do not take more than 4000 IU per day** – As recommended by Health Canada
- **Up to 4000 IU per day of vitamin D supplements are safe** – This can be taken without the guidance of a doctor, unless you have certain medical conditions
- **Your doctor may give you more than 4000 IU per day of vitamin D** – If you have MS and very low vitamin D levels in your blood, your doctor may give you a higher dose to get your levels back to the optimal range



Talk to your doctor – people with certain medical conditions, such as kidney disease, parathyroid disease and endocrine malignancies should consult their doctor before taking vitamin D supplements.

Vitamin D testing is advisable but not essential.

KEY POINTS TO REMEMBER



1

People with MS and those at risk of developing MS should meet the daily vitamin D intake recommended by Health Canada.

2

Blood vitamin D levels should be checked by a doctor and kept within the optimal range.

ENDORSED BY:

