**Important Study on Genetics and Bone Health**

An analysis of data was recently done to extend the information being gained through the South Dakota Rural Bone Health Study (SDRBH). This analysis was particularly important because it allowed us to gain a clearer understanding of the effect of lifestyle choices on bone health by removing the factor of genetics from the data. Since you cannot change your genetics, it is important to know what lifestyle choices you can make that will contribute to your bone health.

**Why was this study so important?**

Genetics is a major factor influencing bone health. Some twin studies have found that genetic explains about 40-80% of the variation in bone density. Since genetics is such a big factor, it is usually difficult to see the influence of lifestyle choices in a typical group of participants. In this analysis of SDRBH data, we took into account how people were related so we were then able to remove the influence of genetics, allowing lifestyle factors to be more clearly studied for their effects on bone health.

Participants included over 700 Hutterites from 15 South Dakota colonies, spanning ages 8 to 85. Information was used on participants' bone health, activity levels, diet information, and family relationships. Bone information included bone mineral content, bone size, and bone density. Exercise levels were determined by asking participants to estimate their activities over the previous seven-day period.

**What was found?**

A strong connection exists between genetics and bone size and density. The strength of the genetic link varies slightly between different parts of the skeleton but is generally strong throughout the body. The strength of this connection also applies equally to both men and women, with a few minor variations by age.

In terms of lifestyle choices, an important finding was highlighted by this study. It was shown that moderate to vigorous exercise was more important for preserving overall bone density than either walking or stair climbing. This was true for all ages and both genders. Regular exercise was shown to increase bone mineral content, bone size, and bone density throughout the skeleton, while walking only increased bone density in hips and legs.

So, in terms of lifestyle choices, moderate to vigorous exercise is important to add to your schedule. But remember, in order to build those stronger bones, an adequate supply of vitamin D and calcium is also needed.

Choosing Safe Toys for the Holidays

Recently, the media has reported numerous safety issues with toys, particularly issues with lead paint. Why is lead such an important safety concern?

Lead is a metal that is extremely toxic to humans. Even a small amount of lead in the blood can cause IQ and behavioral problems in children. The 1999-2002 National Health and Nutrition Examination Survey (NHANES) examined almost 5,000 children, checking their blood and teeth for signs of lead. They found that high levels of lead caused behavioral learning problems, such as distractibility, frustration and inability to follow sequences. Higher blood lead levels led to a diagnosis of attention deficit hyperactivity disorder (ADHD) requiring medication.

Even though the Centers for Disease Control have set the safe blood lead level (BLL) at 10 micrograms per deciliter, data from the NHANES has shown that no amount of lead is safe for humans. Even more seriously, the damage caused by lead ingestion cannot be reversed - even if the lead is removed from the body, the nerve damage remains.

Because lead is so toxic, it has been banned from more and more products over the past three decades. Lead is now illegal in interior house paint (1970), gasoline (phased out starting in 1978), plumbing pipes and solder (1986), and the solder in food cans (1995). In spite of laws banning its use, lead is still sometimes found in older homes, in dirt near gasoline tanks, in water from old pipes, and in new toys made outside the US.

How can we find safe toys?

We certainly wouldn’t want to give an unsafe toy to a cherished child for the holidays. But what can we do to make sure that the toys we choose are safe? One step might be to check the website of the Consumer Product Safety Commission, a branch of the US government (www.cpsc.gov). Their website lists all the recent and past toy recalls along with the reason for the recall and the stores where they toys are sold.

A couple other steps can also help us find safe toys. Reading the toy’s label or package will tell us if the toy is “nontoxic”. To find out if a toy contains lead, a lead test kit can be used. Some websites also offer suggestions for safe and age-appropriate toys. A sample of these include: www.kidshealth.org, www.toxinfreetoys.com, and www.nutrition4health.org. Being aware of the issues will help us protect children from lead contamination and other toy hazards.

Sources: SDSU presentation by Dr. Bruce Lanphear, M.D., M.P.H. and Science Daily, November 21, 2007