

Network for Sustained Elimination of Iodine Deficiency

Iodine and Pregnancy

(Food and Nutrition Board, Institute of Medicine, 2002)

Iodine recommendations:

Sufficient iodine intake by the pregnant woman is vital for her health and for the optimal development of the fetus, particularly the fetal brain.

Based on body weight, infants require more iodine (as thyroid hormone) than any other age group. The newborn thyroid turns over 100% of the iodine it takes in every day. The needs of the developing fetus are proportionally as great as, if not greater than, that of the newborn infant.

Except for women who are breastfeeding, pregnant women have the greatest need for iodine. When the EAR of non-pregnant women (225 mcg/day) is added to the estimated iodine uptake of the fetal thyroid gland (approx 150 mcg/day max), the total is 375 mcg/day.

If in addition, we consider that women when pregnant lose considerably more iodine through the urine than non-pregnant women, it would seem logical that pregnant women would require more than 170 mcg/day. *Lactating women need to consume iodine sufficient to meet the needs for themselves and the nursing infant, and this explains why they have the highest need of iodine.*

Age Group	Intake (mcg)
0 – 12 months	50
2 – 6 years	90
7 – 12 years	120
12+ years	150
Pregnant or Lactating	200

Conclusions

Although the spectrum of iodine deficiency disorders in a population includes a range of human illness, the most significant focus for elimination is the damage to the developing brain of the fetus that occurs in pregnancy. *The national strategy to supply additional iodine to the population may not be optimal in protecting newborns against the brain damage caused by iodine deficiency.*

References:

Food and Nutrition Board, Institute of Medicine. Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc. National Academies Press. 2002. <http://www.nap.edu/openbook/0309072794/html/258.html> (Chapters 1, 2, and 8)

Hess SY, Zimmermann MB, Torresani T, Burgi H, Hurrell RF. Monitoring the adequacy of salt iodization in Switzerland: A national study of school children and pregnant women. *European Journal of Clinical Nutrition* (2001). 55: 162-166.

Hollowell JG, Staehling NW, Hannon WH, Flanders DW, Gunter EW, Maberly GF, Braverman LE, Pino S, Miller DT, Garbe PL, DeLozier DM, Jackson RJ. Iodine nutrition in the United States. Trends and public health implications: Iodine excretion data from NHANES I and III (1971 - 1974 and 1988 - 1994). *Journal Clinical Endocrinology and Metabolism* (1998). 83(10): 3401-3408.

Karanfilski B. Report: On the implementation of the project "Iodine status of pregnant and breastfeeding women in Macedonia". UNICEF. 2001.

Iodine Deficiency Linked to Many Serious Disorders including Pregnancy Loss

Iodine deficiency:

- * **Affects fertility;**
 - * **Increases the risk of miscarriage or stillbirth;**
 - * **Can have devastating effects on the baby's developing brain and also on physical growth: such as severe mental retardation, growth stunting, apathy, and impaired movement, speech or hearing; and is**
 - * **Considered the world's greatest cause of preventable brain damage.**
 - * **Iodine is a chemical element needed for growth and survival. It is mostly derived from the ocean. It is found in small and varying amounts in fruit and vegetables, depending on the concentration of iodine in the soils in which they are grown. Note: sea salt is a *poor* source of iodine, with only 2 micrograms of iodine per gram of sea salt;**
 - * **The most potent source of iodine is Sea Plants.**
 - * **Iodine is critical for normal development of the baby in the womb, so iodine intake is vital both during pregnancy, and while lactating.**
 - * **The World Health Organization recommends the following daily intake for optimal iodine nutrition: 225 mcg per day.**
 - * **Pregnant & lactating women -- as well as those trying to conceive -- should have a minimum of 350 micrograms per day.**
 - * **Iodine deficiency disorders (IDD's) such as 'goitre' pose a severe health hazard to the baby, as listed above.**
 - * **Even mild iodine deficiency can impair development and cause subtle defects in visual motor skills, hearing and intelligence. Iodine deficiency has resulted in an estimated 80 million children suffering from some form of permanent mental retardation.**
- Written By: Dr. Nicole Ballinger

Dietary iodine inadequate in many pregnant women

[OB/GYN News, Nov 15, 2004](#) by [Bruce Jancin](#)

VANCOUVER, B.C. -- *More than one-quarter of fetuses may be at risk for neurodevelopmental deficits resulting from exposure to inadequate iodine in American women during pregnancy. Offie P. Soldin, M.D., said at the annual meeting of the American Thyroid Association.*

Her analysis of data from the Third National Health and Nutrition Examination Survey (NHANES-III) showed that more than 50% of pregnant women had an iodine intake below the Institute of Medicine's Recommended Daily Allowance of 225 micrograms per day in pregnancy, which corresponds to a urinary iodine level of 150 mcg/L.

Moreover, more than 25% of pregnant U.S. women had a urinary iodine level consistent with an iodine intake less than one-half the RDA, according to Dr. Soldin of Georgetown University in Washington.

Her analysis was based upon 266 pregnant and 3,854 nonpregnant NHANES-III participants aged 15-44 years, all of whom were free of thyroid disease and antithyroid antibodies.

Adequate intake of iodine in pregnancy is essential for fetal neurologic development. Dr. Soldin attributed the widespread marginal maternal iodine intake to a lack of public awareness of this fact coupled with the absence of iodine in most multivitamin supplements.

In a separate presentation, Gregory A. Brent, M.D., noted that Dr. Soldin's NHANES-III findings were mirrored in a report earlier this year by Elizabeth N. Pearce, M.D., and coworkers at Boston University. They measured total urinary iodine concentrations in 100 consecutive healthy pregnant Bostonians and found 49% had values consistent with an iodine intake below the 220-mcg/day RDA in pregnancy. Nine percent had urinary iodine levels below 50 mcg/L (Thyroid 2004;14:327-8).

The American Thyroid Association's Public Health Committee is very interested in encouraging multivitamin manufacturers to increase the iodine content in their supplements. A recent survey showed that only 35% of prescription prenatal vitamins contain iodine. And of those that do, a mere 15% contain more than 150 micrograms of iodine per daily dose.

A daily supplement containing only 150 micrograms may not be sufficient for a pregnant woman with low dietary intake of iodine to achieve the RDA, said Dr. Brent, professor of medicine and physiology at the University of California, Los Angeles.

Many prenatal vitamins lack enough iodine 60 multivitamins' claims fall short; too little iodine ups developmental risks

The Associated Press

updated 5:33 p.m. MT, Wed., Feb. 25, 2009

LOS ANGELES - Many brands of multivitamins for pregnant women may not contain all the iodine they claim, potentially putting babies at risk of poor brain development, a new study suggests. Tests on 60 brands that listed iodine as an ingredient on their labels found many fell short of the stated amount. "If these numbers are all real, then they're not meeting their label claim and that's a problem," said William Obermeyer, a former Food and Drug Administration scientist who co-founded ConsumerLab.com, a private testing service. Obermeyer was not part of the research.

The study was done by scientists at the Boston University Iodine Research Laboratory. Results were reported in a letter published in Thursday's New England Journal of Medicine. No brands were named in the analysis.

Iodine deficiency affects more than 2 billion people worldwide and is the leading cause of mental retardation. Pregnant and nursing women need at least 290 micrograms of iodine a day, according to the Institute of Medicine. Expecting mothers who don't get enough can put their babies at greater risk of mental retardation and growth, hearing and speech problems.

During pregnancy, having enough thyroid hormones is important for fetal brain development. There is no law requiring vitamin makers to add iodine to prenatal multivitamins, which are available by prescription or bought over-the-counter as dietary supplements. Boston University scientists last year looked at 223 prenatal multivitamins available by prescription or sold over-the-counter in the United States. About half of them — 114 — listed iodine.

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The most damaging effect of iodine deficiency is on the developing brain, and to a lesser degree, any brain. Thyroid hormone is particularly important for myelination of the central nervous system, which is most active in the prenatal period and during fetal and early postnatal development. Numerous population studies have correlated an iodine-deficient diet with increased incidence of *mental retardation*. *A meta-analysis of 18 studies concluded that iodine deficiency alone lowered mean IQ scores by 13.5 points (Bleichrodt and Born, 1994).* Iodized salt is a special case. With only a few isolated exceptions, edible salt (sodium chloride) does not naturally contain iodine. Either potassium iodide or potassium iodate is laced into salt in 98% of U.S. Households (only found in 3% of English Households). 50-70 percent of the iodide Americans ingest each day, is hidden in their food supply, not the salt shaker.

These compounds are pharmaceutically manufactured by drug companies, in order to provide “stability” but with potential side effect such as HYPO and HYPER thyroidism, which has grown to now epidemic proportions since the 1930’s when they were instituted in the name of iodine by the WHO and the NIH in America. Women of all ages are seeing MD’s for “low thyroid”, and are usually placed onto powerful synthetic drugs “for the rest of their lives” as per the AMA Protocol used to treat the growing number of Americans suffering from imbalanced thyroid conditions. Once the TRUE iodine is ingested daily, the thyroid sloughs off the pharmaceutical iodide and iodate, and our metabolism can be allowed to normalize. Many informed experts believe that the rising rate of obesity in this country, can be traced back to this false iodine in the food supply.

In addition to these effects on the individual, iodine deficiency has adverse consequences for the community. A well known experts states: *“a drop of IODINE each day can be the difference between an idiot and an Einstein.” Mental retardation can cover a wide range, from mild blunting of intellect to full blown cretinism (see “Zombieland”), and a large part of the population may have some intellectual impairment. The mean IQ of the deficient community is decreased by at least 13.5 IQ points, according to one review. Individuals in these communities have lower educability and lower economic productivity, and the output of the whole community suffers. Dramatic improvement typically occurs after appropriate addition of vegetable iodine, as found in the FarmaSea® Blend of Sea Plants (FBSP).*

Other consequences of iodine deficiency are impaired reproductive outcome, increased childhood mortality, decreased educability, and *economic stagnation*.

NOTE by Scott Kennedy: There are 177 Mcg’s of iodine in one capsule of Super Sea Veg. So in 3 capsules, there is 531 Mcg’s of VEGETABLE iodine. The Government states that the Tolerable Upper Intake Level of (iodide/iodate in the salt) for adults is 1.1 mg/day (3 capsules has ½ of this), hence the 3-6 capsules/day suggested serving size.

The Japanese ingest over 7.7 mgs of organic vegetable iodine EVERY DAY! Their IQ is 15 pts higher than Americans across their population. They also enjoy the longest and healthiest life spans. They ingest 7-10 grams of whole sea plants each and every day.

The secret is found in their DAILY diet, and also found in the FarmaSea® Blend of Sea Plants, contained in Super Sea Veg®, by FarmaSea® Health, LLC. 800-893-vegg (8344).

Vitamin D May Prevent Serious Respiratory Disease in Newborns

Supplements can cut risk of RSV, life-threatening complications, researchers say

Posted: May 10, 2011

By Steven Reinberg

HealthDay Reporter

TUESDAY, May 10 (HealthDay News) -- Vitamin D supplements for pregnant women may help prevent a respiratory disease called RSV that can lead to pneumonia and other potentially life-threatening illnesses in newborns, Dutch researchers report.

Respiratory syncytial virus (RSV) is the most common cause of pneumonia and inflammation of the lower airways (bronchiolitis) in infants in the United States, according to the U.S. Centers for Disease Control and Prevention. While most children recover, many are hospitalized and develop respiratory problems that persist well into childhood.

"We have no treatment for RSV. The only thing we can do is try to prevent the disease," said lead researcher Dr. Louis Bont, from the department of pediatric infectious diseases at Wilhelmina Children's Hospital and University [Medical](#) Center in Utrecht.

One way to prevent RSV is for pregnant women to take supplemental vitamin D, he said. "In fact, there are guidelines that prescribe that," he added.

"If pregnant women do not take vitamin D supplements, they have low vitamin D levels in the umbilical cord blood and then the children have a severely increased risk of RSV," Bont said.

"Intake of vitamin D during late stage of pregnancy is vital to prevent RSV, and probably other respiratory diseases as well," he concluded.

RSV infects about 5 million children in the United States each year. But if women took vitamin D supplements during pregnancy, about 20 percent of those infections in newborns might be prevented, Bont said. "That would be in the magnitude of 1 million cases per year," he said.

Vitamin D has many important functions, Bont explained, noting that "it shapes and matures the immune system." In addition, the vitamin plays a role in helping the respiratory system develop, he added.

The report was published in the May 9 online edition of *Pediatrics*.

For the study, Bont's team measured the amount of vitamin D in the umbilical cord blood of 156 newborns in the Netherlands.

The researchers found 54 percent of these newborns had insufficient [levels of vitamin D](#). Among these infants, 18 (12 percent) developed RSV in the first year of life.

In fact, infants with [low levels of vitamin D](#) were six times more likely to develop RSV, compared with infants who had the highest levels, Bont's group found.

Among the women in the study, only 46 percent said they took supplements containing vitamin D while they were pregnant, the researchers noted.

Bont thinks all pregnant women should be taking vitamin D supplements. In general, they should be getting 400 to 1,000 International Units (IU) a day, he said.

In the study, Bont and other researchers explained that some pregnant women might need up to 4,000 IU a day to achieve the best outcome for their infants. (Experts who make up the U.S. [Food and Nutrition](#) Board recommend that pregnant women get at least 600 IU of vitamin D daily and note that they can safely take up to 4,000 IU a day, according to the U.S. Office of Dietary Supplements.)

The cost of prenatal vitamins, which contain vitamin D, is about \$9 a month.

What the researchers have shown in this study is an association between vitamin D and preventing RSV. To establish a cause-and-effect relationship, Bont said that randomized trials are needed.

Dr. Andrew Colin, director of the division of pediatric pulmonology at the University of Miami Miller School of Medicine, said this finding could "save the world a humongous amount of money."

Colin noted the recognition of the link between low vitamin D levels and lung diseases has been growing over the years. This is particularly true for asthma. In fact, the increase in the number of asthma cases can, in part, be attributed to low vitamin D levels, he said.

"RSV is a worldwide scourge," Colin said. "Probably the most significant lung disease of infancy is RSV. The bad news about this disease is that quite a few infants who have had RSV infection will develop an asthma-like disease, which can affect their entire childhood," he added.

Colin thinks vitamin D may very well prevent RSV. "If, indeed, boosting the vitamin D in the mothers is going to end up with high vitamin D in babies [and] is going to make a difference, I think it's huge," he said.

[Vitamin D in Pregnancy and Beyond: Important for pregnant women, breastfeeding, and children](#)

I have [5 posts](#) on this blog encouraging foods over the use of vitamin/mineral supplements. In fact, for last year's [RD Blogfest post](#), I concluded with the following statement:

There is overwhelming evidence in support of taking vitamin D supplements due to the fact that that food sources are sparse and absorption from sun is limited in the winter.

Take Vitamin D supplements during pregnancy and give them to your children!

In September 2007, the National Institutes of Health held a conference entitled "[Vitamin D and Health in the 21st Century](#)" to address several key research questions. Recommendations have become more clear because of this conference, other research articles, and an [updated American Academy of Pediatrics policy](#) published last year.

Here is what we currently know about vitamin D and perinatal/pediatric health:

- If you live above the LA/Atlanta latitude you cannot absorb/convert enough Vitamin D from the sun between November and February. The same holds true if you always wear sunscreen of SPF 30+ in the summer.
- Low Vitamin D levels in women have been associated with breast cancer, other cancers, recurrent vaginal infections, fibromyalgia and other bone pain, heart disease, diabetes and insulin disorders, multiple sclerosis, and rheumatoid arthritis.
- Of specific interest to pregnant women, Vitamin D deficiency in childhood can cause a permanent deformed pelvis ("rachitic" pelvis due to rickets) making vaginal delivery later on in life difficult or impossible. Vitamin D deficiency in pregnancy may also be a factor in preeclampsia, a dangerous condition of high blood pressure in pregnancy that can lead to preterm labor and illness and death of mother and/or infant if left untreated. Low vitamin D levels in pregnant women may cause the fetus to be deficient leading to bone abnormalities, such as extra wide fontanelles in the skull.
- In infants and children, low Vitamin D levels can lead to Rickets, which is defined as growth retardation and bone abnormalities marked by: bone pain, muscle weakness, dental problems, easily broken bones, projections along the ribcage, bowed legs, knock-knees, cranial/spinal/pelvic deformations, poor growth, low calcium levels, uncontrolled muscle spasms, soft skull, deformed chest (wider at the bottom, narrow at the top), wide wrists. Some of the more obvious physical signs may be square heads, large foreheads, sunken or close-set eyes, bowed legs or the opposite, knock knees. Any child with any of these symptoms should have their Vitamin D levels tested to see if that may be the cause.
- The reason why supplements are preferred in the winter is because vitamin D is not normally found in high levels in food (fatty fish, eggs, mushrooms) and our ability to absorb it from the sun is limited during the winter months.
- During the summer months ask your dermatologist about exposing your arms and legs for 10-15 minutes 2-3 times/week and applying sunscreen afterward.

- Recent research studies indicate that infants and children would need 400-800 IU/day, while adults would need 1,000-2,000 IU/day and pregnant and nursing women may need up to 4,000IU/day. You should supplement during the winter even if you or your doctor does not want to do a blood test.
- Breastfed babies can either get vitamin D from their mothers (if their mothers supplement with 4,000 IU/day) or the infant can receive 400-800 IU/day from vitamin D drops. See my favorite brand below, it is the least allergenic. If your baby is drinking formula, infant formula is fortified with about 11 IU per ounce. Your baby might need additional supplementation depending on how much he eats

FISH OIL SUPPLEMENTS DURING PREGNANCY BOLSTERS INFANTS IMMUNE SYSTEMS

A new study adds to the growing evidence that fish oil supplements in the diet of pregnant women can bolster their infants' immune systems.

"DHA is important to the unborn and newborn child, and pregnant women should make sure that they get enough of it, preferably from fish, but otherwise from supplements," said Philip Calder, a professor of nutritional epidemiology at the University of Southampton in England, who was not involved with the research.

The study is published online in the journal *Pediatrics*.

These latest findings are based on results from more than 800 women, half of whom took DHA supplements daily during pregnancy.

Infants in the study were examined at 1, 3 and 6 months old, and their mothers were asked whether, in the past two weeks, the infants had symptoms such as congestion, phlegm, vomiting and rashes and how long those lasted. The mothers had been provided with diaries to track illnesses.

DHA is one of the three types of omega-3 fatty acids found in fish and fish oils. While DHA has been shown to potentially benefit cognitive development, immune development and heart disease, it is not a major part of the American diet. Pregnant mothers may also be concerned about eating fish because of the mercury content.

"In general, DHA intakes are low in the United States among pregnant women and among adults in general because we are not seafood eaters," said Susan Carlson, a professor of nutrition at the University of Kansas Medical Center. "It is a nutrient that is found in relatively few foods in good concentrations, and they tend not to be foods that Americans consume routinely." But a growing body of research is showing that DHA may provide a number of benefits for the infants.

"DHA is vital for early infant brain and eye development," Calder said. "It is a key building block, and has important functional roles that cannot be fulfilled by other fatty acids." Calder added that DHA is probably also important for heart, vascular and immune system development.

Study researcher Usha Ramakrishnan, an associate professor of global health at Emory, said the researchers are continuing to investigate the long-term benefits of DHA.

"[We are] interested in the long-term implications, if these children grow better and are smarter," Ramakrishnan said, noting the children are turning 4 now, and researchers will study their school performance at age 5, among other outcomes.

The ongoing investigation in Mexico will also allow researchers to examine some of the less encouraging findings of the study, and see if they should be larger areas of concern. While the duration of cold symptoms were shorter in children taking DHA, those children had rashes and bouts of vomiting last longer.

"We don't know what to make of it, and when you're looking at a whole bunch of things, some are significant and some aren't," Ramakrishnan said.

Carlson agreed that small numbers of illnesses may have driven that finding, noting that colds were a far bigger concern than vomiting, as more than 200 colds occurred, but only 30 episodes of vomiting.

As with many nutrients, the benefits of DHA may vary with the dose taken. For example, while vitamin C may provide benefits in warding off colds, taking megadoses of the vitamin don't appear to offer a larger benefit and may be harmful in some cases.

Similarly, Carlson said, the large benefits of DHA in many current studies may be the result of people having deficiencies. Additional DHA may not benefit people who already get it from their diet.

While researchers are still examining the benefits of DHA and the proper dose to take, Ramakrishnan stopped short of a broad recommendation.

"If women want to take it, it's unlikely to cause harm in the overall picture of the babies we looked at," Ramakrishnan said. "The magnitude of the benefit seems to be variable and depends on the outcome you looked at. It may not be a benefit for everybody."