

**THYROID AND PREGNANCY****Low thyroid hormone levels in pregnancy and risk of ADHD symptoms in children****BACKGROUND**

Thyroid hormone is essential for normal brain development in the baby during pregnancy. Hypothyroxinemia, or low thyroid levels, in the mother during pregnancy can have major effect on the developing baby. Overt hypothyroidism, with high TSH and low thyroid hormone levels, in the mother during pregnancy has been associated with adverse pregnancy outcomes, including impaired brain development in the children born to these women. Transient hypothyroxinemia, which occurs when the thyroid hormone levels are low but the TSH levels are normal, also has been linked to impaired brain development in children. In contrast, mild hypothyroidism, with increased TSH but normal thyroid hormone levels, also affects pregnancy outcomes, although the effects are more subtle. This study sought to further investigate the potential association of low thyroid hormone levels with a particular focus on symptoms of attention deficit hyperactivity disorder (ADHD) in children born to mothers who had transient hypothyroxinemia during early pregnancy.

**THE FULL ARTICLE TITLE**

Modesto T et al. Maternal mild thyroid hormone insufficiency in early pregnancy and attention-deficit/hyperactivity disorder symptoms in children. *JAMA Pediatr.* July 6, 2015 [Epub ahead of print].

**SUMMARY OF THE STUDY**

This study was part of a larger population study of children born in the Netherlands, known as the Generation R Study. Children in this study were followed from birth until young adulthood. For this particular analysis, 3873 mother-child pairs were examined in depth on a variety of outcomes. Most women enrolled in the study during pregnancy. Thyroid hormone levels were measured during pregnancy (at an average of approxi-

mately 14 weeks) and their children's ADHD symptoms were assessed at 8 years of age by symptom questionnaires given to the mothers. Hypothyroxinemia in the mothers during pregnancy was identified in 127 (3.4%) of women. Children born to women with hypothyroxinemia had significantly higher ADHD symptom scores than children born to mothers with normal thyroid hormone levels during pregnancy. This association remained despite controlling for a number of other potential contributing factors to ADHD symptoms scores, including maternal, child and environmental factors (i.e gender, ethnicity, maternal age, maternal education, family income, child IQ). The authors conclude that low thyroid hormone levels in pregnancy influences brain development in the children.

**WHAT ARE THE IMPLICATIONS OF THIS STUDY?**

Children born to mothers with low thyroid hormone levels during early pregnancy showed higher ADHD symptom scores. This study provides support to the growing body of research demonstrating the importance of maintaining thyroid hormone levels during pregnancy to neurologic development of the fetus. While it is clear that overt hypothyroidism should be treated during pregnancy, additional research is needed to understand whether treating hypothyroxinemia with normal TSH levels during pregnancy would be beneficial.

—Whitney Woodmansee MD

**ATA THYROID BROCHURE LINKS**

Thyroid and Pregnancy: <http://www.thyroid.org/thyroid-disease-pregnancy/>

Hypothyroidism: <http://www.thyroid.org/hypothyroidism>

**THYROID AND PREGNANCY, continued****ABBREVIATIONS & DEFINITIONS**

**Hypothyroxinemia:** A term that specifically refers to low thyroxine ( $T_4$ ) levels. The term differs from hypothyroidism in that it is usually used to describe transient / temporary low thyroxine level that occurs without an associated rise in TSH.

**Transient hypothyroxinemia:** temporary decrease in the blood level of thyroxine ( $T_4$ ) after delivery in pre-term infants, followed by the return of normal levels in the absence of any treatment.

**Overt Hypothyroidism:** clear hypothyroidism an increased TSH and a decreased  $T_4$  level. All patients with overt hypothyroidism are usually treated with thyroid hormone pills.

**Mild/Subclinical Hypothyroidism:** a mild form of hypothyroidism where the only abnormal hormone level is an increased TSH. There is controversy as to whether this should be treated or not.

## Thyroid Awareness Monthly Campaigns

The ATA will be highlighting a distinct thyroid disorder each month and a portion of the sales for Bravelets™ will be donated to the ATA. The month of October is **Thyroid Nodule Awareness Month** and a bracelet is available through the [ATA Marketplace](#) to support thyroid cancer awareness and education related to thyroid disease.

