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Optimal Thyroid Health for All



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Does levothyroxine therapy during the treatment of subclinical hypothyroidism affect bone density?

High levels of thyroid hormone (either from having an overactive thyroid or from taking too much thyroid hormone) cause increased bone turnover leading to bone loss and a decrease in bone density. Thyroid hormone therapy treating overt hypothyroidism that causes suppressed TSH levels has been associated with bone loss and osteoporosis. This study addresses the question of whether treatment with thyroid hormone for subclinical hypothyroidism can also lead to bone loss.

Büchi AE et al. 2022 Bone geometry in older adults with subclinical hypothyroidism upon levothyroxine therapy: A nested study within a randomized placebo controlled trial. *Bone* 161:116404. PMID: 35381390.

THYROID CANCER 5

Bone density testing intervals in TSH suppression for thyroid cancer

In patients where thyroid cancer is at high risk for a recurrence, high doses of thyroid hormone are often prescribed to turn off TSH levels (TSH suppression therapy) which may decrease the risk of cancer recurrence. However, the benefit of TSH suppression must be balanced with the risks of doing so, which include a higher risk of osteoporosis. In the present study, the authors evaluate the progression to osteoporosis and the timing of BMD testing in thyroid cancer patients on TSH suppression.

Park H et al 2022. Bone-density testing interval and transition to osteoporosis in differentiated thyroid carcinoma patients on TSH suppression therapy. *Clin Endocrinol* 97:130–136.

THYROID CANCER 7

What influences a patient's choice in choosing active surveillance in low risk papillary thyroid cancer?

Many small thyroid cancers are at very low risk to spread outside the thyroid or to cause any health risk. Because of this, the option of following the cancer by ultrasound and deferring surgery, called active surveillance, has become increasingly common. This study looks at factors impacting patients' choice for active surveillance or surgery in low risk papillary thyroid cancer.

Sawka AM et al for the Canadian Active Surveillance Study Group (Greater Toronto Area) 2022 A quantitative analysis examining patients' choice of active surveillance or surgery for managing low-risk papillary thyroid cancer. *Thyroid* 32:255–262. PMID: 35019770.

THYROID CANCER 9

Cost effectiveness of surgery vs active surveillance for low risk thyroid cancer

Low risk papillary thyroid cancer may be treated with a surgical procedure called thyroid lobectomy or by following by ultrasound and deferring surgery, which is called active surveillance. This study looked at the cost effectiveness (cost vs. benefit) of both approaches in the management of the low risk papillary thyroid cancer. The goal of the study was to look at which approach may be more cost effective over the long term.

Youssef MR et al 2022 Thyroid lobectomy as a cost-effective approach in low-risk papillary thyroid cancer versus active surveillance. *Surgery* 171:190–196. PMID: 34384606.

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The need for thyroid hormone replacement predicts poorer quality of life after thyroid surgery

One advantage that lobectomy has over a total thyroidectomy is less need for treatment with thyroid hormone after surgery and, if needed, often lower doses are fine. Some studies suggest that the need for thyroid hormone after surgery affects patient's quality of life (QOL). This study compared health-related QOL in patients who underwent thyroid lobectomy with those who underwent total thyroidectomy.

Yaniv D et al 2022 Quality of life following lobectomy versus total thyroidectomy is significantly related to hypothyroidism. *J Surg Oncol*. Epub 2022 Jun 11. PMID: 35689620.

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Switching generic-to-generic levothyroxine does not change serum TSH

Levothyroxine is one of the most commonly prescribed medications in the United States, and it is produced by many different manufacturers as generic or brand name products. The investigators in this study compared data from patients who consistently received generic prescriptions from the same manufacturer and data from patients who switched between the three most frequently used generic manufacturers to help understand whether there are significant differences in the stability of thyroid hormone levels between those groups when such a change happens.

Review of: Brito JP et al 2022 Association between generic-to-generic levothyroxine switching and thyrotropin levels among US adults. *JAMA Intern Med* 182:418–425. PMID: 35226058.

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Editor's Comments



Welcome to another issue of *Clinical Thyroidology for the Public*! In this journal, we will bring to you the most up-to-date, cutting edge thyroid research. We also provide even faster updates of late-breaking thyroid news through [Twitter](#) at [@thyroidfriends](#) and on [Facebook](#). Our goal is to provide patients with the tools to be the most informed thyroid patient in the waiting room. Also check out our friends in the [Alliance for Thyroid Patient Education](#). The [Alliance](#) member groups consist of: the *American Thyroid Association*, *Bite Me Cancer*, *the Graves' Disease and Thyroid Foundation*, *the Light of Life Foundation*, *MCT8 – AHDS Foundation*, *ThyCa: Thyroid Cancer Survivors' Association*, *Thyroid Cancer Canada*, *Thyroid Cancer Alliance* and *Thyroid Federation International*.

We invite all of you to join our [Friends of the ATA](#) community. It is for you that the American Thyroid Association (ATA) is dedicated to carrying out our mission of providing reliable thyroid information and resources, clinical practice guidelines for thyroid detection and treatments, resources for connecting you with other patients affected by thyroid conditions, and cutting edge thyroid research as we search for better diagnoses and treatment outcomes for thyroid disease and thyroid cancer. We thank all of the *Friends of the ATA* who support our mission and work throughout the year to support us. We invite you to help keep the ATA mission strong by choosing to make a donation that suits you — it takes just one moment to give online at: www.thyroid.org/donate and all donations are put to good work. The ATA is a 501(c)3 nonprofit organization and your gift is tax deductible.

While the Covid-19 pandemic is winding down, it has caused an unprecedented upheaval in our daily lives and presented extremely difficult challenges to our healthcare system. We at the American Thyroid Association would like to make sure that you all have access to most accurate, reliable, fact-based and updated information. (<https://www.thyroid.org/covid-19/>)

November is [Hyperthyroidism Awareness Month](#).

In this issue, the studies ask the following questions:

- Does levothyroxine therapy during the treatment of subclinical hypothyroidism affect bone density?
- How often should you measure bone density during thyroid hormone suppression therapy for advanced thyroid cancer?
- What influences a patient's decision to choose active surveillance for low risk thyroid cancer?
- What is more cost effective for low risk thyroid cancer – lobectomy or active surveillance?
- Does the need for thyroid hormone after thyroid surgery affect a patient's quality of life?
- Does switching between generic levothyroxine pill affect serum TSH?

We welcome your feedback and suggestions. Let us know what you want to see in this publication. I hope you find these summaries interesting and informative.

— Alan P. Farwell, MD



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HYPOTHYROIDISM

Does levothyroxine therapy during the treatment of subclinical hypothyroidism affect bone density?

BACKGROUND

Hypothyroidism is very common. Overt hypothyroidism occurs when both the thyroid hormone level (usually FT4) is low and the TSH level is high. Subclinical hypothyroidism is defined as having an only an increased TSH level while the FT4 is in the normal range. As opposed to overt hypothyroidism, treatment with thyroid hormone in subclinical hypothyroidism is controversial. Most experts recommend treatment for subclinical hypothyroidism when TSH levels are above 7-10 mIU/ml. However, in practice, the majority of adults with TSH levels above the normal range receive thyroid hormone treatment.

Thyroid hormone has a direct effect on bone. High levels of thyroid hormone (either from having an overactive thyroid or from taking too much thyroid hormone) cause increased bone turnover leading to bone loss and a decrease in bone density. High thyroid hormone levels also have been linked to fracture. Thyroid hormone therapy treating overt hypothyroidism that causes suppressed TSH levels has been associated with bone loss and osteoporosis. This study addresses the question of whether treatment with thyroid hormone for subclinical hypothyroidism can also lead to bone loss.

THE FULL ARTICLE

Büchi AE et al. 2022 Bone geometry in older adults with subclinical hypothyroidism upon levothyroxine therapy: A nested study within a randomized placebo controlled trial. *Bone* 161:116404. PMID: 35381390.

SUMMARY OF THE STUDY

Study participants from the TRUST trial were examined. A total of 162 individuals, all over 65 years of age with

subclinical hypothyroidism, were divided in 2 groups. One group received levothyroxine and the other group received placebo pills. Doses of levothyroxine given to the first group were increased as needed to maintain a normal TSH level. A year later, 98 participants were studied for their bone structure by measuring it with a specific bone density test, called peripheral quantitative computed tomography (pQCT). Measurement of bone structure by pQCT may allow for a better determination of the strength of the bone as compared with the traditional bone mineral density test.

The average age of the participants was 74 years old and 46% were women. Before receiving levothyroxine treatment (50 individuals) or placebo (48 individuals) their pQCT results were similar. After 1 year of treatment, the bone volume or density measured by pQCT was remained unchanged in the treatment group as compared to the placebo group.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study confirms that treatment with levothyroxine in patients with subclinical hypothyroidism does not have a negative impact on bone mass. It is reassuring to know that treatment of subclinical hypothyroidism does not affect the bones, as long as levothyroxine doses are tailored to keep a normal TSH level. As with patients with overt hypothyroidism, clinicians who treat subclinical hypothyroidism should be cautious to avoid over treatment. Whether treatment of subclinical hypothyroidism is needed or helpful is another question.

— Susana Ebner MD

ATA THYROID BROCHURE LINKS

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

Older Patients and Thyroid Disease: <https://www.thyroid.org/thyroid-disease-older-patient/>



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HYPOTHYROIDISM, continued

ABBREVIATIONS & DEFINITIONS

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

Overt Hypothyroidism: clear hypothyroidism an increased TSH and a decreased T4 level. All patients with overt hypothyroidism are usually treated with thyroid hormone pills.

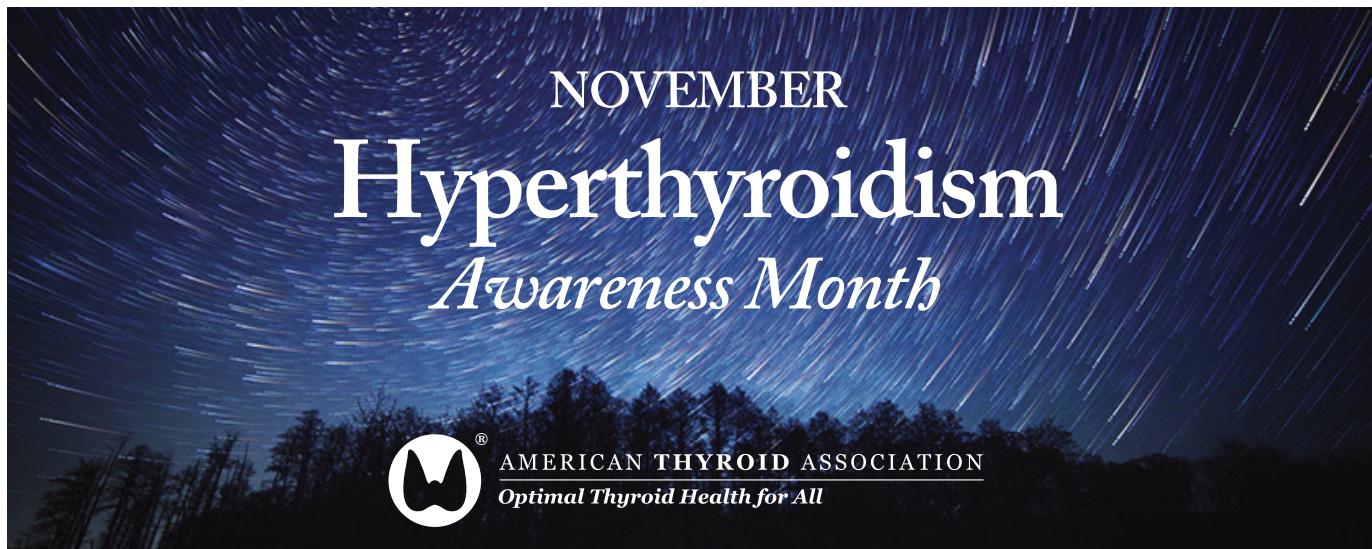
Levothyroxine (T4): the major hormone produced by the thyroid gland and available in pill form as Synthroid™, Levoxyl™, Tyrosint™ and generic preparations.

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.

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

Bone Mineral Density (BMD): this is usually measured in the lumbar (lower) spine and the hip and the results give information as to the strength of the bone and the risk of fractures. The results are expressed as T scores, which as standard deviations from the average bone density in a person in their 20s, when bone mass is the highest. A T score of -1 to -2.5 is termed *Osteopenia* and a T score >2.5 is termed *Osteoporosis*.



NOVEMBER

Hyperthyroidism

Awareness Month

AMERICAN THYROID ASSOCIATION
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THYROID CANCER

Bone density testing intervals in TSH suppression for thyroid cancer

BACKGROUND

Thyroid cancers such as papillary and follicular carcinoma account for approximately 90% of all cases of thyroid cancer. Initial therapy for thyroid cancer includes surgery to remove the thyroid. In higher risk thyroid cancers, surgery is followed by radioactive iodine therapy. Thyroid hormone therapy is begun after surgery in all cancers where the entire thyroid has been removed (total thyroidectomy) and in many where only a lobe was removed (lobectomy). In patients where the cancer is at high risk for a recurrence, high doses of thyroid hormone are often prescribed to turn off TSH levels (TSH suppression therapy). Since TSH stimulates thyroid cell growth, long-term suppression of TSH, particularly in more advanced cases of thyroid cancer, may decrease the risk of cancer recurrence. However, the benefit of TSH suppression must be balanced with the risks of doing so, which include a higher risk of osteoporosis.

A bone mineral density (BMD) test is used to diagnose osteoporosis and predict one's risk for bone fractures. BMD uses the T-score to compare a patient's bone density to the average bone density of young, healthy adults of the same gender. The lower the T-score, the higher the risk of fracture. Specifically, a T-score between -1.0 and -2.5 is diagnostic of low bone mass or osteopenia, and a T-score of -2.5 or below is diagnostic of osteoporosis. TSH suppression during the treatment of thyroid cancer can lead to a decrease in BMD, especially in postmenopausal women. BMD testing is recommended every 2 years in patients at risk for developing osteoporosis or to monitor those on treatment for osteoporosis. However, there are no guidelines to help determine the frequency of BMD testing in thyroid cancer patients who require TSH suppression therapy. In the present study, the authors evaluate the progression to osteoporosis and the timing of BMD testing in thyroid cancer patients on TSH suppression.

THE FULL ARTICLE TITLE

Park H et al 2022. Bone-density testing interval and transition to osteoporosis in differentiated thyroid carcinoma patients on TSH suppression therapy. Clin Endocrinol 97:130–136.

SUMMARY OF THE STUDY:

The authors studied 658 thyroid cancer patients on TSH suppression therapy who underwent BMD testing more than twice at the Samsung Medical Centre in Korea between January 2007 and January 2020. This thyroid cancer group was matched with a group of healthy women without thyroid cancer to compare the timing of BMD tests between thyroid cancer and non-thyroid cancer patients. Participants were divided into four groups based on their baseline T-score: Normal [-1.00 or higher], mild osteopenia [-1.01 to 1.49] moderate osteopenia [-1.50 to -1.99] and severe osteopenia [-2.00 to -2.49]. The 10% of patients in each group who progressed to osteoporosis were analyzed in the hope that this measure could guide future recommendations for BMD testing intervals in thyroid cancer patients. The authors also examined other general factors associated with worsening BMD in the study population.

In the thyroid cancer group, 14.7% of patients developed osteoporosis during the follow-up period while 13.6% of patients in the non-thyroid cancer developed osteoporosis. The estimated BMD testing interval for 10% of patients who developed osteoporosis in the thyroid cancer group compared to the non-thyroid cancer group was 7.1 versus 8.2 years for patients with initially mild osteopenia, 5.4 versus 4.8 years for those with moderate osteopenia, and 1.3 versus 1.1 years for those with severe osteopenia. Thus, the progression rate from osteopenia to osteoporosis was statistically no different between the two groups. However, baseline t-score and duration of TSH suppression were independent risk factors for the development of osteoporosis in the thyroid cancer group.



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THYROID CANCER, continued

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study shows that, despite a trend towards more rapid progression to osteoporosis in thyroid cancer patients on TSH suppression therapy, there was no significant difference compared to patients not on thyroid hormone over the duration of the study. This is important for patients and physicians to show that requiring TSH suppression due to advanced thyroid cancer does not have

a major adverse effect on bones. This also suggests that more frequent BMD testing is not indicated in thyroid cancer patients.

Since the appropriate testing interval was the same for thyroid cancer patients on TSH suppression as non-thyroid cancer patients, a patient's baseline T-score should determine the interval between tests.

— Phillip Segal, MD

ATA THYROID BROCHURE LINKS

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

Thyroid Cancer (Papillary and Follicular): <https://www.thyroid.org/thyroid-cancer/>

Radioactive Iodine Therapy: <https://www.thyroid.org/radioactive-iodine/>

Thyroid Surgery: <https://www.thyroid.org/thyroid-surgery/>

ABBREVIATIONS & DEFINITIONS

Bone mineral density (BMD): measurement of bone strength that is used to diagnose osteoporosis and predict one's risk for bone fractures. BMD uses the T-score to compare a patient's bone density to the average bone density of young, healthy adults of the same gender. The lower the T-score, the higher the risk of fracture. Specifically, a T-score between -1.0 and -2.5 is diagnostic of low bone mass or osteopenia, and a T-score of -2.5 or below is diagnostic of osteoporosis.

Osteoporosis: a decrease in bone mineral density in which the individual is at a significantly increased risk for fractures with little or no trauma or force. This occurs

with a bone mineral density T score of >-2.5. The areas at highest risk for osteoporotic fractures are the wrist, spine and hip.

Osteopenia: a decrease in bone mineral density in which the individual is at a slightly increased risk for fractures with little or no trauma or force. This occurs with a bone mineral density T score between -1 and -2.5.

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.



THYROID CANCER

What influences a patient's choice in choosing active surveillance in low risk papillary thyroid cancer?

BACKGROUND

Thyroid cancer is common, especially in women. The vast majority of thyroid cancers respond well to treatment and have a good prognosis. In particular, papillary thyroid cancer, which is the most common type and makes up about 80% of all cases of thyroid cancer, has an excellent outcome. Until recently, a diagnosis of thyroid cancer usually led to a recommendation for surgery, which is often curative. However, many small thyroid cancers are at very low risk to spread outside the thyroid or to cause any health risk. Because of this, the option of following the cancer by ultrasound and deferring surgery, called active surveillance, has become increasingly common.

The concept of active surveillance consists of performing serial ultrasounds of the thyroid (every 6-12 months) to monitor changes in the size of the cancer without performing any medical or surgical treatment. This avoids unnecessary treatments with potential complications or side effects. If at some point, a change in the cancer occurs where, for example, the size becomes bigger or it starts spreading beyond the thyroid, then proceeding to surgery would be the next option. Some large studies suggest that over half of the small low risk thyroid cancers followed by active surveillance never result in surgery. Continued studies in the United States and elsewhere looking at the suitable size of cancer for which active surveillance is safe and appropriate are ongoing. This study looks at factors impacting patients' choice for active surveillance or surgery in low risk papillary thyroid cancer.

FULL TITLE OF THE PUBLICATION

Sawka AM et al for the Canadian Active Surveillance Study Group (Greater Toronto Area) 2022 A quantitative analysis examining patients' choice of active surveillance or surgery for managing low-risk papillary thyroid cancer. *Thyroid* 32:255–262. PMID: 35019770.

SUMMARY OF THE STUDY

A total of 200 patients of at least 18 years of age at a single center in Canada from 2016 to present with papillary thyroid cancer <2 cm in size that were considered to be low risk were enrolled in the study. Patients were provided written information about the prognosis of low-risk papillary thyroid cancer and options for surgery vs active surveillance. The goal of the study was to assess the amount of patients choosing active surveillance over surgery and what factors affected their decision.

The average cancer size in these patients was 1.1 cm and 56% were larger than 1 cm. Out of 200 patients, 155 (77.5%) opted for active surveillance while 45 (22.5%) opted for immediate surgical intervention. Patients were more likely to choose active surveillance over surgery if they were older than 40 years of age; this was particularly true for those 65 years or older. Patients choosing active surveillance also had lower formal education. Those who chose surgery reported responsibility for children younger than 18 years as well as those who had already identified a surgeon within the study institution. Most patients in both groups reported independent decision-making (86%), as opposed to shared decision-making with their physician (14%), and 96% reported high satisfaction with their decision. Additional predictors of choosing surgery included fear of disease progression and an active coping style, while predictors of choosing active surveillance included fear of requiring thyroid hormone replacement after surgery.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

In this study, results indicate that patients are more likely to choose active surveillance instead of surgery for low-risk papillary thyroid cancer if they were older than 40 years of age, had lower formal education and preferred not to



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THYROID CANCER, continued

be on thyroid hormone after surgery. Patients choosing surgery reported a fear of cancer progression along with responsibility for their children. Importantly, the vast majority of patients reported making this decision on their own. This highlights an opportunity for doctors to discuss active surveillance with their patients and to be aware

of the factors that drive patients to make a decision on treatment options. This study is important as it is of vital importance to understand patient's values and how others influence their decision when having this discussion.

— Juan Vasquez Mendez, MD, Endocrinology Fellow

— Maria del Pilar Brito, MD

ATA THYROID BROCHURE LINKS

Thyroid Cancer (Papillary and Follicular): <https://www.thyroid.org/thyroid-cancer/>

Thyroid Surgery: <https://www.thyroid.org/thyroid-surgery/>

ABBREVIATIONS AND DEFINITIONS

Papillary thyroid cancer: the most common type of thyroid cancer. There are 4 variants of papillary thyroid cancer: classic, follicular, tall-cell and noninvasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP).

Active surveillance: the term for avoiding surgery for small thyroid cancers by monitoring them over time with ultrasound and physical exam.

Lobectomy: surgery to remove one lobe of the thyroid.

Total thyroidectomy: surgery to remove the entire thyroid gland.



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THYROID CANCER

Cost effectiveness of surgery vs active surveillance for low risk thyroid cancer

BACKGROUND

Thyroid cancer is a commonly diagnosed cancer and, until recently, the fastest rising cancer in women. Many of these newly diagnosed cancers are low risk papillary thyroid cancer. These low risk cancers will rarely, if ever, cause death and many may never expand outside the thyroid. Low risk papillary thyroid cancer may be treated with a surgical procedure called thyroid lobectomy, which has been the most common recommendation. However, many studies from Asia and now within the United States have shown that following these low risk cancers by ultrasound and deferring surgery, which is called active surveillance, is an acceptable treatment option. If the cancer grows on follow up imaging, then lobectomy is recommended.

This study looked at the cost effectiveness (cost vs. benefit) of both approaches in the management of the low risk papillary thyroid cancer. The goal of the study was to look at which approach may be more cost effective over the long term.

THE FULL ARTICLE TITLE

Youssef MR et al 2022 Thyroid lobectomy as a cost-effective approach in low-risk papillary thyroid cancer versus active surveillance. *Surgery* 171:190–196. PMID: 34384606.

SUMMARY OF THE STUDY

The study used the example of a healthy, 40-year-old female patient with a biopsy-proven, single, low-risk

papillary thyroid cancer (<15 mm) without features or risk factors that would require a more surgery. It examined both treatment approaches to determine the cost effectiveness of both approaches using statistical modeling.

They found that, although thyroid lobectomy consistently cost more than active surveillance, it was associated with greater quality of life starting from a patient age of 40 years. In the case of 20 years of follow-up for both thyroid lobectomy and active surveillance for middle-aged patients (those diagnosed between 40 and 59 years of age), lobectomy was more expensive but also afforded patients increased quality-adjusted life-years. However, starting at 69 years of age, active surveillance was consistently less costly than thyroid lobectomy and afforded patients increased quality-adjusted life-years.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The study showed that the cost effectiveness of treatment options for low risk thyroid cancer was determined by patient age. Thyroid lobectomy is more cost effective in patients less than 69 years of age. In patients above the age of 69 years, active surveillance was found to be more cost effective. However, individual patient preferences and physician experience with these approaches should also be considered when making these decisions.

—Vibhavasu Sharma, MD, FACE

ATA THYROID BROCHURE LINKS

Thyroid Cancer (Papillary and Follicular): <https://www.thyroid.org/thyroid-cancer/>



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THYROID CANCER, continued

ABBREVIATIONS & DEFINITIONS

Papillary thyroid cancer: the most common type of thyroid cancer. There are 4 variants of papillary thyroid cancer: classic, follicular, tall-cell and noninvasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP).

Active surveillance: This refers to following low risk thyroid cancers with ultrasound imaging once or twice a year as opposed to proceeding with immediate surgery.

Lobectomy: surgery to remove one lobe of the thyroid.



THYROID SURGERY

The need for thyroid hormone replacement predicts poorer quality of life after thyroid surgery

BACKGROUND

Thyroid cancer has an excellent prognosis and surgery is often the only treatment needed. The surgery options include removing the entire thyroid (total thyroidectomy) or just part of the gland (lobectomy). Patients with thyroid cancer have excellent survival and low rates of cancer recurrence regardless of the extent of surgery. Thyroid hormone therapy is always needed after a total thyroidectomy.

One advantage that lobectomy has over a total thyroidectomy is less need for treatment with thyroid hormone after surgery and, if needed, often lower doses are fine. Some studies suggest that the need for thyroid hormone after surgery affects patient's quality of life (QOL). A large survey of hypothyroid patients found that a subset of those patients were frustrated with their current treatment, with dissatisfaction mostly related to weight management, fatigue or energy level, mood, and memory. Therefore, decision-making regarding the extent of surgery performed for suspected thyroid cancer may have a substantial impact on health-related QOL. This study compared health-related QOL in patients who underwent thyroid lobectomy with those who underwent total thyroidectomy.

THE FULL ARTICLE TITLE

Yaniv D et al 2022 Quality of life following lobectomy versus total thyroidectomy is significantly related to hypothyroidism. J Surg Oncol. Epub 2022 Jun 11. PMID: 35689620.

SUMMARY OF THE STUDY

Patients who underwent thyroid lobectomy or total thyroidectomy at least 6 months earlier at a university-affiliated medical center were invited to participate. They completed the 85-question ThyPRO QOL questionnaire, a validated patient-reported tool divided into three main

categories assessing the impact of thyroid disease, fatigue/mental health, and physical symptoms. Information regarding the patients' history, surgical pathology, other illnesses, and thyroid blood tests were collected from the medical record.

A total of 160 patients took part in the study; most of them were female (83.1%) and the average age was 54 years. Overall, 20% of patients had a benign (non-cancerous) nodule/goiter. Of the patients with cancer, most (73.8%) had papillary thyroid carcinoma. In terms of surgery, 51.8% of patients underwent thyroid lobectomy (51.8%) while 48.2% had a total thyroidectomy. Of those who underwent lobectomy, 30 (36.1%) required levothyroxine supplementation or full replacement therapy. Thus, 107 patients (all of the total thyroidectomy group plus 30 lobectomy patients, 66.8% of the total group) in the study population received levothyroxine.

Patients who underwent total thyroidectomy reported a worse overall thyroid-related QOL than those who underwent lobectomy. Regardless of the extent of their surgery, patients receiving levothyroxine therapy reported an increased negative impact of their disease on their overall QOL as well as significant increases in tiredness, emotional issues and cosmetic symptoms.

Within the subgroup of patients taking levothyroxine after a lobectomy, the overall self-assessment and tiredness scores were better than in patients who underwent lobectomy and did not require L-T4. Patients who were taking TSH-suppressing (defined as TSH <0.5 µIU/ml) doses of levothyroxine reported a worse overall self-assessment score, than patients with normal TSH levels who were taking levothyroxine. QOL parameters did not vary significantly according to menopausal status, receipt of radioactive iodine treatment, or cancer versus no cancer pathology.



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THYROID SURGERY, continued

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study suggests that QOL outcomes are associated with the need for levothyroxine therapy rather than with the extent of surgery. While it is important to weigh the risks, and benefits of total thyroidectomy versus thyroid lobectomy, current guidelines support more

limited surgery for patients with low-risk thyroid cancers. However, these data suggest that even patients who undergo lobectomy but still require levothyroxine therapy may experience adverse effects on their QOL as compared with patients who did not require any levothyroxine supplementation after lobectomy.

— Alan P. Farwell, MD

ATA THYROID BROCHURE LINKS

Thyroid Surgery: <https://www.thyroid.org/thyroid-surgery/>

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

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

ABBREVIATIONS & DEFINITIONS

Thyroidectomy: surgery to remove the entire thyroid gland. When the entire thyroid is removed it is termed a *total thyroidectomy*. When less is removed, such as in removal of a lobe, it is termed a *partial thyroidectomy*.

Lobectomy: surgery to remove one lobe of the thyroid.

Hypothyroidism: a condition where the thyroid gland is underactive and doesn't produce enough thyroid

hormone. Treatment requires taking thyroid hormone pills.

Levothyroxine (T4): the major hormone produced by the thyroid gland and available in pill form as Synthroid™, Levoxyl™, Tirosint™ and generic preparations.



HYPOTHYROIDISM

Switching generic-to-generic levothyroxine does not change serum TSH

BACKGROUND

Levothyroxine is one of the most commonly prescribed medications in the United States, and it is produced by many different manufacturers as generic or brand name products. However, data shows that there are less prescriptions written for generics than for brand names when compared to other types of medications. Pharmacies in the United States are allowed to substitute levothyroxine by any manufacturer unless a manufacturer and/or “dispense as written” is specifically indicated by the prescriber. The FDA has indicated that generic levothyroxine products at the same dosage are equivalent. However, the American Thyroid Association recommends measuring TSH after a change in levothyroxine manufacturer to make sure that thyroid hormone levels remain stable.

The investigators in this study compared data from patients who consistently received generic prescriptions from the same manufacturer and data from patients who switched between the three most frequently used generic manufacturers to help understand whether there are significant differences in the stability of thyroid hormone levels between those groups when such a change happens.

THE FULL ARTICLE TITLE

Review of: Brito JP et al 2022 Association between generic-to-generic levothyroxine switching and thyrotropin levels among US adults. JAMA Intern Med 182:418–425. PMID: 35226058.

SUMMARY OF THE STUDY

Claims from a large database, the OptumLabs Data Warehouse, were evaluated. This included commercially insured and Medicare Advantage enrollees throughout the United States. Included were adults who filled a prescription for generic levothyroxine made by Mylan, Lannett or

Sandoz between January 1, 2008 and June 30, 2019, had a stable dose, the same manufacturer and a normal TSH for at least 3 months before either continuing the same product or switching to a different generic product.

There were 15,829 patients who filled generic prescriptions for levothyroxine. Most patients were female (73.4%), average age was 58.9 years, and received a dose of levothyroxine of 50 mcgs or less/day. The generics manufactured by Mylan were 56.8%, Lannett 34.4% and Sandoz 8.9% of prescriptions. The investigators then designated two groups of patients. The “non-switchers” continued with the same manufacturer (13,049 patients); the “switchers” changed manufacturers (2780 patients). These last group was matched 1:1 with 2780 non switchers based on TSH level, age and medical problems.

There was no significant difference in the proportion of patients achieving a normal TSH between switchers (82.7%) and non-switchers (84.5%). The results were consistent even when the group that was on higher doses of thyroid hormone was assessed.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study shows that changing generic manufacturers did not result in a significant change in blood levels of thyroid hormones. It is reassuring to know this, since there is a significant price difference between brand name products and generics. What is not known, and should be studied, is whether switching back and forth between generic and brand name levothyroxine would lead to the same results. In any event, it is helpful for both physicians and patients to know that switching between generic manufacturers is not a cause of variable thyroid blood levels.

— Jessie Block-Galarza, MD



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HYPOTHYROIDISM, continued

ATA THYROID BROCHURE LINKS

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

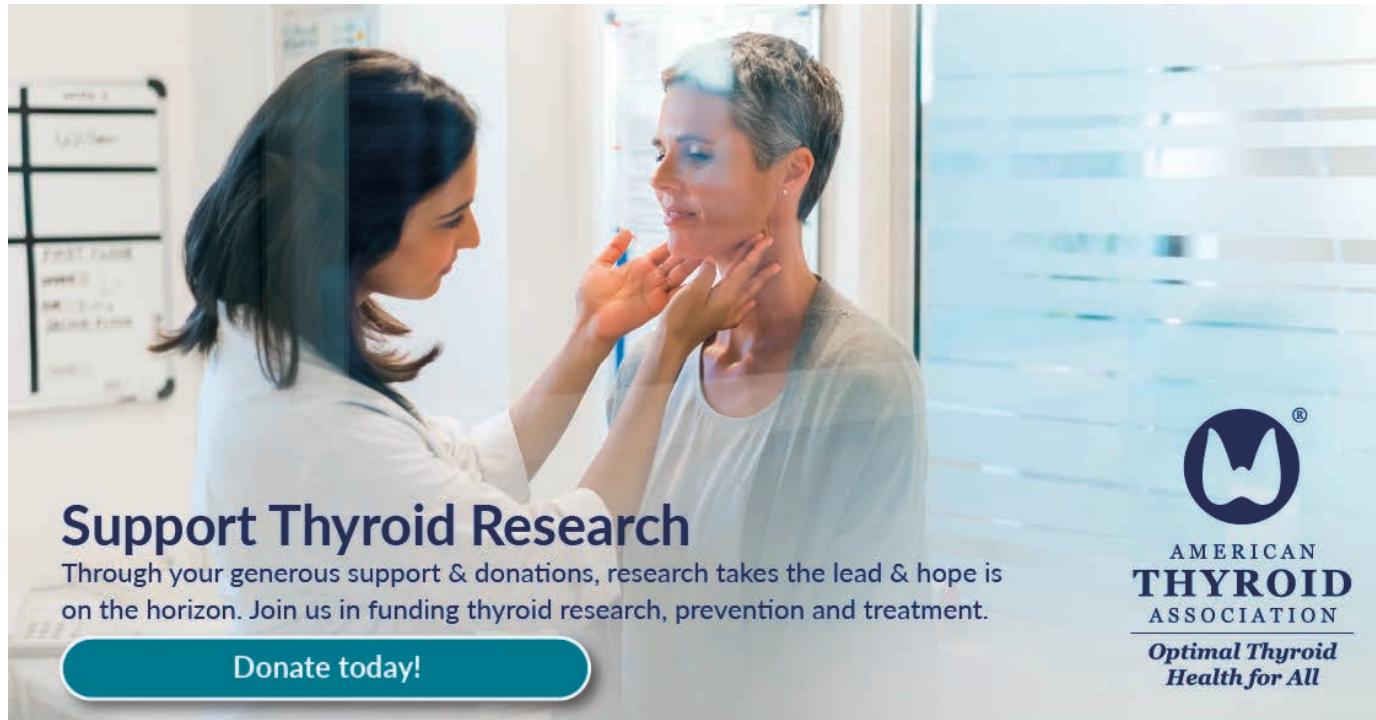
ABBREVIATIONS & DEFINITIONS

Levothyroxine (T4): the major hormone produced by the thyroid gland and available in pill form as Synthroid™, Levoxyl™, Tirox™ and generic preparations.

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.

Generic levothyroxine: made by Mylan, Lannett or Sandoz



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GOAL The goal of our organizations is to provide accurate and reliable information for patients about the diagnosis, evaluation and treatment of thyroid diseases. We look forward to future collaborations and continuing to work together toward the improvement of thyroid education and resources for patients.



ThyCa: Thyroid Cancer
Survivors' Association, Inc.
www.thyca.org



MCT8 - AHDS
Foundation

THYROID CANCER
ALLIANCE



American Thyroid Association

www.thyroid.org

ATA Patient Resources:

www.thyroid.org/thyroid-information/

Find a Thyroid Specialist: www.thyroid.org

(Toll-free): 1-800-THYROID

thyroid@thyroid.org

Bite Me Cancer

www.bitemecancer.org

info@bitemecancer.org

Graves' Disease and Thyroid Foundation

www.gdatf.org

(Toll-free): 877-643-3123

info@ngdf.org

Light of Life Foundation

www.checkyourneck.com

info@checkyourneck.com

MCT8 – AHDS Foundation

mct8.info

Contact@mct8.info

Thyca: Thyroid Cancer Survivors' Association, Inc.

www.thyca.org

(Toll-free): 877-588-7904

thyca@thyca.org

Thyroid Cancer Alliance

www.thyroidcanceralliance.org

www.thyroidcancerpatientinfo.org

Rotterdam, The Netherlands

Thyroid Cancer Canada

www.thyroidcancercanada.org

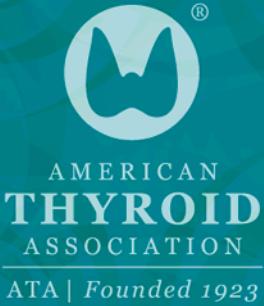
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