



## HYPOTHYROIDISM

### Physician perception and patient input are important influences in the treatment of hypothyroidism

#### BACKGROUND

Over the years, the traditional, paternalistic approach to providing medical decisions and recommendations in clinical practice has, appropriately, evolved into a more patient-centered approach. In the current model of shared decision making, information and opinions are exchanged between patients and providers to develop a treatment plan that works best for each individual patient. There are many studies published in primary care journals about these two-way patient–physician interactions but there seems to be less attention paid to this within the specialties, including endocrinology. This may be changing, as demonstrated by the two publications summarized here.

The first of these, by Bellastella et al., describes a survey tool to improve communication from patients to their physicians. The second, by Esfandiari et al., examines physician–patient interactions as perceived by physicians.

#### THE FULL ARTICLE TITLE

- Bellastella G et al 2019 EMPATHY: a new tool for identifying the most suitable thyroxine formulation in hypothyroid patients. *Thyroid* 29:928–933. PMID: 30963820.
- Esfandiari NH et al 2019 Patient requests for tests and treatments impact physician management of hypothyroidism. *Thyroid*. Epub 2019 Oct 10. PMID: 31436135.

#### SUMMARY OF THE STUDY

##### BELLASTELLA G ET AL

The aim of this study was to describe a patient survey tool that would help physicians choose the formulation of synthetic levothyroxine that would provide the best option for thyroid hormone replacement in their patients with autoimmune hypothyroidism. A total of 300 patients with mild-moderate untreated hypothyroidism secondary to autoimmune thyroiditis were recruited for the study. Inclusion criteria for the study were age <60

years, TSH >10 mIU/L, and “low/normal” serum free T<sub>3</sub> and free T<sub>4</sub> levels. Patients were assigned to two groups, each containing 50 men and 100 women. One of the groups, referred to here as E<sup>+</sup>, was assigned to answer a survey entitled EMPATHY (Evaluation of Malabsorption in Patients with Hypothyroidism.). The other group, referred to here as E<sup>-</sup>, did not take the survey. EMPATHY consisted of seven questions. The first six were designed to uncover a history of drug allergies or intolerance, stomach issues including inflammatory and irritable bowel disease, dietary restrictions, soy intake, or alcohol abuse. The final question presented a check-off panel of foods and food types in various categories, including nickel allergy, lactose intolerance, histamine intolerance, citric acid intolerance, gluten intolerance, and cornstarch allergy.

At baseline, age and serum thyroid-function tests (free T<sub>4</sub>, free T<sub>3</sub>, TSH) were similar in E<sup>+</sup> and E<sup>-</sup> patients. A drug/food allergy or intolerance was suspected in 30 E<sup>+</sup> patients based on answers to the questions. Levothyroxine treatment was started at a dose of 1.6 µg/kg/day in both groups in the form of tablets, soft gel capsules, or liquid. During the next 6 months, the levothyroxine dose was adjusted to achieve a target TSH of 0.4 to 2.5 mIU/L. During this period, the percentage of tablets and liquid preparations taken by the E<sup>+</sup> group was less, but not significantly less, than comparable formulations taken by the E<sup>-</sup> group. In contrast, approximately 20 percent of patients in the E<sup>+</sup> group were taking soft-gel T<sub>4</sub> preparations, as compared with less than half that number in the E<sup>-</sup> group. During the periods 2 months and 6 months after starting levothyroxine therapy, there were significantly more dose adjustments in the E<sup>-</sup> group than in the E<sup>+</sup> group. Also, 95% of patients in the E<sup>+</sup> group had reached the target TSH after 6 months while 89% were in range in the E<sup>-</sup> group.

The authors concluded that screening for drug and food allergies or intolerances in patients with autoimmune hypothyroidism may be useful in selecting the best levothyroxine formulation for thyroid hormone replacement.



## HYPOTHYROIDISM, continued

### ESFANDIARI NH ET AL

The focus of this study was to determine physicians' perception of the barriers to managing thyroid hormone replacement in patients with hypothyroidism. The authors conducted a survey among randomly chosen physician members of the Endocrine Society (ES), American Academy of Family Practice (AAFP), and American Geriatrics Society (AGS) with regard to their decision-making in treating their patients with hypothyroidism. The goal of the study was to determine whether physician and patient behaviors influence choices for thyroid hormone replacement therapy. The survey asked physicians about their practice patterns and interactions with their patients and what they believed were barriers. In addition, there were several sets of questions about the confidence that physicians had in interventions using decision support tools for managing thyroid hormone replacement. The survey was mailed to 600 physician addresses; the response rate among the remaining 566 physicians was 63%. Among these, 36% were primary care physicians, 32% endocrinologists, and 32% geriatricians. The majority of physicians (64%) had not read guidelines for the treatment of hypothyroidism. The makeup of the clinical practice of these physicians varied widely, as expected when comparing primary care physicians and specialists. In 70% of the physicians, they were treating fewer than 25% of their patients with levothyroxine for hypothyroidism. The remaining 30% prescribed levothyroxine to >26% of their patients.

A total of 70% of physicians considered it "somewhat likely" to "very likely" that patient compliance was a barrier for them in managing thyroid hormone replacement in their patients with hypothyroidism while 41% rated patient requests for tests and treatments as being a barrier. This perception was mainly associated with endocrinologists and less likely in physicians who had been practicing medicine for more than 20 years. Concern about patient dissatisfaction was noted in 32%

of physicians, and this response was correlated with patient requests for tests and treatments as a barrier to managing thyroid hormone replacement. Physicians stated that they were "very likely" or "likely" to receive the following requests from patients: 1) to adjust their dose of thyroid hormone even when the thyroid-function tests were normal (50%); 2) to use thyroid hormone preparations other than levothyroxine (50%); 3) to maintain serum T<sub>4</sub> concentrations below normal (30%) and 4) to adjust thyroid hormone doses based on serum free T<sub>3</sub> concentrations (20%). Further, 21% indicated they sometimes or almost always adjusted the dose of thyroid hormone based on symptoms when thyroid function tests were normal, 12% indicated they would use thyroid hormone preparations other than levothyroxine, 15% indicated they sometimes or almost always maintained serum TSH concentrations below normal, and about 8% indicated they sometimes or almost always adjusted the dose of thyroid hormone based on serum free T<sub>3</sub> concentrations.

Surprisingly, this study suggests that patient requests for tests and treatments outranks other more traditionally perceived barriers to patient compliance, including multiple providers managing thyroid medication, patients taking multiple other medications, clinic-visit time constraints and lack of clinical decision support tools.

### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Both of these studies indicate that a patient-centered approach to the management of hypothyroidism, along with shared decision making between physicians and patients, leads to increased patient satisfaction and better compliance by patients. Tools that can increase the communication between patients and physicians, as well as engaging patients in their own care, are likely to also lead to better patient outcomes.

— Alan P. Farwell, MD



## HYPOTHYROIDISM, continued

### ATA THYROID BROCHURE LINKS

Hypothyroidism (Underactive): <https://www.thyroid.org/hypothyroidism/>

Thyroid Hormone Treatment: <https://www.thyroid.org/thyroid-hormone-treatment/>

### ABBREVIATIONS & DEFINITIONS

**Autoimmune thyroid disease:** a group of disorders that are caused by antibodies that get confused and attack the thyroid. These antibodies can either turn on the thyroid (Graves' disease, hyperthyroidism) or turn it off (Hashimoto's thyroiditis/Autoimmune thyroiditis, hypothyroidism).

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

**Primary hypothyroidism:** the most common cause of hypothyroidism cause by failure of the thyroid gland.

**Thyroxine (T<sub>4</sub>):** the major hormone produced by the thyroid gland. T<sub>4</sub> gets converted to the active hormone T<sub>3</sub> in various tissues in the body.

**Triiodothyronine (T<sub>3</sub>):** the active thyroid hormone, usually produced from thyroxine.

**TSH: thyroid stimulating hormone** — produced by the pituitary gland that regulates thyroid function; also the best screening test to determine if the thyroid is functioning normally.

**Levothyroxine (T<sub>4</sub>):** the major hormone produced by the thyroid gland and available in pill form as Synthroid™, Levoxyl™, Tirosint™ and generic preparations.

**Thyroid hormone therapy:** patients with hypothyroidism are most often treated with Levothyroxine in order to return their thyroid hormone levels to normal. *Replacement therapy* means the goal is a TSH in the normal range and is the usual therapy. *Suppressive therapy* means that the goal is a TSH below the normal range and is used in thyroid cancer patients to prevent growth of any remaining cancer cells.

**Desiccated thyroid extract:** thyroid hormone pill made from animal thyroid glands. Currently desiccated thyroid extract is made from pig thyroids and is available as Armour Thyroid™ and Nature-Throid™.