

# Zinc: Uses, Side Effects, Interactions, Dosage, and Warning

## Overview Information

Zinc is a mineral. It is called an "essential trace element" because very small amounts of zinc are necessary for human health. Since the human body does not store excess zinc, it must be consumed regularly as part of the diet. Common dietary sources of zinc include red meat, poultry, and fish. Zinc deficiency can cause short stature, reduced ability to taste food, and the inability of testes and ovaries to function properly.

Zinc is used for the treatment and prevention of zinc deficiency and its consequences, including stunted growth and acute diarrhea in children, slow wound healing, and Wilson's disease. Zinc is also used for many other conditions. There is some scientific evidence to support its use for some of these conditions. But for most, there is no good scientific evidence to support its use.

Note that many zinc products also contain another metal called cadmium. This is because zinc and cadmium are chemically similar and often occur together in nature. Exposure to high levels of cadmium over a long time can lead to kidney failure. The concentration of cadmium in zinc-containing supplements can vary as much as 37-fold. Look for zinc-gluconate products. Zinc gluconate consistently contains the lowest cadmium levels.

## How does it work?

Zinc is needed for the proper growth and maintenance of the human body. It is found in several systems and biological reactions, and it is needed for immune function, wound healing, blood clotting, thyroid function, and much more. Meats, seafood, dairy products, nuts, legumes, and whole grains offer relatively high levels of zinc.

Zinc deficiency is not uncommon worldwide, but is rare in the US. Symptoms include slowed growth, low insulin levels, loss of appetite, irritability, generalized hair loss, rough and dry skin, slow wound healing, poor sense of taste and smell, diarrhea, and nausea. Moderate zinc deficiency is associated with disorders of the intestine which interfere with food absorption (malabsorption syndromes), alcoholism, chronic kidney failure, and chronic debilitating diseases.

Zinc plays a key role in maintaining vision, and it is present in high concentrations in the eye. Zinc deficiency can alter vision, and severe deficiency can cause changes in the retina (the back of the eye where an image is focused).

Zinc might also have effects against viruses. It appears to lessen symptoms of the rhinovirus (common cold), but researchers can't yet explain exactly how this works. In addition, there is some evidence that zinc has some antiviral activity against the herpes virus.

Low zinc levels can be associated with male infertility, sickle cell disease, HIV, major

depression, and type 2 diabetes, and can be fought by taking a zinc supplement.

## Uses & Effectiveness?

### Effective for

- **Zinc deficiency.** Zinc deficiency might occur in people with severe diarrhea, conditions that make it hard for the bowel to absorb food, liver cirrhosis and alcoholism, after major surgery, and during long-term use of tube feeding in the hospital. Taking zinc by mouth or giving zinc intravenously (by IV) helps to restore zinc levels in people who are zinc deficient. However, taking zinc supplements regularly is not recommended.

### Likely Effective for

- **Diarrhea.** Taking zinc by mouth reduces the duration and severity of diarrhea in children who are undernourished or zinc deficient. Severe zinc deficiency in children is common in developing countries. Also giving zinc to undernourished women during pregnancy and for one month after delivery reduces the incidence of diarrhea in infants during the first year of life.
- **An inherited disorder that causes copper to build up in many organs (Wilson disease).** Taking zinc by mouth improves symptoms of an inherited disorder called Wilson disease. People with Wilson disease have too much copper in their bodies. Zinc blocks how much copper is absorbed and increases how much copper the body releases.

### Possibly Effective for

- **Acne.** Research suggests that people with acne have lower blood and skin levels of zinc. Taking zinc by mouth appears to help treat acne. However, it's unclear how beneficial zinc is compared to acne medications such as tetracycline or minocycline. Applying zinc to the skin in an ointment does not seem to help treat acne unless used in combination with the antibiotic drug called erythromycin.
- **A disorder of zinc deficiency (acrodermatitis enteropathica).** Taking zinc by mouth seems to help improve symptoms of acrodermatitis enteropathica.
- **An eye disease that leads to vision loss in older adults (age-related macular degeneration or AMD).** People who consume more zinc as part of their diet seem to have a lower risk of developing age-related vision loss. Research shows that taking supplements containing zinc and antioxidant vitamins may modestly slow vision loss and prevent age-related vision loss from becoming advanced in people at high risk. It's still not clear if taking zinc along with antioxidant vitamins helps prevent age-related vision loss from becoming advanced in people at low risk. Most research shows that taking zinc alone, without antioxidant vitamins, does not help most people with age-related vision loss. However, it's possible that people with certain genes that make them susceptible to age-related vision loss might benefit from zinc supplements.
- **An eating disorder (anorexia nervosa).** Taking zinc supplements by mouth might help increase weight gain and improve depression symptoms in teens and adults with anorexia.
- **Attention deficit-hyperactivity disorder (ADHD).** There is evidence that

children with ADHD might have lower blood levels of zinc than children without ADHD. There is also evidence that people with ADHD who have lower zinc levels might not respond well enough to prescription medications for ADHD (stimulants). Thus, zinc supplements are of interest for people with ADHD. Taking zinc by mouth along with medicine for ADHD might slightly improve hyperactivity, impulsiveness, and socialization problems in some children with ADHD. But zinc doesn't seem to improve attention span. Most studies using zinc for ADHD have taken place in the Middle East, where zinc deficiency is more common than in Western countries. One small study shows that taking zinc alone or as add-on therapy to prescription ADHD medication does not consistently improve symptoms of ADHD. But it does seem to lower the optimal dose of ADHD medication that is needed.

- **Burns.** Giving zinc intravenously (by IV) together with other minerals seems to improve wound healing in people with burns. However, taking zinc alone does not appear to improve wound healing in all people with burns, but it might reduce recovery time in people with severe burns.
- **Non-cancerous growths in the large intestine and rectum (colorectal adenoma).** Research suggests that taking a supplement containing selenium, zinc, vitamin A 2, vitamin C, and vitamin E by mouth daily for 5 years reduces the risk of recurrent large-bowel tumors by about 40%.
- **Common cold.** Although some conflicting results exist, most research shows that taking lozenges containing zinc gluconate or zinc acetate by mouth helps reduce the duration of a cold in adults. However, side effects such as bad taste and nausea might limit its usefulness. It is unclear if zinc helps prevent common colds. In adults, taking zinc supplements by mouth does not seem to prevent common colds. However, zinc gluconate lozenges might help prevent colds in children and adolescents. Using zinc as a nose spray does not seem to help prevent colds.
- **Depression.** Early research suggests that zinc levels are lower in people with depression. Ingesting more zinc is associated with less risk of depression. Some research suggests that taking zinc along with antidepressants improves depression in people with major depression. However, other research shows that it improves depression in only people who do not respond to treatment with antidepressants alone. It doesn't seem to improve depression in people who respond to antidepressant treatment.
- **Diabetes.** Taking zinc seems to reduce blood sugar, increase insulin levels, improve the way the body uses insulin, and decrease cholesterol and other fats (lipids) in the blood in people with type 2 diabetes. Zinc also seems to decrease body weight in people with diabetes who are overweight or obese. Taking zinc might also help to lower blood sugar in women who develop diabetes during pregnancy. But it doesn't seem to reduce the need for a caesarean section during labor in these women.
- **Foot sores in people with diabetes.** Research suggests that applying zinc hyaluronate gel can help foot ulcers heal faster than conventional treatment in people with diabetes.
- **Diaper rash.** Giving zinc gluconate by mouth to infants seems to speed up the healing of diaper rash. Applying zinc oxide paste also seems to improve the healing of diaper rash. However, it doesn't seem to work as well as applying 2% eosin solution.
- **A mild form of gum disease (gingivitis).** Using toothpastes containing zinc, with or without an antibacterial agent, appears to prevent plaque and gingivitis. Some evidence also shows that zinc-containing toothpaste can reduce existing plaque. However, other conventional treatments may be more effective.

Also, most studies that showed benefit used zinc citrate in combination with triclosan, which is not available in the US.

- **Bad breath.** Research suggests that chewing gum, sucking on a candy, or using a mouth rinse containing zinc reduces bad breath.
- **Cold sores (herpes labialis).** Applying zinc sulfate or zinc oxide to the skin, alone or with other ingredients, seems to reduce the duration and severity of oral and genital herpes. However, zinc might not be beneficial for recurrent herpes infections.
- **Reduced ability to taste (hypogeusia).** Some early research suggests that taking zinc by mouth does not improve taste disorders in children with zinc deficiency. But most evidence suggests that taking zinc by mouth is effective for people with a reduced ability to taste foods due to zinc deficiency or some other conditions.
- **Skin infection caused by Leishmania parasites (Leishmania lesions).** Research suggests that taking zinc sulfate by mouth or injecting as a solution into lesions helps heal lesions in people with Leishmaniasis. However, injecting zinc solutions into lesions does not seem to be more effective than conventional treatments.
- **Leprosy.** Taking zinc by mouth in combination with anti-leprosy drugs seems to help treat leprosy.
- **Muscle cramps.** Taking zinc by mouth seems to help treat muscle cramps in people with cirrhosis and zinc deficiency.
- **Weak and brittle bones (osteoporosis).** Low zinc intake seems to be linked to lower bone mass. Taking a zinc supplement in combination with copper, manganese, and calcium might decrease bone loss in women who have passed menopause.
- **Stomach ulcers.** Taking zinc acexamate by mouth seems to help treat and prevent peptic ulcers. However, this form of zinc is not available in the US.
- **Sore throat (pharyngitis).** Using a zinc lozenge before surgery that involves having a tube placed into the windpipe seems to reduce the chance of having a sore throat after surgery.
- **Pneumonia.** Most research suggests that taking zinc might help PREVENT pneumonia in undernourished children. However, research assessing the effects of zinc for TREATING pneumonia once it develops shows conflicting.
- **Preterm birth.** Taking zinc by mouth during pregnancy appears to reduce the risk for early delivery. But zinc supplementation doesn't seem to reduce the risk for stillbirths, miscarriage, or infant deaths.
- **Bed sores (pressure ulcers).** Applying zinc paste appears to help improve the healing of bed sores in elderly people. Also, increasing zinc intake in the diet seems to improve bed sore healing in hospitalized patients with bed sore.
- **Illness from a Shigella bacteria infection (shigellosis).** Research shows that taking a multivitamin syrup containing zinc along with conventional treatment can improve recovery time and reduce diarrhea in undernourished children with food poisoning.
- **Sickle cell disease.** Taking zinc by mouth seems to help reduce symptoms of sickle cell disease in people with zinc deficiency. Taking zinc supplements also appears to decrease the risk for complications and infections related to sickle cell disease.
- **Leg sores caused by weak blood circulation (venous leg ulcer).** Taking zinc sulfate by mouth appears to help some types of leg ulcers heal faster. The effects seem to be greater in people with low levels of zinc before treatment. Applying zinc paste to leg ulcers also appears to improve healing.
- **Vitamin A deficiency.** Taking zinc by mouth together with vitamin A seems

to improve vitamin A levels in undernourished children better than vitamin A or zinc alone.

- **Warts.** Early research suggests that applying a zinc sulfate solution improves plane warts but not common warts. Applying zinc oxide ointment appears to be as effective as conventional treatments for curing warts. Taking zinc sulfate by mouth also appears to be effective.

## Possibly Ineffective for

- **Patchy hair loss (alopecia areata).** Although there is early evidence that suggests taking zinc together with biotin might be helpful for hair loss, most studies suggest that zinc is not effective for this condition.
- **Eczema (atopic dermatitis).** Taking zinc by mouth does not appear to improve skin redness or itching in children with eczema.
- **Cataracts.** Taking zinc by mouth together with antioxidant vitamins does not seem to help treat or prevent cataracts.
- **Cystic fibrosis.** Zinc sulfate does not appear to improve lung function in children or adolescents with cystic fibrosis, although it may reduce the need for antibiotics.
- **HIV/AIDS.** Taking zinc by mouth along with antiretroviral therapy does not improve immune function or reduce the risk of death in adults or children with HIV.
- **Pregnancy complications in women with HIV/AIDS.** Taking zinc by mouth during pregnancy does not appear to reduce the risk of transmitting HIV to the infant. Also, zinc does not appear to prevent infant death or maternal wasting in pregnant women with HIV.
- **Involuntary weight loss in people with HIV/AIDS.** Taking zinc by mouth together with vitamins does not seem to improve AIDS diarrhea-wasting syndrome.
- **Infant development.** Giving zinc to infants or children at risk for having low levels of zinc does not seem to improve mental or motor development. But giving zinc to women during pregnancy might increase the growth of the child during the first year of life.
- **Long-term swelling (inflammation) in the digestive tract (inflammatory bowel disease or IBD).** Taking zinc by mouth does not seem to help treat IBD.
- **Flu (influenza).** Taking zinc supplements by mouth is unlikely to improve immune function against the flu virus in people who are not at risk for zinc deficiency.
- **Ear infection (otitis media).** Taking zinc does not appear to prevent ear infections in children.
- **A pregnancy complication marked by high blood pressure and protein in the urine (pre-eclampsia).** Taking zinc does not seem to reduce the risk of high blood pressure in pregnancy.
- **Low iron levels in women who are pregnant.** Taking zinc by mouth does not seem to help improve iron levels in women taking iron and folic acid supplements.
- **Prostate cancer.** Taking zinc does not seem to be linked to the risk of getting prostate cancer.
- **Scaly, itchy skin (psoriasis).** Taking zinc by mouth does not seem to help treat psoriasis.
- **Joint swelling (inflammation) in people with psoriasis.** Taking zinc by mouth, alone or together with painkillers, has no effect on the progression of

psoriatic arthritis.

- **Rheumatoid arthritis (RA).** Taking zinc by mouth does not seem to help treat rheumatoid arthritis.
- **A skin condition that causes redness on the face (rosacea).** Research suggests that taking zinc by mouth daily for 90 days does not improve quality of life or symptoms associated with rosacea.
- **Sexual problems that prevent satisfaction during sexual activity.** Research suggests that zinc supplementation does not improve sexual function in men with sexual dysfunction related to kidney disease.
- **ringing in the ears (tinnitus).** Taking zinc by mouth does not seem to help treating ringing in the ears.
- **Upper airway infection.** Taking zinc by mouth does not decrease the risk for upper respiratory tract infections.

### Likely InEffective for

- **Malaria.** Taking zinc by mouth does not seem to help prevent or treat malaria in undernourished children in developing countries.

### Insufficient Evidence for

- **Liver disease in people who drink alcohol.** Taking zinc sulfate by mouth might improve liver function in people with alcohol-related liver disease.
- **Alzheimer disease.** Some early research shows that zinc supplements might slow the worsening of symptoms in people with Alzheimer disease.
- **Arsenic poisoning.** Early research suggests that taking zinc together with spirulina can reduce symptoms and arsenic levels in the urine and hair of people with long-term arsenic poisoning.
- **Asthma.** Zinc intake does not appear to be linked to the risk for developing asthma in children.
- **A blood disorder that reduces levels of protein in the blood called hemoglobin (beta-thalassemia).** Early research suggests that taking zinc sulfate while undergoing blood transfusions increases growth in children with beta-thalassemia compared to blood transfusions alone.
- **Brain tumor.** Early research suggests that zinc intake is not linked with a reduced risk of developing brain cancer.
- **Swelling (inflammation) of small airways in the lung (bronchiolitis).** Taking zinc while in the hospital might speed up recovery from this type of airway infection.
- **Canker sores.** Some early research suggests that taking zinc sulfate improves canker sores and prevents them from reappearing. However, other research shows no benefit.
- **Tiredness in people treated with cancer drugs.** Early research shows that taking zinc does not reduce tiredness or improve life quality in people with colorectal cancer receiving chemotherapy.
- **A lung disease that makes it harder to breathe (chronic obstructive pulmonary disease or COPD).** Early research suggests that taking zinc daily after recovery from COPD-related infections reduces the risk of additional infections in older people.
- **Colon cancer, rectal cancer.** Increased intake of zinc has been linked to a 17% to 20% reduced risk of colorectal cancer.
- **Heart disease.** Early research suggests that taking zinc reduces cholesterol but not triglycerides in people with clogged arteries.

- **Diseases, such as Alzheimer disease, that interfere with thinking (dementia).** Research suggests that taking zinc sulfate improves behavior and social abilities in people with memory loss.
- **Tooth plaque.** Early evidence suggests that brushing teeth with toothpaste containing zinc reduces plaque buildup.
- **Nerve pain in people with diabetes (diabetic neuropathy).** Research suggests that taking zinc sulfate improves nerve function and reduces blood sugar in people with nerve damage caused by diabetes.
- **Down syndrome.** Early research suggests that taking zinc can improve immune function and reduce infections in people with Down syndrome who are zinc deficient and have weakened immune systems. However, other research shows conflicting results.
- **Seizure disorder (epilepsy).** Taking zinc might reduce how often seizures occur in children not responding well to other treatments.
- **Cancer of the esophagus.** Early research has linked low intake of zinc with an increased risk of esophageal cancer. However, other early research shows that zinc intake is not linked with the risk of esophageal cancer. It's possible that the source of zinc (plant vs. meat) affects how beneficial it is.
- **Loss of bowel movement control (fecal incontinence).** Research suggests that applying an ointment containing zinc and aluminum to the anus three times daily for 4 weeks improves symptoms and quality of life in women with a loss of control of bowel movements.
- **Stomach cancer.** Early research shows that increased zinc intake is not linked to a lower risk of stomach cancer.
- **Head and neck cancer.** Early research suggests that zinc supplementation does not improve survival rates or reduce the spread of cancer after 3 years in people with head and neck cancer.
- **Reduced brain function in people with advanced liver disease (hepatic encephalopathy).** Early research suggests that taking zinc may slightly improve mental function in people with hepatic encephalopathy. However, zinc does not appear to improve disease severity or recurrence.
- **Diarrhea in people with HIV/AIDS.** Taking zinc long-term might help prevent diarrhea in adults with HIV who have low blood levels of zinc. However, zinc doesn't seem to help treat diarrhea in adults with HIV-related diarrhea. In children with HIV, some research shows that taking zinc reduces the occurrence of diarrhea compared to placebo (sugar pills). But other research shows that it doesn't help prevent diarrhea compared to vitamin A.
- **Certain infections (opportunistic infections) in people with HIV/AIDS.** There is some early evidence that taking zinc supplements by mouth in combination with the drug zidovudine might reduce infections that occur because of a weakened immune system. However, it might negatively affect survival in people with AIDS.
- **Infection of the intestines by parasites.** Taking zinc alone or along with vitamin A might help treat some, but not all, parasite infections in children in developing countries. Also, some research suggests that taking zinc with vitamin A reduces the risk for some infections. However, other research suggests that zinc does not reduce the risk for infection.
- **Cancer of the white blood cells (leukemia).** Research suggests that taking zinc by mouth helps improve weight gain and reduces infection rate in children and adolescents with leukemia. However, zinc does not appear to improve nutrient levels in the body so that the body can function properly.
- **Infants born weighing less than 2500 grams (5 pounds, 8 ounces).** Taking zinc during pregnancy does not seem to reduce the risk of having a

newborn with low birth weight. Giving zinc to underweight infants in developing countries seems to decrease the risk of death, prevent certain complications, and improve mental ability. Giving zinc supplementation to low birth weight infants industrialized countries also seems to help prevent some complications and death. But zinc doesn't appear to improve growth in low birth weight infants from industrialized countries.

- **Conditions in a man that prevent him from getting a woman pregnant within a year of trying to conceive (male infertility).** Some early research suggests that zinc supplementation increases sperm count, testosterone levels, and pregnancy rates in infertile men with low testosterone levels. Other research suggests that taking zinc can improve sperm shape in men with moderate enlargement of a vein in the scrotum (grade III varicocele). However, in men with fertility problems due to diseases or medical treatment, taking zinc has produced mixed results.
- **Dark skin patches on the face (melasma).** Research suggests that applying a solution containing zinc to the skin daily for 2 months is less effective than standard skin bleaching treatment for people with brown patches on the face.
- **Heart attack.** Early research shows that taking zinc twice daily for 9 months helps the heart to beat more effectively in people who have had a heart attack.
- **Cancer of the upper part of the throat behind the nose (nasopharyngeal cancer).** Early research suggests that taking zinc improves survival rates after 5 years in people with a rare type of advanced nose and throat cancer.
- **Yellowing of the skin in infants (neonatal jaundice).** Early research suggests that taking zinc twice daily for 7 days does not improve jaundice in newborns.
- **Injury to the brain, spine, or nerves (neurological trauma).** Administering zinc immediately after a head trauma seems to improve the rate of recovery.
- **Cancer that starts in white blood cells (non-Hodgkin lymphoma).** Early research suggests that zinc supplementation is linked to a decreased risk of developing non-Hodgkin lymphoma.
- **A type of anxiety marked by recurrent thoughts and repetitive behaviors (obsessive-compulsive disorder or OCD).** Early research suggests that taking zinc twice daily along with the drug fluoxetine for 8 weeks reduces OCD symptoms slightly more than taking fluoxetine alone.
- **Swelling (inflammation) and sores inside the mouth (oral mucositis).** Research shows that taking zinc sulfate by mouth while undergoing radiation therapy helps prevent ulcers and swelling in the mouth caused by radiation treatments. Some research shows that taking zinc sulfate by mouth reduces the severity of mouth ulcers in adults undergoing chemotherapy. However, taking zinc does appear to improve mouth ulcers caused by chemotherapy in children and adolescents. Zinc does not appear to reduce mouth ulcers in patients undergoing hematopoietic stem cell transplantation (HSCT).
- **A hormonal disorder that causes enlarged ovaries with cysts (polycystic ovary syndrome or PCOS).** Some research shows that taking zinc helps prevent hair loss on the head and hair growth on the face in women with PCOS who are also taking a medication called metformin. Taking zinc does not seem to improve acne or levels of hormones in the body.
- **Recovery after surgery.** Early research suggests that taking zinc reduces the healing time after surgery used to treat an abnormal skin growth located at the



tailbone (pilonidal surgery).

- **Swelling (inflammation) of the prostate due to infection.** Taking zinc along with the drug prazosin does not seem to improve the ability to urinate or quality of life compared to taking prazosin alone in men with prostate swelling. But zinc might help to relieve pain in some people with this condition.
- **Itching.** Early research suggests that taking zinc twice daily for 2 months reduces itching in people with kidney disease who are experiencing itching due to dialysis treatment.
- **Seizures.** Febrile seizures are seizures that occur during a fever. Taking zinc might prevent these seizures in children who already experienced one.
- **Blood infection (sepsis).** Taking zinc along with antibiotics might protect the brain of newborns with sepsis. It isn't known if taking zinc can help these babies live longer.
- **Infections of the kidney, bladder, or urethra (urinary tract infections or UTIs).** Early research shows that taking zinc helps to improve some symptoms of a bladder infection faster in children who are also taking antibiotics. Taking zinc might reduce how often they need to go to the bathroom. It doesn't seem to help with fever or to kill the bacteria in the bladder.
- **Wound healing.** Early research suggests that applying a zinc solution twice daily improves wound healing compared to applying a saline solution. However, applying zinc-containing insulin (Humulin by Eli Lilly and Company) seems to work better than solution containing zinc alone.
- **A type of inflammatory bowel disease (Crohn disease).**
- **A type of inflammatory bowel disease (ulcerative colitis).**
- **Skin wrinkles from sun damage.**
- **Other conditions.**

More evidence is needed to rate zinc for these uses.

## Side Effects & Safety

**When taken by mouth:** Zinc is **LIKELY SAFE** for most adults when taken by mouth in amounts not larger than 40 mg daily. Routine zinc supplementation is not recommended without the advice of a healthcare professional. In some people, zinc might cause nausea, vomiting, diarrhea, metallic taste, kidney and stomach damage, and other side effects. Zinc is **POSSIBLY SAFE** when taking by mouth in doses greater than 40 mg daily. There is some concern that taking doses higher than 40 mg daily might decrease how much copper the body absorbs. Decreased copper absorption may cause anemia. Taking high amounts of zinc is **LIKELY UNSAFE**. High doses above the recommended amounts might cause fever, coughing, stomach pain, fatigue, and many other problems. Taking more than 100 mg of supplemental zinc daily or taking supplemental zinc for 10 or more years doubles the risk of developing prostate cancer. There is also concern that taking large amounts of a multivitamin plus a separate zinc supplement increases the chance of dying from prostate cancer. Taking 450 mg or more of zinc daily can cause problems with blood iron. Single doses of 10-30 grams of zinc can be fatal.

**When applied to the skin:** Zinc is **LIKELY SAFE** for most adults when applied to the skin. Using zinc on broken skin may cause burning, stinging, itching, and tingling.

**When inhaled:** Zinc is **POSSIBLY UNSAFE** when inhaled through the nose, as it might cause permanent loss of smell. In June 2009, the US Food and Drug

Administration (FDA) advised consumers not to use certain zinc-containing nose sprays (Zicam) after receiving over 100 reports of loss of smell. The maker of these zinc-containing nose sprays has also received several hundred reports of loss of smell from people who had used the products. Avoid using nose sprays containing zinc.

### **Special Precautions & Warnings:**

**Infants and children:** Zinc is **LIKELY SAFE** when taken by mouth appropriately in the recommended amounts. Zinc is **POSSIBLY UNSAFE** when used in high doses.

**Pregnancy and breast-feeding:** Zinc is **LIKELY SAFE** for most pregnant and breast-feeding women when used in the recommended daily amounts (RDA). However, zinc is **POSSIBLY UNSAFE** when used in high doses by breast-feeding women and **LIKELY UNSAFE** when used in high doses by pregnant women. Pregnant women over 18 should not take more than 40 mg of zinc per day; pregnant women age 14 to 18 should not take more than 34 mg per day. Breast-feeding women over 18 should not take more than 40 mg of zinc per day; breast-feeding women age 14 to 18 should not take more than 34 mg per day.

**Alcoholism:** Long-term, excessive alcohol drinking is linked to poor zinc absorption in the body.

**Diabetes:** Large doses of zinc can lower blood sugar in people with diabetes. People with diabetes should use zinc products cautiously.

**Hemodialysis:** People receiving hemodialysis treatments seem to be at risk for zinc deficiency and might require zinc supplements.

**HIV (human immunodeficiency virus)/AIDS:** Use zinc cautiously if you have HIV/AIDS. Zinc use has been linked to shorter survival time in people with HIV/AIDS.

**Syndromes in which it is difficult for the body to absorb nutrients:** People with malabsorption syndromes may be zinc deficient.

**Rheumatoid arthritis (RA):** People with RA absorb less zinc.

**Vegetarianism:** Vegetarian diets are often linked with lower zinc absorption. So this type of diet is considered a risk factor for zinc depletion. But the body adapts over the long term. It becomes better at absorbing zinc and reducing zinc loss.