GENERAL EXAMINATION in INTERNAL MEDICINE

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1) Basic physical examination methods

- Aspection (day-light, time, privacy)
- Palpation (superficial, deep…)
- Percussion (direct, indirect)
- Auscultation (direct, indirect)
- Smell (ketoacidosis, uremia, foetor hepaticus)
2) Psychical state of the patient

Mental state of the patient

Quantitative disorders

Somnolence: a pathological sleepiness with a possibility of awakening.

Sopor: no reaction to a verbal stimulus. Wakening after painful stimuli.

Coma (unconsciousness): reaction to a painful stimulus is missing. Gradually, the reflexes vanish (incl. pupil and corneal reflexes).

Syncope (faintness): is a short-time loss of consciousness caused by insufficient blood supply of the central nervous system.
2) Psychical state of the patient

Mental state of the patient

Qualitative disorders are characterised by the disorientation in time, place, and person.

Amentia: disorder of perception with hallucinations and motor hyperactivity.

Delirium: more severe state with prevailing visual hallucinations (small animals), memory disorders, agitation, or sleepiness.

Obnubilation (blackout): manifests by an unconscious action of the patient (the patient does not retain memory from this state).
Psychical status

- **Quantitative disorders**
  - **Somnolence** (pathological sleepiness with a possibility of wakening. The verbal answers to questions are correct; the reactions are slowed down).
  - **Sopor** (no reaction to a verbal stimulus, wakening after painful stimuli. After this patient returns to the original state of consciousness)
  - **Coma (unconsciousness)** The reaction to a painful stimulus is missing. Gradually reflexes wane, including the pupil and corneal reflexes.
  - **Syncope (faintness)** short-time loss of consciousness caused by insufficient blood supply of CNS
2) Psychical state of the patient

Causes of consciousness disorders

Circulatory: primary - ischaemia, haemorrhage, embolism of CNS, secondary - due to a heart failure or arrhythmia

Inflammatory: meningitis, meningoencephalitis, brain abscess

Metabolic: hyperglycaemia, hypoglycaemia, liver or kidney failure, hydration disorders

Intoxications: alcohol abuse, drug

Psychiatric illnesses, injuries, tumours and epilepsy.

Evaluating patient's action and behaviour, his/her mood and view on the illness.
2) Psychical state of the patient

**Emotional instability**

**Anxiety:** usually in a neurosis or a secondary reaction to the uncertainty, associated with the illness.

**Depression:** manifests as an unsubstantiated sorrow (endogenic) or as a reaction to the situation.

**Mania:** manifests by an exceedingly cheerful mood, inappropriate to the situation.

Emotional lability can be a sign of neuroses, psychoses, brain arteriosclerosis, metabolic encephalopathy, and acute and chronic alcohol intoxication.
3) Development and growth

runs proportionally, under the influence of hormonal, metabolic, and genetic factors.

**Gigantism**: exceedingly high build. The development of the individual is proportional, but acromegalic features can be developed (prominent supraorbital arcs, nose, chin). Caused by hypersecretion of somatotropin in childhood, before the closure of growth plates.

**Eunuchoid growth**: higher build with disproportion between the length of the extremities and the trunk, which is relatively shorter. The cause is in praepubertal hypogonadism.
3) Development and growth

**Dwarfism**: proportional small build. The limit of the height for men - 145 cm, for women 135 cm. This occurs in case of hormonal, genetic chromosomal defects (Turner syndrome, ovarian dysgenesis) or congenital metabolic disorder.

**Pituitary dwarfism**: represented by normal body proportions; caused by decreased production of STH (somatotropin) before the closure of growth clefts.

**Dwarfism in cretinism**: caused by hypofunction of the thyroid gland either before birth or during childhood. Has growth and intellect defects (cretinism) and hypogonadism.
4) The state of nutrition

BMI, subcutaneous fat measuring and Brock's formula can be used as objective assessment:

**BMI (body mass index):** weight [kg]/surface of the body [m2]
- < 20 underweight,
- 20 - 25 normal,
- 30 - 40 obesity,
- > 40 severe obesity,

**Subcutaneous fat measuring** by callipers:
- men > 1,5 cm  
- women > 2,2 cm

**Brock's formula:** weight [kg] (-10 %) = height [cm] – 100

The main deviations are **obesity and cachexia.**
4) The state of nutrition

Obesity

**Primary (simple) obesity:** excessive energetic supply in comparison to the output.

**Secondary obesity:** accompanies other diseases (e.g. endocrine). Fat, especially on the trunk.

**Diffuse obesity:** usually congenital, genetic or hormonal abnormality. Includes Fröhlich (adiposogenital) syndrome (obesity + hypogonadism).

**Truncal obesity:** related to the excessive food intake.

**Cushing syndrome:** develops in case of hypercorticoidism. The fat is accumulated in the face,(a moon appearance), behind the neck, between the shoulder, on the abdomen, violet striae

**Pickwick syndrome:** a term used to describe obese patients with chronic respiratory insufficiency. The main symptoms are inversion of sleep, central cyanosis, and polyglobulia.
4) The state of nutrition³

Cachexia

caused by absence of the fat deposits and muscular atrophy.

May be caused by: tumours of gastrointestinal tract, and some inflammations (tuberculosis), hypopituitarism (Simmonds´ cachexia, Sheehan syndrome), active thyrotoxicosis, Addison's disease, mental anorexia

Progressive lipodystrophy occurs in girls by a disproportional storage of fat in the lower part of the trunk, while in the upper part the fat vanishes.

Necrobiosis – diabetic lipodystrophy is characterised by a local loss of fat in association with insulin administration in diabetes.
5) Position

Healthy individual is relaxed, able to take any position.

**Forced positions:**

- **Orthopneic:** in case of heavy cardiac or pulmonary **dyspnoea**. The patient is sitting, and using auxiliary respiration muscles to breath.

- **Unsettled:** in case of developing shock – the patient is restless, looks for a relief position, changing it frequently. (in renal or biliary **colic**).

- **On the back with inflected legs** the patient avoids movement; can be observed in **peritonitis**.

- **On the side:** pt restrains breathing on the affected side; can be observed in **pleuritis**.
5) Position

On the side with reclined head and inflected legs (in thighs and knees); can be observed in meningitis.

"On all fours" the patient leans on the inflected forearms; can be observed in pancreatic tumour or chronic pancreatitis.

Reclined head with dorsal flexion of the spine occurs in tetanus.

Passive position is characteristic for an immobile patient in a severe clinical state with cerebral apoplexy.
6) Stand and walk

**Posture** of a healthy individual is upright, walking is springy, extremities move freely. Abnormalities occur in neurological and muscular disorders.

**In Parkinson's syndrome** a slight forward bending of the head and trunk is observed. Walking consists of small steps.

**Hemiparesis, hemiplegia** means paralysis of the extremities on the same side of the body; a mild degree: hemiparesis, a more severe: hemiplegia. The patient can move his upper extremity inflected in elbow, and/or his leg extended, moving it in external arc (circumduction). In the most severe cases neither standing nor walking is possible (**cerebral apoplexy**).
6) Stand and walk²

**Ataxia with unsure walking:** represented by a wide-basis walking. It occurs in alcohol intoxication, disorders of dorsal roots of the spinal cord, in pernicious anaemia, and tabes dorsalis.

**Rolling ("duck") walking:** in congenital luxation of the iliac joint or myopathia.

**The so-called stork walking** is present in paresis of the fibular nerve; the patient compensates the defect by lifting the limb.
7) Abnormal movements

Are not present under physiological circumstances.

**Tremor**

**Static tremor:** slow, and soft, diminishes in voluntary movements. It is manifested in the fingers, forearm or the whole arm, chin, or the whole head.

**Postural tremor:** soft, fast - can be observed in hyperthyroidism.

**Intentional tremor:** dependent on the movement and is not present at rest. It can be observed in diffuse sclerosis.
7) Abnormal movements²

"Flapping tremor": is characterised by a slow flexion and extension of the fingers. Indicates a severe defect of the CNS in liver failure.

Chorea: represent unintentional movements, present in the face, head, and hands. These occur in chorea minor in rheumatic fever.

Athetosis is characterised by slow, sometimes bizarre movements with large amplitude. Present in the face and lower extremities. Is associated with brain arteriosclerosis or with prenatal encephalopathy.
7) Abnormal movements

Tics are fast, repeated, stereotype short-time muscular contractions mostly present in the face (around the eyes, on the cheeks) of neurotics.

Cramps (spasms) of skeletal muscles are caused by a spasm of some muscular groups as localised or generalised spasms. Can be divided into:

- **Tonic** (fastening) – enhanced muscle tension (tetanus);
- **Clonic** (twitching) - with visible muscular twitches;
7) Abnormal movements

- **Tonic-clonic** - generalised, accompanied by unconsciousness, foam at the mouth, apnoea and cyanosis, incontinence of the urine and faeces, and biting of the tongue (grand mal - great epileptic attack), or localised in one part of the body without the loss of consciousness (Jacksonian seizure);

- **Trismus** represents a local spasm in the jaw muscles, which gives the patient a look of bitterness (risus sardonicus in tetanus).

- **Orofacial dyskinesia** is characterised as regular, repeated, bizarre movements present mostly in the face, mouth, tongue, and jaws. They can be found in some psychoses, treated with phenothiazines.
8) Speech

is a typically human expression. It is fluent, clear, and individual characteristic.

- **Scanned speech** is present in diffuse sclerosis.
- **Dysarthria and anarthria** is a defect of pronunciation: missing and mixing letters.
- **Aphasia** is a speech disability due to severe damage of the speech centre.

**Expressive aphasia** means that the patient is unable to speak, but able to understand both speech and writing.

**Sensory aphasia** is manifested by the lack of understanding the speech and writing, but the ability to speak is retained.

**Mixed aphasia** means a combination of the two above. The defects occur in neurological disorders, especially in cerebral apoplexy.
9) Voice

Men and women have characteristic voice differences related to sex (women have a higher voice, men a lower).

- **High voice** occurs in infantile men.
- **Rough, deep voice** with slower speech is present in hypothyroidism of both sexes and in acromegaly.
- **Hoarse voice** (dysphonia) occurs in paresis of the laryngeal recurrent nerve in aortic aneurysm, mediastinal or bronchial tumours, or in inflammation or tumour of the vocal cords.
- **Weakened or almost inaudible voice** occurs in dehydration, and severe clinical conditions e.g. advanced Parkinsonism.
- **Mumbling voice** (nasolalia) is typical for congenital cleft palate and paralysis of the soft palate.
10) Skin examination

The skin is rosy, warm, and elastic, having no continuity defects.

**Colour: Pale: Pallid appearance of the skin**

**Generalised** - (together with pallid mucous membranes) - accompanies anaemia or diffuse vasoconstriction (shock);

**Localised** - pallid appearance is the sign of blood circulation disorder e.g. in limbs (ischaemia of the legs, diabetic microangiopathy) or in individual fingers (Raynaud's disease).
10) Skin examination – colour (cont.)

Red: The red coloration

**Generalised** - in hyperaemia (sun exposed skin, fever);

**Localised**: Local hyperaemia (inflammation);
  - Facial rubeosis (diabetes mellitus);
  - Mitral stenosis - rosy-violet cheeks;
  - Maragnon's maculae on face and the upper half of the body (in neurovegetative lability in girls);
  - "Palmar erythema" reddening of thenar and antithenar in cirrhotic pts.

"Flush" is observed on the upper part of the body, particularly in faces of patients suffering from carcinoid (serotonin secretion).
10) Skin examination – colour (cont.)

Bluish colour (cyanosis) can be observed on the skin and mucous membranes. The skin acquires the bluish colour, if concentration of reduced haemoglobin reaches 50 g/l.

Central cyanosis is caused by insufficient oxygen saturation of haemoglobin in pulmonary diseases and congenital heart defects (left-right short cut). It can be found on the skin of the whole body, particularly visible in lips, tongue, mouth mucous membranes, and acral parts. It is commonly found together with polyglobulia and clubbed fingers. (Oxygen inhalation reduces cyanosis of pulmonary origin.)

Peripheral cyanosis is caused by prolonged tissue-blood contact caused by insufficient blood circulation. It accompanies heart failure; it can appear in cold. It is observed in lips, ears, hands, feet (including toenails), the tongue is rosy.
10) Skin examination – colour

**Yellow: Jaundice** (icterus) caused by increased plasma concentration of bilirubin. According to the cause the following types of icterus can be distinguished: praehepatic (haemolytic), hepatic (hepatocellular), posthepatic (obstructive). In addition to the skin, sclera and palatal mucous membrane are also affected.

**Xantosis** is caused by hypercarotinaemia. The coloration is manifested on the palms, soles, and cheeks (diabetes mellitus, hyperlipoproteinaemia).

**Brown colour** generally arises from melanin accumulation or in combination with other substances. Localised form - nipples, linea alba and chloasma uterinum during gravidity. Diffuse form - after sunbathing, in porphyria, hyperthyroidism.

**Addison's disease** (peripheral form) manifests by diffuse skin hyperpigmentation (except palms and soles, where only ripples are coloured). There are graphite maculae on mouth mucous membrane.

**Grey-brown** - the skin takes part in melanin and haemosiderin accumulation, e.g. in haemochromatosis.

**Albinism** is caused by lack of pigmentation in skin, hair, and irises. Hair and irises have light colours, the pupils seem to be bright red.

**Vitiligo and leukoderma** are caused by local loss of pigmentation. Those disorders are either congenital, or acquired - e.g. syphilis.
Icterus  Facies mitralis
10) Skin examination - moisture

Enhanced moisture depends on enhanced perspiration.

Localised moisture in armpits, on palms, and soles, occurs in people with neurovegetative dysbalance, commonly accompanied by acrocyanosis and acrohypothermia.

Diffuse moisture on the whole body surface is present in lytic temperature decrease, thyrotoxicosis, shock, and hypoglycaemia. Nocturnal sweating can be related to malignant tumours and tuberculosis.

Reduced moisture

Localised form occurs in ischaemia.

Diffusion form can be found in dehydration and cachexia. The skin is dry and wrinkled.
10) Skin examination – temperature

Body temperature depends on the blood supply of the skin, it can be tentatively assessed by touch of hand.

**Locally decreased temperature** is characterised by pallid; cold skin (could be cyanotic) as a result of impaired blood supply (ischaemic disease of blood vessels of lower extremities, Raynaud's disease).

**Locally increased temperature** is characterised by reddening and oedema of the skin and is caused by inflammation (erysipelas, thrombophlebitis).
10) Skin examination – efflorescences

cannot be found on the skin of a healthy person. Its presence is the sign of a skin disease or can be the secondary manifestation of the infectious or internal disease. Dermatological terminology is used for describing.

macula = area blot
papule = protruding blot
vesicula = blister filled by clear liquid
pustule = blister with turbid liquid

Findings can transform continuously. Exact description, localisation, and configuration, and even the dynamics of the disease are required for judgement.
10) Skin examination – efflorescences

Some diseases are accompanied by distinctive findings:

**Scarlet fever (scarlatina):** small-macular red exanthema is localised on the skin of the abdomen, it spreads onto the legs and the rest of the body; it does not appear at the vicinity of the mouth. If untreated, the disease can lead to skin exfoliations.

**Measles (morbilli):** macular exanthemas localised initially on the face and neck; they tend to merge together later. There are so called Koplik's spots at the mucous membrane of the mouth.

**Chickenpox (varicella):** begins as a macular, later vesicular exanthema on the surface of the whole body (including areas with hair), gradually it dry out. Eruption of efflorescence runs in the cycles.

**Shingles (herpes zoster):** vesicular, later pustular efflorescences are arranged in the groups that follow peripheral nerves route, but also branch of the nervus trigeminus. The disease is caused by the varicella-zoster virus in adult patients weakened by other diseases (e.g. tumours).

**Cold sore (herpes labialis, nasalis):** vesicular or pustular efflorescences are found on the lips, below the nose or by the nose orifices in febrile diseases (croupous pneumonia, viral infections), or in insolation.
10) Skin examination – efflorescences³

**Allergic exanthemas** take the form of either urticarial (nettle-rash) exanthema or their appearance may resemble findings present in infectious diseases. In that case, they are called according to the disease they resemble (e.g. morbiliform, scarlatiniform etc.) Itchy white or rosy buds of a map-like appearance are typical for urticaria. Allergic exanthemas manifest as local affections, most commonly caused by direct contact (plants, cosmetics), or generalised affections of various appearance - on the skin of the trunk and limbs. Their eruption is recurrent.

Transient oedematous swelling on the face, neck, or perhaps other areas is the sign of **Quincke's oedema**.

**Erythema nodosum** are specific painful red and violet infiltrates located on the shanks (sarcoidosis, idiopathic intestinal inflammations, or the origin may be unclear).

"*Butterfly exanthema*" is distinguished by symmetrical reddening of the face that is distinctively shaped (lupus erythematosus).

**Osler nodes** are bright, red coloured lentil size nodes, which can be found on the fingertips. They are caused by mycotic micro-embolisation in infectious endocarditis.
10) Skin examination – efflorescences

Various morphological findings in the form of petechiae, haematomas, maculopapular efflorescences, or area infiltrations can all represent evolutionary changes of vasculitis.

Xanthelasma is a shallow protruding area on the eyelid, close to the nose. It is caused by the accumulation of fat (hyperlipoproteinaemia, rarely in a healthy person too).

Xanthoma (tuberosum) is generally larger, commonly located on the muscle tendons (some hyperlipoproteinaemias).

"Naevus arachnoideus" (spider angioma) is red, made of a central arteriole wrapped by venules into periphery. Usually, they are located in the upper part of the trunk and in the face. In more advanced cases of hepatic cirrhosis they can appear on the arms as well (they may appear non-specifically e.g. during pregnancy). When subjected to pressure they become anaemic.
Naevus arachnoides
10) Skin examination – efflorescences

Haemangiomata are most commonly of lentil appearance, but also they may be of irregular shape, at various locations in elderly people.

Bleeding manifestations (haemorrhagic diatheses) on the skin and mucous membranes arise spontaneously in cases of primary and secondary haemocoagulation disorders.

Petechiae are ecchymoses, dotty haemorrhages in thrombocytopenia, thrombocytopenia, and vasculitis.

Purpura arises of multiplex petechiae.

Haematoma has its origin in substantial subcutaneous bleeding in case of e.g. coagulopathy. They gradually decolourise over time (haemophilia, incorrect anticoagulation therapy, blunt trauma, hepatic cirrhosis).
10) Skin examination – efflorescences

Postoperative scars have distinctive shapes and localisations. The appearance and colour allow to estimate the type of operation, history of healing, and the time elapsed since opening the skin.

So called keloid scars are bulging, protruding, reddish, found in person with individual redisposition.

Post-injury scars are irregular, in various locations.
Scars
10) Skin examination - trophics

Changes are caused by vascular (ischaemic) and innervation disorders.

**Bedsores (decubitus)** are the most common. They constitute in immobile patients on the heels, and sacral and gluteal areas first as a superficial local ischaemia, gradually worsening to necrosis.

**Varicose ulcers** localised on shanks are of various shapes, sizes, and depths and can be observed in patients with chronic venous insufficiency.

In chronic ischaemia trophic skin defects on the toes (ischaemic disease of blood vessels of lower extremities, diabetic microangiopathy) can be observed.
10) Skin examination - turgor

Depends on hydration of the skin, the epidermis and its structure.

**Decreased turgor** is common in older age and is caused by decreased elasticity of epidermis. In other cases dehydration caused by fluid loss contributes to decreased turgor (decompensated diabetes mellitus, diabetes insipidus, intensive diuretic therapy) or dehydration can be caused by insufficient intake of fluids (reduced thirst feelings in elderly people). The combinations of both causes are frequent.
10) Skin examination - oedemas

Oedemas are caused by an accumulation of extracellular fluid in the interstitium.

**Local oedemas**

*Inflammatory oedemas* appear in the site of inflammation. The oedema is painful; the skin is warm and erythematous.

*Venostasic oedemas* occur in the blockage of the venous system (phlebothrombosis). The skin is taut, sensitive, palpation causes a shallow dimple; cyanosis can be observed.

*Lymphoedemas* are caused by the obstruction of lymaticph vessels or nodes by tumours, metastases, or parasites. The skin is pallid, rigid, and painless. After palpation, no dimple occurs. The long-lasting obstruction causes induration of the epidermis.

*Allergic oedemas* can be found anywhere in the body, including mucous membranes (Quincke's angioneurotic oedema, contact allergy, insect stings). They tend to be flat, painless; they keep the colour and temperature of the surrounding skin. Even eyelid oedemas in patients with acute glomerulonephritis are considered of allergic origin.
10) Skin examination – oedemas

**Systemic oedemas** occur in case of massive fluid retention. From etiopathogenetic point of view there is various participation of venostatic constituent, hypoproteinaemia and changes of vessel wall permeability.

**Cardiac oedema** occurs in case of the right heart insufficiency. In walking patients they constitute in area perimaleolaris; they advance to the shanks and thighs. In recumbent patients they are found on the shanks, the lower part of the thighs and in the loins. In the most severe cases they stretch to the abdominal area and they affect the outer genitals. Ascites, hydrothorax, or hydropericarditis occur. The state is called *anasarca*.

**Renal oedemas** can be found in nephrotic syndrome. They occur on the eyelids, in the face, on the genitals, and in lumbosacral parts of back.

**Hepatic oedemas** manifest in decompensated hepatic cirrhosis. Ascites is predominant, but lower extremities oedemas may occur as well.

**Hypoproteinaemic oedemas** in case of hypalbuminaemia are soft, with persisting dimple after palpation.

**Myxoedemas** form by accumulation of mucopolysaccharides in the face and forearm ("iron sheet forearm"); they are of tough consistence.
Lymphoedema

Cardiac decomp.
10) Skin examination- adnexa: hairs

has typical appearance and position depending on the sex.

Thin hair can be found in both sexes in hypogonadism, hypopituitarism, hypothyroidism, and hepatic cirrhosis and in males treated by oestrogens.

Stronger and denser hair (hypertrichosis, hirsutism) - important in women. Mild forms can be observed in older women on the face and in case of Cushing's syndrome. More severe forms accompany androgenic tumours of the adrenal cortex and androgen treatment (doping!).

Alopecia is diffuse or local loss of hair. It occurs in cytostatic treatment, in abdominal typhus, and thyrotoxicosis. In some men, the diffuse alopecia is a common finding. Local alopecia (alopecia areata) is rather rare to find.
10) Skin examination- adnexa: nails

generally strong, smooth, resistant and of distinctive appearance and colour.

**Fragile and fraying nails** common in thyrotoxicosis and sideropenic anaemia.

**Spoon-shape bent nails** (koilonychia) occur in thyrotoxicosis.

**Spherical nails** accompany congenital heart disorders, chronic pulmonary diseases; less frequently can be found in hepatic cirrhosis as a part of clubbed fingers.

"**White**" (hepatic) nails occur in hepatic cirrhosis (the white part of the nail, so called lunula occupies a significant part of the nail area).

**Nails deformed** with uneven surface, thick, changed in colour (particularly on toes) are affected by mycosis (onychomycosis).
Koilonychia
Body temperature examination

The temperature of a healthy human, measured in the armpit, ranges from 36 to 37 degrees Celsius during the day.

Subnormal temperature: is lower than 36.2°C and is related to restrained metabolism. It can be observed in elderly people, in chronic cachexia-causing diseases (tumours), in hypopituitarism, hypothyroidism, after excessive bleeding, and in shock.

Subfebrile temperature: does not exceed 38°C; it accompanies focal infections (chronic tonsillitis or sinusitis, urinary infections, adnexitis).

Fever (pyretic, febrile state): body temperature raising above 38°C.

Hyperpyrexia: condition with temperature ranging from 40 to 41°C is called hyperpyrexia. Fevers occur in inflammations, infectious diseases, systemic diseases, and in certain tumours (lymphomas, Grawitz's tumour).
Body temperature examination

The shape of the temperature curve bears distinctive features in certain diseases. The introduction of antibiotics into clinical practice has changed some former typical features.

Febris continua: is marked by temperature fluctuation within 1°C range during a 24-hour period (abdominal typhus, paratyphoid, erysipelas).

Febris remittens: daily fluctuation exceeds the 1°C range, the temperature does not return to the normal value (infectious diseases).

Febris intermittens (septic temperature): temperature swiftly raises to 39°C, swiftly falls below 37°C, in 24-hour period the difference of the maximum and minimum temperatures is bigger than 1°C (sepsis, e.g. cholangitis, urosepsis, infectious endocarditis).

Febris recurrens - alternation of fever and apyretic periods of various duration.

Febris undulans - periods of raising and falling temperatures alternating with apyretic periods (lymphomas, brucellosis).

Febris efemera - one-day fever is caused by mild advancement of a respiratory infection, by blood transfusion, or by intravenous application of certain drugs.

Febris hectica - long-lasting intermittent temperature, common in tuberculosis.