



## THYROID AND THE HEART

### Hypothyroidism Is Not Linked with a Significantly Increased Risk for Coronary Heart Disease

#### WHAT IS THE STUDY ABOUT?

Hypothyroidism, or an underactive thyroid, has been associated with cardiovascular risk factors that may lead to coronary heart disease (CHD). This is especially true with cholesterol levels, which are increased in hypothyroidism and then decrease with thyroid hormone treatment. Subclinical hypothyroidism occurs when an increased TSH level is the only abnormality and the thyroid hormone levels are normal. The association with subclinical hypothyroidism and significant changes in cholesterol levels is unclear. The aim of this study was to determine the association between subclinical hypothyroidism, cardiovascular risk factors and the risk for CHD and mortality.

#### THE FULL ARTICLE TITLE:

Boekholdt et al. Initial thyroid status and cardiovascular risk factors: The EPIC-Norfolk prospective population study. *Clin Endocrinol (Oxf)* 2009 doi: 10.1111/j.1365-2265.2009.

#### WHAT WAS THE AIM OF THE STUDY?

The aim of this study was to determine the association between hypothyroidism, cardiovascular risk factors and the risk for CHD and mortality.

#### WHO WAS STUDIED?

The European Prospective Investigation into Cancer and Nutrition (EPIC)-Norfolk study is a population-based study of 25,633 men and women, 45 through 79 years of age residing in Norfolk, United Kingdom. Participants completed a baseline health and lifestyle questionnaire and nonfasting blood cholesterol and thyroid tests (FT<sub>4</sub> and TSH) were obtained.

#### HOW WAS THE STUDY DONE?

The records of the participants were reviewed. Subclinical hypothyroidism was defined as a TSH >4.0 µIU/ml with a FT<sub>4</sub> in the normal range. Hypothyroidism was defined as a TSH >4.0 µIU/ml with a low FT<sub>4</sub>. Participants with CHD were identified during follow-up if they had a hospital admission and died of CHD or had this diagnosis as an underlying cause of death.

#### WHAT WERE THE RESULTS OF THE STUDY?

Serum TSH and FT<sub>4</sub> was measured in 13,076 participants and complete data were available for 11,554 participants, 5206 men (45%) and 6348 women (55%). Subclinical hypothyroidism was present in 800 persons, affecting 5% of men (238) and 9% of women (562). Undiagnosed hypothyroidism was found in only 47 men (1%) and 158 women (2.5%).

Men with subclinical hypothyroidism had similar cholesterol levels as men with normal thyroid function (euthyroid). Those with overt hypothyroidism had higher LDL-C levels than the euthyroid group. Women with subclinical hypothyroidism and overt hypothyroidism had higher levels of both total cholesterol and LDL-C levels than did euthyroid women. However, the incidence of cardiac disease in men and women with either subclinical hypothyroidism or overt hypothyroidism was no different than euthyroid individuals.

#### HOW DOES THIS COMPARE WITH OTHER STUDIES?

Several studies have shown that cholesterol levels are increased with individuals with both subclinical and overt hypothyroidism. Other studies have shown that treatment with thyroid hormone lowers cholesterol levels in patients with subclinical hypothyroidism. As seen in the January 2010 issue of *Clinical Thyroidology for Patients*, Adrees et al also showed that treatment with thyroid hormone improved cardiovascular risk factors in patients with subclinical hypothyroidism (Woodmansee W “Elevated cardiovascular risk factors in women with subclinical hypothyroidism are decreased by treatment with levothyroxine.” *Clinical Thyroidology for Patients* [serial online]. 2010;3(1):3-4. Available at: [http://thyroid.org/patients/ct/volume3/issue1/ct\\_patients\\_v3i1\\_3\\_4.html](http://thyroid.org/patients/ct/volume3/issue1/ct_patients_v3i1_3_4.html)). Finally, other studies also have shown no increased incidence of cardiac disease in patients with subclinical hypothyroidism.

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## THYROID AND THE HEART, continued

### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Although there is an association between thyroid hormone levels and cardiovascular risk factors, in this study, hypothyroidism is not linked with a significantly increased risk for coronary heart disease.

— Alan Farwell, MD

### ATA THYROID BROCHURE LINKS

Hypothyroidism: [http://thyroid.org/patients/patient\\_brochures/hypothyroidism.html](http://thyroid.org/patients/patient_brochures/hypothyroidism.html)

Hyperthyroidism: [http://thyroid.org/patients/patient\\_brochures/hyperthyroidism.html](http://thyroid.org/patients/patient_brochures/hyperthyroidism.html)

### ABBREVIATIONS & DEFINITIONS

**Hypothyroidism** — a condition where the thyroid gland is underactive and doesn't produce enough thyroid hormone. Treatment requires taking thyroid hormone pills.

**Hyperthyroidism** — a condition where the thyroid gland is overactive and produces too much thyroid hormone. Hyperthyroidism may be treated with antithyroid meds (Methimazole, Propylthiouracil), radioactive iodine or surgery.

**Euthyroid** — a condition where the thyroid gland is working normally and producing normal levels of thyroid hormone.

**Atherosclerosis** — “hardening of the arteries”, a condition wherein fatty material (cholesterol, lipids) collects along the inner walls of blood vessels (arteries). Over time, this material hardens (forms plaques) and can block blood flow through the arteries.

**LDL-C** — low density lipoprotein cholesterol, the type of cholesterol that has been associated with atherosclerosis and heart disease.



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