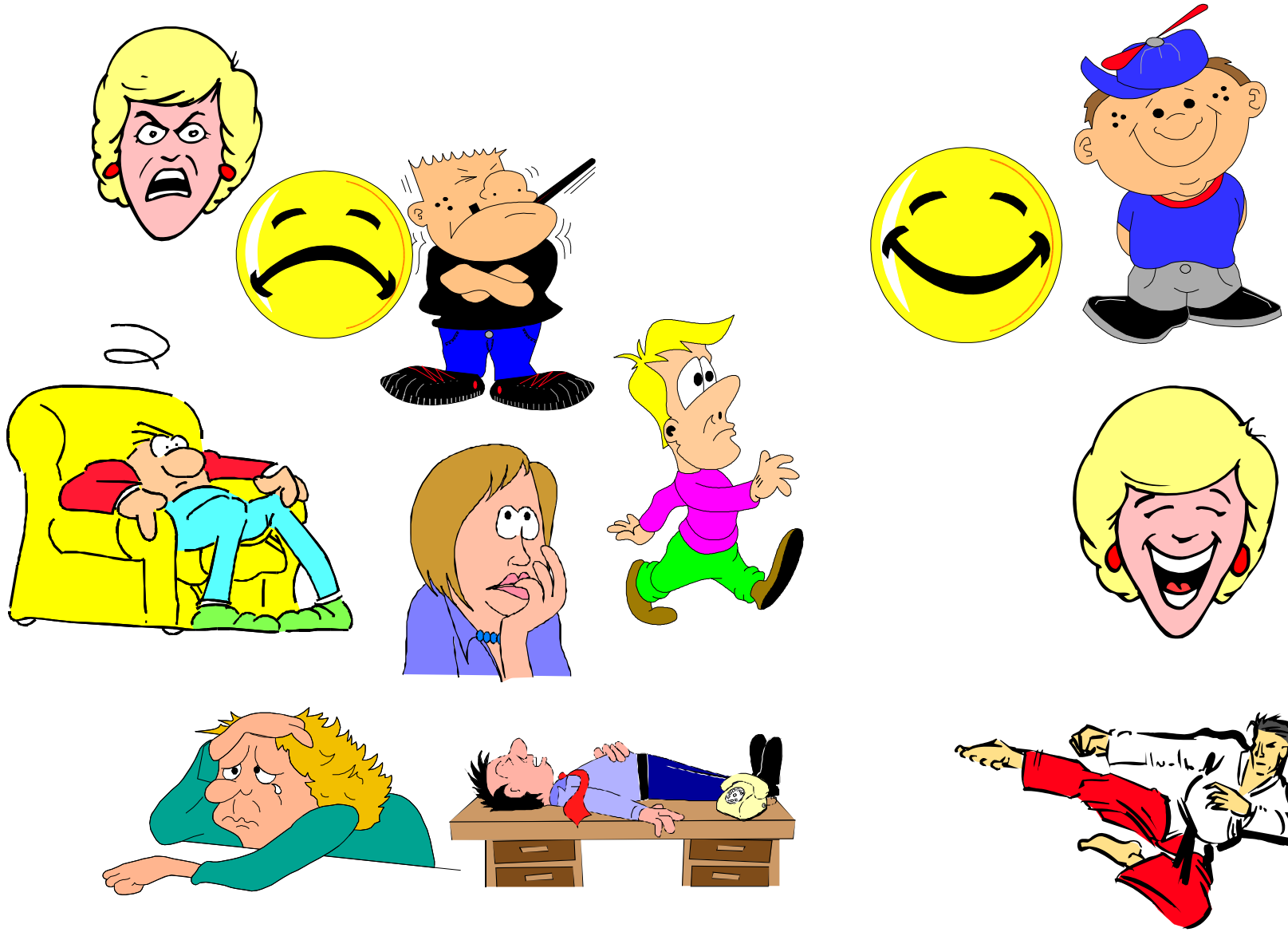
Tired or Wired?

What You Need To Know About Your Thyroid Function

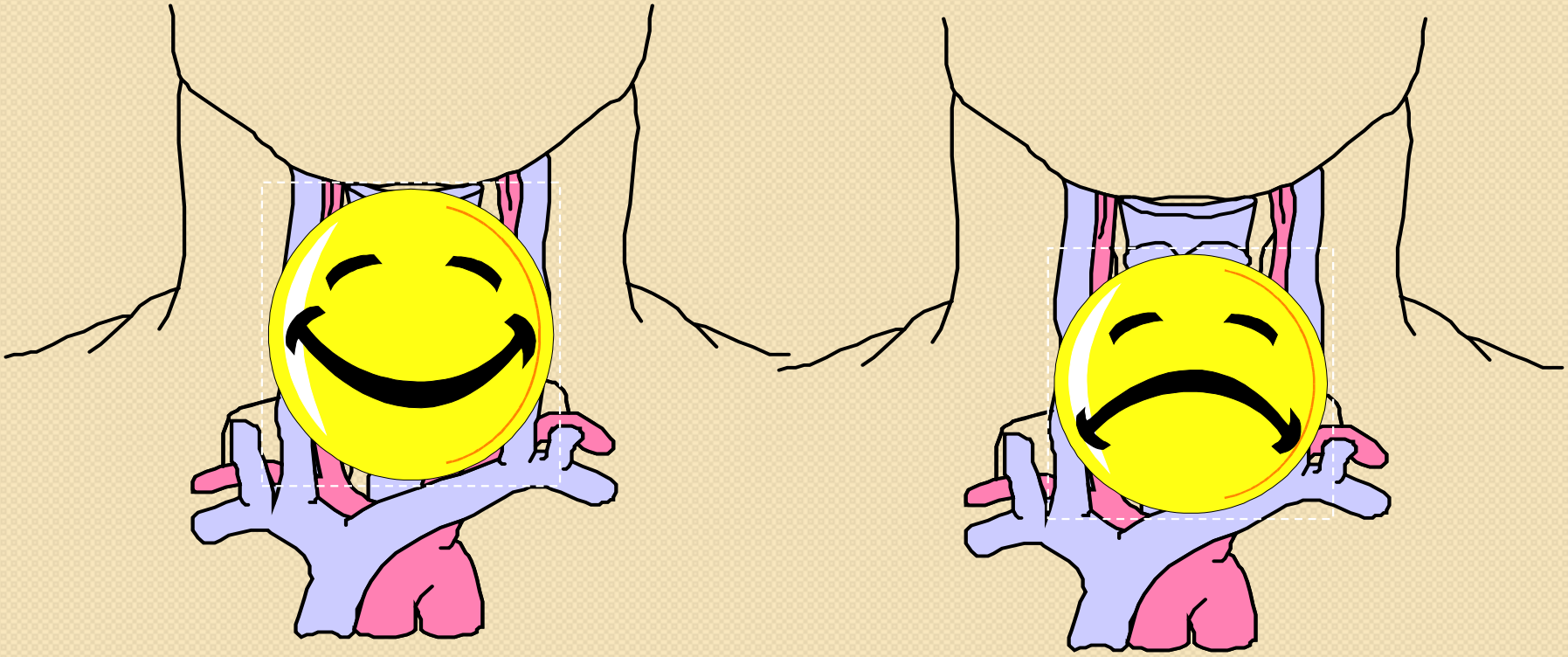
or If My Lab Tests are Normal…..

Why Do I Feel So Bad, Sad, and Tired???

Can You See/Feel the Difference?



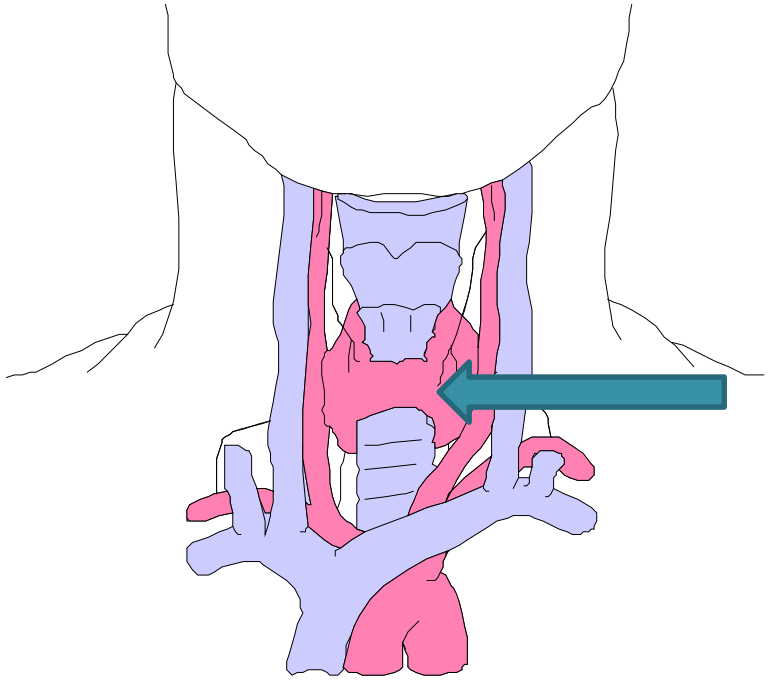
Conclusion



A Happy Thyroid

Is NOT the same as Euthyroid

Where Is Your Thyroid Located?



Thyroid gland is located in what we call the Adam's Apple of the throat

Thyroid and Your Hormonal System

Development and Regulation of Function

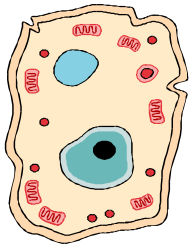
- Arguably, the thyroid is your most important developmental and regulatory gland, since proper maturation and function of all other glands is not possible without it.
- The thyroid controls how quickly your body uses energy, makes proteins, and controls how sensitive your body is to other hormones.

TOO FAST – toooo slooowww – Just Right.

Developmental Considerations

- The thyroid is the first endocrine gland to form – on the 24th day of gestation
- Although its maturation period is between the ages of 2-7 years.
- *Anything that interrupts its maturation period can lead to long term problems in your future with regards to energy levels and health.*
- These include: Infections, Environmental Poisoning, Heavy Metals, Poor Diet, Significant Physical Emotional or Mental Stress.

Cellular Actions



- Thyroid hormone actions occur in every cell nucleus, cell membranes, cytoplasm, and in each mitochondria – in other words all the key energy and activity centers of your body.
- Thyroid hormone receptors mediate the activity of T3 hormone in particular (and not so much T4 hormone).
- Thyroid receptor mutations can cause an array of symptoms due to decreased sensitivity of target tissues to T3

Mitochondria are Thyroid Receptors

- In test animals – mitochondria increase in size and function based on levels of circulating thyroid hormone.

- Defects in mitochondria, due to biological and environmental toxins, impair thyroid metabolism at the cellular level.

Thyroid Hormone Activity

- T4: Half life of activity = 6.7 days
- T3: Half life 18 hours – needed to lose fat tissue, improve depression, improve mental performance
- T2: Increases metabolic rate of muscles and fat breakdown
- T1: *Calms heart rhythm*, Prevents bone loss

History

- Hypothyroidism – or low thyroidism was first diagnosed as 'myxedema' in 1878.
- Myx – is from Latin word for 'mucin' which is a jelly like material that accumulates in the thyroid in hypothyroidism.
- Thickness of the skin of the lateral arm used to be measured routinely to help diagnose hypothyroidism.

Things To Consider

- Low thyroid is more than just low basal body temperature (cold body) and constipation.
- Optimal thyroid function requires optimal nutritional status.
- When in doubt – the person needs to be examined – not just TSH and T4 blood tests
- Hypothyroidism is an epidemic today – and it is being missed with standard testing
- Adrenal function also needs to be considered.

Things To Consider

- Most patients require a combination of T4 and T3 – not just Synthroid (T4)
- Thyroid issues are also a symptom of an underlying problem – that must be addressed in order to really achieve long term feeling great.

Benefits of Optimal Thyroid Function

- Lowers Inflammation – C –reactive protein levels
- Lowers Homocysteine levels – a by-product of improper metabolism that plugs arteries.
- Lowers blood pressure
- Improves cholesterol
- Improves metabolic syndrome – weight gain
- Improves insulin resistence

Benefits of Optimal Thyroid Function

- Low T3 is a good predictor of death in cardiac patients (fT3<3.1)
- T3 is a better predictor of death than measuring serum lipids or heart ejection fraction.
- T3 is strongly linked to prognosis of cardiac patients

Signs of Low Thyroid

- Low body basal temperature (resting) – ideal is 97.8 to 98.2 (orally or axillary)
- Prolonged achilles tendon reflex
- Flattened bridge of nose
- Outer 1/3 of eyebrows thin
- Nails are brittle
- Hair loss of thinning
- Skin dry and pale

Signs of Low Thyroid

- Thick skin
- Swollen eyes
- ‘Saddle’ nose
- Swollen thick looking lips
- Eyebrows thin
- Weight gain in spite of activity.

The 8 Most Common Signs

- 1 – Coldness (86%)
- 2 – Fatigue (84%)
- 3 - Joint Pain (73%)
- 4 – Prolonged Achilles tendon reflex (71%)
- 5 – Headache (68%)
- 6 – Depression (53%)
- 7 – Muscle Cramps (42%)
- 8 – Constipation (41%)

Thyroid Categories

- Hyperthyroidism – TOO MUCH Function
- Hypothyroidism – too little function
- Euthyroidism – '*Normal*' Blood T4 and TSH

  …..which is not the same as……
- Happy Thyroidism – Just Right

Hyperthyroidism

Hyperthyroidism

- Medical treatment is to block the thyroid function with radioactive iodine or medication.
- At the Tahoma Clinic in Washington – protocol utilizes iodine, lithium, and/or cobalt which in 40 of 40 cases normalized thyroid function.

Hypothyroidism – Type One

- **Type 1** – Failure of thyroid gland to produce sufficient quantities of thyroid hormone to maintain serum levels
  - Primary = due to low thyroid production
  - Secondary = due to low pituitary output of TSG
- These are diagnosed based on blood T4 and TSH levels.
  - *This is what your doctor measures when testing for thyroid function!!*

Hypothyroidism – Type Two

- **Type 2 – Hypothyroidism**
- *Peripheral Resistence to thyroid hormone at the cellular level, despite normal serum hormone levels, and normal TSH*
- *There is presently no consensus for accepted lab tests for type 2 hypothyroidism –* ***so this has been overlooked and completely missed with the regular testing and treatment.***

Syndromes Associated with Peripheral Thyroid Hormone Resistence

- Fibromyalgia – strong evidence of relationship to thyroid hormone resistence
- Overlapping symptom picture suggests relationship to……
  - Chronic fatigue
  - Gulf war syndrome
  - PTSD
  - Breast implant sensitivity syndrome
  - Bipolar affective disorder
  - Environmental intolerance syndrome

Secondary Signs of Low Thyroid- Type 2

- Appetite disruption
- Cancers
- High Cholesterol
- Poor Circulation
- Dental problems
- Blood Sugar problems
- Fatigue and lethargy
- IBS or constipation
- Heart Conditions – Fast heart beat, Arrhythmia
- Hoarseness or difficulty speaking
- Immune – increased infections
- Anxiety, Poor concentration, Foggy Brain, ADHD, Depression, Memory loss, Mania

Secondary Signs of Low Thyroid Type 2

- Muscle disturbances – fibromyalgia, weakness
- Neurological – tinnitus, headache, vertigo
- Joint pain – arthritis
- Perspiration reduction
- Reproductive disorders, birth defects, breast cysts, dysmenorrhea
- Respiratory – asthma, sinusitis
- Skin disorders- acne, alopecia, eczema, hives, psoriasis
- Sleepiness, sleep apnea
- Slowed movement
- Temperature regulation intolerance to heat or cold
- Urinary tract infections, kidney failure

Why is Low Thyroid Linked to So Many Disease Conditions?

- Because of the mitochondrial connection – which accounts for 90% of the energy we produce and affects all areas of our function.

Why is Hypothyroidism so Common?

- Genetic hypothyroid individuals – due to low energy levels they more compatible with each other and produce offspring with low genetic type
- Environment toxicity – 65,000 environmental pollutants identified which will affect your thyroid (and probably mitochondria of your cells)
- Infections – double blood supply to thyroid gland
- Diet – Lack of optimal nutrients especially minerals – and iodine must be in ideal pH etc for absorption

Diagnosis

- Basal metabolic rate – resting metabolism
- Basal body temperature – resting oral or axillary temperature
- Lab testing – T4, TSH, T3 of blood or urine
- Medical history – signs and symptoms and questionaires

Pitfalls of Testing

- One method is not enough
- Standard blood tests only identify hyper or type 1 hypothyroid
- Euthyroid may still not be 'Happy Thyroid'
- Basal body temperature – oral is raised if there is an infection in the mouth/throat
- Readings below 97.8 axillary temperature are highly indicative of hypothyroidism

Other Causes of Low Basal Body Temp

- Food Intolerances
- Drugs/Medications
- Adrenal insufficiency
- Heavy Metal Toxicity
- Hypoglycemia/Diabetes
- Anemia
- Metabolic toxicity syndromes
- Climate and room temperature

Ocean Park Natural Therapies

- Recommendations for Assessment
  - Thorough family history
  - Extensive medical history – possible causes, time
  - Extensive physical exam- 8 signs
  - Basal body temperature measurements (<98.2)
  - Urinary 24 hour T3 levels
  - (Note: Serum thyroid tests correspond to only 2% of hypothyroid cases, (ie -98% are false normal tests) due to blood concentration, in that patient must take 4-6 glasses of water before the blood hormone tests)

Serum Lab Tests - Primary

- TSH
- Total T4
- Free T4
- Free T3
- Reverse T3 (rT3)
- Thyroid binding globulin
- Thyroid antibodies: TPO, anti-thyroglobulin – for autoimmune identification

Secondary Lab tests

- Consider : Serum
  - T3 uptake
  - rT3/T3 ratio (<33%)
  - Thyroid receptor antibody – Grave's disease marker
- Urinary
  - 24 hour urine T3
  - 24 hour urine T4

Diagnostic Accuracy

- An autopsy study in 1992 found that the patient's correct final diagnosis was made by:
  - Medical history 76%
  - Physical exam 12%
  - Laboratory testing 11%
- This means that 90% of diagnosis were missed!!!

Diagnosis: Is TSH Reliable?

- In 1997, a group of endocrinologists had a summit to decide which classical symptoms and physical findings correlated best with laboratory finding typically associated with hypothyroidism by high TSH measurement.
- They couldn't find a direct correlation!!!!
- The conclusion was "tissue hypothyroidism at the peripheral target organs must be different in individual patients" because there is frequently no correlation between the blood tests and the severity of hypothyroidism.

Is TSH Reliable?

- "The use of TSH measurements to assess thyroid status in patients on thyroxine replacement therapy, could be considered a classic example of the misapplication of a laboratory test"
  - "Thyroid hormone replacement: An Iatrogenic problem. *Int J Clin Pract* June 2010; 64(7) 991-994

Is TSH Reliable?

- In a Tahoma clinic Davis Lampson, ND tested 2092 patients for suspected hypothyroidism
- Utilizing TSH alone – only 24% of the confirmed low thyroid patients had raised TSH levels.
- *76% were found to have low T3/T4 ratios with 'normal' TSH*
- *In other words – 3 of 4 patients tested with TSH were false negatives – Missed diagnosis*

Urinary T3 Hormones

- In this study, symptoms of hypothyroidism correlate best with 24 hour urine free T3
  - Thyroid Insufficiency: Is TSH Measurement the Only Diagnostic Tool? *J of Nutri and Envir Medicine (200): 10, 105-113*

Hypothyroid Diagnosis: Urinary T3

- % Correlation
  - Urine T3 – 45%
  - Total T4 – 30%
  - T4/TBG – 35%
  - TSH – 0%
  - Free T4 – 0%

What Level of T3?

- What level of T3 is necessary to eliminate the maximum number of hypothyroid symptoms?
- Ideal is 1900 pmol (1237 ng)/24 hours

Reverse T3

- During periods of heavy starvation and stress, the body shunts more and more away from T3 in preference to rT3 to conserve energy and prolong life.
- There may also be other causes of increased production of rT3 – such as heavy metal toxicity or viral inactivation and genetic variations within the population.

rT3 and Toxic Metals

- Tahoma clinic research by David Lamson, ND
- 90-95% correlation of rT3 high levels (>21 ng/mL) was found to have high tissue levles of heavy metals, based on 6 hour urine collection post IV provocation with DMPS & EDTA.
- Removal of heavy metals nearly always lowers rT3 levels, and can normalize thyroid function.

Thyroid Autoimmunity

- TPO antibodies positive in 85-100% of Hashimoto's hypothyroidism
- Vit D levels are approximately half of control levels
- Hashimoto's hypothyroidism is associated with celiac disease and vice versa – at almost 100% correlation – so important to avoid all Gluten and especially wheat.

Treatment for Hypothyroidism

- Standard medical treatment is to give only T4 in a form such as 'Synthroid'.
- T4 must be converted to active form of T3 to be useful metabolically in the tissues
- Under-conversion of T4 to T3 causes include:
  - Low calorie intake - Aging- Inflammation
  - Increased Cortisol from stress or medication
  - Chronic illness - Trauma

Metabolic Under-Conversion of T4 to T3 also caused by:

- Dysglycemia – Blood sugar problems
- Elevated insulin – Diabetes
- Growth Hormone deficiency
- Deficiencies of Selenium, Tyrosine, Zinc

Facts: T4 vs T4/T3

- Thyroid produces 80-90% T4 and 10-20% T3
- T4 is converted to T3 in peripheral tissues such as liver, kidney, and spleen.
- Problems with conversion suggest looking to improve the function of these organs and tissues
- Natural Dessicated Thyroid is 38 mcg T4 and 9 mcg T3.

T4 vs Natural Dessicated Thyroid

- T4 Contains:
  - Thyroxine which may or may not convert to T3
- Natural Dessicated Thyroid contains:
  - Thyroxine (T4)
  - Liothyroixine (T3)
  - T2
  - T1

Thyroid Insufficiency is Thyroxine the Only Valuable Drug? 2001 Study

- In patients who were on Thyroxine treatment but still exhibiting symptoms of low thyroid function….
- Were either given Higher doses of Thyroxine or Natural Dessicated Thyroid (NDT)….
- The following slide compares the results of reduction of the 8 major symptoms of hypothyroidism in these patients

Increasing Thyroxine	Natural Dessicated Thyroid
• 1-Fatigue - still high • 2-Feeling cold – still high • 3-Joint pain – still high • 4-Prolonged Achilles tendon reflex – still present • 5-Depression – still present • 6-Cramps – still high • 7-Headaches – still high • 8-Constipation – still high	• *In every case of the 8 primary symptoms* • Natural Dessicated Thyroid reduced the symptoms by at least 75% or more compared to Thyroxine

Thyroid Insufficiency is Thyroxine the Only Valuable Drug? 2001 Study

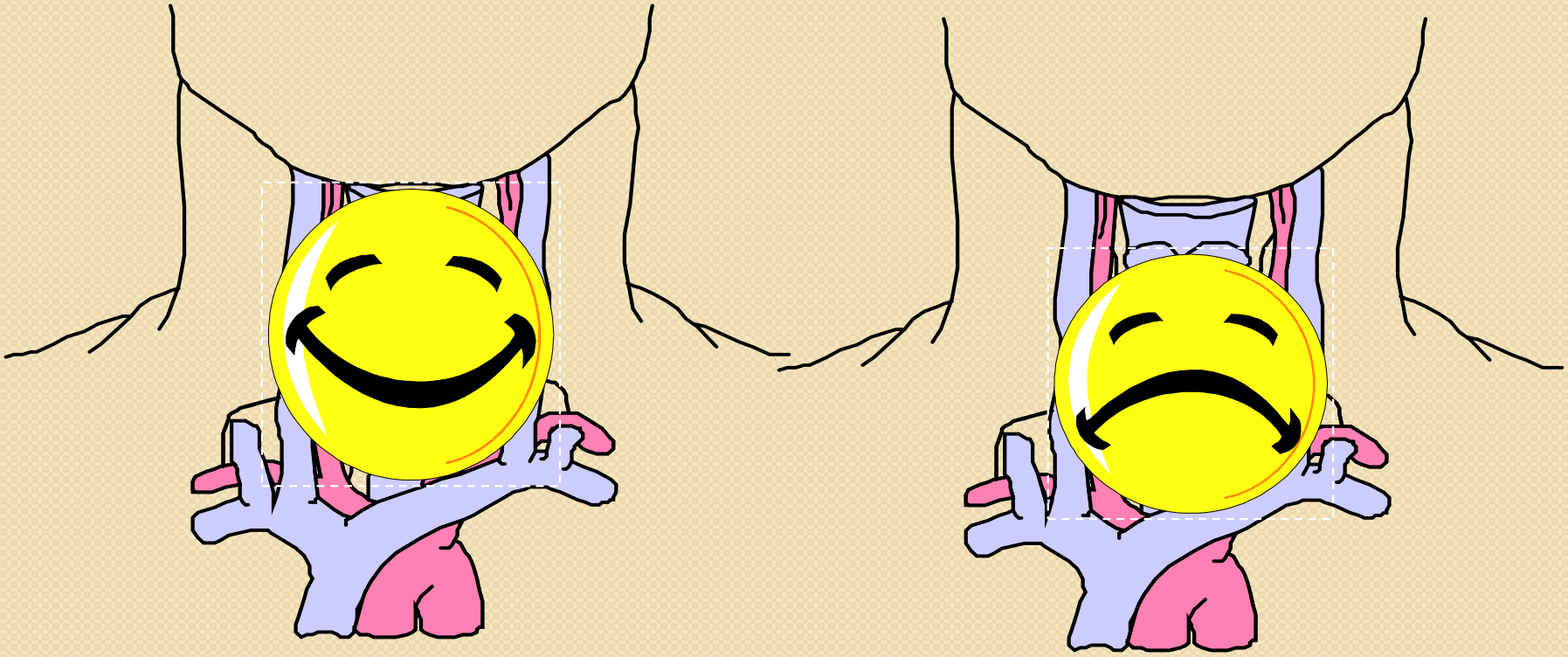
T4	Natural Dessicated Thyroid
• 25 mcg	• ¼ grain
• 50 mcg	• ½ grain
• 75 mcg	• ¾ grain
• 100 mcg	• 1 grain
• 150 mcg	• 1.5 grain
• 200 mcg	• 2 grains
• 300 mcg	• 3 grains
• 500 mcg	• 4 grains

What About the Argument that NDT is not standardized like Thyroxine?

Take Away Conclusions

- Respect the urinary T3 level for assessment of peripheral thyroid activity (1237 is ideal)
- Monitor the 8 Signs/Symptoms of Thyroid function
- Use Natural Dessicated Thyroid whenever possible – it works better
- Look for causes of underconversion such as heavy metal toxicity if high rT3 findings.

Take Away Conclusions



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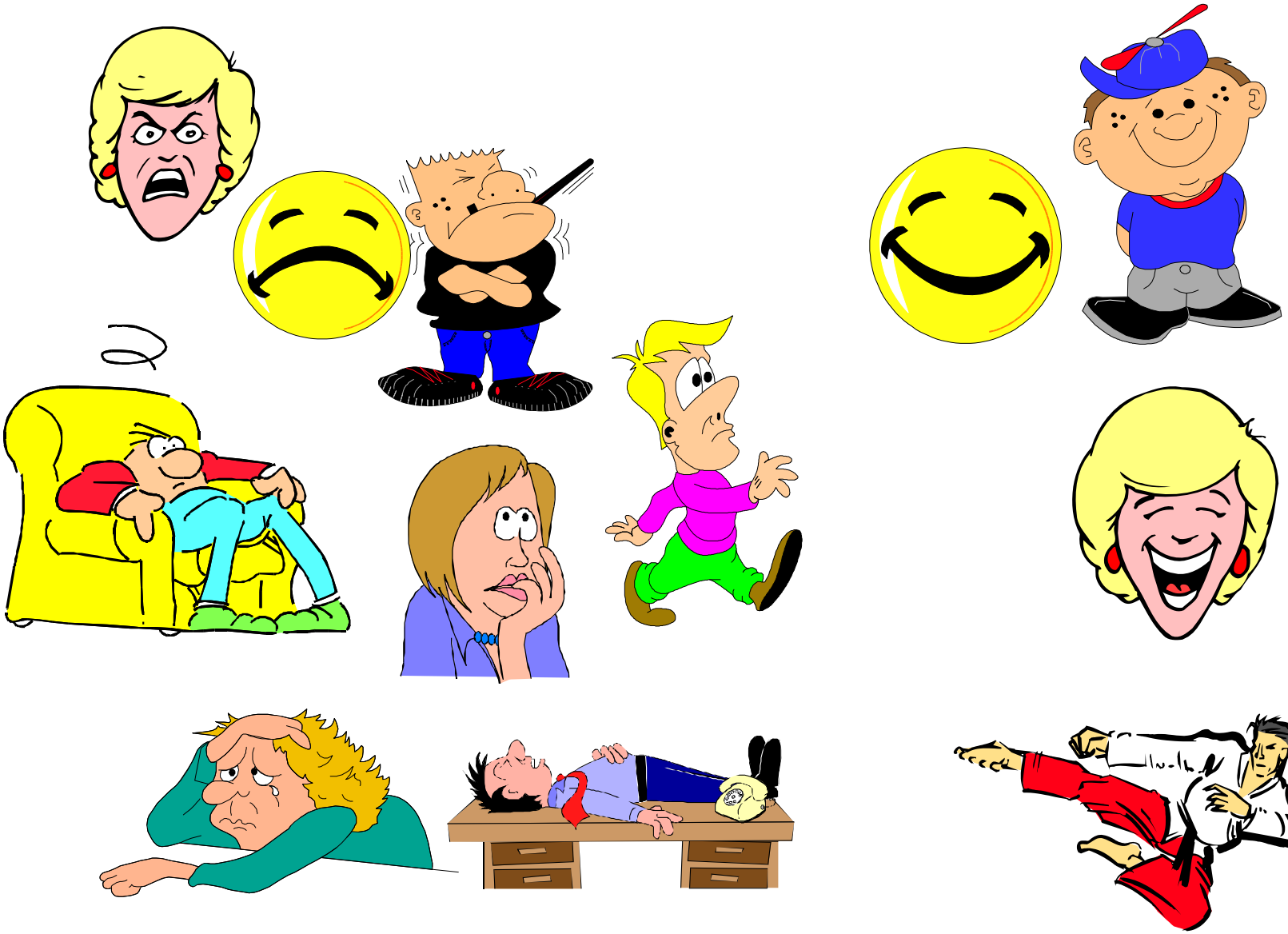

Proper Testing and Treatment

- Most standardized testing is only utilizing T4 and TSH serum values for diagnosis and monitoring of treatment.
- TSH values should be ignored as having any meaning for effectiveness of peripheral conversion if the patient is on thyroid support.
- T4 is inadequate as a measure of effectiveness of tissue conversion and reduction of symptoms of hypothyroidism
- You must choose doctors and care accordingly!!!

Thank You

And May Your Thyroid Be Happy