Sub-Laboratory Hypothyroidism, Low Body Temperature and the Empirical Use of T3

2 hours CME/ CE
Third hour is non CME/ 1 CE

Denis Wilson, MD
Financial Disclosure: Co-owner Restorative Formulations
Problem

- Patients not on thyroid medicine, have low thyroid symptoms, TSH and other blood tests are normal
- Patients are on thyroid medicine, TSH test is normal, still not feeling well

Solution

- Temperature & TSH = Simplicity & Success

Purpose of T3 is to set the speed of DNA transcription, the speed of life

- Corepressor (CoR) is displaced
- Coactivator (CoA) is recruited
- DNA transcription is accelerated

Kliwer SA, Umesono K, Mangelsdorf DJ, Evans RM (January 1992). "Retinoid X receptor interacts with nuclear receptors in retinoic acid, thyroid hormone and vitamin D3 signalling". Nature 355 (6359): 446–9. doi:10.1038/355446a0. PMID 1310351
• Kinetic energy is proportional to temperature

\[ E = \frac{1}{2} mv^2 = \frac{3}{2} kT \]

• When we measure temperature we are measuring velocity or rate, as in metabolic rate

Video:
The higher the temperature the higher the amplitude of movement
Body temperature is an exact measure of the metabolic rate.

The core body temperature (blue line) of a mouse was recorded using an abdominal telemeter while oxygen consumption (pink line) was measured.
Thyroid hormone blood tests don’t measure thyroid hormone expression because they don’t measure body temperature.
80% of T3 is produced and regulated intracellularly in a time-specific and tissue-specific fashion.

This regulation and control is invisible to blood tests.

A great deal of the T3 stimulation of the nucleus depends on the intracellular conversion of T4 to T3, and that’s regulated.

Ubiquitin Proteasome Pathway

Key regulatory system for protein levels

Ubiquitin is found in every cell

E1 activates ubiquitin for attachment to E2

E2 transports ubiquitin to E3 for attachment to targeted protein

Process repeats until chain of at least 4 ubiquitin

Targeted and tagged protein is recognized and digested by proteosome and amino acids are recycled

This is the key pathway that regulates the activity of D2 which converts T4 to T3
• T4 and rT3 both accelerate the destruction of type II deiodinase (D2), decreasing the half-life of D2 by as much as 50%, slowing the conversion of T4 to T3
• This can explain why many patients don’t feel well on T4-containing medicine
• Some people feel better on herbs than on T4

• With good T4 to T3 conversion, T4 medicine may improve a patient’s temperature (expression).
• With poor T4 to T3 conversion, T4 medicine and RT3 may make conversion worse.
• I don’t recommend T4-containing medicine until a patient’s temperature is normal.
• Stressful lifestyle and excessive dieting are well known to impair T4 to T3 conversion
• Heavy metals and other toxins can also impair conversion

Typical stressors that can lower the body temperature

- Childbirth (No. 1 cause)
- Divorce
- Death of a loved one
- Job or family stress
- Surgery or Accidents
- Heavy metal toxicity (e.g., mercury)
- Bromine, Fluorine, Chlorine; especially a mixture of compounds that contain these
T3 can be a more effective antidepressant than antidepressants

• Hypothyroidism is known to cause depression. What if thyroid tests normal?

• Only 1/3 of patients achieve remission on antidepressants.

• T3 can correct up to 50% of treatment-resistant depression.

• T3 can often correct bipolar symptoms after failing on an average of 14 different medicines.

• Optimal thyroid function **beyond simply being within the normal values**, may be necessary for optimal response.


Disorders such as ... hypothyroidism must be excluded before a diagnosis of PMS can be considered.
Hypothyroidism and hyperthyroidism in anxiety disorders revisited: new data and literature review

Naomi M. Simon, Deborah Blacker, Nicole B. Korbly, Saumya G. Sharma, Mark H. Pollack

Anxiety Disorders Program, Massachusetts General Hospital, Boston, MA, USA

Thyroid function should be checked in patients with Panic Disorder and Generalized Anxiety Disorder
Hypothyroidism is also associated with:

- Migraine headache
- Carpal tunnel syndrome
- Depression
- Hair loss
- Irritable bowel syndrome
- Fibromyalgia
- Obesity
- Mental fog
- Low sex drive


Evaluating Thyroid Patients:
Just two parameters will enable you to solve most thyroid cases

1. **TSH** - evaluates thyroid hormone supply
2. **Body temperature** - evaluates thyroid hormone expression
Evaluating Thyroid Patients:

1st, consider thyroid hormone supply

Is the person euthyroid or hypothyroid?

- **What was their TSH before starting thyroid medicine?** Patients who have been taking thyroid medicine for years may never have been hypothyroid, or may no longer be.

- **What is TSH now?** T4 and RT3 can down regulate the deiodinase enzyme. Patient might not need T4 for supply and it might be impairing conversion.
Evaluating Thyroid Patients:

Next, consider thyroid hormone conversion.

- If TSH is normal and Temperature is low then patient likely has a conversion (peripheral) problem.
- Body Temperature is the parameter that correlates best with symptoms.
People don’t have hypothyroid symptoms without having a low body temperature.
Sheep Body Temperature by Radio Telemetry -- $24 \times 7 \times 365$ days
The temperature does fluctuate during the day.
• 9 obese patients and 12 lean controls in Italy. Morning temperature is the same. One degree F split during day.

FIGURE 1. Twenty-hour body core temperature profiles (±SEM) in obese (n = 9; 2 females) and lean subjects (n = 12; 2 females). Grey panel represents the dark period. The values of BcT recorded every 2 min are averaged every 15 min.

Daniela Grimaldi, Federica Provini ; Evidence of a diurnal thermogenic handicap in obesity ; Chronobiology International, Early Online: 1–4, (2014); ISSN: 0742-0528 print / 1525-6073 online; DOI: 10.3109/07420528.2014.983603
Typical Symptoms

- Fatigue
- Fibromyalgia
- Depression
- Weight gain
- Migraines
- PMS
- Irritability
- Fluid retention
- Hair loss
- Dry skin, Dry hair
- Insomnia
- Anxiety and Panic attacks
- Irritable bowel syndrome
- Asthma and Allergies
- Irregular periods
- Decreased memory
- Decreased concentration
- Muscle and joint aches
- Low sex drive
- Carpal tunnel syndrome
- Hives
How to measure body temperature

- By mouth with a liquid metal thermometer
- Every 3 hours
- 3 times a day, starting 3 hours after waking
- For several days (not the 3 days prior to the period in women since its higher then) for diagnosis.
- You can also encourage your patients to check their temperatures when they feel their best and when they feel their worst, so they can see the correlation.
Incidence of low body temperatures

- Hypothyroidism (low temps with high TSH) affects 3% of the population and is on the rise.
- Low temperatures with **normal** TSH is about 10 times more common (more than 30% of population).
- Many, if not most, people being treated with T4 for Hypothyroidism that have normal TSH, still have symptoms and low temperatures
Workup for low thyroid symptoms and low body temperature

• TSH can rule out primary hypothyroidism
• Multichemistry blood tests can rule out kidney disease, diabetes, liver problems, etc.
• Complete blood counts can rule out anemia, infection, leukemia, and so on.
• Consider ferritin (preferably above 70 ng/L, TPO is heme dependent)
• Consider food allergy testing
• Consider adrenal fatigue
• EKG, good baseline to have
• If no better explanation for the symptoms and temperature, consider impaired transport/conversion/resistance of thyroid hormones
If TSH is high and temperature is low

Support thyroid gland function:
- Thyroid support herbs and nutrients (e.g. iodine)
- Immune support herbs if Hashimoto’s Thyroiditis
- Thyroid hormone replacement as needed
- May recover or may need thyroid hormone replacement for life.
If TSH is normal and temperature is low

- Usually **reversible** for both euthyroid and hypothyroid patients.
- Healthy lifestyle measures
- Use thyroid and adrenal support herbs, nutrients (selenium)
- More severe cases will need T3 therapy (relatively simple way to make an huge difference in the lives of your patients)
- Some people will need T3, botanicals, and nutrients to normalize their temperatures
- T3 therapy may be beneficial even when T3 blood tests are high and RT3 tests are low
Lifestyle measures for low body temperature

• Stress-reduction, declutter, simplify
• Regular, moderate exercise, especially short sprints
• Detoxification, sauna
• Organic foods (to avoid pesticides and toxins)
• Avoid gluten, aspartame, excess alcohol
• Get adequate rest, good multi-vitamin and nutrition
• Iodine
• Selenium, Zinc
• Iron
• Tyrosine
• Certain thyroid (dose according to body temperature) and adrenal support botanicals
• Improved gut health > consider resting the gut
• Fat loss to reduce inflammation
Impact of iodine deficiency on thyroid system

• Hypothyroidism
• Hyperplasia / Nodules
• Thyroid Cancer
• Hashimoto’s Thyroiditis

“…there is little doubt that increasing dietary iodine intake will limit goiter and thyroid nodule formation, the formation of differentiated thyroid cancer, and possible further dedifferentiation to anaplastic thyroid carcinoma.”


Iodine and anaplastic thyroid carcinoma.

Smyth PP.
Impact of iodine deficiency on breasts

• Impaired structure and function
• Fibrocystic breast (fibrocystic breasts take up more iodine than normal breasts, breast suffers in iodine deficiency since thyroid competes, bromine makes it worse - record levels of brominated fire retardants (PBDEs) found in US women
  [http://www.ewg.org/research/mothers-milk-0#.WbOTwtOGPB](http://www.ewg.org/research/mothers-milk-0#.WbOTwtOGPB)

• Breast cancer

“Iodine has been shown to induce apoptosis in thymocytes and mammary cells”


Differential action of iodine on mitochondria from human tumoral- and extra-tumoral tissue in inducing the release of apoptogenic proteins.

Upadhyay G, Singh R, Sharma R, Balapure AK, Godbole MM.
Multiple ways iodine can affect breast cancer

• Alters genes involved in the regulation of cell cycle progression, growth, and differentiation
• Increases mRNA of several genes involved in break down of estrogen (CYP1A1, CYP1B1, and AKR1C1)
• Decreases estrogen responsive genes (TFF1, WISP2)
• Useful adjunct in estrogen dominance


Iodine alters gene expression in the MCF7 breast cancer cell line: evidence for an anti-estrogen effect of iodine.

Stoddard FR 2nd¹, Brooks AD, Eskin BA, Johannes GJ.
Bladderwrack impact on estrogen dominance

- Contains iodine and other constituents
- 3 women with excess bleeding, short menstrual cycles, anovulatory
- Within 3 months of 1.4 g/day, less bleeding, longer menstrual cycles, now ovulating
- Increased progesterone levels 2900%!
- Decreased estrogen levels 676%!

*The effect of Fucus vesiculosus, an edible brown seaweed, upon menstrual cycle length and hormonal status in three pre-menopausal women: a case report*

Christine F Skibola\(^1\)
Halogens and halogenated compounds displace iodine and vice versa

- Bromine
- Chlorine
- Fluorine
- Perchlorate
- PBDEs (have estrogenic activity)

We are increasingly exposed to these toxins which can have an enormous impact on our health through their impact on iodine.

Happily, iodine greatly aids displacement and detoxification
Controversy: Iodine and Hashimoto’s Thyroiditis

- Starting iodized salt programs in developing countries sometimes carries small uptick in autoimmune thyroid antibodies (e.g., from 1% to 2%)
- Thyroid gland is more autonomous and reactive in iodine deficiency. Uptick may be temporary.
- Temperature often normalized (66% of cases) with iodine (from 2-48 mg/day), selenium (200-800 mcg/day), herbs.
- Anti-thyroid antibodies usually go down, not up. In 3-5% of cases they do go up, may be normal progression of disease.
- Iodine is what is supposed to be oxidized in organification. Therefore, iodine repletion can relieve oxidative stress
- Iodine + selenium + herbs for Hashimoto’s Thyroiditis


**Iodine deficiency influences thyroid autoimmunity in old age--a comparative population-based study.**

Andersen S¹, Iversen F, Terpling S, Pedersen KM, Gustenhoff P, Laurberg P.
Iodine

• T3 can sometimes go up significantly just by adding iodine.

• Probably, <10% of people will respond adversely to high dose iodine.* However, a few may become hypo or hyper. Therefore, monitor response.

• With iodine, if TSH goes up and T4 goes down but T3 does not go down and patient is not feeling worse, then it is not hypothyroidism. Tests usually normalize in 6–9 months.

• In a few: rash, palp’s, potentiation of thyroid meds.

* [http://www.inchem.org/documents/jecfa/jecmono/v024je11.htm](http://www.inchem.org/documents/jecfa/jecmono/v024je11.htm)
Hashimoto’s Thyroiditis

27 year old female
Selenium (100-800 mcg/day)

- Increasing doses of iodine have been shown to increase thyroid autoimmunity in specially bred mice, high dose iodine plus selenium has been shown to reduce it.

- Reported to increase plasma glutathione peroxidase by 21% and TPO antibody decreased by 76%. When Se stopped, glutathione peroxidase dropped and TPO markedly climbed.


The more glutathione in reduced state (GSH) the lower the TPOab, TSH
Replenish Nutrient Deficiencies  
(gland, conversion, and immune support)

- Iodine (12 - 48 mg/d) + Selenium (100 - 800 mcg/d)
- Zinc (12 - 48 mg/d)
- Vitamin D (4,000 - 10,000 IU/d)
- Vitamin A (5,000 IU/d)
- EPA (6 gm/day) (Eicosapentaenoic Acid)
- B12 (1 mg/d) important in digestion, blood cell formation, myelin sheath, other
- N-acetyl Cysteine (400 mg/d) precursor for glutathione
- Vitamin C (1 gm/d)
- Iron (bring ferritin levels to above 70 ng/L) TPO is heme-dependent, also impacts T4-T3 conversion
- Eating organically
Botanical Support

• There are roughly 3000 different molecules in every herb. They are not random molecules.
• Herbs and animals fit together like a hand and glove. They are perfectly suited for one another.
• About 70% of people are able to get their temperatures to normal using herbs and nutrients alone (usually within 4w)
• Herbs and nutrients are best dosed according to body temperature. If the temperature doesn’t normalize then the treatment is not improving the metabolic rate
• Dosing of herbs and nutrients can be changed once/week according to body temperature.
Guggul (Commiphora Myrrha)

- Contains ketosteroids that support iodine uptake and T4 to T3 conversion.
- Supports healthy cholesterol levels. Decreases total serum lipids, cholesterol, triglycerides, and beta lipoproteins and increases all thyroid functions.

Bladderwrack (Fucus Vesiculosus, Kelp)

- Good source of iodine and other substrates.
- Contains diiodotyrosine (2 DIT join to make T4).
- Non-iodine compounds in seaweed may also be very helpful in thyroid related disorders such as Hashimoto’s thyroiditis.
- Used for centuries in Asian cultures for both hypo and hyper.

Blue Flag (Iris Versicolor)

- Used extensively from 1830–1940 to treat thyroid disorders
- Late 1800’s made into a pharmaceutical called Iridin for hypothyroidism
- Commercially used to detoxify toxic land
- Traditionally used to “move sluggish body fluids”
Botanical Adrenal Support

- Very important in thyroid disorders and treatment
- Help normalize endocrine function, resistance to stress
- Support for stamina as well as mental and immune function
- Thyroid and Adrenal go together like two players on the same team. When one struggles the other is taxed as well
- Adrenal support can often help people tolerate T3 therapy
Adrenal Support Herbs

• Siberian Ginseng (Eleutherococcus senticocus) – helps optimize adrenal response. Excellent for stress-related exhaustion and emotional disturbances.

• Holy Basil (Ocimum sanctum) – helps to normalize hyperglycemia, corticosterones, and adrenal hypertrophy from chronic stress.

• Rose Root (Rhodiola rosea) – adaptogen and anti-stress herb

• Licorice – Glycerrhizic acid decreases the breakdown of cortisol which can bind to mineralocorticoid receptors and increase blood pressure. Also been used in the treatment of hepatitis, and viral illnesses such as EBV
Immune Support Herbs

• Rehmannia – Helps balance immune function and B and T cell biosynthesis.
• Cordyceps – Fungus, antioxidant, immune-modulating, protects liver.
• Rosemary (Rosmarinic acid) – Rosmarinic acid is a polyphenol that helps balance immune function by inducing apoptosis of activated T cells and neutrophils without affecting T cells or neutrophils in their resting state. May be helpful in T-cell leukemia, RA, Lupus, SLE, Ulcerative Colitis, Crohn’s, MS
• Turmeric & rosmarinic acid – supports healthy cortisol levels, anti-inflammatory
Downsides of using T4 when TSH is normal and body temperature is low

- Symptoms tend to recur when the T4 is discontinued
- People can feel worse on T4 since T4 and RT3 down regulate T4 to T3 conversion and can competitively inhibit T3.
- Classic story: Better for 2–3 months, then worse again, or worse “right off the bat”
- Desiccated has T4 and instant-release T3
Effect on T4, RT3, and T3 levels

Clearing the imbalance by clearing the pathways

Start vs. Add Desiccated vs. Add T3

Reducing T4 and RT3 potentially up regulates deiodinase
Supraphysiological Cyclic Dosing of Sustained Release T3 in Order to Reset Low Basal Body Temperature.

MICHAEL FRIEDMAN, ND*; JORGE R. MIRANDA-MASSARI, PHARM.D†;
MICHAEL J. GONZALEZ, DSC, PhD, FACN†

The use of sustained release tri-iodothyronine (SRT3) in clinical practice, has gained popularity in the complementary and alternative medical community based exclusively on its presentation in the treatment of chronic fatigue with orthomolecular T3 and basal metabolism by Friedman M, et al.

11 patients underwent WT3 protocol for CFS. All patients increased their body temperatures. All patients improved in the 5 symptoms measured. Recovery time varied from 3 weeks to 12 months.
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Temperatures normalized

Symptoms much improved

See Means
• How many have seen temperatures normalized with herbs and nutrients alone? Results?

• How many have seen temperatures normalized with T3 alone? Results?
Object of cyclic T3 with sustained release agent in euthyroid patients

- eliminate symptoms of slow metabolism
- by resetting the oral body temperature to 98.6°F
- by replacing some or all of the T4 in the body with T3 (clearing T4 and RT3 from the pathways may up-regulate the deiodinase enzyme, restoring normal conversion)
Cycling patients on and off T3 for one or more cycles is often necessary to normalize the body temperature (upregulation? reverses T3 resistance?)
Essential concepts for T3 therapy

• T4 is 4 times weaker and 3 times longer-acting. Consequently, T4 tends to have a weaker, more steady effect on the thyroid hormone receptors.

• Also, T4 provides a steady supply of T3 as it is slowly converted to T3 by the body.

• Thus, T4 has a very stabilizing influence on the thyroid hormone system.
When T4 levels go down and T3 levels go up with treatment, the weaker and more steady effect of the T4 is replaced with the stronger and more unsteady effect of the T3.

Hopefully, the temperature will go up but we need to minimize unsteadiness (most common reason for fluid retention, palpitations, shakiness)
One way to minimize the unsteady effect of T3 is to make the most of the steady effect of the endogenous T4 by increasing the T3 doses quickly (every 24 hours, and sometimes every 12 hours because “Fast compensators” often do better going up quickly (if slowly, temps may be lower on the day after starting T3, rather than higher). Compensation time).

That way, patients are able to get the stronger effect of the T3 while the steady effect of the T4 is still present but decreasing.
Compounded sustained-release T3 maximizes steadiness. Use a reliable compounding pharmacist (some patients report better results changing pharmacists)

Traditional T3

T3 Compound

The higher the dose of T3 the more unsteady the effect it has on the thyroid hormone receptors.
One benefit of weaning a cycle of T3 is that it allows the thyroid system to steady down again. It is important for people to steady down between cycles. Otherwise, people might start the next cycle unsteady and stay unsteady for the whole cycle. That is why it is usually best for patients to wean off the T3 entirely between cycles.
Weaning off the T3 slowly (decreasing the dose every 2–6 days) gives the thyroid system and pathways more of a chance to come back on line and maintain any progress in temperature and symptoms that has been obtained from the cycle of T3.
Thus, to keep T3 levels as steady as possible patients should:

- use well-made sustained-release T3 designed to be taken every 12 hours
- take the T3 every 12 hours on time, not even 3 minutes late
- counter-intuitively, increase the T3 doses quickly, wean off the T3 doses more slowly.
- make sure they are off the T3 long enough between cycles for their systems to steady down.
Simplified T3 protocol  
(qick and easy version based on pulse)

- Will help about 80% of patients.
- Email me now at dwilson.wts@gmail.com for T3 tutorial videos and patient handout for Simplified T3 Protocol (based on pulse rate)
- Original protocol based on body temperature
Getting started

• Temps are usually 97.8F or lower when patients check their temperatures every 3 hours, 3 times a day, starting 3 hours after waking, for a couple of days.
• Anything less than 98.6 F can explain symptoms.

FIGURE 1. Twenty-hour body core temperature profiles (±SEM) in obese (n = 9; 2 females) and lean subjects (n = 12; 2 females). Grey panel represents the dark period. The values of BcT recorded every 2 min are averaged every 15 min.
Evaluate whether the patient can tolerate T3

• Can you run around the block, and do you feel OK when your pulse rate goes up? Usually, yes.
• Ever had any cardiac problems (e.g., MI within the past 2 months) or blood pressure issues? PVC’s, palpitations, skipped beats? People with pre-existing cardiac symptoms are most likely to have cardiac symptoms from T3 therapy.
• Adrenal insufficiency and low magnesium levels can interfere with a person tolerating T3 therapy well
Adrenal support for T3 therapy

- **Adrenal support herbs** (Eleutherococcus, Holy Basil, Rhodiola, Licorice for a couple of weeks before treatment and/or hydrocortisone 5 mg BID (8 am and noon).
- Some doctors do not like to give T3 without supporting the adrenals first.
Hypertension can be normalized before T3 therapy

African Snake Root, Motherwort, Hawthorne berry, Jamaican Dogwood, Mistletoe.

Cycling up on the T3

- Have them program their timers or phones with alarms that are 12 hours apart.
- Start on 7.5 mcg / dose every 12 hours
Cycling up on the T3

Increase dose by 7.5 mcg/dose/day

- Day 1 > 7.5 mcg (am), 7.5 mcg (pm)
- Day 2 > 15 mcg, 15 mcg
- Day 3 > 22.5 mcg, 22.5 mcg
- Day 4 > 30 mcg, 30 mcg
- ...
- Day 10 > 75 mcg, 75 mcg
- no higher on this cycle, just to be cautious
Patient instructions

• Take the T3, and take it exactly on time, with or without food. Timing of each dose can affect steadiness for up to 2 weeks.
• If a few hours late with a dose, go ahead and take the dose and keep following the directions.
• Write down your pulse every day.
• Stop increasing T3 and call the doctor if:
  • Pulse is above 100 b.p.m., or
  • Feeling palpitations.
To manage side effects:

- Lily of the Valley (contains cardiac glycosides as in Digitalis), Night blooming Cereus (no glycosides), Hawthorne, Motherwort.
- Starts working within one hour to calm tachycardia
- **T4 test dose**: T3 toxicity or unsteadiness? Check temp, 12.5 mcg T4 and assess after 45 mins. Can repeat the dose of T4 an hour later if needed. Given PRN but sometimes that means daily


Choi DH1, Kang DG, Cui X. The positive inotropic effect of the aqueous extract of Convallaria keiskei in beating rabbit atria. Life Sci. 2006 Aug 15;79(12):1178-85
Continuing the protocol:

- If no issues, keep going up on the T3 (notice that this is irrespective of body temperature)...you cannot really overdo the temperature.
- Once on 75 mcg BID...stay there for about 3 days and then cycle down every 2–3 days (or slower).
- Thus, the first cycle is only up to 75 mcg BID and lasts about a month.
- Ask the patient to check their body temperatures about 2–3 times/day for a couple of days to see if and how it has changed; and then return for a visit.
At 1-month visit

- How did you feel?
- Any palpitations?
- If temperature not fully normalized (which is typical) and no complaints then can cycle up to 90 mcg BID on next cycle (if no rapid pulse or palpitations).
- Then they can cycle back down slowly (no faster than one decrement every 2 days, or slower) and check their temperatures.
- Can continue more cycles as needed.
Many options, Plateaus are possible

• If they find a dose that they feel really good on and their temperatures are in the 98.1–98.5F range then they can stay on that dose indefinitely

• Side effects are more short term than long-term. Osteoporosis is unlikely. Can track blood C-telopeptide (C-terminal telopeptide of type 1 collagen (CTx)) as a marker for bone resorption, and blood P1NP (Procollagen type 1 N-terminal propeptide) as a marker for bone formation

• Not addictive, won’t ruin thyroid gland

• Original protocol
Three most important instructions for patients

• Take the T3 on time.
• Write down pulse rate every morning.
• Pay attention to any disagreeable awareness of the heartbeat.
Most common side effects of T3 therapy

- Fluid retention
- Achiness
- Jitteriness
- Irritability
- Dull headache
- Increased awareness of heart beat
- Usually due to unsteady T3 levels from not taking the medicine on time
What to order

- If you want to follow the simplified treatment we just covered then it is usually convenient to order your patients an assortment or "starter pack" of capsules that they can use to go up on the doses and then wean down.
• The “10 x 6 Starter Pack” has 6 capsules of each of the 1st 10 strengths (7.5–75mcg)
• The “10 x 8 Starter Pack” has 8 capsules of each of the first 10 strengths
• The “12 x 6 Starter Pack” has 6 capsules of each of the first 12 strengths (up to 90 mcg)
• The “12 x 8 Starter Pack” has 8 capsules of each of the first 12 strengths
If you use a “10 x 6 Starter Pack” then your patient will be able to go up a strength every day and then wean down one strength every 2 days. The cycle will be over in 30 days.
If you use a “10 x 8 Starter Pack” then your patient will be able to go up a strength every day and then wean down one strength every 3 days. The cycle will take 40 days.
The advantage of weaning down more slowly:
- body has more time to come up and maintain the thyroid system

The disadvantage of weaning slowly:
- not always necessary
- the cycles take longer and are more expensive
12 x 6 and 12 x 8 Starter Packs are not usually used on the first cycle, but on the next, if the first cycle did not seem strong enough, because the 12 x 6 and 12 x 8 starter packs go up to 90 mcg doses instead of just 75 mcg.

**90 mcg BID** is a commonly used maximum dose.
With treatment, many patients enjoy complete resolution of their low temperature symptoms persisting years after the treatment is discontinued.

Without treatment, the symptoms can easily persist for decades and can even worsen during episodes of severe mental, emotional, or physical stress, causing untold loss of quality of life and productivity.
Though the goal is for the temperature and symptoms to remain improved even after the T3 has been discontinued, some people may benefit staying on some T3 on a continual basis. T3 is very well tolerated long-term.

A review of 28 studies showed no increase in osteoporosis in premenopausal women on suppressive doses of T3.

T3 therapy in patients currently taking T4

• What was the TSH before starting T4?
• Can wean T4 before or while cycling up on T3.
• Can wean off T4 over 1-3 days. 7 day 1/2-life

Murphy E, Williams GR. The thyroid and the skeleton. 
Singar Jagadeesan, MD
Neurologist; Cary, North Carolina

- **Thyroid formula and T3 for thyroid support in Parkinson’s disease.**
- Symptoms of Parkinson’s Disease (PD) and Hypothyroidism are very similar.
- Conventional treatment of PD is symptomatic and can cause side effects after years of use, therefore beneficial to delay use of Parkinson’s drugs when possible.
- “Using a thyroid formula and T3, I feel I can postpone using medicines for Parkinson’s by at least 6 months to one year, as well as improve the quality of life of patients who are using the PD medicines.”
Dr. Usha Honeyman
Corvallis, OR

- **T3 therapy in Lyme Disease**
- “90% of patients with Lyme are likely to benefit from adding T3 to the treatment protocol, whether or not TSH is high.”
- “Less than 10% of Lyme patients have any adverse reaction to adding T3.”
- “In 10% of Lyme patients in whom I’ve added T3, the T3 has been instrumental in improving response to therapy enough that they were able to discontinue antibiotics without return of Lyme symptoms.”
Conclusion

- TSH and body temperature are most predictive in helping patients feel well.

- Low body temperature can result from either inadequate supply centrally, or inadequate conversion, expression peripherally.

- High TSH indicates low thyroid hormone supply. Low body temperature and normal TSH indicates intracellular peripheral problem invisible to thyroid blood tests.
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