



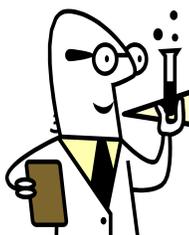
Dr. Techy says, "The recommended test panel with suspected hypothyroidism is TSH, T<sub>3</sub>, T<sub>4</sub>, Reverse T<sub>3</sub>."

## HYPOTHYROIDISM

### UNDERDIAGNOSED AND UNDERTREATED IN CHRONIC PAIN PATIENTS

#### THERE ARE 4 TYPES OF HYPOTHYROIDISM IN CHRONIC PAIN PATIENTS

1. **Classic Glandular Insufficiency:** The most common cause is probably Hashimoto's Thyroiditis which is an autoimmune disorder commonly associated with such painful conditions as fibromyalgia, systemic lupus erythematosus, and Crohn's disease. Thyroxine (T<sub>4</sub>), triiodothyronine (T<sub>3</sub>), and thyroid stimulating hormone (TSH) may be low in the serum.
2. **Pituitary Disease:** The most common causes in pain patients are probably traumatic brain injury and autoimmune disease. TSH is low in the serum.
3. **Opioid Suppression:** TSH is not as often suppressed by opioids as is follicle stimulating hormone (FSH), luteinizing hormone (LH), and adrenocorticotropin hormone (ACTH). Serum TSH, as well as T<sub>3</sub> and T<sub>4</sub> may, however, be low in the serum. Opioids may also act in peripheral, cellular tissue to suppress the conversion of T<sub>4</sub> to T<sub>3</sub>. Keep in mind that peripheral tissue produces about 80% of T<sub>3</sub>, the active thyroid hormone. There are no T<sub>4</sub> receptors in the body, only T<sub>3</sub>.
4. **Cellular Hypothyroidism or Euthyroid Sick Syndrome:** A number of conditions associated with chronic pain including inflammation, autoimmune disorders, infections, trauma, heart failure, adrenal dysfunction, diabetes and a number of drugs including opioids and antidepressants may produce a clinical hypothyroid state that may have normal TSH and T<sub>4</sub>. This condition may be caused by multiple factors including interference with serum protein binding. The most popular, but controversial theory, however, is that the cellular enzyme, deiodinase 1, is suppressed. This may result in a low serum T<sub>3</sub> and a high serum thyroxine metabolite called "Reverse T<sub>3</sub>".



Dr. Hormone says, "Hypothyroidism is common in chronic pain patients. Look for lethargy, weakness, dry skin, edema, hair loss, fatigue, depression, and slow mentation."



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