JSC "Astana medical university"
Department of inner diseases №1

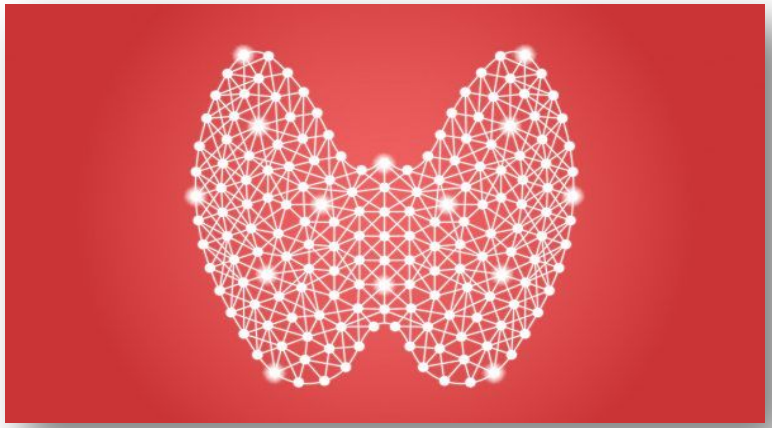
HYPOTHYROIDISM & DIFFUSE TOXIC GOITER (GRAVES' DISEASE, BASEDOW DISEASE)

Made by: Bekbolatova N.O.
Group: 445
Faculty: General medicine
Checked by: Baydurin S.A.

Astana, 2018

PLAN

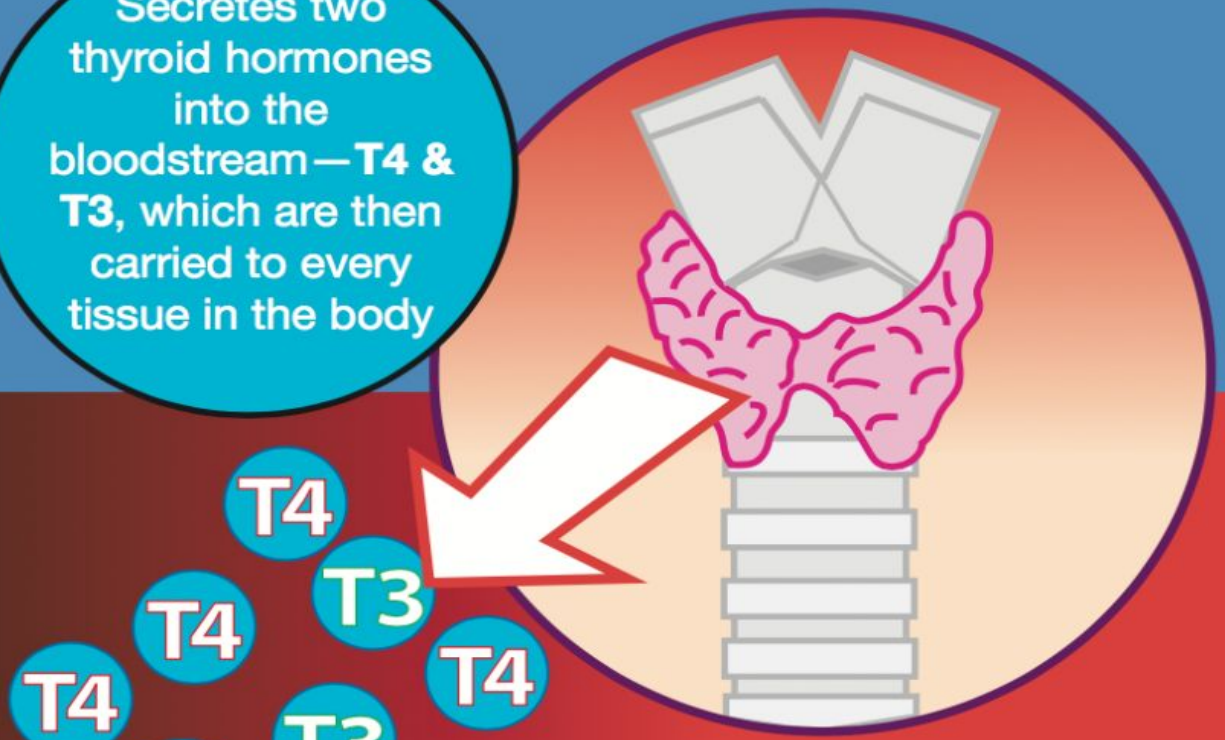
1. **Introduction**
   - ✔ General means about hypothyroidism & Diffuse toxic goiter
2. **Main body**
   - ✔ Classification
   - ✔ Etiology
   - ✔ Pathogenesis
   - ✔ Clinical manifestations
   - ✔ Diagnostics
   - ✔ Differential diagnosis
   - ✔ Treatment
3. **Conclusion** - Recommendations
4. **Bibliography**

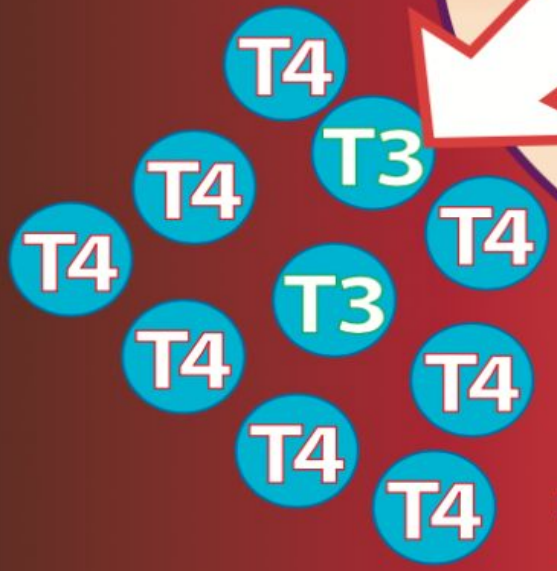


The Thyroid Gland[1,6]

A small, **butterfly-shaped gland** located in the neck, just below your voice box.

Secretes two thyroid hormones into the bloodstream—**T4 & T3**, which are then carried to every tissue in the body





T4 & T3 help regulate metabolism or how the body uses and stores energy

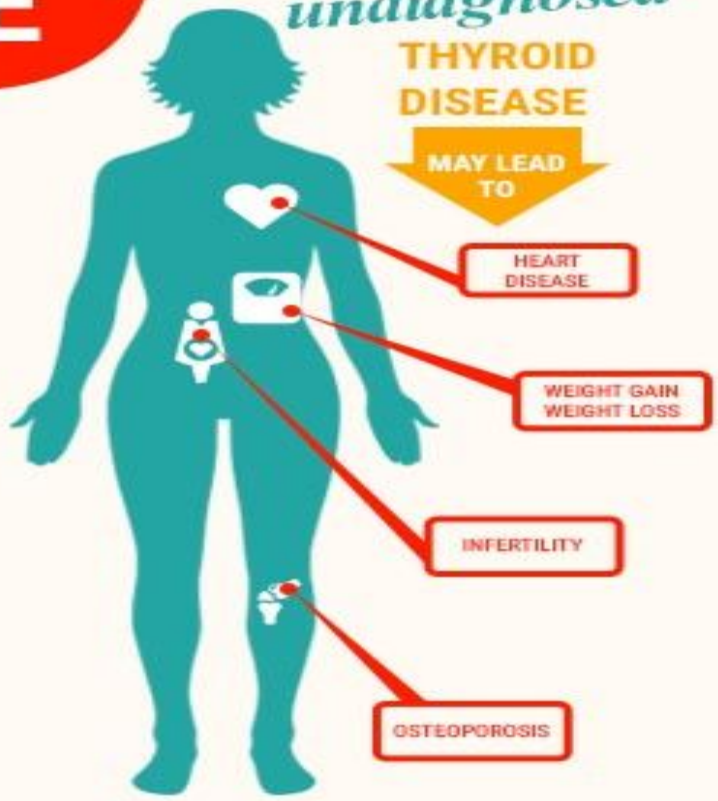
THYROID DISEASE

Women are
5-8X
MORE LIKELY
THAN MEN TO HAVE
THYROID PROBLEMS

More than 12%
of the **U.S.** population
will develop a thyroid
condition in their lifetime

AN ESTIMATED
20
MILLION
AMERICANS have
some sort of
up to
12
MILLION
are unaware of
their condition

1 in 8
women will develop
a thyroid disorder
during their lifetime

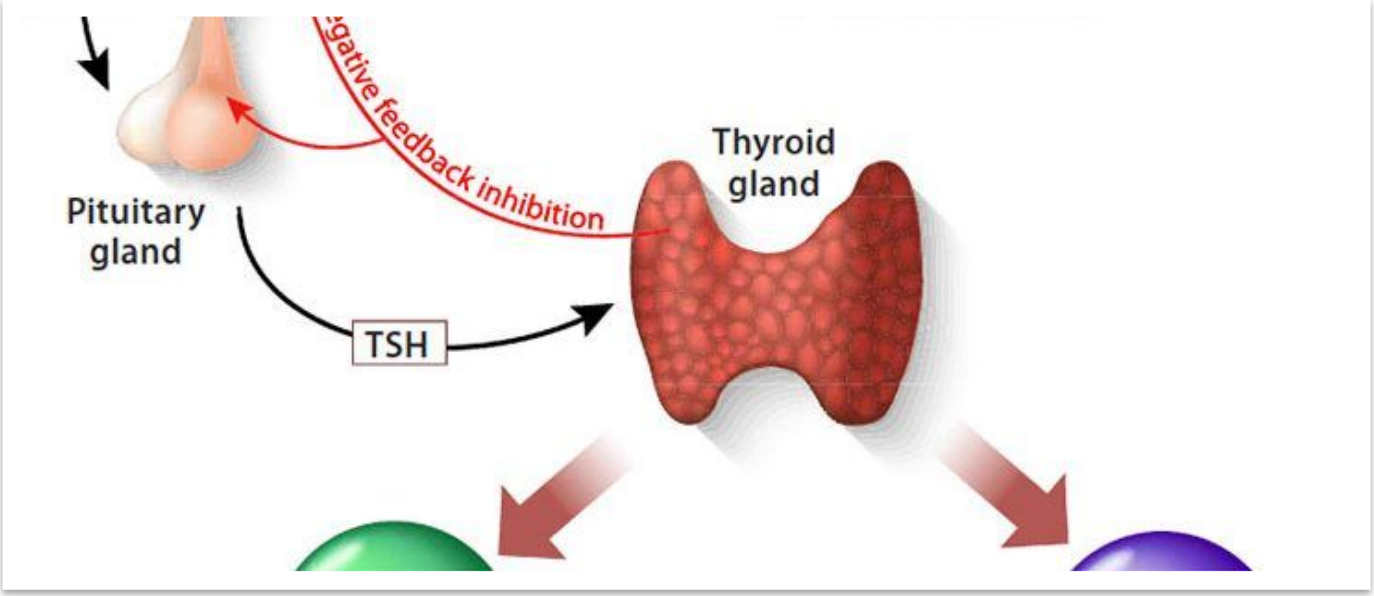


most
thyroid diseases
ARE LIFE-LONG
CONDITIONS
and can be managed
with medical attention

HYPOTHYROIDISM

1. **Definition**

= clinical syndrome caused by persistent thyroid hormone deficiency



HYPOTHYROIDISM CLASSIFICATION

A. Primary (thyroid) hypothyroidism

1. **Destruction or lack of functionally active tissue of the thyroid gland**

- chronic autoimmune thyroiditis
- surgical removal of the thyroid
- radioactive therapy with ^{131}I
- transient hypothyroidism with subacute, postpartum and silent ("painless") thyroiditis
- agenesis and thyroid dysgenesis

2. **Disturbance of thyroid hormone synthesis**

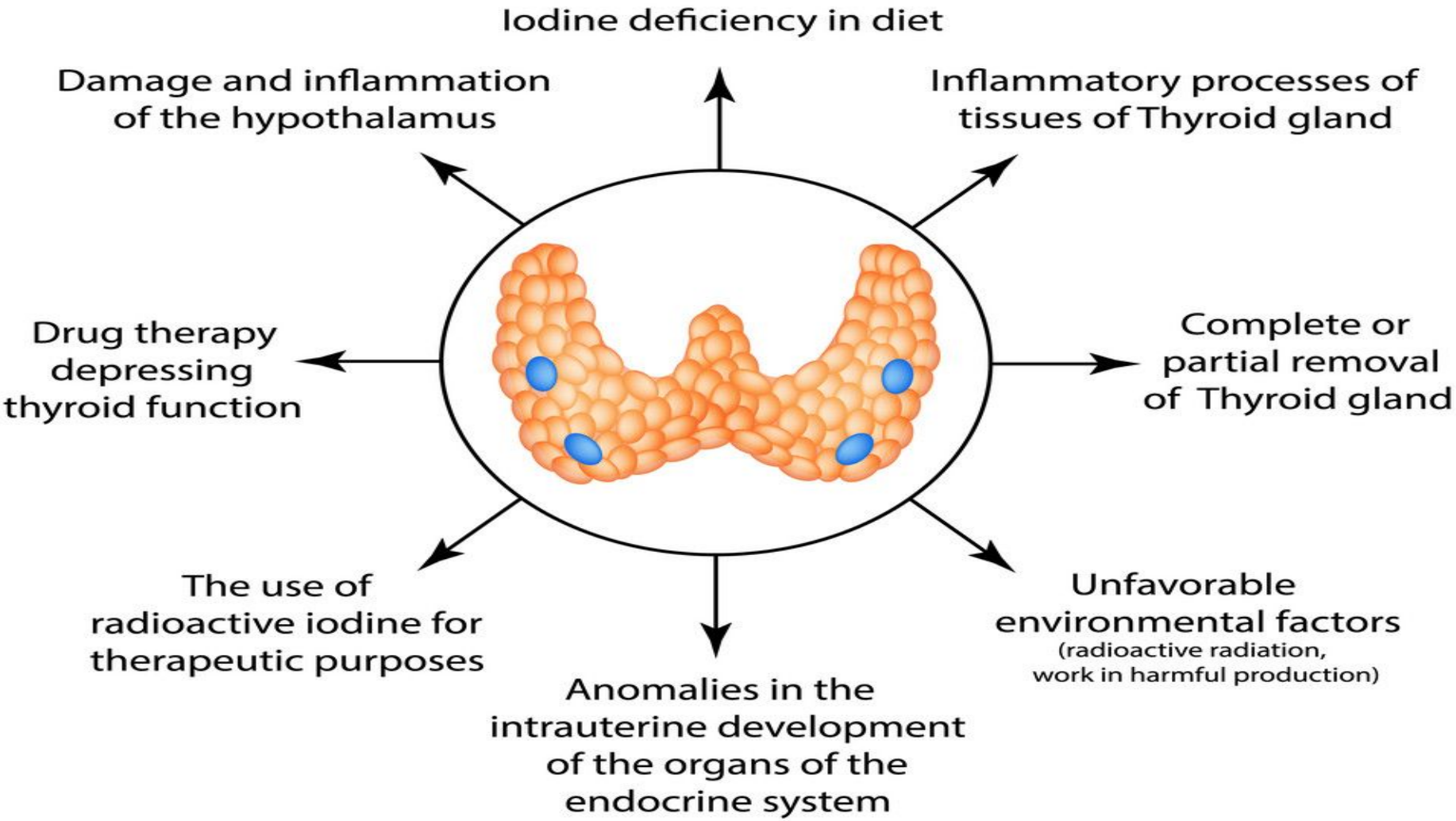
- congenital defects of thyroid hormone biosynthesis
- severe iodine deficiency or excess
- drug or toxic effects (thyreostatic drugs, lithium, perchlorate, etc.)

B. Central (hypothalamic-pituitary, secondary) hypothyroidism

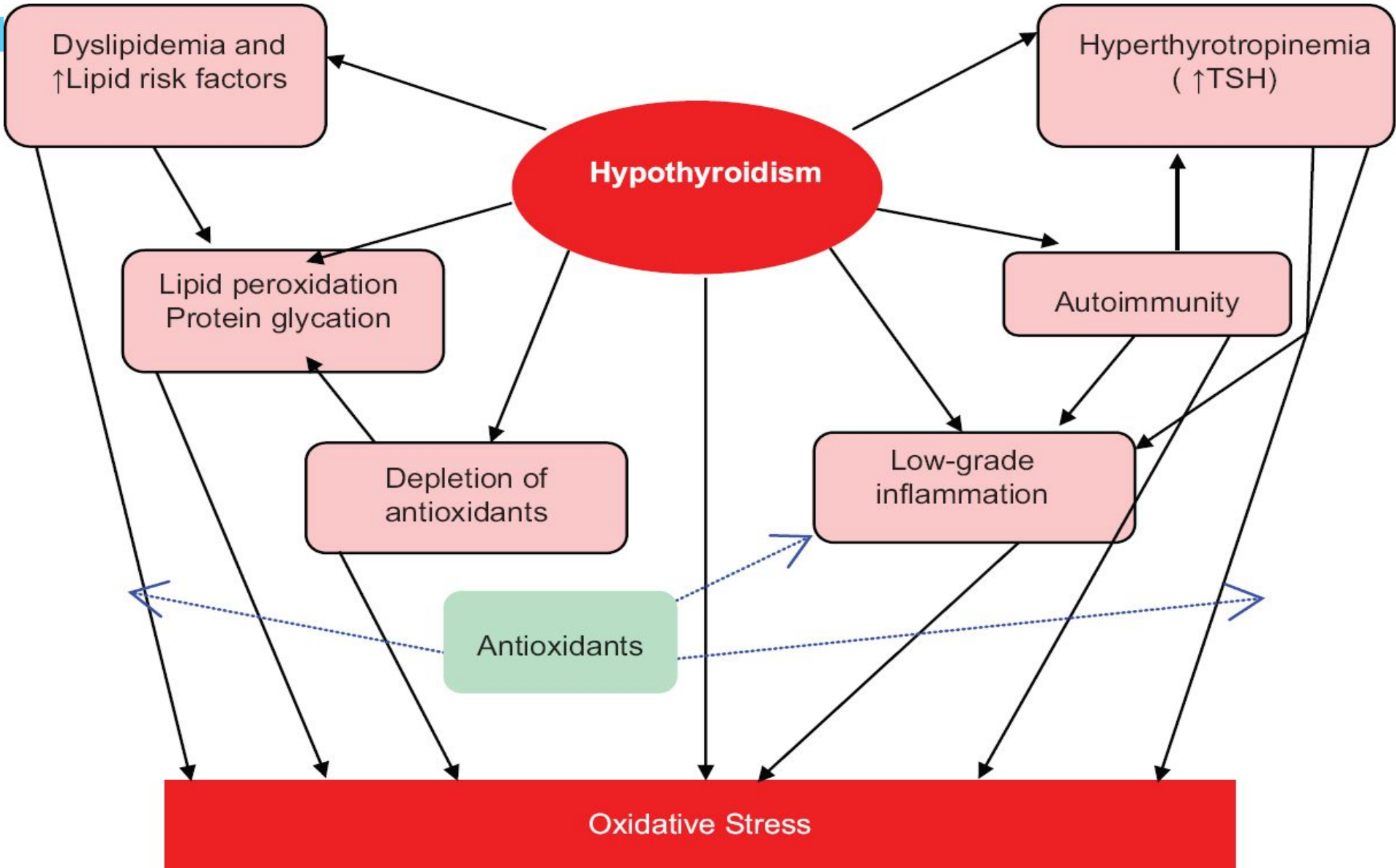
1. **Resolution or lack of cells producing TSH or thyroliberin**

- tumors
- traumatic or lumen injury (surgery, proton therapy)
- vascular disorders (ischemic or hemorrhagic damage)
- infectious or infiltrative processes (abscess, tuberculosis, histiocytosis)
- chronic lymphocytic hypophysitis
- congenital disorders
- mutations
- drug and toxic effects

CAUSES OF HYPOTHYROIDISM



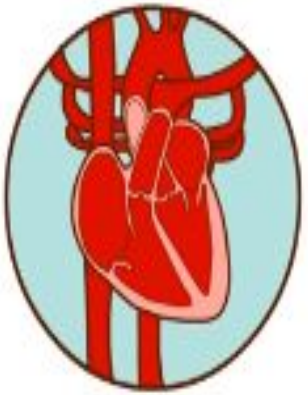
HYPOTHYROIDISM PATHOGENESIS



Hypothyroidism symptoms

feeling tired

feeling cold



heart problems

increase in weight

depressed feelings

hair loss

hoarse voice

bowel problems

HYPOTHYROIDISM

symptoms

dry hair

loss of eyebrow hair

puffy face

enlarged thyroid

slow heartbeat

arthritis

cold intolerance

depression

dry skin

fatigue

forgetfulness

menstrual disorders

infertility

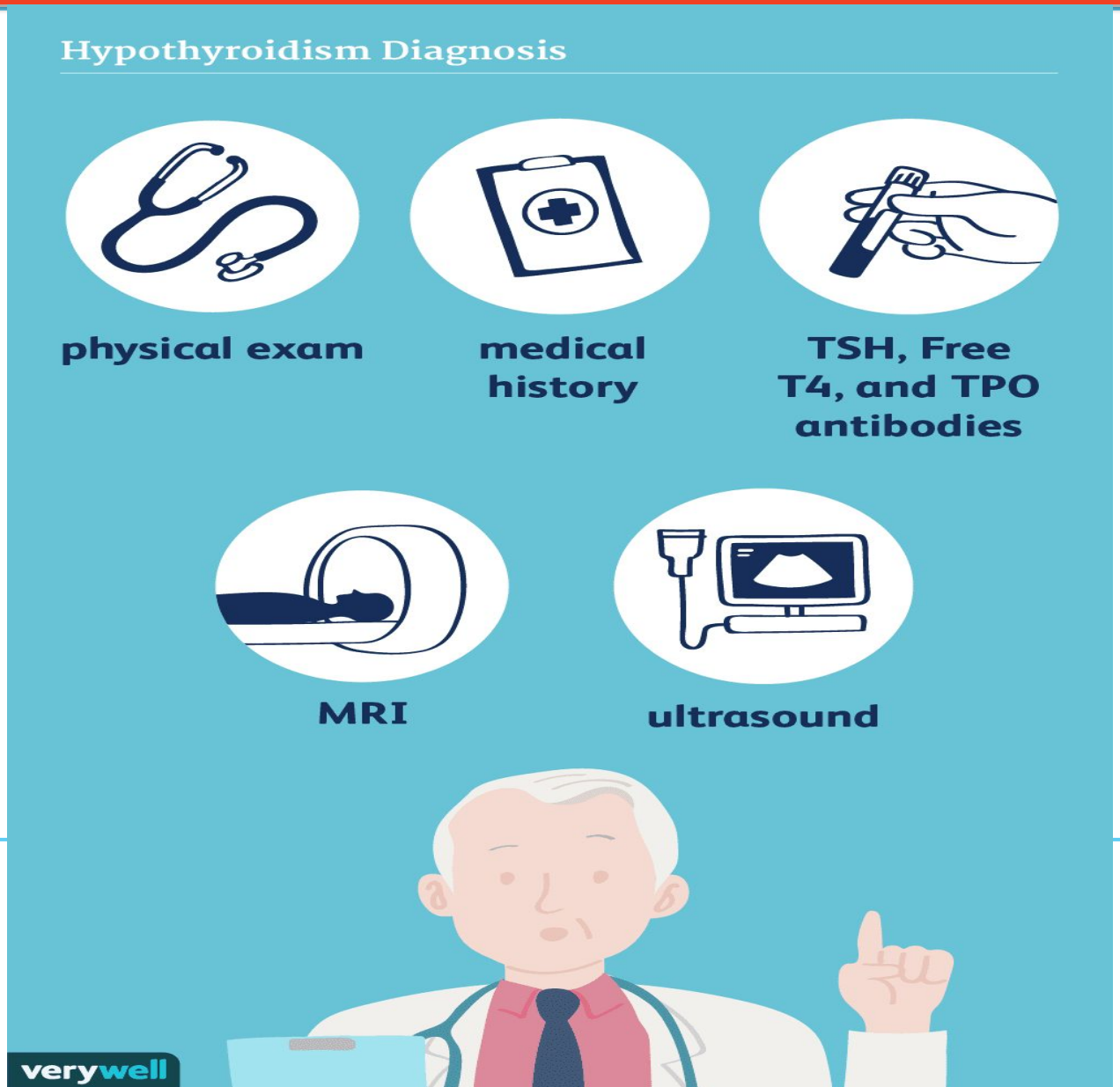
muscle aches

weight gain

constipation

brittle nails

HYPOTHYROIDISM DIAGNOSTICS



LABORATORY INVESTIGATIONS

1. **PRIMARY HYPOTHYROIDISM**

TSH **INCREASE**

T4 **DECREASE**

T3 **DECREASE**

Your thyroid is "normal". Are you sure?

Test	Optimal Levels
TSH	0.5-1.5 mIU/L
Free T4	1.3-2.8 ng/dL
Free T3	3.7-4.2 pg/mL
Reverse T3	FT3/rT3 ratio ≥ 20
TPO Antibodies	<2 IU/mL
TG Antibodies	<2 IU/mL

*The optimal levels listed are guidelines only. Our bodies are all different and optimal levels for each person will vary.

2. **SECONDARY HYPOTHYROIDISM**

TSH **DECREASE**

T4 **DECREASE**

T3 **DECREASE**

INSTRUMENTAL INVESTIGATIONS

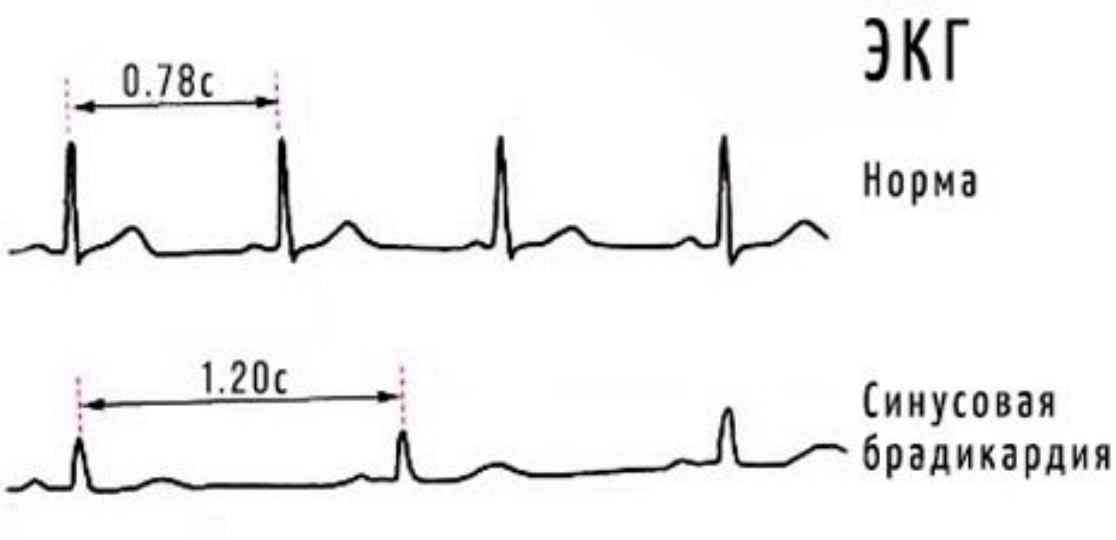
1. **ULTRASOUND OF THYROID**

- thyroid reduction
- there may be nodular cystic formations

INSTRUMENTAL INVESTIGATIONS

2. **ECG**

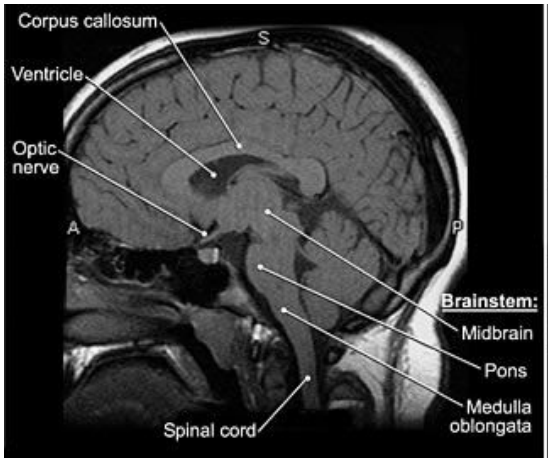
- sinus bradycardia
- reduction of teeth voltage

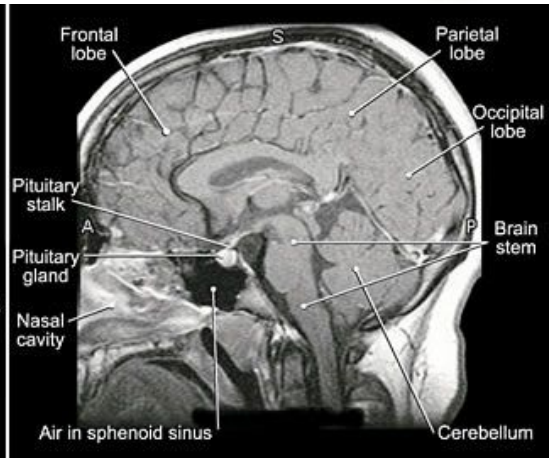


INSTRUMENTAL INVESTIGATIONS

3. MRT

- pituitary adenoma





HYPOTHYROIDISM
DIFFERENTIAL DIAGNOSIS

1. **Autoimmune thyroiditis**

- if chronic AIT, then it is **irreversible** and the patient should receive **replacement therapy for life**

- while hypothyroidism is usually terminated by the restoration of the thyroid gland

2. **Primary and secondary hypothyroidism**

- secondary - **uninsulated,** combined with the secondary failure of other endocrine glands (hypocritisism, hypogonadism).

- **normal level** of TSH can sometimes be

DIFFERENTIAL DIAGNOSIS

HYPOTHYROIDISM DIFFERENTIAL DIAGNOSIS

- **Gastroenterological:**

constipation, biliary tract dyskinesia, cholelithiasis, chronic hepatitis (jaundice combined with elevated hepatic transaminase);

- **Cardiac:**

diastolic hypertension, dyslipidemia, hydropericardium;

- **Respiratory:**

sleep apnea syndrome, pleural effusion of unknown origin, chronic laryngitis;

- **Neurological:**

tunnel syndromes (carpal canal, peroneal canal nerve);

- **Rheumatological:**

polyarthritis, polysinovitis, progressive osteoarthrosis (often adjacent to neurological masks);

- **Gynecological:**

menstrual disorders (amenorrhea, polymenorrhea, hypermenorrhea, menorrhagia, dysfunctional uterine bleeding), infertility;

- **Hematologic:**

normochromic normocytic, iron hypochromic or macrocytic B12 deficiency anemia;

- **Psychiatric:**

depression, dementia.

HYPOTHYROIDISM TREATMENT

LEVOTIROXIN (L-T4)

Pharmacological action - compensating for the deficiency of thyroid hormones.

Inside, in the morning, on an empty stomach, washed down with a small amount of liquid.

Tablets should be taken regularly.

FOR WOMAN = **100 MG/DAY**

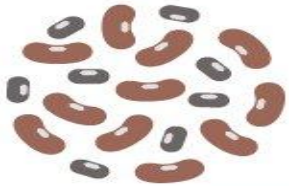
FOR MAN = **150 MG/DAY**

CONCLUSION

- Low-fat diet with plenty of fiber
- Patients activation
- Outdoor stay
- Wearing warm clothes

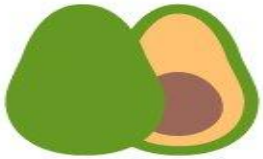
FIBER IN FOODS

(per100g)

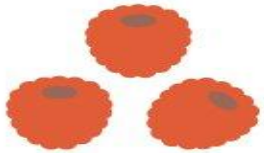


BEANS FIBER 16 (g)

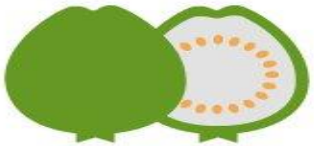
ALMONDS FIBER 12 (g)



AVOCADO FIBER 7 (g)

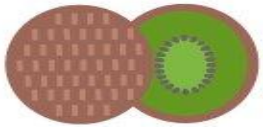


RASP BERRY FIBER 6 (g)



GUAVA FIBER 5 (g)

GREEN PEAS FIBER 5 (g)



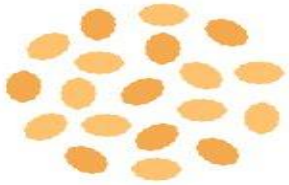
KIWI FIBER 3 (g)

BROCCOLI FIBER 2.6 (g)

ORANGES FIBER 2.4 (g)

KALE FIBER 2 (g)

BROWN RICE FIBER 1.8 (g)



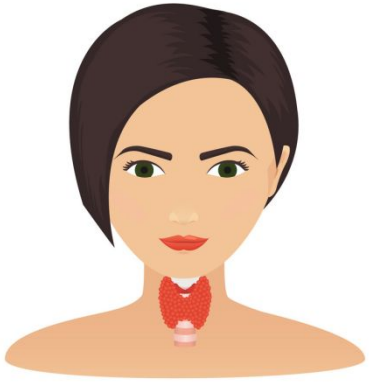
OATMEAL FIBER 1.7 (g)

A diet high in fiber may help decrease the risk of heart disease, obesity and diabetes, and have been linked to a lower incidence of some types of cancer.

DIFFUSE TOXIC GOITER

1. **Definition**

= systemic autoimmune disease, which develops as a result of the production of stimulating antibodies to the thyroid hormone receptor (AB – pTSH) , is clinically manifested by the defeat of the thyroid gland with the development of thyrotoxicosis syndrome in combination with extrathyroid pathology



CAUSES

Iodine deficiency

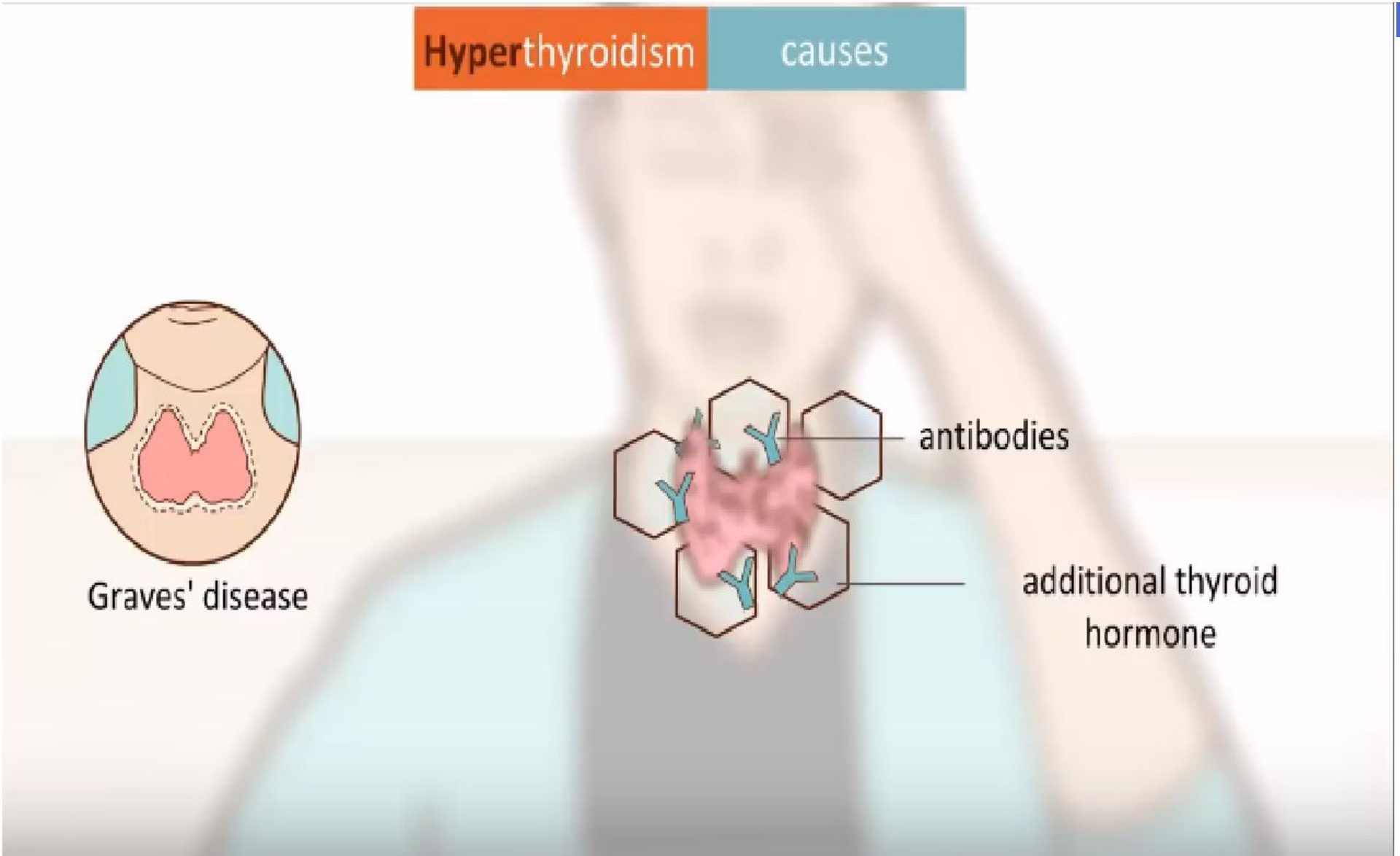
Autoimmune disease
Women over the age of 40

GRAVES' DISEASE

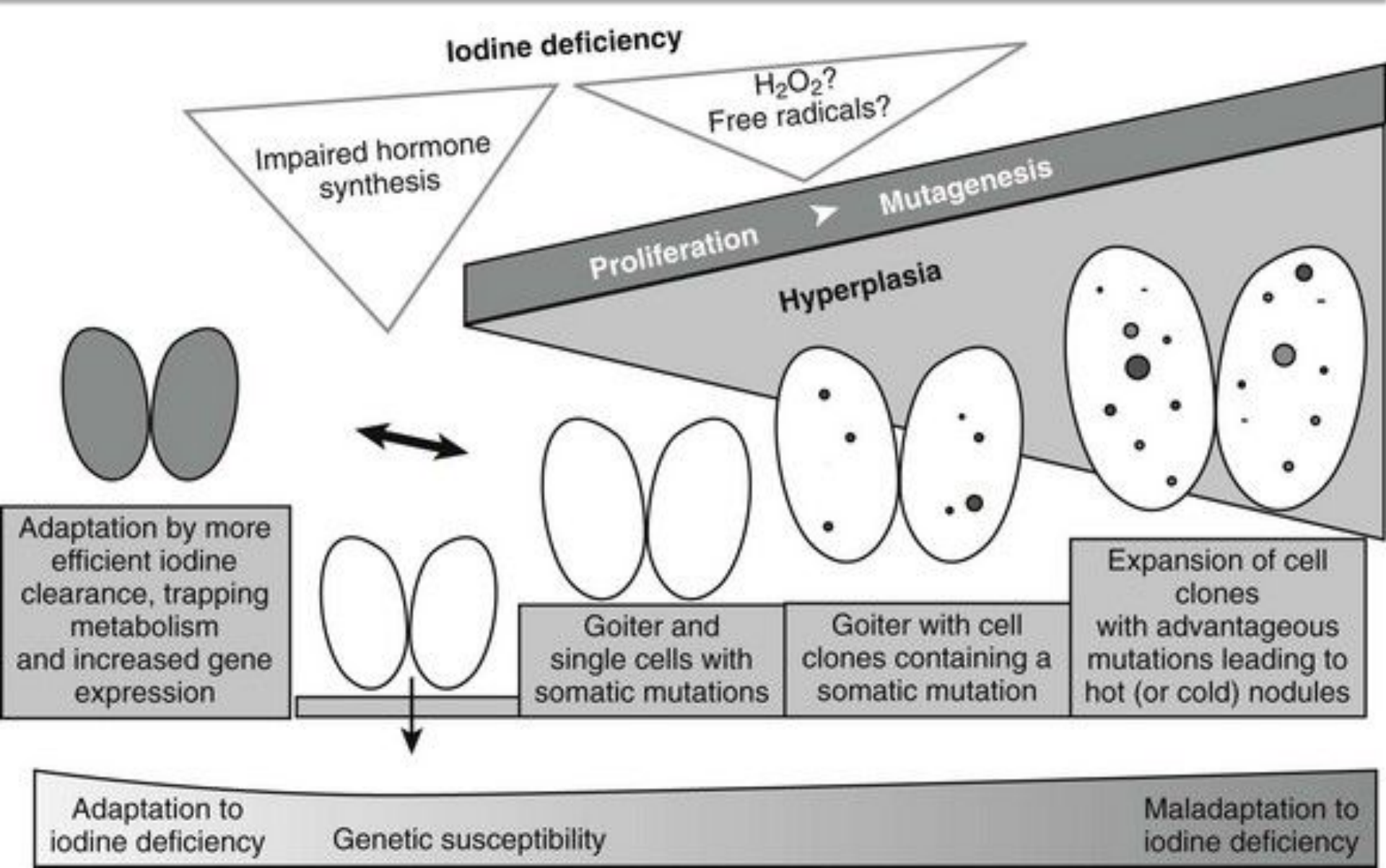
Hyperthyroidism

Other causes
1. **Smoking**
2. **Hormonal changes**
3. **Thyroiditis**
4. **Lithium**
5. **Overconsumption of iodine**
6. **Radiation therapy**

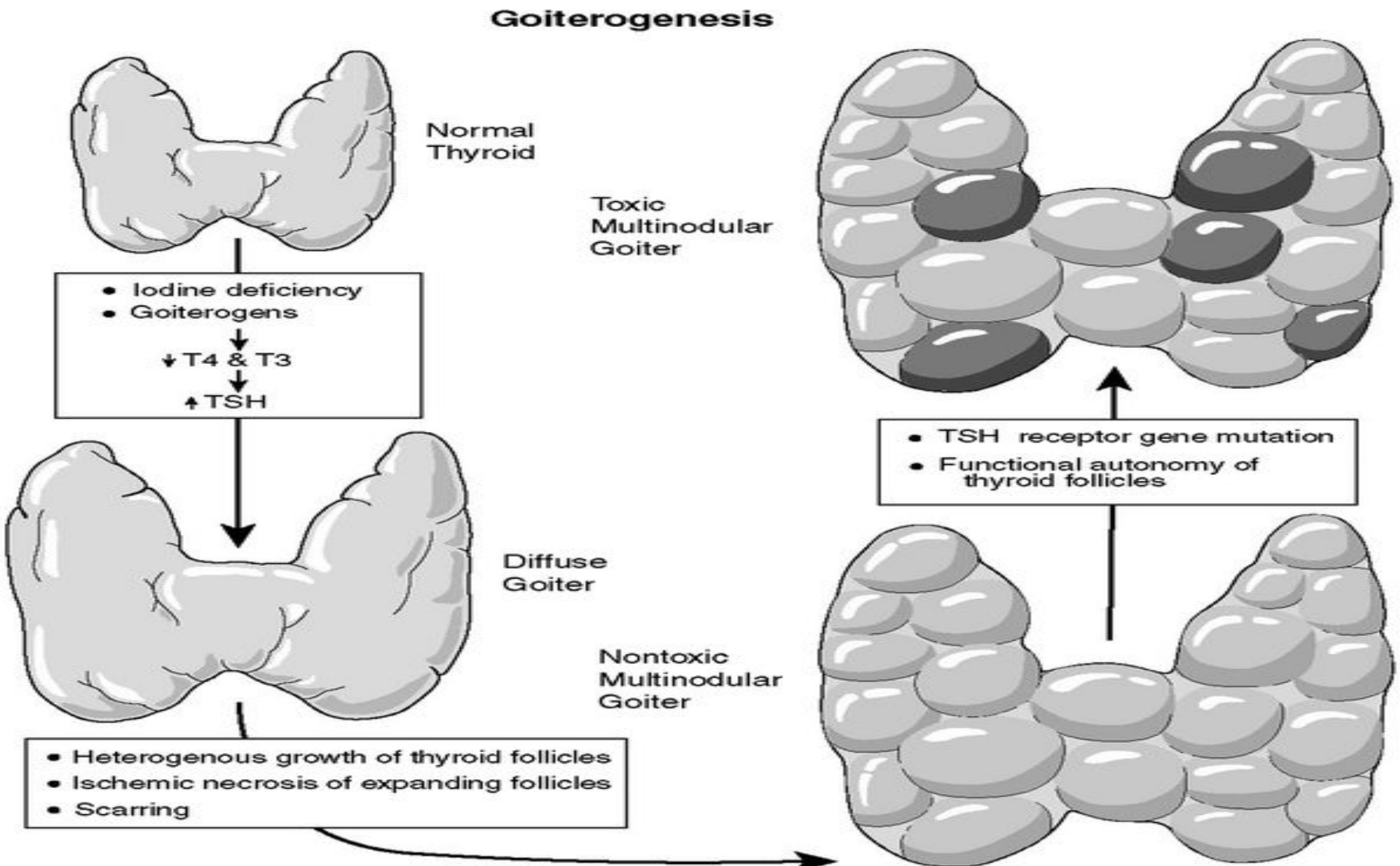
PATHOGENESIS



PATHOGENESIS



PATHOGENESIS



Hyperthyroidism symptoms

feeling warm

shortness of breath

loss of strength

menstrual complaints

weight loss

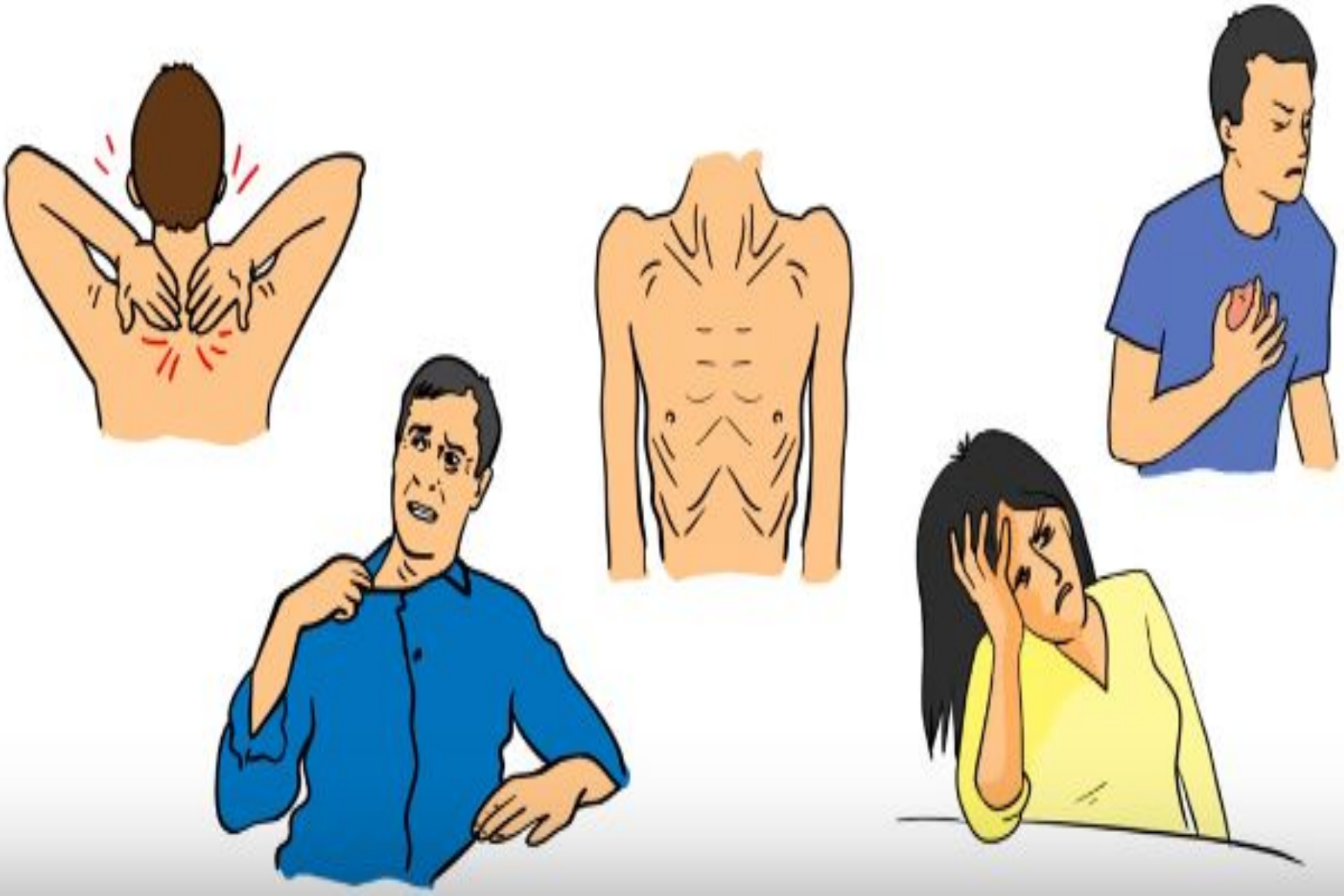
rapid heartbeat

diarrhea

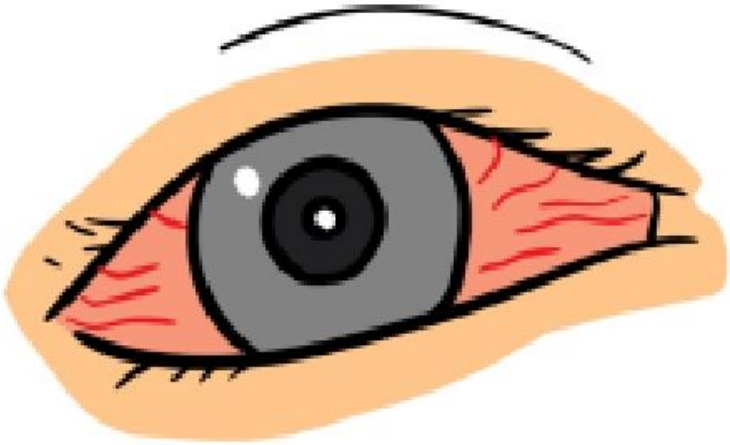
psychological symptoms

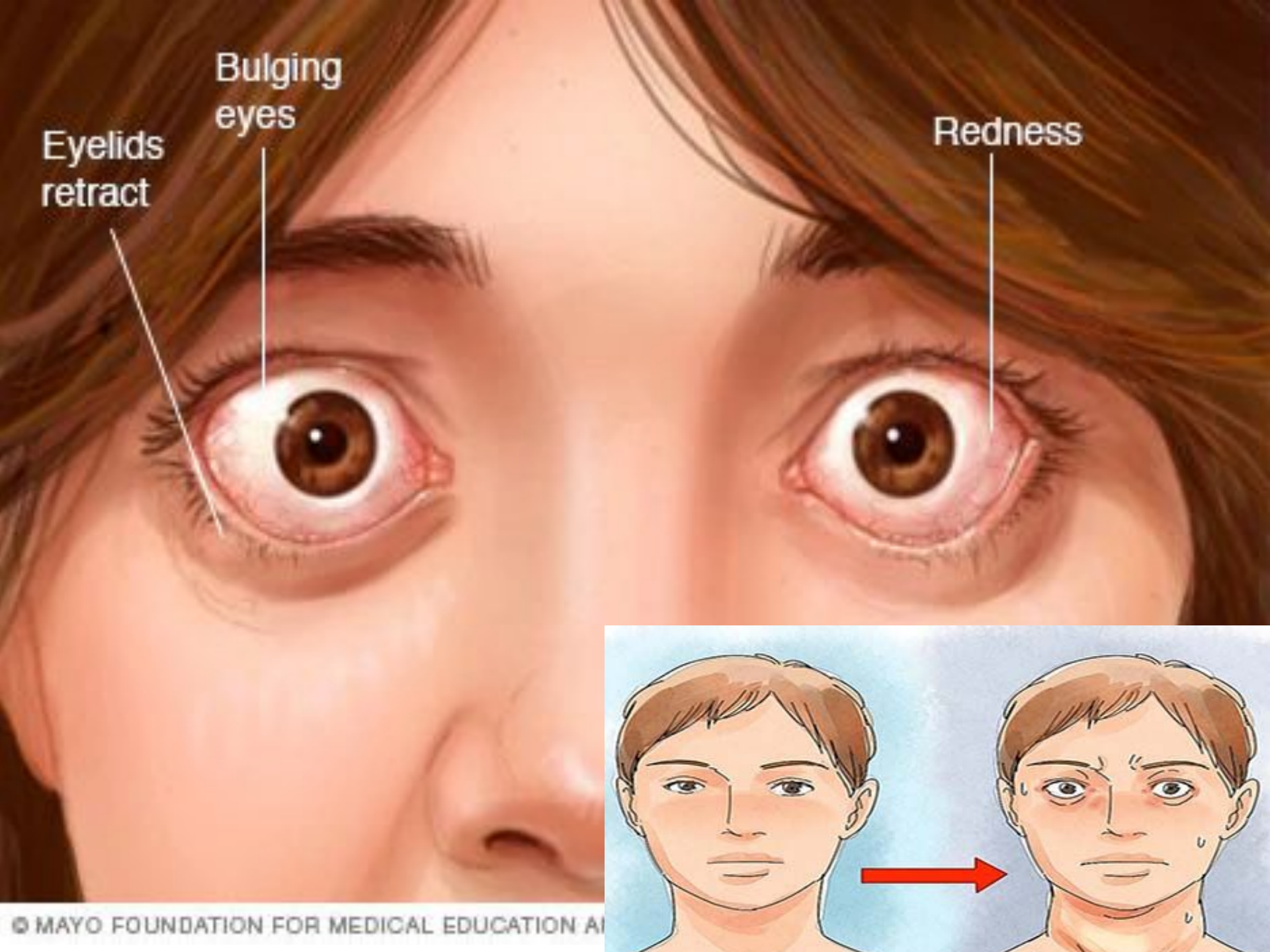
Symptoms

Symptoms

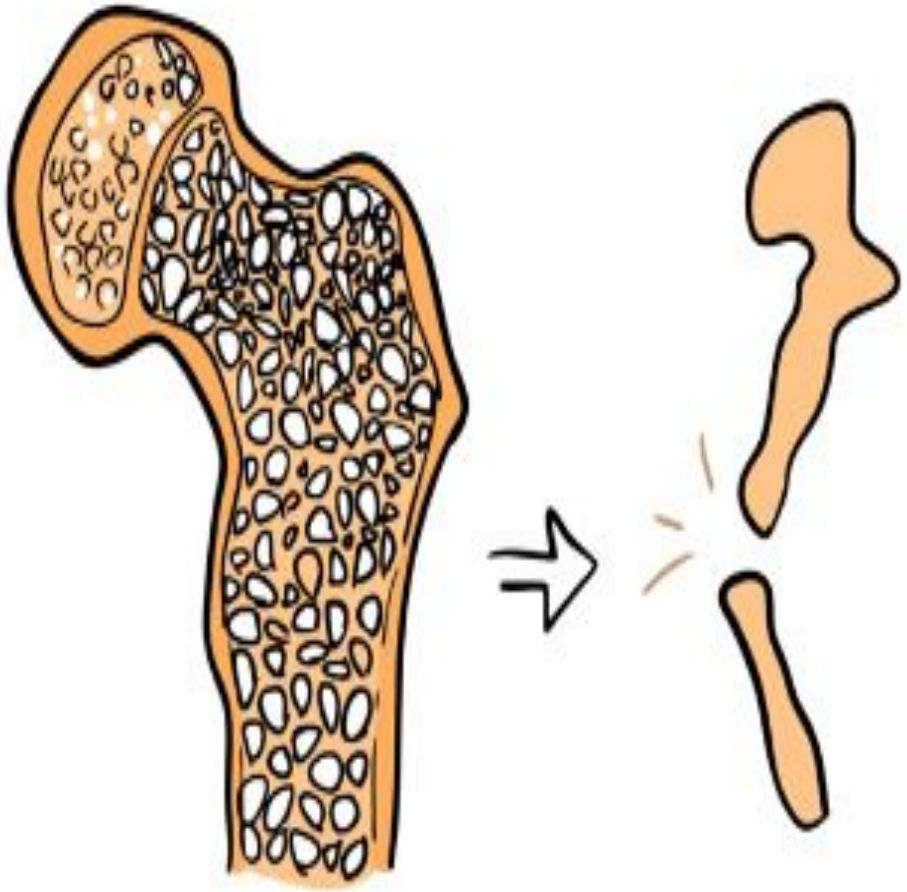


Eye problems




Bulging eyes
Eyelids retract
Redness
© MAYO FOUNDATION FOR MEDICAL EDUCATION A

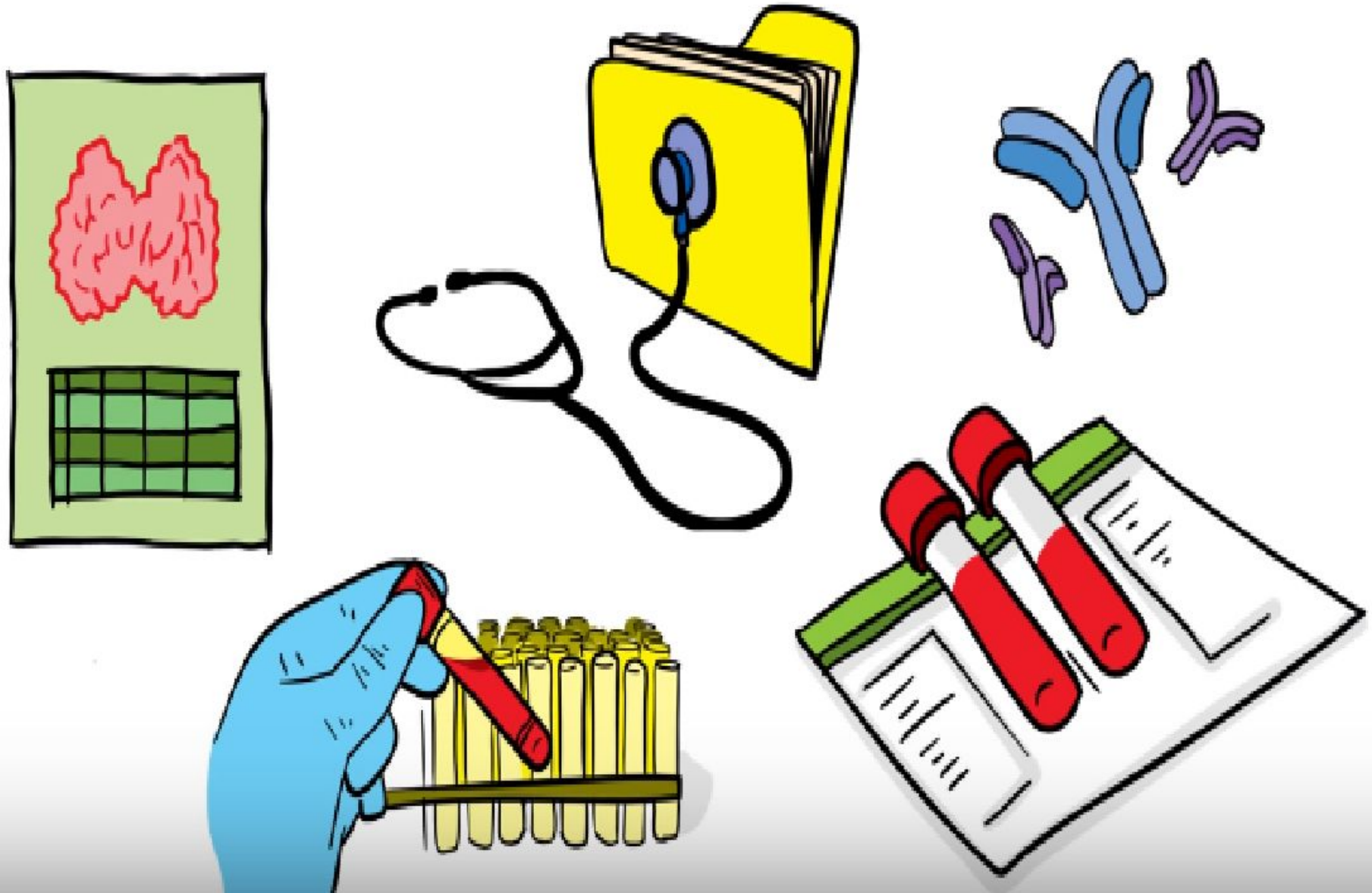
Myxedema or pretibial dermopathy



Osteoporosis

Congestive
heart failure

Diagnosis



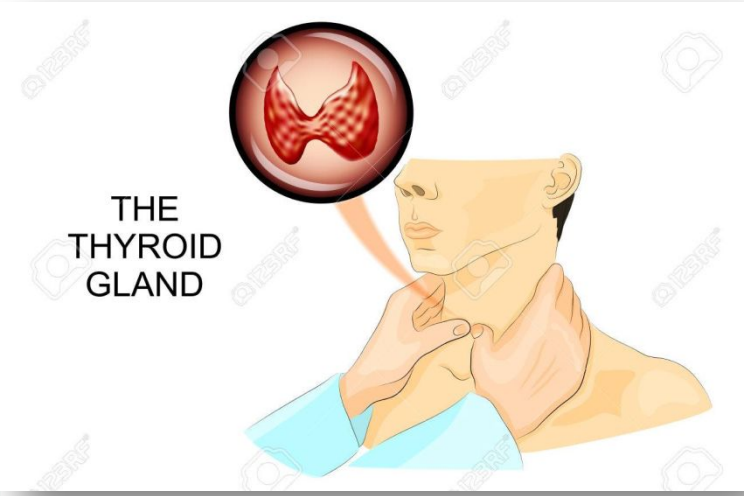
THYROID GLAND PALPATION

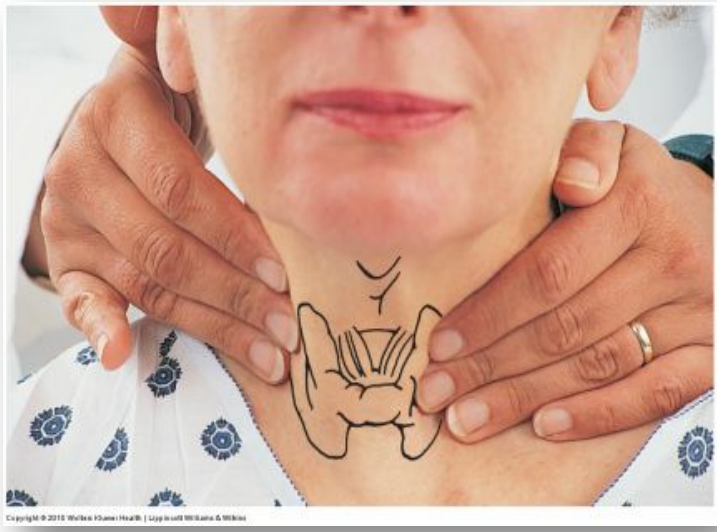
Goiter size classification (WHO)

0 - no goiter

I - the size of the goiter is larger than the **distal phalanx** of the doctor's thumb, the **goiter is palpable but not visible**

II - goiter is **palpable** and **visible** to the eye





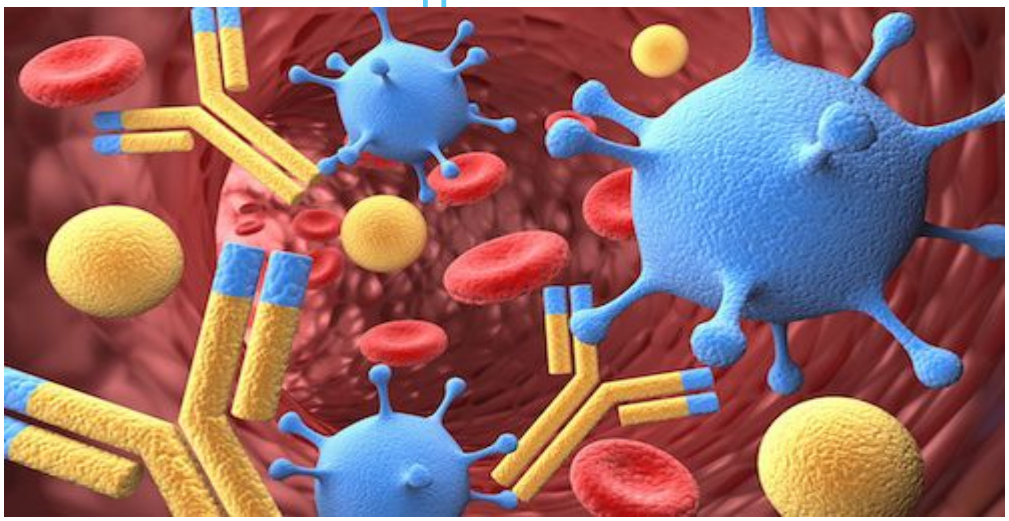
Study of functional activity of the thyroid gland

Thyroid hormones in the blood

- **TSH** DECREASE (<0,1 mE/l)
- **T3** INCREASE
- **T4** INCREASE

Study of immunological markers

- ANTIBODIES TO r-TSH - 99-100%
- ANTIBODIES TO TPO (TYREOPEROXIDASE)
- – 40-60%



INSTRUMENTAL INVESTIGATIONS

USI OF THYROID GLAND

- decreased echogenicity

NORMAL VOLUME OF TG

FEMALE = **18 ml**

MALE = **25 ml**

INSTRUMENTAL INVESTIGATIONS

THYROID SCINTIGRAPHY

Use technetium isotope (^{99m}Tc)

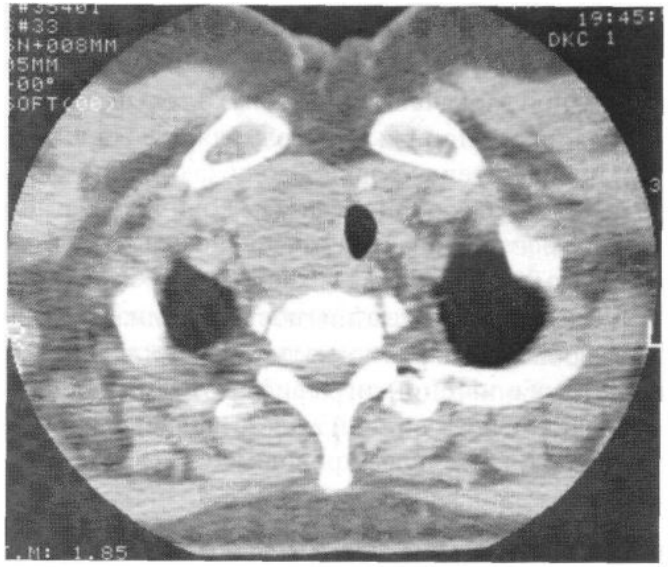
Disease = **Equable isotope distribution**

INSTRUMENTAL INVESTIGATIONS

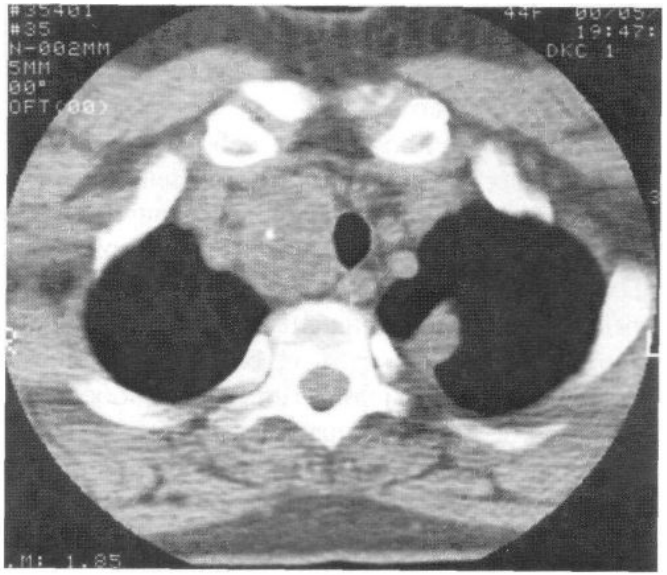
CT

MRT

- RETROSTERNAL GOITER
- DISPLACEMENT AND RELEASE OF TRAHEA AND ESOPHAGUS



а

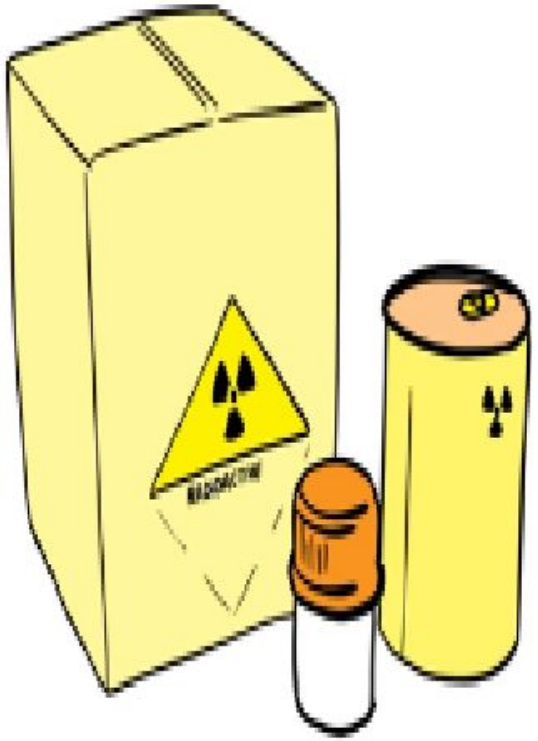


б

DIFFERENTIAL DIAGNOSTICS

1. Thyrotoxicosis due to destruction of thyroid tissue
2. Painless silent thyroiditis
3. Subacute thyroiditis
4. Radiation thyroiditis
5. Postpartum thyroiditis
6. Thyrotoxicosis caused by excessive proliferation of TSH (TSH-producing pituitary adenoma, hypophysial resistance to thyroid hormones)
7. Artificial thyrotoxicosis

Treatment



NON-MEDICAL TREATMENT

- Limiting physical activity
- To give up smoking

MEDICAL TREATMENT

RECEPTION OF THYROESTATICS

THERAPY 12-18 MONTHS

Tiamazol (tyrosol, merkazolil)

Propylthiouracil

Beginning

+ relatively large doses: 30-40 mg (2 times) or propylthiouracil 300-400 mg (3-4 times)/

Lasts 3-4 months

+ B – blockers – ANAPRILIN 120 mg/day 3-4 times; CONCOR 5 mg/day; ATENOLOL 100 mg/day 1 time.

+ GCS if severe prolonged thyrotoxicosis – PREDNIZOLON (10-15 mg/day) or HYDROCORTIZON (50-70 mg/day)

SCHEME "BLOCK AND REPLACE"

If T4 = NORMAL we decrease dose after 2-3 weeks – SUPPORTIVE THERAPY

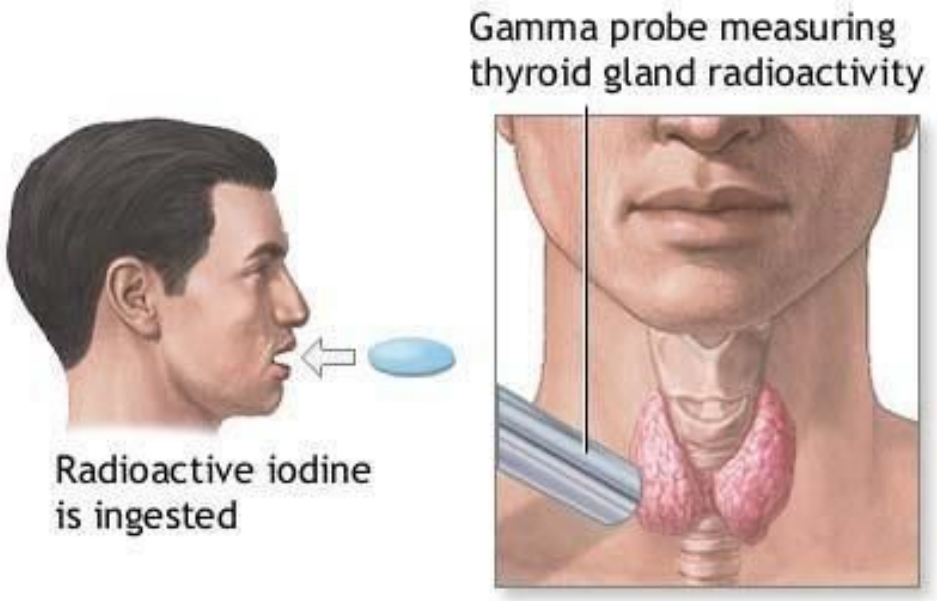
+ TIAMAZOL 10 mg/day/

+ LEVOTHYROXIN 25-50 mcg/day

THERAPY WITH ^{131}I

In case of **recurrence** of thyrotoxicosis

WAY = destruction of hyper functioning thyroid tissue

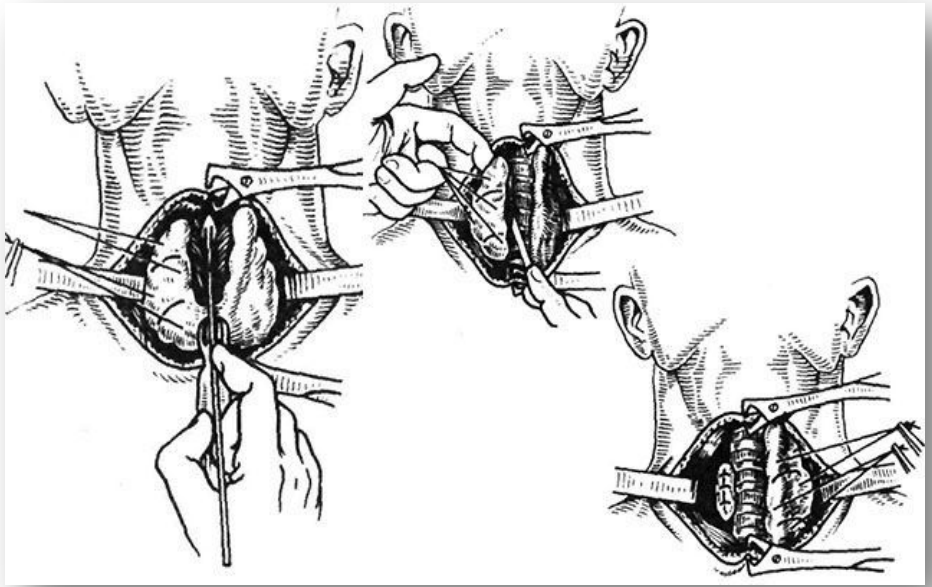


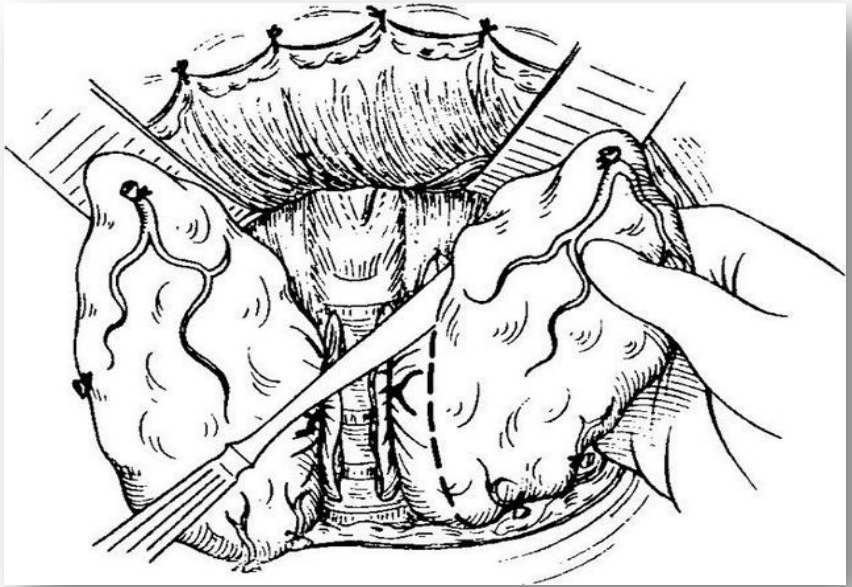
SURGICAL TREATMENT

- **Indications:**

lateral goiter, diffuse and nodular forms of goiter

1. FIRST: Achievement of euthyroid state
2. Surgery





Food Options for a 7-Day Detox Diet

Locally-grown, seasonal fruits and vegetables

Balanced meals
(chickpea buddha bowl)

Recipes with variety
(sweet potato and red cabbage slaw)

Avoid caffeine & alcohol

Breakfast
(oatmeal and smoothie)

Snack
(white bean and cashew dip)

Lunch or dinner
(baked honey-mustard salmon)

7 FOODS TO AVOID IF YOU HAVE THYROID ISSUES

1

Soy

May interfere with hormone production

2

Grains

Specifically gluten is thought to negatively affects those with thyroid diseases

3

Raw Cruciferous Veggies

Interfere with absorption of iodine

4

Caffeine

Affects production of thyroid stimulating hormone

5

Sugar

Increases chance for inflammation, leaky gut and insulin spikes

Fluoridated Water

Affects production of thyroid stimulating hormone

6

7

Vegetable Oil

Interferes with hormone release and transport

THYROIDSYMPTOMS
thyroidsymptoms.com

BIBLIOGRAPHY

1. Дедов И.И. Эндокринология 3-е издание
2. Федеральные клинические рекомендации по диагностике и лечению токсического зоба.

Е.А. Трошина, Н.Ю. Свириденко, В.Э. Ванушко, П.О. Румянцев, В.В. Фалеев, Н.А. Петунина