

***A global public health epidemic is impairing the health and wellbeing of millions of people.***

You may be affected and you surely know someone else who is struggling because of it. Statistics vary depending upon the source; between 10% and 40% of the population of developed countries is afflicted with this health problem that causes a slow decline in health, wellbeing, and productivity. <sup>(1, 2, 3)</sup> Some of the common diagnoses include:

**Hypothyroidism**  
**“Mysterious symptoms”**  
**Chronic Fatigue Syndrome (CFS)**

**Fibromyalgia (FM)**  
**Depression**  
**Stress overload**

**Normal aging process**  
**Myalgic Encephalitis (ME)**  
**Multiple Chemical Sensitivities (MCS)**

For many people, impaired thyroid hormone regulation of the tissues is the fundamental imbalance that underlies these issues. Thyroid hormone strongly influences the quality of the function of almost every tissue of the body. Statistics on data combined from both retrospective and prospective studies on fibromyalgia patients revealed that 43.5% were euthyroid (TSH, free T<sub>4</sub>, and free T<sub>3</sub> within normal reference ranges), 13.0% had primary hypothyroidism, and 43.5% had TRH stimulation test results consistent with central hypothyroidism. <sup>(4)</sup>

As you can see, many people have symptoms which are consistent with hypothyroidism but their lab test results for TSH, free T<sub>4</sub>, and free T<sub>3</sub> are within the reference ranges. When you look at the list of symptoms of fibromyalgia, chronic fatigue syndrome, or ME you will see that they fit neatly within the list of those for hypothyroidism. (*Take the Self-Tests at [www.drginahoneyman.com](http://www.drginahoneyman.com)*)

Autoimmune thyroiditis, also known as Hashimoto's Disease, can impair thyroid hormone production and may be the forerunner of hypothyroidism. Autoimmune thyroiditis is diagnosed by blood tests to measure thyroid antibodies, including thyroid peroxidase antibodies (TPO) and anti-thyroglobulin antibodies (ATA). When either TPO or ATA levels elevate, treatment should be initiated to suppress them. Current research is suggesting that autoimmune thyroiditis can also be a precursor to thyroid cancer. <sup>(5)</sup> Adrenal gland function should also be assessed since either a cortisol deficiency or excess can factor into immune system function, inflammatory conditions, and blood sugar control. Additionally, gluten sensitivity and/or celiac disease are often found in conjunction with autoimmune thyroiditis and should be either ruled out or detected and treated.

Thyroid hormone resistance is the most logical explanation for the 43.5% of clients who have perfectly normal TSH, free T<sub>4</sub>, and free T<sub>3</sub> levels, no elevation of thyroid antibodies, yet suffer from typical symptoms of hypothyroidism. The standard blood tests for TSH and thyroid hormones measure the quantity of these substances but they cannot detect thyroid hormone resistance. This is a receptor signaling and cellular regulation problem rather than a production problem. Resting metabolic rate (RMR) is a functional assessment of cellular energy production that is regulated largely by thyroid hormone. Certainly a differential diagnosis must be performed to detect any other variables that can alter the RMR. When there are no other such factors, impaired thyroid hormone regulation is the most rational explanation for the person's symptoms that mimic hypothyroidism.

People develop problems with thyroid hormone regulation for a variety of reasons. Nutritional deficiencies or family history of thyroid disease can be predisposing factors. Autoimmune thyroiditis and gluten sensitivity are often linked with one another. For women, shifts in female sex hormones such as the onset of menses,

pregnancy, childbirth, and menopause can be the catalysts for the emergence of thyroid disease. Physical, chemical, or emotional traumas can trigger the onset of impaired thyroid regulation. While the onset of symptoms can seem acute, they are often due to the disruption of a person's ability to compensate for the effects of a lesser degree of impairment. Total thyroidectomy for the treatment of thyroid cancer will result in the need to use thyroid hormone supplementation for the rest of one's life. Most partial thyroidectomy patients must use thyroid hormone supplementation though some will function well without it.

Neuroendocrine disruption can impair thyroid hormone production or utilization. Polychlorinated bisphenyls (PCBs) have been widely studied for decades and there is consensus that PCBs are pervasive and can disrupt any aspect of thyroid hormone production and utilization among many other damaging effects. Our thyroid system has many "moving parts" including central regulation by the hypothalamus and pituitary gland in the brain, production of thyroid hormones by the thyroid gland, transport proteins that carry thyroid hormone in the bloodstream, conversion of  $T_4$  to  $T_3$  in tissues, and thyroid hormone receptors. Any part of this system may malfunction due to contamination by PCB's and other chemicals. The Agency for Toxic Substances and Disease Registry (ATSDR) issued a report in 2000 stating that we all have measurable levels of PCBs in our bodies. <sup>(6)</sup>

As a reminder, hormones must bind with their matching receptors in order to switch on their beneficial processes inside the nuclei of our cells. When a receptor loses the ability to recognize its matching hormone, the function of the cells with faulty receptors is likely to be impaired. When we reach a critical mass of impaired thyroid hormone receptors our bodies behave just as though thyroid hormone were not present in adequate supply.

In June 2009, The Endocrine Society, an international group, issued the publication "*Endocrine-Disrupting Chemicals*", An Endocrine Society Scientific Statement. <sup>(7)</sup> Endocrine disruptors such as PCBs, dioxins, and bis-phenol A are influencing male and female reproductive systems, breast and prostate cancers, neuroendocrinology, thyroid hormone production and utilization, adrenal gland function, metabolism, obesity, diabetes, and cardiovascular endocrinology. Other reports are showing that these types of chemicals are causing boys to become girls during the initial stages of sexual differentiation in fetal development. <sup>(8)</sup>

***It is essential that the accepted standard of care for the diagnosis and treatment of people with symptoms of impaired thyroid hormone regulation be refined to accommodate basic science and current research.*** The Endocrine Society's awareness of the problems and the call to action with permission to diagnose and treat people differently than the current "standard of care" is encouraging. My treatment protocols are supported by basic textbook science that all students undertaking a professional doctorate program in health care must learn, whether they become a DC, MD, DO, or ND.

Human physiology books such as Guyton's *Textbook of Medical Physiology* agree on the fact that thyroid hormone is a strong modulator of metabolic rate. It makes sense to measure resting metabolic rate (RMR) as a functional analysis of thyroid hormone regulation. Indirect calorimetry is the technology used to measure RMR; it's the tried-and-true, noninvasive way to gather this invaluable information. Research has shown that female fibromyalgia patients had lower RMRs than did the matched healthy controls and TSH, free  $T_3$ , free  $T_4$  did not correlate with RMR. <sup>(9,10)</sup> It is both curious and disappointing that this basic science approach is rarely employed or respected by the medical community in general.

A differential diagnosis must be performed to detect or rule out other factors that can cause the patient's symptoms. A thorough history will reveal the use of medications or severe restriction of caloric intake. Body composition is measured to see if the person has adequate fat-free mass (also known as lean tissue) to support a normal RMR.

The current "standard of care" demands that doctors adjust thyroid hormone medication dosages by keeping the TSH in midrange rather than aiming for adequate tissue responses to thyroid hormone. The flaw in this dictate is that TSH, free  $T_4$ , and free  $T_3$  levels only reflect patients' production or use of thyroid medication.

These blood tests cannot determine whether or not the tissues of the body are well-regulated by thyroid hormone. With the exception of the thyrotroph cells which produce TSH in the anterior pituitary gland, these blood tests cannot give us information about how well the thyroid hormone receptors respond to circulating thyroid hormone. This is why people can have normal thyroid-related test results and still have symptoms of hypothyroidism.

RMR measurement needs to be integrated into the diagnostic and treatment process for people who have signs and symptoms of impaired thyroid hormone regulation. This is relevant to the call to action issued by the Endocrine Society in June 2009. ***As the nature of our problems change, so must our solutions.***

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