

Our Children, Our Nutrition



A publication of Arkansas Children's Nutrition Center

Summer 2011

Changing Science, Changing Lives

Recommendations change for Calcium & Vitamin D

Last November, the Institute of Medicine (IOM) issued new recommended amounts for Calcium and Vitamin D. Based on an extensive literature review, the IOM expert panel found that most Americans get enough of these essential nutrients, and there is a growing body of evidence showing that too much may actually be harmful.

Formation of Vitamin D in the skin requires activation of a pre-Vitamin D by sun light. Its job is largely to help Calcium to function. About 15 minutes of sunlight on the hands, face, and arms each day can prevent deficiency. Persons who have darker skin or use sun block lotions may need a longer time in the sun. An alternative to getting Vitamin D from the sun is drinking milk. All milk includes added Vitamin D, regardless of the fat content, therefore about one cup of milk supplies approximately one quarter of daily Vitamin D needs. Vitamin D is often added to fortified cereals and some juices as well.

Calcium is the most abundant mineral in the



body. About 99% of the body's Calcium is stored in the bones. The other 1% of the body's Calcium is vital for muscle contractions and nerve impulses. Food sources for Calcium include all dairy, dark green vegetables, and bone-in fish such as canned salmon or sardines. Calcium is often added to fortified cereals and some juices. You can also find it in antacid tablets.

The Recommended Dietary Allowance (RDA) of Calcium for children and adults varies between 700 mg and 1300 mg daily, whereas Vitamin D requirements stay the same at 600 international units (IU) daily. It is important to note that there is an Upper

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Beginnings

A research study of Arkansas Children's Nutrition Center



Although the American Academy of Pediatrics recommends breast-feeding for up to one year, recent data suggest that 87% of U.S. babies are formula-fed during the first 6 months of life. There are differences in the composition of breast-milk and infant formulas. 15-20% of formula-fed infants are fed formulas made with soy protein, while most of the rest are fed formulas made with cow's milk protein.

Recently, the "Beginnings Study" at the ACNC has suggested that within formula feeding, soy-formula-fed babies are slightly leaner than babies fed milk formula. It has been hypothesized that this may lead to a reduced risk of obesity in children and adults who were fed soy formulas as infants. One potential mechanism is soy formulas change fat and carbohydrate metabolism.

Soy protein isolate, used to make soy formulas, is a complex mix of proteins, peptides and plant chemicals which includes isoflavones. Isoflavones are structurally similar to the female estrogen sex hormones, and have weak estrogenic actions. Moreover estrogens and purified isoflavones have been shown to reduce adiposity in rodent models.

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Portion Sizes and Our Health

Portion sizes have a significant influence on the ever-growing obesity epidemic. According to the National Heart, Blood, and Lung Institute's "Portion Distortion", an average serving of French fries 20 years ago was 2.4 oz compared to our average 6.9 oz serving of French fries today. That is a 400 calorie difference! Over the past couple decades, both the portion sizes that we are served, and the percentage of those overweight and obese have increased. Everywhere we go, our servers ask us if we want to add this or that to our order or if we want to increase the size for only a few cents more. Although it may seem like a good deal, the perception of the right portion size has definitely gotten fuzzy. Here are several suggestions that can help us to win the battle between portion sizes and our health.

When eating out, it can be more difficult to monitor portions. One thing we can do is ask for a carry out box with our order. When the entrée is served, put

half of it in the carry out box. This way we are not tempted to eat more than we need, and there is lunch for the next day. A few other options would be to

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split a large entrée with a friend or family member, skip the appetizer, or ask for the lighter portion option.

When eating at home, we can better control how much we eat if smaller plates and bowls are used. Then there will be less temptation to get larger

portions. For example, a 9 inch plate is a great size to use for meals. One good tip is to split our plate into three sections. We can do one part starch- like rice or pasta, one part protein- like beans, meat or fish, and one part vegetables- like green beans or carrots. This will help us get our daily vegetables. Lastly, we can wrap up our meal with a fruit, or add it as a snack during the day. It is also smart to take small amounts of food at first, then, if there is still a feeling of hunger, we can get "seconds".

Eating slowly gives our stomach and brain enough time to communicate to each other about our satiety, or fullness. This saves us from eating excess calories and stomach discomfort. Remember that fruits and vegetables are lower in calories, full of wonderful nutrients, and have little or no fat unless it's added.

*Kayla Fuller, M.S., R.D., L.D.
Research Assistant*



The ACNC recently participated in the March of Dimes annual event, March for Babies, in Little Rock. Just one more way we support the children of Arkansas.



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Development of the neonatal pig is very similar to that of human infants. Pigs resemble human infants well, and can be fed the same formulas in the same fashion. Using this model, we studied gene expression profiles in the liver after breast or formula feeding.

Researchers found that expression of many genes was changed by feeding either milk or soy-based formulas compared to breast-feeding. In particular, genes regulating iron transport

and storage changed. This reflected iron deficiency in breast milk and increased iron storage in the liver of iron rich formula-fed piglets.

It is now well known that the diet we eat determines which genes are turned on or turned off. In infants, this means that breast-fed and formula-fed infants may turn on and turn off many genes differently.

In addition, genes involved in bile acid synthesis from cholesterol were turned on to a much greater extent in

piglets fed soy formula than those fed milk formula. This explains a decrease in serum cholesterol observed in formula-fed piglets and the well known cholesterol lowering effects of soy. However, we observed no evidence for estrogenic regulation of hepatic genes after soy formula feeding.

*Martin Ronis Ph.D.
Professor
Associate Director for Basic Research*

Research studies have shown that fast weight gain during early infancy is related to greater body fat in adulthood. Often, this rapid weight gain is linked to feeding baby above the recommended levels. Regular check-ups with your pediatrician in which the weight and length of your baby is plotted on growth charts is very important. Your baby's weight and length should stay consistent within percent lines. If you see a sudden or gradual increase, ask for more information. Your pediatrician can assess your baby's feeding patterns or refer you to a

Infancy is an important period in development in which children learn how, when and what to eat.

dietitian. Some satiety or fullness cues commonly seen in infants are decreased activity, more pausing during

the feeding session, and placing hands on mouth, eyes, and ears. When getting older, infants may also turn their head, push food containers away, or simply say "no". All these cues are signs from baby to let you know he/she is done. Infancy is an important period in development in which children learn how, when, and what to eat. Providing a variety of food, in adequate portion sizes, during

From the Director of the Human Studies Facility

Aline Andres, Ph.D.



a specific meal pattern is the best start you can give your child. Try to offer as wide of a variety as possible, especially vegetables and fruits.

Also, always remember that you are the best role model for your child and as your child grows older they will tend to mimic what you eat. If you eat a balanced diet and exercise regularly, your child is more likely to do the same. Perhaps this is a good time for you to get motivated to make a few small changes to your diet that may have a big impact on your child's health.

Carrie has been on staff as Clinical Nutrition Research Analyst for over two years. She has a Master in Public Health degree from UAMS College of Public Health, and a BA in Sociology from Hendrix College. Before coming to ACNC, Carrie worked at UAMS in the Department of Family & Preventive Medicine and in the College of Nursing.



Meet our Staff: Carrie and Sarah

Carrie works "behind the scenes" here at the ACNC. She takes care of all the data management for clinical studies and all submissions to the Institutional Review Board (IRB). "Though I usually don't get to work directly with participants, I like



knowing I'm a part of something that could improve the health of many children."

Sarah joined the staff in June

2010 as Clinical Research Technologist. She has a BA in Psychology from UALR. Before coming to the ACNC, Sarah was an early childhood teacher. At the ACNC, Sarah works closely with participants in the Brain Function Lab. When asked what Sarah likes most about her job she replied, "I enjoy interacting with all the children I get to see every day and knowing that I am helping contribute to science and a better understanding of child development."

Recommendations cont. from pg 1

Level intake (UL) for both of these nutrients. Intake of Calcium or Vitamin D above these levels may be harmful. In general, it is important not to take more than 2500 mg/d of Calcium. For Vitamin D, children 1-3 years of age should not consume more than 2500 IU/d, children ages 4-8 no more than 3000 IU/d and adults and children older than age 8 should not take more than 4000 IU/d.

Karin Pennington, R.D., L.D.
Lead Dietitian

Life Stage Group	Calcium RDA (mg/day)	Vitamin D RDA (IU/day)
1-3 yr	700	600
4-8 yr	1000	600
9-13 yr	1300	600
14-18 yr	1300	600



**Our families,
Our research,
Our vision,
Our team,
Our ACNC...**



Have a Great Summer!

Study Participation Opportunities

fMRI

This is a short-term study designed to look at how the food kids ate as babies affects how they think today. Participants attend up to three study visits on the campus of Arkansas Children's Hospital.

Qualifications

Children participating in this study must be healthy, between the ages of 7½ and 8½ and have been fed mostly breast milk, milk-based formula or soy-based formula from birth until their first birthday.

Compensation

Those completing each visit will receive monetary compensation in the form of a VISA card. A bonus card will be given to families completing all visits. Partially completed visits may be partially compensated.

Beginnings

This is a long-term, observational study for healthy babies. It is designed to look at how babies fed either breast milk, milk-based formula or soy-based formula grow and develop over the first six years of life.

Qualifications

Babies must be healthy, full-term and weigh at least six pounds at birth. Babies are accepted into the study until 2 months of age and must be fed mostly breast milk, milk-based formula or soy-based formula.

Compensation

Participants will be offered diapers or formula for the first year of participation. Following that, monetary compensation will be provided. Additional compensation may be provided for completion of each visit.

Glowing

This is a long-term study for pregnant women. It is designed to look at how the health of women at conception affects the health of their child at birth. Families are followed through pregnancy until the child is 2.

Qualifications

Women must be less than 8-weeks pregnant or thinking of becoming pregnant. Moms must be healthy at conception and meet specific entry criteria.

Compensation

Nutrition education and monetary compensation are provided through pregnancy. Diapers are provided through the child's 1st birthday. Additional compensation is provided from 1-2 years of age.

Interested in learning more about a study being conducted at ACNC?

Think you may qualify to participate? All research studies require potential participants to be screened. This process is simple and conducted via telephone in approximately 5-10 minutes. During that time, the study can be explained in more depth and any questions you have may be answered.

Screening is done as a way to learn more about you and your child. Typical questions center around the child's diet, your pregnancy and any other pertinent information that relates to the study being conducted. To be screened or learn more, please contact the ACNC Recruitment Line at 501-364-3309 or toll-free at 866-423-1311. For certain studies, pregnant moms may be placed on a waiting list.



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