

Knowledge of Health, Inc.



# Beyond Vaccines

The End Of The Vaccination Era



# *Zinc and Vaccination*

Provision of adequate amounts of zinc may assist your immune system in producing antibodies in response to inoculation with attenuated bacteria and viruses or synthetic vaccines.

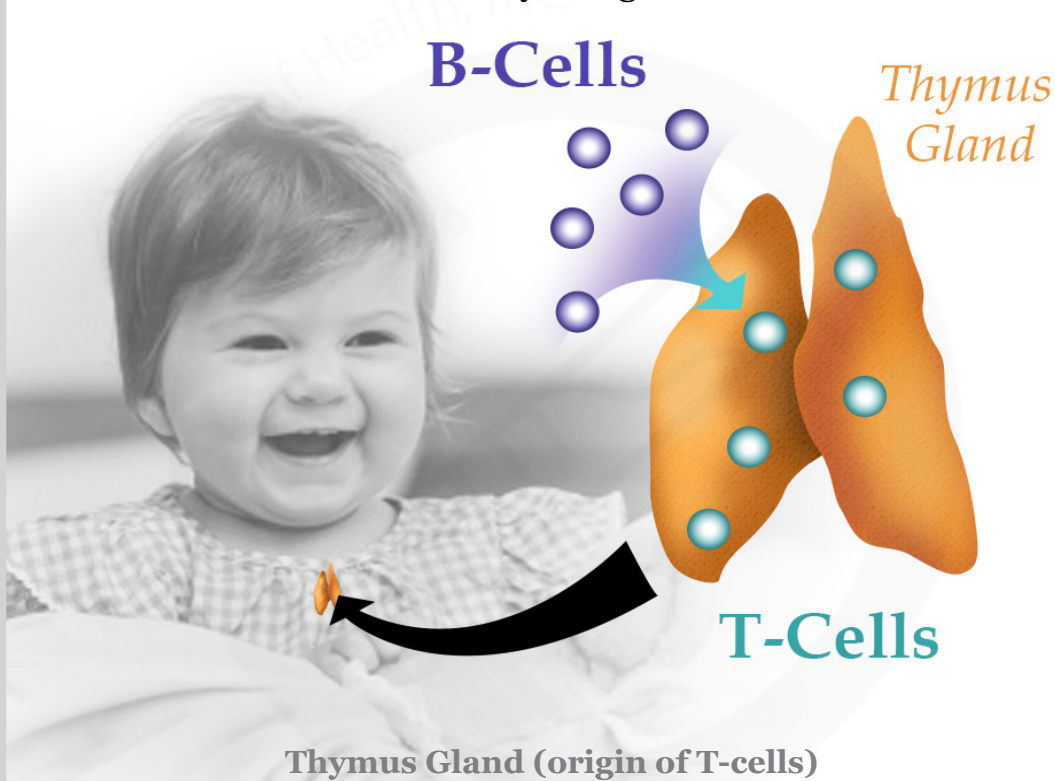
Most well nourished people who have adequate zinc intake levels and availability of zinc as well as other nutrients like vitamins C and D and selenium experience only mild transient symptoms (fever, aches) while they are making antibodies against potentially pathogenic bacteria and viruses. For example, only 1 in 200-1000 adequately nourished people infected by the poliovirus develop paralysis.

*Zinc supplementation is proposed as a way to develop antibodies and avert symptoms when infected with potentially pathogenic germs either from natural exposure or from vaccines.*

While physicians may not be convinced of the use of zinc to enhance the immune response, the very populations of people who don't produce sufficient antibodies after vaccination, **the very young and the very old, are commonly zinc deficient.**

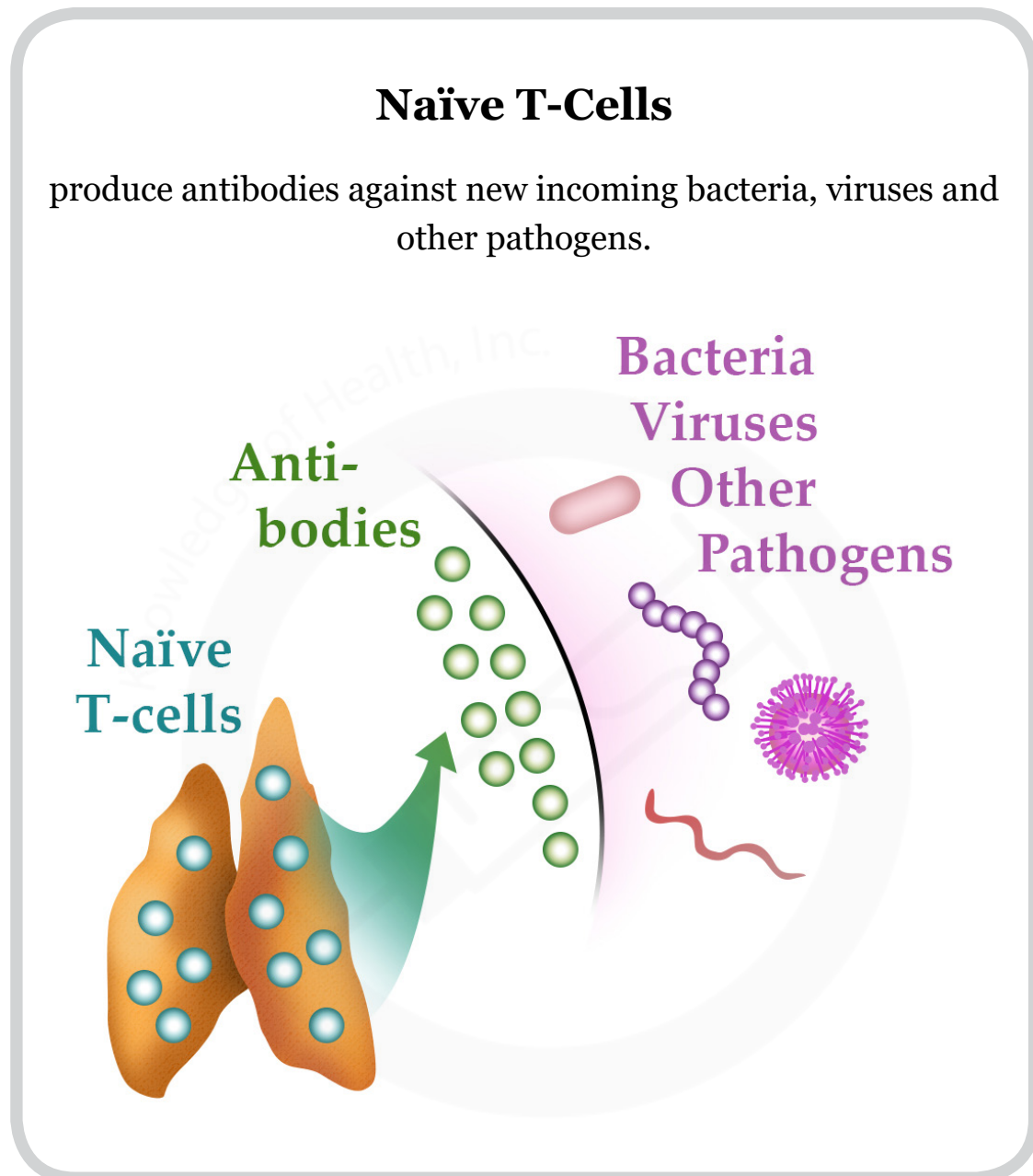
## Zinc

works to maintain the size and function of the thymus gland. B-cells produced in your bone marrow are converted to T-cells in the thymus gland.



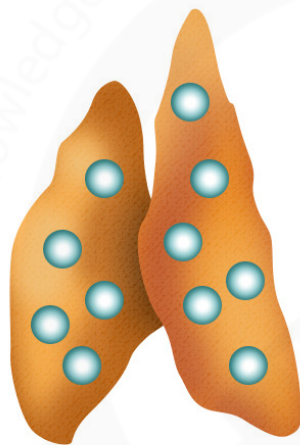
The thymus gland is located below your breastbone (sternum) just below your neck.

A pool of **un-activated (naïve) T-cells** that has not produced any antibodies is required to produce antibodies against new incoming bacteria, viruses and other pathogens that may infect the host.



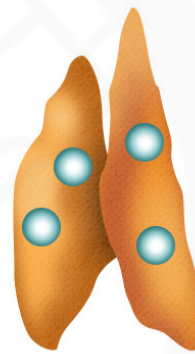
## **Zinc deprived**

thymus gland shrinks and does not maintain a healthy pool of naïve T-cells.



### **Zinc-Sufficient**

Healthy pool  
of naïve T-cells



### **Zinc-Deficient**

Not healthy pool  
of naïve T-cells

Studies involving zinc induced antibody production with vaccination are mixed. Reasons why the provision of zinc may not always help produce antibodies are:

- (a) excessively high doses may over-produce metallothionein (meh-tallo-th-eye-o-neen), a binder of zinc and other heavy

metals such as cadmium, mercury, copper and aluminum. This may result in a normal zinc blood test but the zinc is not bio-available;

(b) insufficient supply of selenium and vitamin B6 to release zinc from metallothionein.

The over-binding of zinc to metallothionein may be overcome by starting a zinc regimen with low doses and work up to higher doses. Later, zinc release agents such as supplemental selenium and vitamin B6 can be consumed with zinc. Then more zinc should be bioavailable.

Modern medicine attempts to improve vaccine-induced antibody production by increasing the number of booster shots and/or toxic heavy metal adjuvants (aluminum, thimerosal (mercury), but this does not address why the young and old don't respond well to vaccines.

Mercury (thimerosal) and aluminum are heavy metals added to vaccines to provoke an antibody response that are a concern to many parents of young children who undergo continual vaccination throughout their school years. It is important to recognize that zinc is the primary activator of metallothionein that binds to mercury (thimerosal) and aluminum. Binding these heavy metals renders them harmless. A zinc deficiency may lead to a shortage of metallothionein.

*Zinc normalizes the immune response  
rather than over-stimulates it. Zinc is posed  
as remedy for autoimmunity.*



So there should be little concern for individuals with autoimmune problems. In fact, zinc is posed as a remedy for autoimmunity.

## **Zinc and the diet**

Aside from oysters there are no zinc-rich foods. A typical serving of wheat germ, meats (beef, pork, chicken), pumpkin seeds, nuts, mushrooms, provide 2-6 milligrams per serving.

*It may be best to start a zinc supplementation program to ensure proper zinc nutrition. This is especially important for infants and growing children as well as older adults.*

Outside of meat it is not uncommon for growing children to be picky eaters and eat few foods considered relatively rich in zinc. Vegetarians would most likely benefit from zinc supplementation. Older adults often eat less food and therefore consume less zinc. Also, due to diminished secretion of stomach acid (which requires zinc for its production by the way) in the senior years of life, less zinc from the diet is absorbed.

## **Zinc supplements**

There are many types of zinc supplements available. Zinc oxide, the most economical zinc supplement, is not soluble in water whereas other **forms of zinc (gluconate, citrate, acetate) are more desirable**. Zinc is bound to (chelated to, pronounced key-lay-ted))



carriers such as oxide, citrate, gluconate, acetate. Different forms provide different amounts of elemental zinc.

FORM OF ZINC	ELEMENTAL ZINC %	TYPICAL DOSE Miligrams provides
Zinc oxide (insoluble)	80%	100 mg provides 80 mg
Zinc citrate	34%	
Zinc acetate (lozenges)	30%	
Zinc sulfate	23%	220 mg provides 60 mg
Zinc carnosine	22%	
Zinc mono-L-methionine	21%	
Zinc picolinate	20%	
Zinc gluconate	14%	10 mg provides 1.4 mg

The Institute of Medicine has established Adequate Intake (AI) levels of zinc for infants birth to 6 months is 2 mg/day. Breast milk provides ~2 mg of zinc/day. However, the **demand of zinc increases to 3 mg/day around the 6th month of life**, which is precisely when the thymus gland dramatically shrinks in size. It is critically important for extra zinc to be provided at this age.

### Recommended Daily Zinc Allowance

Infants & children 7 months -3 years	3 mg/day
Children 4-8 years	5 mg/day
Children 9-13 years	8 mg/day
Girls 14-18 years, girls	9 mg/day
Boys & men, 14 years & older	11 mg/day
Women, 19 years & older	8 mg/day
Pregnant women, 14-18 years	13 mg/day
Pregnant women 19 & older	11 mg/day
Lactating women, 14-18 years	14 mg/day
Lactating women, 19 years & older	12 mg/day
Senior adults	Not established

The typical North American male consumes about 13 mg of elemental zinc/day of dietary zinc; women consume approximately 9 mg elemental zinc/day. However, because **so little zinc is absorbed (~15-20%) it is possible to experience a shortage.**

*Only about 15-20% of zinc is absorbed.*

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.

*Zinc is needed for immune function,  
wound healing, blood clotting, thyroid  
function and more.*

Zinc deficiency is not uncommon worldwide, but is mistakenly said to be rare in the US. In fact, there is a massive zinc deficiency in the population. The most common visible symptoms of zinc deficiency are:

### Common Zinc Deficiency Symptoms

Behavioral or learning problems in growing children such as attention deficits, oppositional behavior, reading problems (dyslexia), delayed speech or even autistic symptoms

Skin problems such as warts, moles, Athlete's foot, impetigo, rough skin and rashes and skin allergies

Slow growth

Poor sense of taste and smell

Low insulin levels

Diarrhea

Loss of appetite

Nausea

Irritability

Slow wound healing

Hair loss

It is not uncommon for children and adults to experience stomach upset or pain after taking supplemental zinc. It is recommended zinc be taken with food rather than on an empty stomach. Liquid zinc is also available for young children and adults with swallowing problems.

For adults, supplemental zinc should stay below 34-40 mg/day to avoid side effects and not induce a zinc/copper imbalance.

Zinc overdose may materialize as symptoms of zinc deficiency since excessive zinc is likely bound up with metallothionein making zinc less available. Nausea, vomiting and diarrhea would likely be experienced in cases of zinc overdose.

Supplemental iron or calcium, or more so iron + calcium, interferes with zinc absorption. Prenatal vitamins provide ample amounts of iron and calcium for the growing baby. However, these two minerals impair proper zinc nutriture. It is suggested women take a separate 15-25 mg zinc supplement with food during pregnancy at least 4-hours apart from their prenatal vitamins to ensure proper absorption. Vitamin B6 and selenium help to release zinc from its binding protein (metallothionein) and are considered co-factors. (Source: Food & Function, May 18, 2016)

A question often asked is why are so many well-fed Americans zinc deficient? One answer is that high-fructose corn syrup, which began to be added to prepared and processed foods in the 1970s, interferes with zinc absorption. (Sources: American Journal Clinical Nutrition Nov 1993; Neural Plasticity March 2015) It is interesting to note that when high fructose corn syrup was fed to humans, more cases of diarrhea were reported. Diarrhea is a sign of zinc deficiency. (Source: Plant Foods Human Nutrition, April 1992)