

MINISTRY OF HEALTHCARE OF UKRAINE  
HSEEU "Ukrainian Medical Stomatological Academy"

**"Approved"**  
at the meeting of internal  
medicine №1 department  
Head of Department  
**Prof. Skrypnyk I.M.**

---

**Protocol № 2 from 15.09.2016**

**GUIDELINES  
FOR STUDENTS  
INDEPENDENT WORK  
IN THE PRACTICAL CLASSES PREPARING**

<i>Academic discipline</i>	Internal medicine
<i>Module</i>	Basics of Internal Medicine
<i>Content module</i>	General questions of Internal Medicine
<i>Study subject</i>	<b>General principles of physiotherapy. Electrotherapy. Phototherapy. Spa treatment.</b>
<i>Course</i>	IV
<i>Faculty</i>	of foreign students training

## THEME BASIS:

Direct electric current of low tension is an adequate irritant for the human organism. Complex biochemical and biophysical processes occur in living tissues of the organism under its influence, providing different physiological reactions, which cause its therapeutic effect.

## EDUCATIONAL AIMS:

### Student must know:

- Physiological and medical effect of electric current;
- Main indications and contra-indications for the medical usage of galvanization and medicinal electrophoresis;
- Kinds of the electrophoresis;
- Electro medical apparatuses.

### Student must be able:

- To prove the necessity of electrical treatment and prescribe proper one (with usage of galvanic current) to the patient;
- To perform the procedures;
- To interpret the procedure effect on organism;
- To combine electrical treatment with other methods of therapy.

Material and methodical theme support: apparatuses, tables, slides.

## SHORT CONTENT OF THE THEME:

Galvanization – medical application of constant electric current with low power and tension characteristics. Galvanic current normalizes the functional state of central and vegetative neural system, by regulation of the inhibition and stimulation processes in cerebral cortex; improves blood and lymph circulation, assists widening of coronary vessels and improves the functional possibilities of the heart; rises oxygen maintenance in blood; rises the maintenance of glycogen and adenosine diphosphoric acid in myocardium; improves the function of inner secretion glands, influences the excitability of neuromuscular system.

General influence of galvanic current is indicated through neural reflexes. Local effects are: antiphlogistic, metabolic, trophic (under cathode); analgetic, sedative (under anode).

Medicinal electrophoresis – combined action of the electric current and medicinal substances on organism. Those medical substances enter tissues through the undamaged skin or mucous tunic under the action of the electric current.

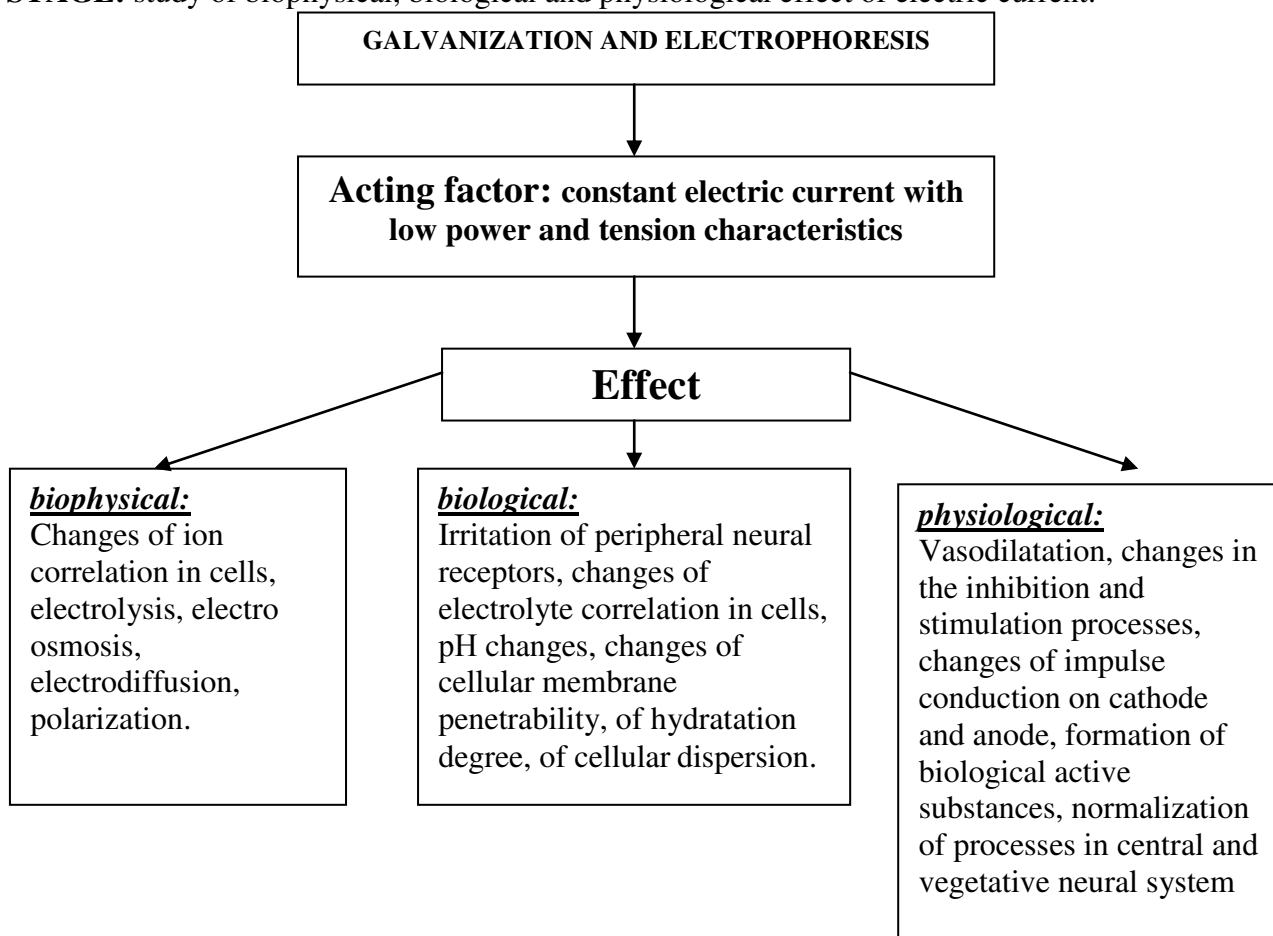
### Kinds of electrophoresis.

According to method and location of influence	According to kind of electrical energy
<i>Through skin:</i> usual (classical) micro, labile, super <i>Intracavitary, enters through the mucous tunic:</i> intranasal, intraoral, intraocular, intra-aural, intra-intestinal, intravaginal, intrauterine, urocystic. <i>Interstitial</i> (intra-organ)	Galvanophoresis electrophoresis under electrosleep diadynamophoresis amplipulsophoresis  aeroionophoresis or franklinophoresis

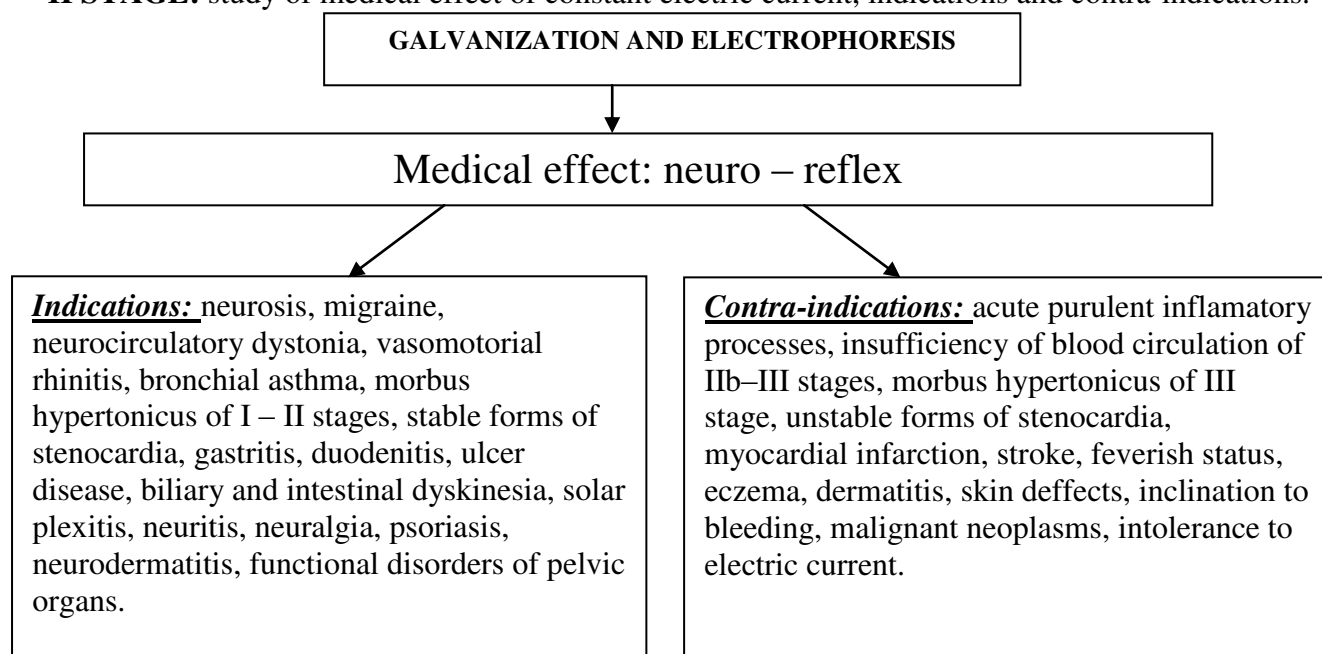
## REFERENCE CARD FOR STUDENTS WORK

(Stages of peculiarities study of the medicinal methods of physiotherapy and choice of medical impact.)

**I STAGE:** study of biophysical, biological and physiological effect of electric current.



**II STAGE:** study of medical effect of constant electric current, indications and contra-indications.



**III STAGE:** study of medicinal methods.

**GALVANIZATION AND ELECTROPHORESIS**

**Medicinal methods**

Local: transversal,  
longitudinal application of  
electrodes

General: by Vermel, by  
Scherbak, by Kassel-  
Graschenko.

Influence on reflexo-  
segmental zones: (by Kellat,  
by Bergonye, by Berganyon),  
influence on Zaharyins –  
Geds zones.

**REFERENCE CARD FOR STUDENTS WORK**

(Stages of diagnostical search)

**I STAGE:** Acquaintance with the patient, his/her case history. Clarification of the complaints, anamnesis, objective examination of the patient, study of the analysis results.

**II STAGE:** Substantiation of the diagnosis, choice of the physiotherapy treatment method.

**III STAGE:** Clarification of indications and contra-indications for galvanization and electrophoresis.

**IV STAGE:** Choice of a specific treatment method according to the indications. Dosing (determination of the electric current power, procedure duration. Choice of medical substance, kind and electric current polarity for the electrophoresis).

**V STAGE:** Procedure realization or assistance.

**VI STAGE:** Evaluation of the procedure results, observation of the patient's condition, temperature, pulse, AP, local manifestations.

**VII STAGE:** Evaluation of the procedure results at the end of treatment

**VIII STAGE:** Evaluation of the physiotherapy significance factor in whole treatment picture. Give recommendations after the treatment course. (Treatment staging, changing one treatment course to another).

## **MATERIALS FOR SELFCONTROL.**

### **SITUATIONAL TASKS.**

1. Patient A., 30 years old. Diagnosis: chronic gastritis with the hypersecretion function of the stomach. Prescribe the proper electrotherapy to the patient.
2. Patient H., 32 years old. Diagnosis: chronic cholecystitis. Prescribe the proper electrotherapy to the patient.
3. Patient K., 43 years old. Diagnosis: bronchial asthma. Prescribe the proper electrotherapy to the patient.

### **Standards of tasks solution.**

1. Galvanization of epigastric region. The patient lies on back. The laying 12 x 16 cm (with anode) is put on the epigastric region and fixated by the bag with sand. Second laying of the same size (with cathode) is put under the back, transversal to the body, lower then the scapulas. Power of the el. current up to 15 mA, duration of the procedure 15 – 20 min., every day, 10 – 15 procedures.
2. Galvanophoresis of gall-bladder region with magnesium sulphate. The patient lies on back. The laiynng saturated with 5% solution of magnesium sulphate, with sizes 10 x 15 cm and anode are put on the right hypochondrium region. Second laying of the same size and cathode are put transversal under the back. Power of the el. current up to 10 mA, duration of the procedure 15 – 20 min., every day, 10 – 12 procedures.
3. General galvanization by Vermel. Anode and laying with the size of 30 cm<sup>2</sup> are put on the interscapular space of the patient, while he lies on the back. Bifurcated cathode and layings (with sizes 10 x 15 cm) are put under gastrocnemius muscles. Power of the el. current up to 30 mA, duration of the procedure 20 min., every day or over the day, 10 – 15 procedures.

## **PRACTICAL SKILLS ACCORDING TO THEME:**

1. Examination of the patients with the substantiation of galvanization and electrophoresis prescription.
2. Fill in the procedure cards.
3. Master the technique and methods of galvanization and electrophoresis.
4. Realization of the procedures under the teacher's control.

## **THEME: *PULSE CURRENT*.**

### **THEME BASIS:**

Usage of pulse current in modern physiotherapy for treatment of different diseases is very perspective, because impulse action in a certain set regime is same with the physiological rhythms of the functioning organs and systems of the organism. Rhythmic influence of pulse current affects the functional condition of different organs and systems.

## **EDUCATIONAL AIMS:**

### **Student must know:**

- Physiological and medical influence of pulse current on organism;
- Main indications and contra-indications for the medical usage of pulse current;
- mechanism of pulse current action;
- Apparatuses for electrical treatment.

### **Student must be able:**

- to use the pulse current with a certain medical aim;
- to substantiate the combination of the electrical treatment (with usage of the pulse current) with other methods of therapy;
- to perform the procedures;
- To be able to estimate the pulse current influence on organism.

## **SHORT CONTENT OF THE THEME:**

Pulse current – the current with the periodically increasing and decreasing magnitude.

The main parameters of the current are:

- a) Frequency of impulse repetition;
- b) Duration of each impulse;
- c) Form of impulses.

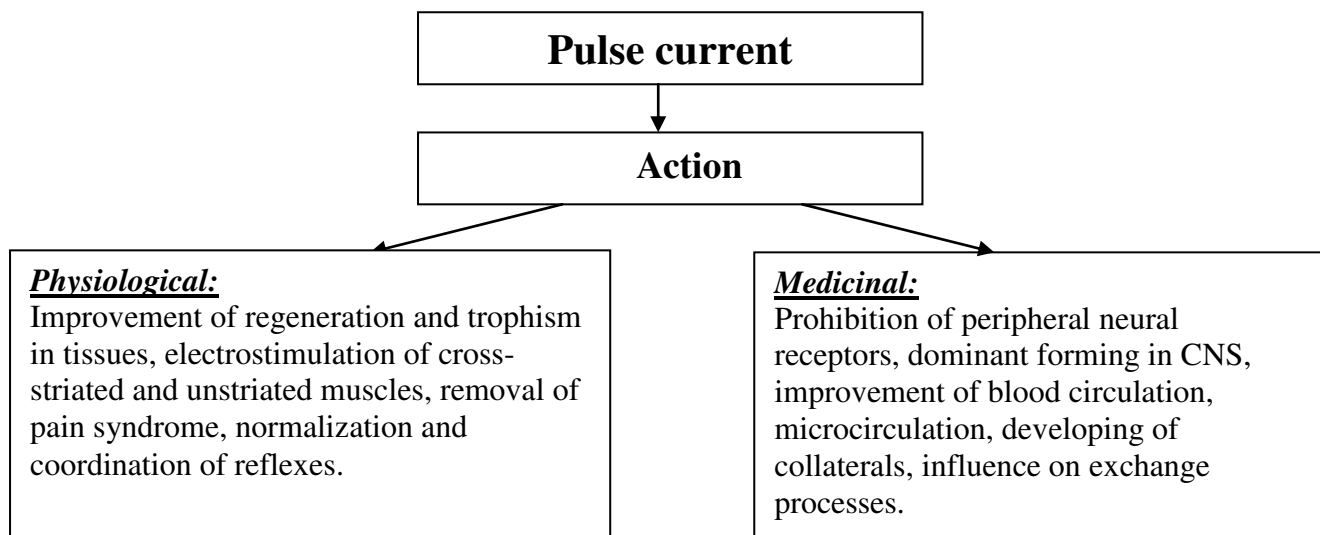
Depending on the characteristics, it can cause stimulatory (that is why pulse current is used for muscle stimulation) or inhibitory (it can be used for performing of electrosleep therapy and electroanalgesia) action.

The combination of stimulatory and inhibitory action of pulse current is used in diadynamic therapy and amplipulse therapy. The pulse current causes: the stimulation of the cells while passing through them and restoration of rest state while it is paused. Physiological reaction on each impulse passing is the muscle constriction under the electrodes. One can get the stimulation of parasympathetic or sympathetic nervous system using different frequency of impulses.

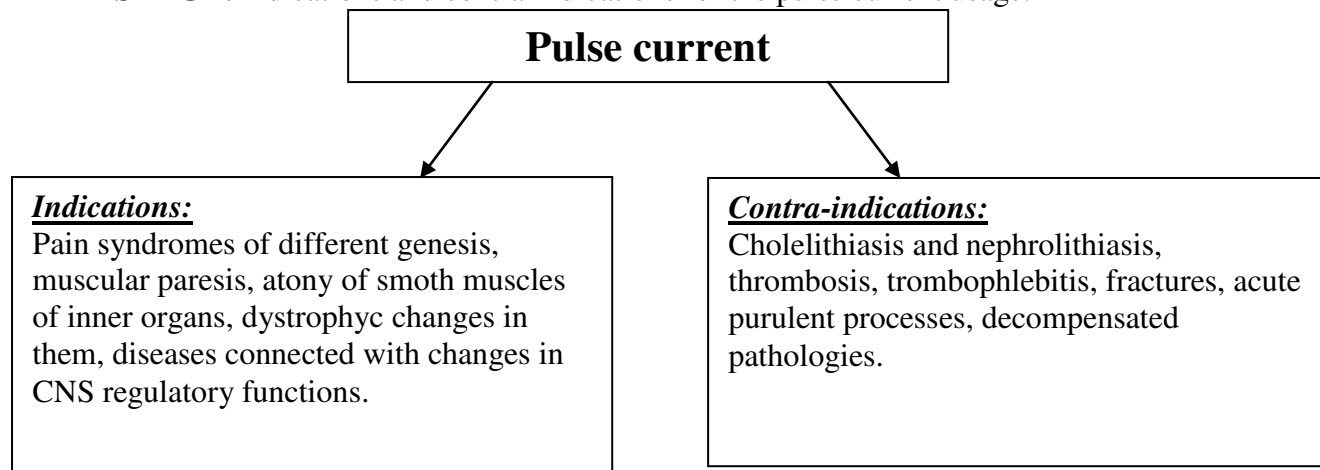
## **REFERENCE CARD FOR STUDENTS WORK**

(Stages of the medicinal methods of physiotherapy features study and choice of medical impact.)

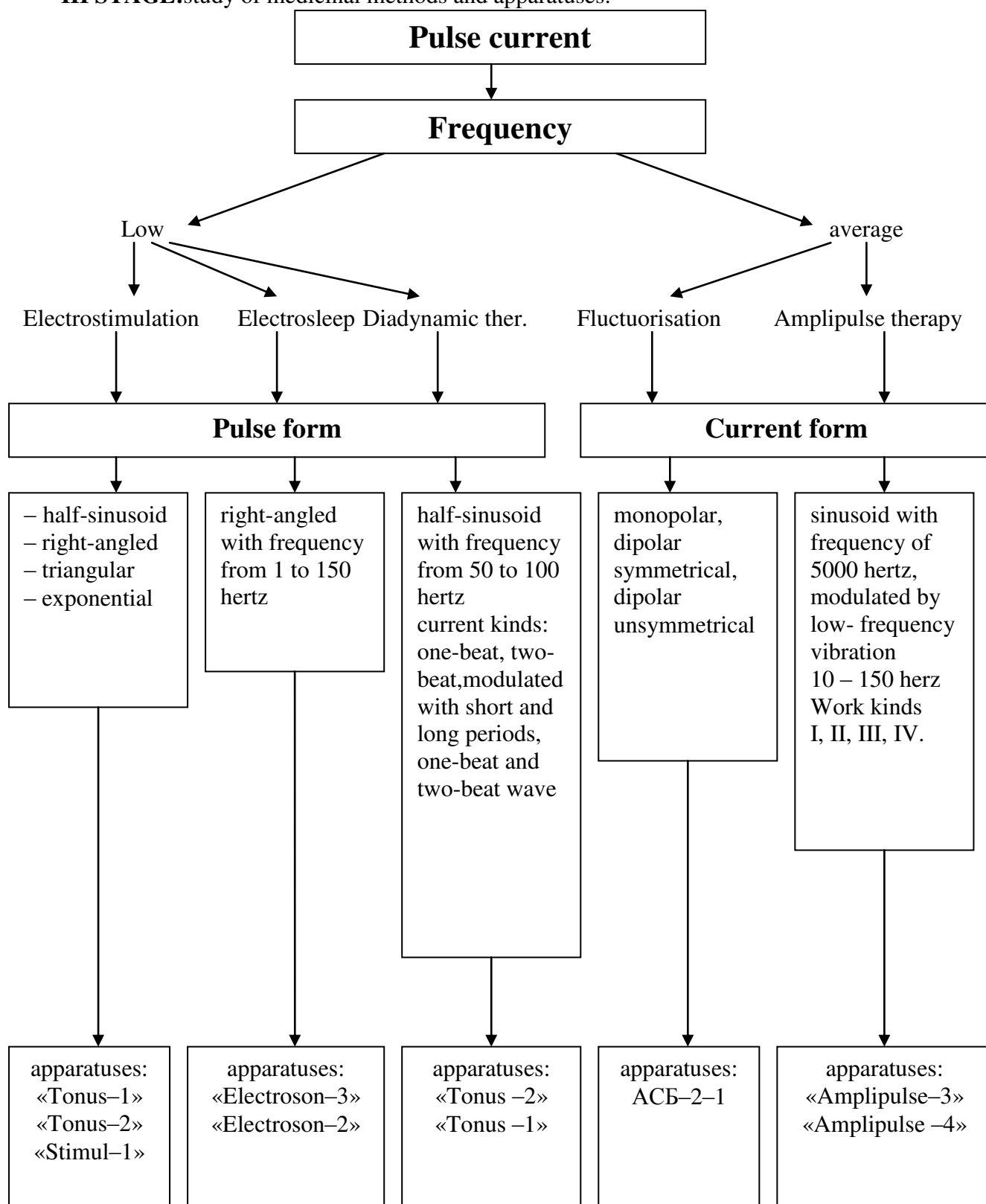
**I STAGE:** study of physiological action of the pulse current.



**II STAGE:** indications and contra-indications for the pulse current usage.



### III STAGE: study of medicinal methods and apparatuses.



## **REFERENCE CARD FOR STUDENTS WORK**

(Stages of diagnostical search)

**I STAGE:** Acquaintance with the patient, his/her case history. Clarification of the complaints, anamnesis, objective examination of the patient, study of the analysis results.

**II STAGE:** Substantiation of the diagnosis, choice of the physiotherapy treatment method.

**III STAGE:** Clarification of indications and contra-indications for impulse therapy prescription.

**IV STAGE:** Choice of a specific treatment method according to the indications. Dosing (pulse form, frequency and duration).

**V STAGE:** Procedure realization or assistance.

**VI STAGE:** Evaluation of the procedure results, observation of the patient's condition, temperature, pulse, AP, local manifestations.

**VII STAGE:** Evaluation of the procedure results at the end of treatment.

**VIII STAGE:** Evaluation of the physiotherapy significance factor in whole treatment picture. Give recommendations after the treatment course (treatment staging, changing one treatment course to another).

## **MATERIALS FOR SELFCONTROL.**

### **SITUATIONAL TASKS.**

1. Patient 45 years old. Diagnosis: CHD: stable exertional angina II functional class. Cardiosclerosis atherosclerotic. What phys. procedure should be prescribed?
2. Patient 30 years old. Diagnosis: Duodenal ulcer with pronounced pain syndrome. Prescribe electrical treatment with usage of pulse current.
3. Patient 37 years old. Diagnosis: osteochondrosis of lumbosacral region. Prescribe the physiotherapeutic treatment.

### **Standards of tasks solution.**

1. Prescription: electrosleep. Electrode position: Bifurcated cathode – on eyelids, bifurcated anode – on mastoid bones. Frequency 5 – 20 hertz, duration – 20 – 40 min., every day, number of procedures – 10.
2. Diadynamophoresis: anode with 2% novocaine solution is put on epigastric region; cathode is situated transverse on back in the region of VII – XII thoracic vertebrae. Current kind – two-beat continuous, current thickness – 0,05 mA/cm, duration – 10 – 15 min, daily, 10 procedures.
3. Amplipulse therapy on waist region. Work regime – unstraight, III kind of work – 3 min, then IV kind of work – 5 min., modulation frequency – 100 hertz, modulation depth – 50%, duration – 2 – 3 sec, daily, number of procedures – 7 – 8.

## **MATERIALS FOR INDEPENDENT AUDITORIUM WORK**

### **PRACTICAL SKILLS ACCORDING TO THEME:**

1. Examination of the patients with the substantiation of pulse therapy prescription.
2. Fill in the procedure cards.

3. Master the technique and methods of electrosleep, diadynamic therapy, amplipulse therapy.
4. Realization of the procedures under the teacher's control.
- 5.

**THEME: *ULTRASOUND THERAPY.***

**THEME BASIS:**

Ultrasound therapy is one of the most widespread procedures in physiotherapy. Ultrasound can change the membrane penetrability; improve the diffusion and osmosis processes; raise the ion, hormone activity, activity of biologically active substances by transferring them into free condition; stimulate the fermentative activity; improve metabolism. Ultrasound has biodegradable, antiphlogistic, analgetic effects.

**EDUCATIONAL AIMS:**

**Student must know:**

- mechanism of ultrasound action on organism;
- physiological and medicinal effects of ultrasound;
- indications and contra-indications for the medical usage of ultrasound;
- apparatuses for the ultrasound therapy.

**Student must be able:**

- To prove the necessity of ultrasound usage in patient treatment;
- To prescribe the treatment using ultrasound therapy.
- To perform the procedures;
- To interpret the procedure effect on organism.

**SHORT CONTENT OF THE THEME:**

Ultrasound is the elastic vibration of physical medium with frequency more than 20 kHz (in other words in supersonic acoustical frequency range), which spread as alternate compressings and stretchings of the medium. Ultrasound, used in medical practice, has range from 800 to 900 kHz. Max absorption of ultrasound energy is observed in bone tissue, on the tissue borders, on the inner cell membrane.

Intensity of the ultrasound action is in direct dependence on vibration amplitude, oscillatory speed and amplitude of pressure change.

Ultrasound can change the membrane penetrability; improve the diffusion and osmosis processes; raise the ion, hormone activity, activity of biologically active substances by transferring them into free condition.

Ultrasound can be reflected by thinnest air layers. That is why the airless contact surroundings (oil vaselini, degas water etc) must be used for the performance of ultrasound therapy.

Combined action of ultrasound and medicinal substances, which are inserted into organism through undamaged skin with the help of ultrasound, is called medicinal phonophoresis.

**REFERENCE CARD FOR STUDENTS WORK**

(Stages of the medicinal methods of physiotherapy features study and choice of medical impact.)

**I STAGE:** study of the mechanisms of ultrasound action on organism.

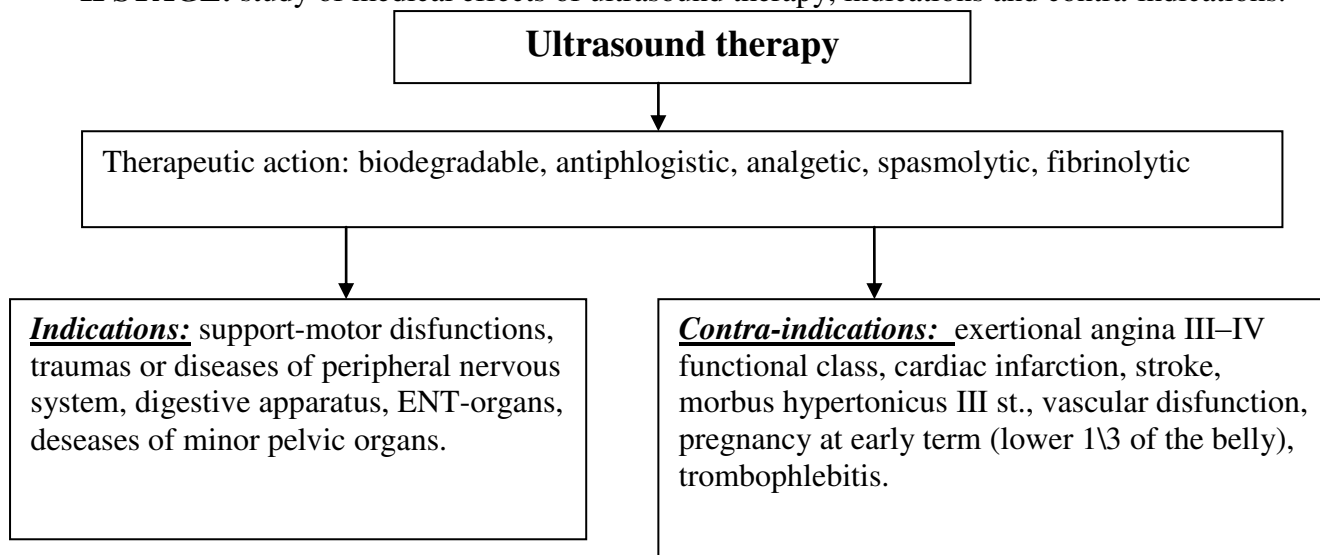
## Ultrasound therapy

Action

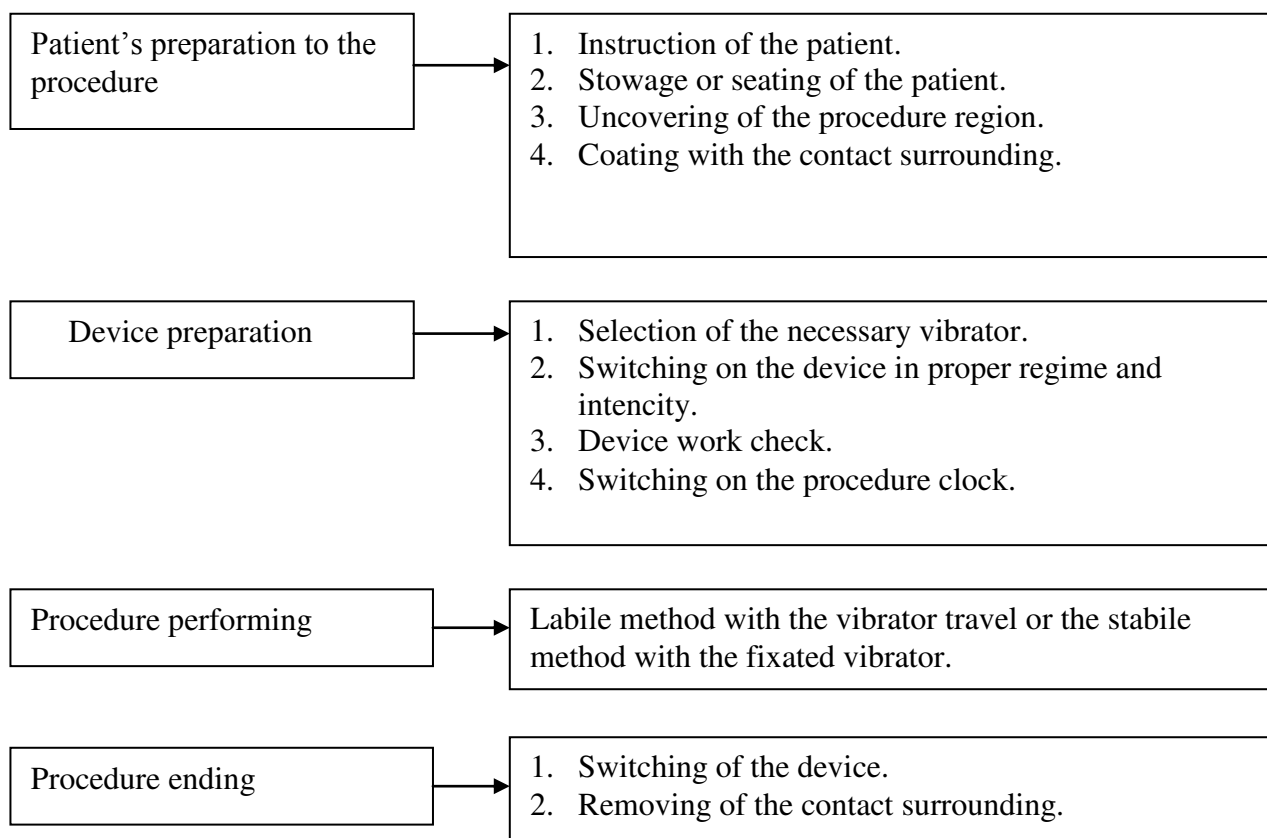
**Biophysical: mechanical, thermal, physicochemical.**

**Physiological:** micromassage of cells and tissues, change of the membrane penetrability, diffusion and osmosis in cells, changes in acid-base equilibrium, transfer of zoles into gels, widening of blood vessels, improvment of blood, stimulation of methabolism in tissues, formation of biologically active substances, acceleration of the redox processes, stimulation of methabolism in cells, and improvment of the tissue respiration.

**II STAGE:** study of medical effects of ultrasound therapy, indications and contra-indications.



**III STAGE:** the ultrasound method succession.



## REFERENCE CARD FOR STUDENTS WORK

(Stages of diagnostical search)

**I STAGE:** Acquaintance with the patient, his/her case history. Clarification of the complaints, anamnesis, objective examination of the patient, study of the analysis results.

**II STAGE:** Substantiation of the diagnosis, choice of the physiotherapy treatment method.

**III STAGE:** Clarification of indications and contra-indications for ultrasound treatment.

**IV STAGE:** Choice of a specific treatment method accordingly to the indications (choice of the contact surrounding, labile or stabile method). Dozing (intensity, generation regime).

**V STAGE:** Procedure realization or assistance.

**VI STAGE:** Evaluation of the procedure results, observation of the patient's condition, temperature, pulse, AP, local manifestations.

**VII STAGE:** Evaluation of the procedure results at the end of treatment

**VIII STAGE:** Evaluation of the physiotherapy significance factor in whole treatment picture. Give recommendations after the treatment course (treatment staging, changing one treatment course to another).

## **MATERIALS FOR SELFCONTROL.**

### **SITUATIONAL TASKS.**

1. Patient K. 28 years old. Diagnosis: acute pneumonia of lower lobe of right lung.  
Prescribe electrotreatment.
2. Patient H. 62 years old. Diagnosis: osteoarthritis with preferential affection of the ankle-joint.  
Prescribe electrotreatment.

### **Standards of tasks solution.**

1. Ultrasound action on the inflammatory focus (lower lobe of right lung). Contact straight, method labile, regime continuous. Intensity 0, 1 – 0, 6 Wt/cm duration 5 min., daily, 5 – 10 procedures.
2. Ultrasound action on the the ankle-joint. , method labile, regime continuous. Action through water. Distance from vibrator to ankle-joint 1 – 2 cm, action from all sides. Intensity 0,4 – 0,8 Wt/cm, procedure duration 5 – 8 min., the procedures are made every other day, 8 – 10 procedures.

### **PRACTICAL SKILLS ACCORDING TO THEME:**

1. Examination of the patients with the substantiation of ultrasound therapy prescription.
2. Give the prescription of the ultrasound therapy to the patient.
3. Master the technique and methods of ultrasound therapy.
4. Realization of the procedures under the teacher's control.

## **THEME: *HIGH-FREQUENCY CURRENTS AND EL.FIELDS***

### **THEME BASING:**

Important role in electrical treatment belongs to the methods which are based on usage of high-frequency variable electromagnetic vibrations. Scientific and technical progress, development of electronics greatly enriched this section of physiotherapy. The action of high-frequency electrical fields leads to different effects in organism: antiphlogistic, biodegradable, analgesic. That makes possible to use them in medical practice for treatment of different diseases on different stages of their development.

## **EDUCATIONAL AIMS:**

### **Student must know:**

- Biophysical effects of high-frequency electrical fields action;
- Physiological and medical effect of high-frequency electrical fields;
- Indications and contra-indications for the medical usage.

### **Student must be able:**

- to use the high-frequency electrical fields with a certain medical aim;
- to work with the devices;
- to perform the procedures;
- to be able to estimate the high-frequency electrical fields influence on organism.

## **SHORT CONTENT OF THE THEME:**

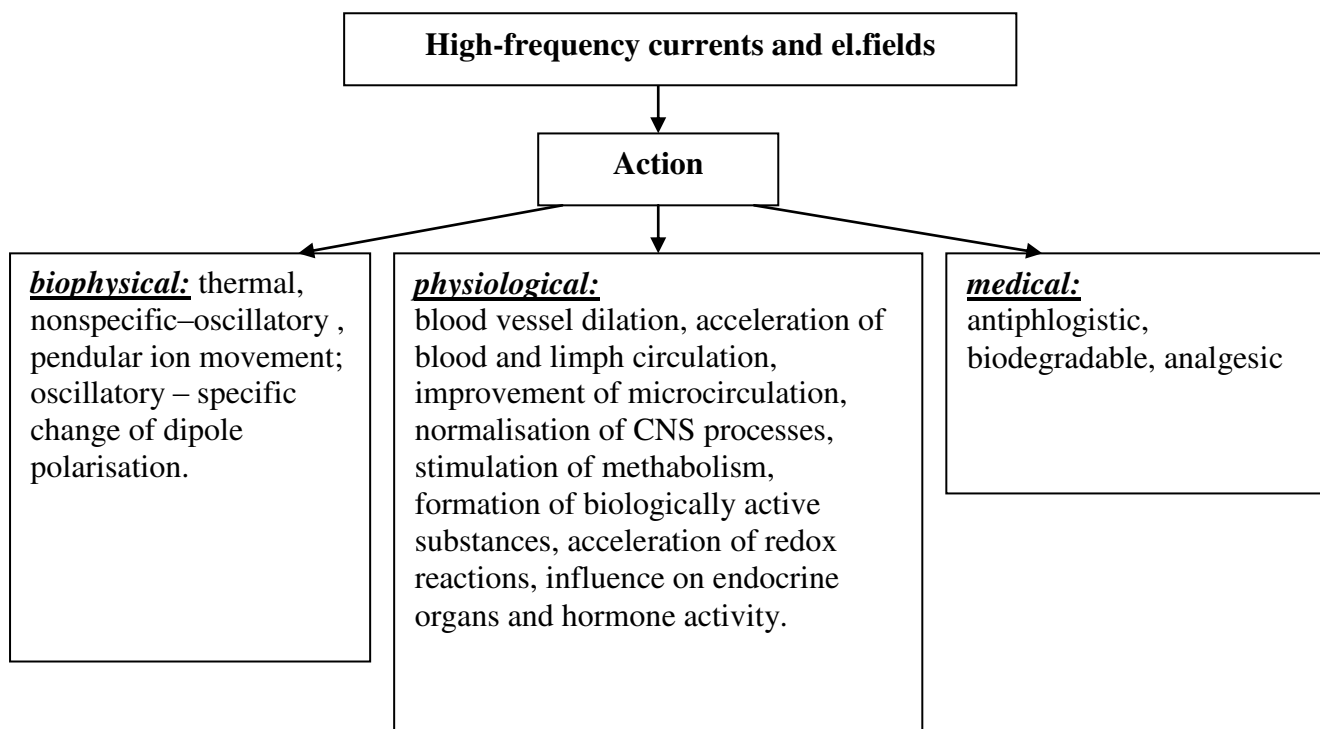
Under the high-frequency electrical fields action one can see the arrangement of the pendular oscillatory current movement in tissues. Mechanical energy of that movement transfers into thermal energy that leads to the formation of the endogenous heat in tissues. The great value in electromagnetic vibrations effect on organism belongs to the oscillatory effect. Its essence is the following: the molecules of tissues-dielectrics are dipols (they are electro-neutral and conduct electrical current badly), however their positive and negative charges are displaced towards their poles. One can see spatial re-orientation (polymerization) of dipols in accordance with frequency of field tension change when molecules enter variable electro-magnetic field. The influence of high-frequency electromagnetic field produces oscillatory movements of dipols of dielectrics, that leads to unfolding of molecule chains and changes of their physicochemical properties. The higher is the frequency of the electromagnetic vibration – the greater is the oscillatory effect.

The high-frequency therapy provides destructive effects on the thermolabile microorganisms (bacteriostatic effect); improves immunity by activation of the glucocorticoid function of the adrenal gland and stimulation of the phagocytosis; takes off the blood vessel spasm, improves the microcirculation and metabolism by ferment activation, accelerates the redox reactions.

## **REFERENCE CARD FOR STUDENTS WORK**

(Stages of study of action mechanisms and medical effects of high-frequency currents and el.fields)

**I STAGE:** Study of biophysical, physiological and medical effect of high-frequency currents and el.fields



## II STAGE: indications and contra-indications

### High-frequency currents and el.fields

#### indications:

inflammatory diseases of different organs and tissues, commisures and unions, degenerative-dystrophic damage of joints and vertebral column, functional diseases of n. system, neuralgia, muscle spasm, traumatic tissue damage.

#### Contra-indications:

disorders in pain and thermal sensitivity, syringomyelia, infectious diseases, bleeding disposition, malignant formations, insufficiency of blood circulation of IIb–III stages, myocardial infarction, stenocardia, morbus hypertonicus of III stage, praesens of heart implants, metallic objects, pregnancy, CHAPP breakdown liquidators.

## III STAGE: study of electromagnetic vibration diapasons, methods and devices.

Type of treatment	Range of electromagnetic vibration		method	devices		Fixated working frequency
	Frequen- cy	wave- length		fixed	portative	
Rf – therapy	30 kHz – 30 MHz	10km – 10m	Current of supertonal frequency; d'arsonvalization, inductothermy	ДКБ–2 ИКБ–4	Ultratok; Iskra1 Iskra 2	22 kHz 110 kHz 13,56 MHz
UHF – therapy	30 MHz	10 m – 1m	El. field UHF	UHF–300, Ekran 2, Impulse 2 Impulse 3	UHF66 UHF62 UHF 4	40,68MHz
Microwa- ve therapy	300MHz 3000 MHz 100MHz	1m– 10cm 10cm – 1cm, 1– 10mm	ДМБ – therapy, СМБ – therapy, EHF – therapy,	Volna 2, Lych 58, Porog 1	Romashka Lych–2 Yav–1	460 MHz 2375 MHz 57–65 GGz

## REFERENCE CARD FOR STUDENTS WORK

(Stages of diagnostical search)

**I STAGE:** Acquaintance with the patient, his/her case history. Clarification of the complaints, anamnesis, objective examination of the patient, study of the analysis results.

**II STAGE:** Substantiation of the diagnosis, choice of the physiotherapy treatment method.

**III STAGE:** Clarification of indications and contra-indications.

**IV STAGE:** Choice of a specific treatment method according to the indications. Dosing.

**V STAGE:** Procedure realization or assistance.

**VI STAGE:** Evaluation of the procedure results, observation of the patients condition, temperature, pulse, AP, local manifestations.

**VII STAGE:** Evaluation of the procedure results at the end of treatment.

**VIII STAGE:** Evaluation of the physiotherapy significance factor in whole treatment picture. Give recommendations after the treatment course. (treatment staging, changing one treatment course to another).

## **MATERIALS FOR SELFCONTROL.**

### **SITUATIONAL TASKS.**

1. Patient JI. 60 years old. Diagnosis: trofic shank ulcer.  
Prescribe electrotreatment.
2. Patient H. 20 years old. Diagnosis: acute bronchitis.  
Prescribe electrotreatment.
3. Patient A. 30 years old. Diagnosis: chronic bronchitis.  
Prescribe electrotreatment.

### **Standards of tasks solution.**

1. Ulcers region d'arsonvalization. Influence upon the skin round the ulcer (on distance of 5-10 cm), and ulcer itself for 5-10 minutes (low or average intensity) with fungiform electrode. Treatment course – 10 – 15 procedures daily or every other day.
2. UHF of the thoracic region. Capacitor plates with diameter = 16cm are put behind and in front of the thorax with air clearance = 3 cm each. Dosing – the patient must not feel heat. Procedure duration – 10 – 15 minutes, daily or every other day, treatment course -10 - 15 procedures.
3. Microwave therapy of the maxillary sinus region. Cilindric vibrator (from «Luch – 58» device) with diameter = 3,5 cm is put on the maxillary sinus region. Dosing – up to 3 Wt, daily or every other day, 8 –10 procedures.

## **MATERIALS FOR INDEPENDENT AUDITORIUM WORK**

### **PRACTICAL SKILLS ACCORDING TO THEME:**

1. Examination of the patients with the substantiation of high-frequency electrical field therapy prescription..
2. Write out the prescriptions and fill in the procedure cards.
3. Realization of the procedures under the teachers control.

## **THEME: AEROSOL THERAPY AND AEROIONOTHERAPY.**

### **THEME BASIS:**

Aerosols are widely used in different branches of national economy and medicine. Medicinal particles dispersed in air or other gas environments are used to influence on different body parts: skin, mucous tunics and wound regions. The aerosols widely used in physiotherapy to influence the mucous tunics of the respiratory system by means of the inhalation.

Aeroions – are the particles of the atmospheric air, which transfer positive and negative electric charges. In natural conditions aeroions are produced under the influence of solar, space radiation and other factors. Aeroions are the obligatory part of the atmosphere which have beneficial action on organism. Ionized air influences the health and work capacity greatly.

## **EDUCATIONAL AIMS:**

### **Student must know:**

- Biophysical basing of aerosol therapy and aeronotherapy.
- Medicinal and physiological effects of aerosol therapy and aeronotherapy.
- Indications and contra-indications;

### **Student must be able:**

- To prove the necessity of aerosol therapy and aeronotherapy in patients treatment;
- To prescribe the treatment;
- To perform the procedures.

## **SHORT CONTENT OF THE THEME:**

Aerosol therapy is a method based on breathing with the medicinal particles (fluid or solid) dispersed in air or other gas environments.

Aerosol effect depends on dispersion of the particles. The smaller the particles are the bigger the interaction square of medical substances with the mucous tunics and the depth of their penetration into the respiratory tract (the particles with diameter = 5 mcm and less reach alveoles, up to 30mcm – form a sediment in trachea, bigger then 30mcm are held in nasal ducts and nasopharynx) is. The result of great dispersion is the rise of the medicinal activity of the spread substance because of the increased contact square, bettered absorption and entrance in blood and limph. Due to inhalation the medicinal substance has both local and general effects on organism.

Aeroionotherapy – is the method of influence on mucous tunics of respiratory system or skin with aeroions of different charges (negative charges are used more often).

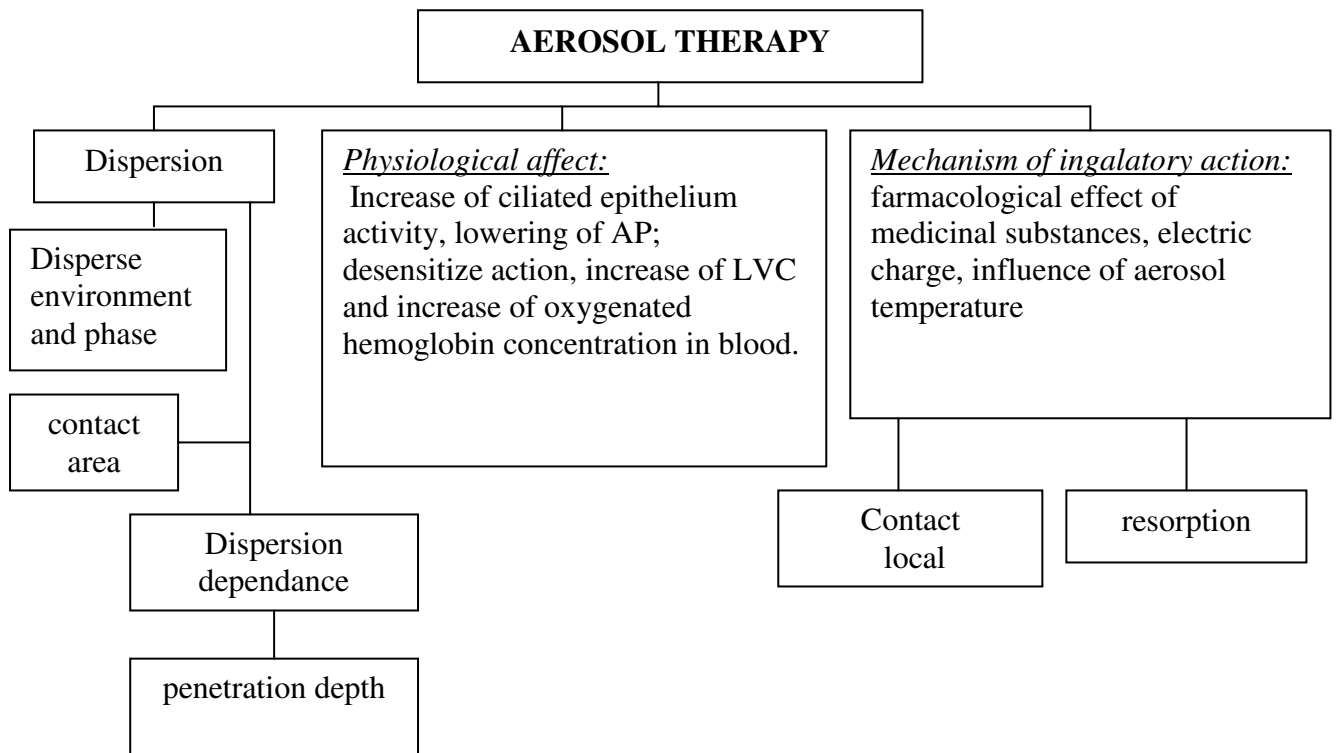
Beneficial action of aeroions (especially negative) is marked in treatment of allergic diseases and diseases of nervous system. Also there is therapeutic action of aeroions on skin, respiratory ducts, blood, limph and protoplasm.

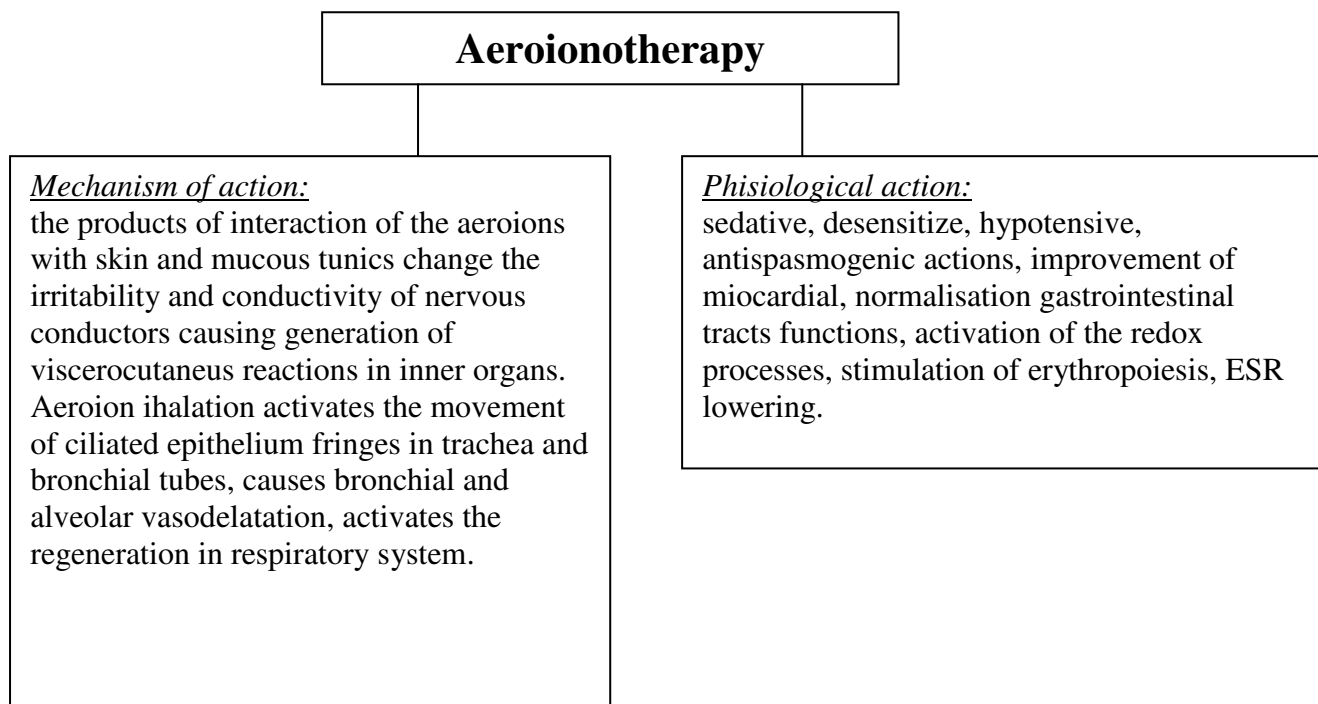
Ionized air affects the human health, improves the work capacity, takes down the tiredness, headaches and improves sleep.

## **REFERENCE CARD FOR STUDENTS WORK**

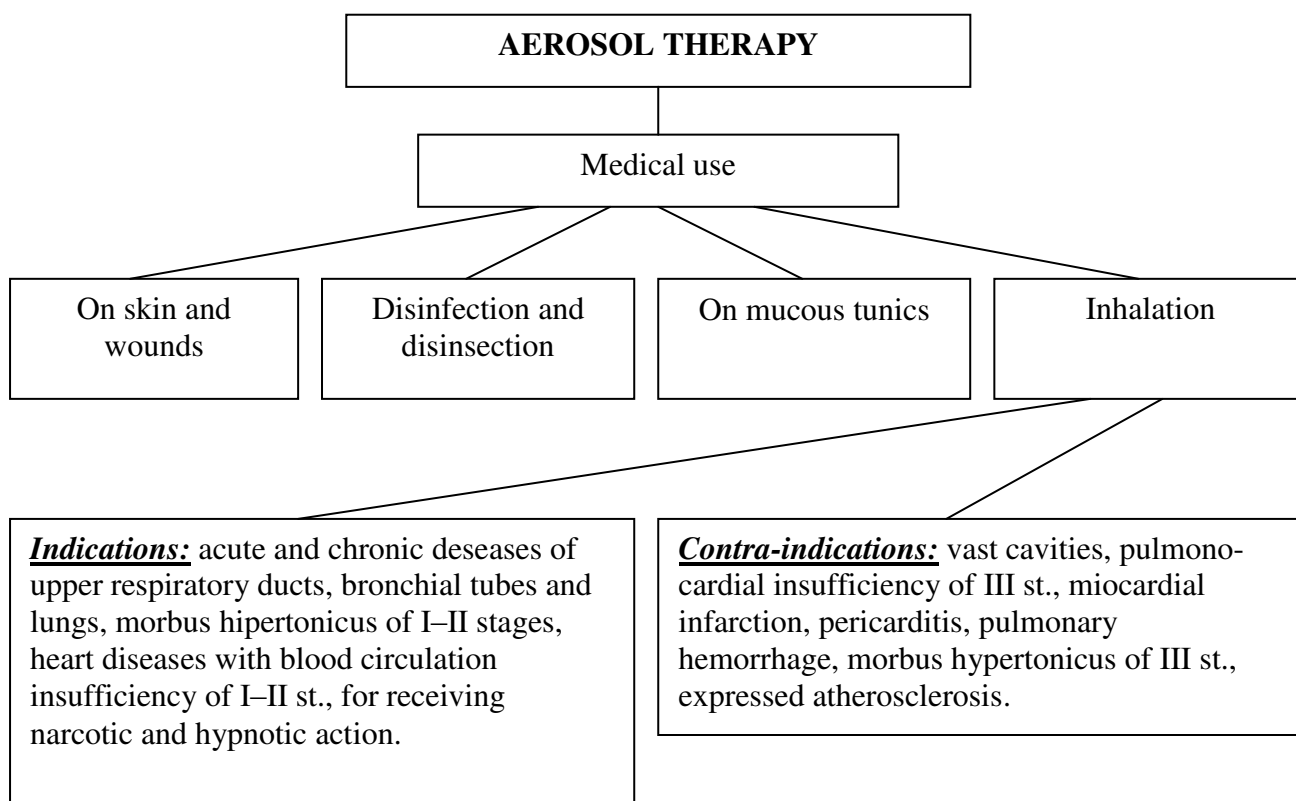
(Stages of aerosol therapy and aeronotherapy effects study.)

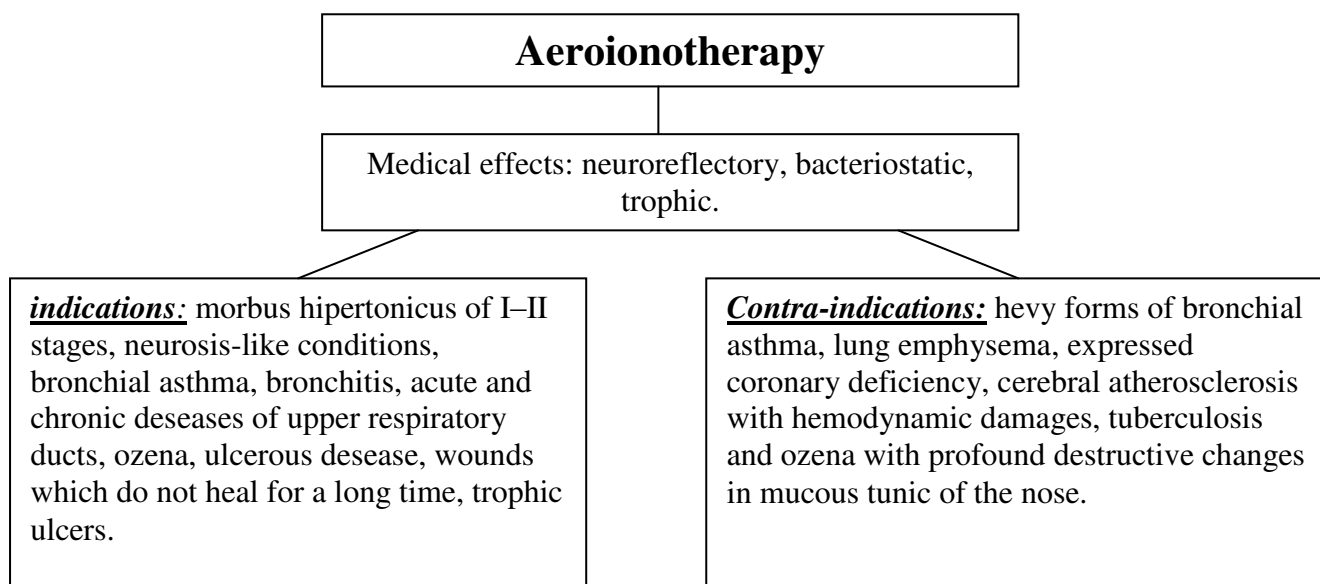
**I STAGE:** study of affect mechanisms of aerosol therapy and aeronotherapy



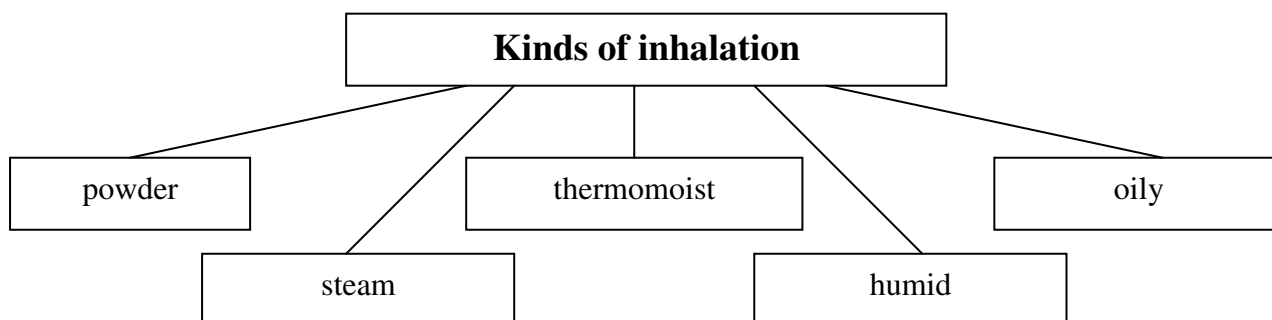
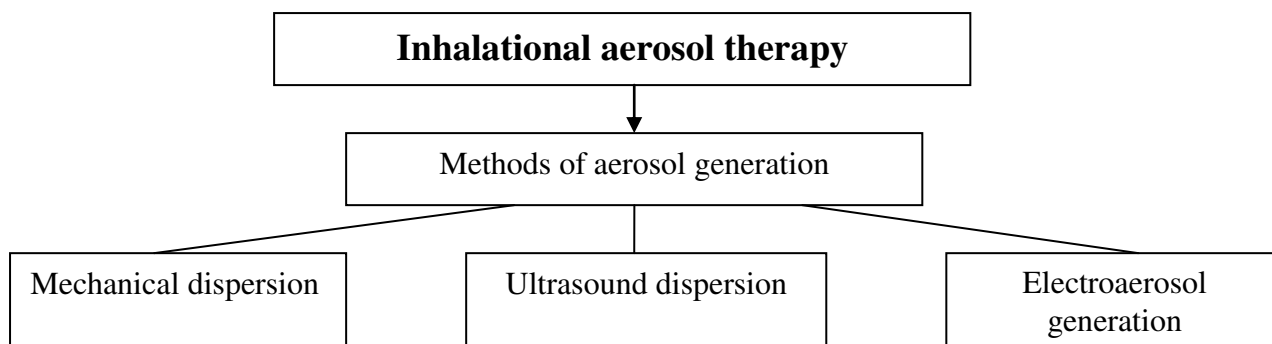


**II STAGE:** study of medical effect of aerosol therapy and aeronotherapy.

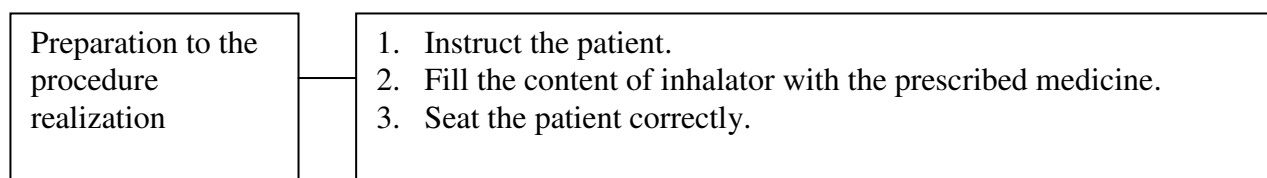


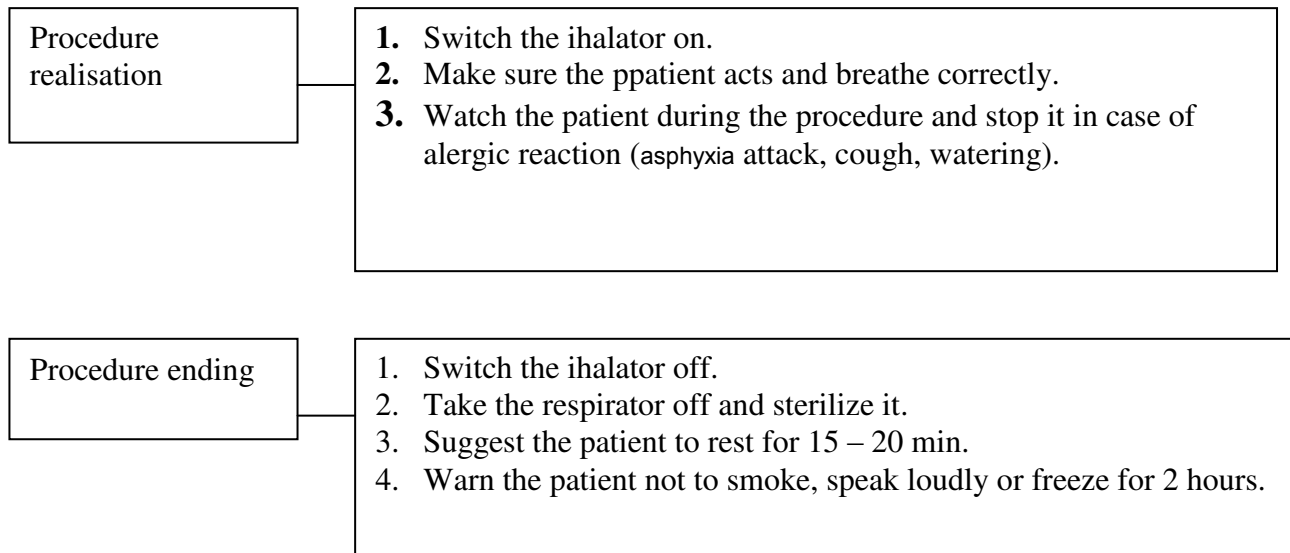


**III STAGE:** study of medical methods and equipment.



**Scheme of inhalation realization:**





## REFERENCE CARD FOR STUDENTS WORK

(Stages of diagnostical search)

**I STAGE:** Acquaintance with the patient, his/her case history. Clarification of the complaints, anamnesis, objective examination of the patient, study of the analysis results.

**II STAGE:** Substantiation of the diagnosis, choice of the physiotherapy treatment method.

**III STAGE:** Clarification of indications and contra-indications for the aerosol therapy and aeronotherapy.

**IV STAGE:** Choice of a specific treatment method accordingly to the indications. Dosing.

**V STAGE:** Procedure realization or assistance.

**VI STAGE:** Evaluation of the procedure results, observation of the patient's condition, temperature, pulse, AP, local manifestations.

**VII STAGE:** Evaluation of results at the end of treatment

**VIII STAGE:** Evaluation of the physiotherapy significance factor in whole treatment picture. Give recommendations after the treatment course. (Treatment staging, changing one treatment course to another).

## MATERIALS FOR SELFCONTROL:

### SITUATIONAL TASKS:

Patient H. 40 years old. Diagnosis: Morbus hipertonicus of the II st.  
Prescribe physiotherapy.

Patient B. 30 years old. Diagnosis: Chronic catarrhal bronchitis.  
Prescribe physiotherapy.

**Standards of tasks solution.**

1. Aeroionization of the face. Electrode-ionizator is put on the distance of 15 cm. from patients face. Patient sits on a wooden chair. Second electrode is situated under the patients feet. The face is the aim of the airoion action. Current tension – 30 –40 kW. Procedure duration 10 – 15 minutes. Treatment course 12 – 15 procedures.
2. Thermomoist inhalation with the solutions of: hydrogen carbonate of natrium -2,0, natrii chloridi -1,0, distilled water – 100ml for one. Aerosol temperature 38–42°C, duration 10 min. treatment course - 10 procedures, daily.

**MATIRIALS FOR INDEPENDENT AUDITORIUM WORK****PRACTICAL SKILLS ACCORDING TO THEME:**

1. Examination of the patients with the substantiation of aerosol therapy or aeronotherapy prescription.
2. Write out the prescriptions and fill in the procedure cards.
3. Realization of the procedures under the teachers control.

## **THEME: PHOTOTHERAPY**

### **THEME BASIS:**

Phototherapy consists of dosed influence of infrared, ultra-violet and visible radiation on the organism.

Almost all living processes on Earth happen in the light environment.

Sun is the source of light and the light is the source of life on our planet. By the physical properties light is the flow of electromagnetic vibrations in optic diapason, such vibrations are radiated by separate portions called quanta, which possess different energy.

Absorption of the quantum energy by the tissues and its transformation into other energy kinds first of all into thermal and biochemical energy (which affect organism on local and general levels) is in the foundation of biological action of the light.

### **EDUCATIONAL AIMS:**

#### **Student must know:**

- Principle of picking up of the biodose;
- Features of the bactericide and bacteriostatic effects of the UV;
- Mechanisms of ultra-violet and infrared radiation action;
- Mechanisms of laser therapy action;
- Indications and contra-indications to the phototherapy.

#### **Student must be able:**

- To determine the biodose;
- To use the devices for the phototreatment;
- To create the scheme for the phototreatment.

### **SHORT CONTENT OF THE THEME:**

Phototreatment is the use of radiant energy of sun and the artificial light sources with medical and prophylactic aims.

When the radiant energy falls on the skin it is divided into two parts, one of them is reflected and other one is absorbed by the organism. The absorbed quantum energy is transformed into chemical and thermal energy.

The main effect of infrared radiation is thermal one. Visible radiation of different wave-length diapasons causes different color sensations. In red diapason it approaches infrared radiation effects (including thermal one), in violet diapason it approaches ultra-violet radiation effects causing the photochemical reactions.

Violet part of visible radiation spectrum differs by the chromogenic action; blue one has some sort of bactericide action. Violet and blue radiation treatment lowers the excitability of the nervous centres, while red radiation raises it.

Ultra-violet radiation absorbed by skin affects nervous fibers in it and its metabolism.

#### **Kinds of phototreatment.**

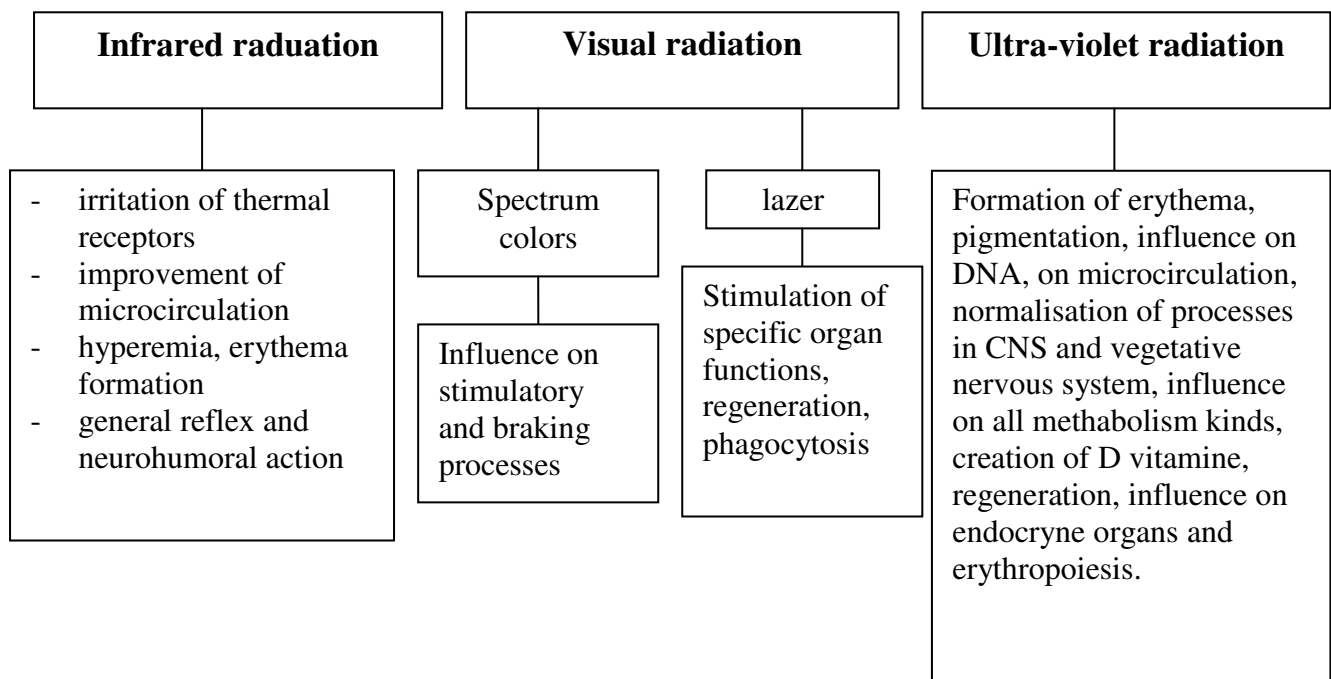
	Infrared radiation	Visual radiation	Ultra-violet radiation
wave-length	760nm – 340mcm	760 – 400nm	400 – 180nm
penetration depth	2 – 3 cm	Up to 1 cm	Up to 1 mm
Biophysical action	Thermal	thermal, photoelectric	photoelectric, photochemical

Kinds of radiation	long-wave (more then 1400nm)  short-wave 1400–760nm	Colors: red, orange, yellow, green, blue, violet.  monochrome coherent.	– long-wave (LWUV) 400 – 315nm –middle-wave (MWUV) 315 – 280nm –short-wave (SWUV) 280 – 180nm
Sources of radiation	Incandescent lamps: Минина, solux, aerial lamp	Incandescent lamp, laser	Arc light lamps

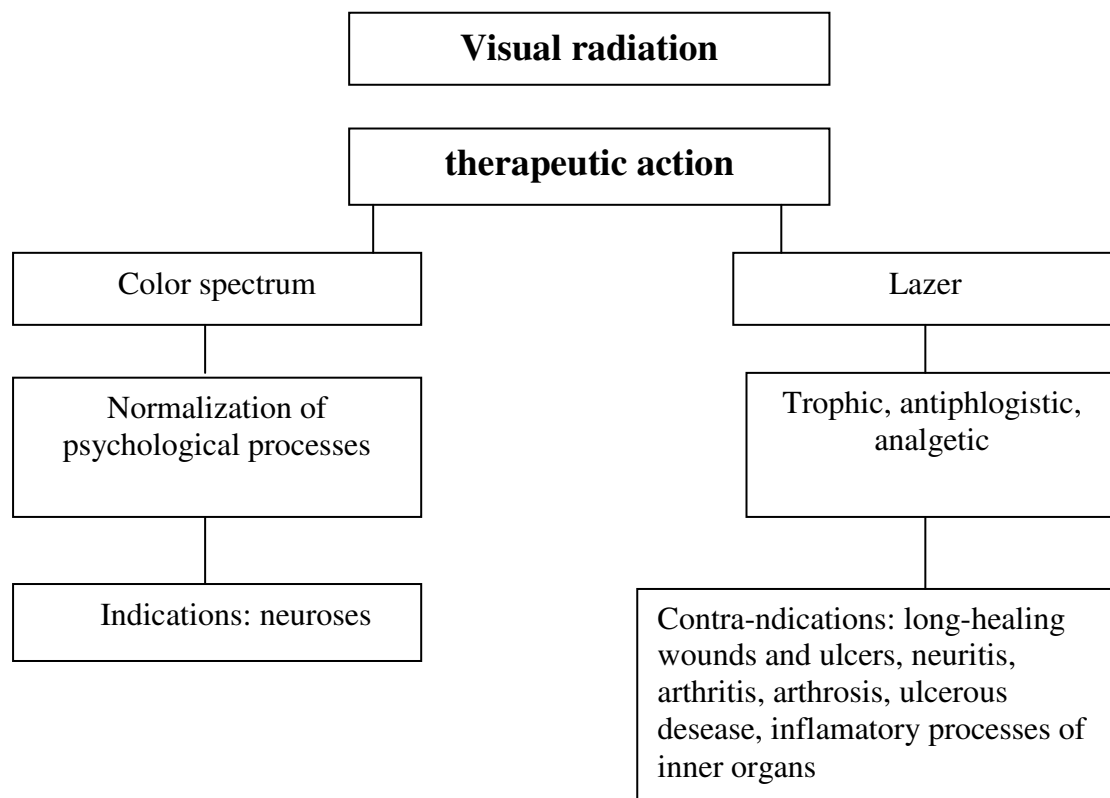
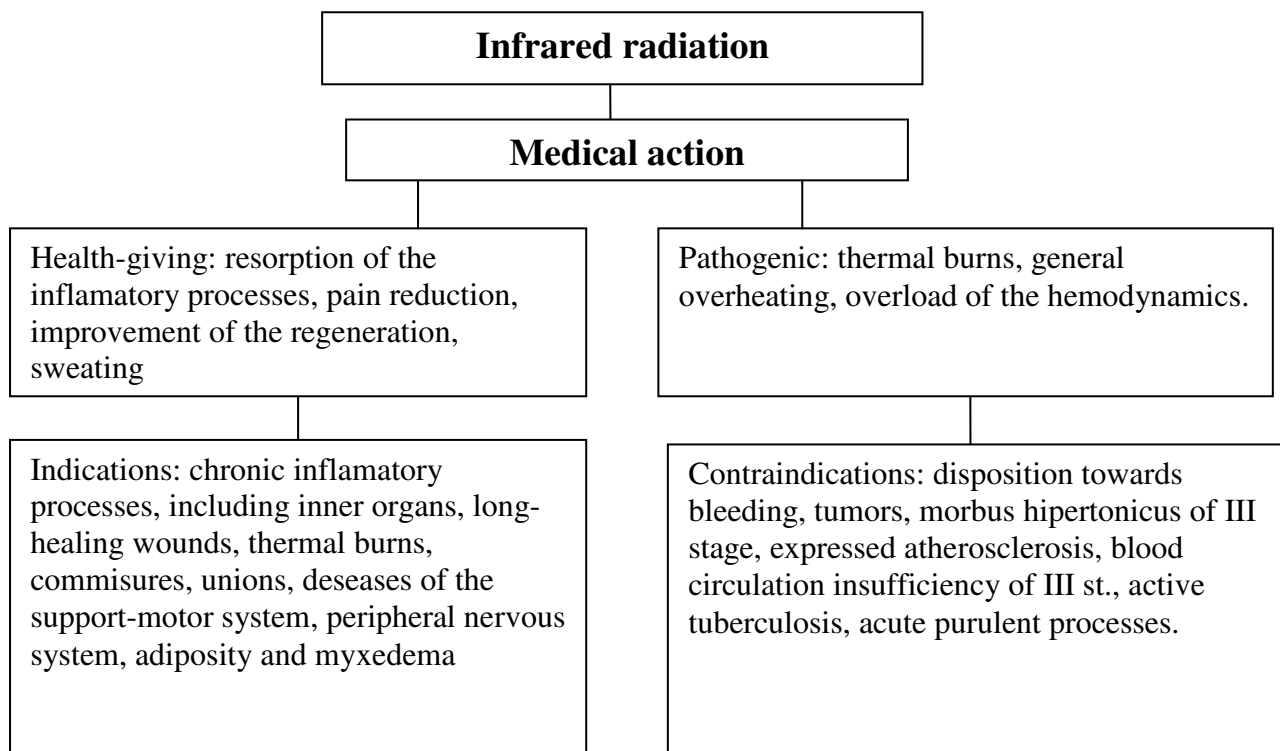
## REFERENCE CARD FOR STUDENTS WORK

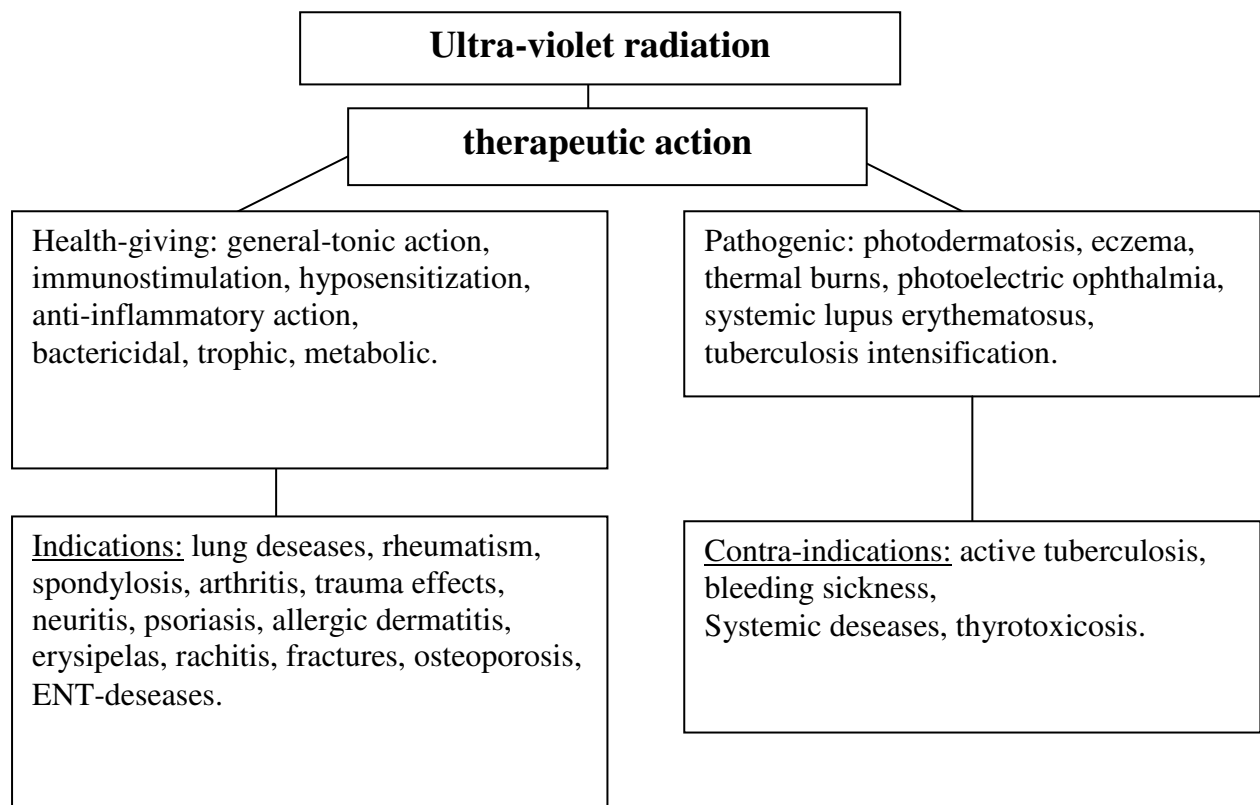
(Stages of phototreatment action mechanisms and methods study)

**I STAGE:** phototreatment action mechanisms study.



**II STAGE:** study of the medical action of the phototherapy.





## REFERENCE CARD FOR STUDENTS WORK

(Stages of diagnostical search)

**I STAGE:** Acquaintance with the patient, his/her case history. Clarification of the complaints, anamnesis, objective examination of the patient, study of the analysis results.

**II STAGE:** Substantiation of the diagnosis, choice of the physiotherapy treatment method.

**III STAGE:** Clarification of indications and contra-indications for impulse therapy prescription.

**IV STAGE:** Choice of a specific treatment method accordingly to the indications. Dosing.

**V STAGE:** Procedure realization or assistance.

**VI STAGE:** Evaluation of the procedure results, observation of the patient's condition, temperature, pulse, AP, local manifestations.

**VII STAGE:** Evaluation of the procedure results in the end of treatment.

**VIII STAGE:** Evaluation of the physiotherapy significance factor in whole treatment picture. Give recommendations after the treatment course (treatment staging, changing one treatment course to another).

## MATERIALS FOR SELFCONTROL.

### SITUATIONAL TASKS.

1. Patient K., 60 years old. Diagnosis: chronic pyelonephritis.  
What phototreatment method should be prescribed?
2. Patient H., 32 years old. Diagnosis: chronic bronchitis.  
Prescribe phototreatment.

3. Patient B., 65 years old. Diagnosis: trophic ulcer of right shank.  
Prescribe phototreatment.

### **Standards of tasks solution.**

1. Radiation of kidney projection region by infrared rays. The patient lies on the belly. Reflector of the fixed solux lamp is set on the distance of 60-80 cm from the point of kidney projection on the back. Electrical lamp output = 500-750 Wt. Procedure duration – 15-20 minutes daily.
2. Ultra-violet radiation treatment of trachea and bronchus regions. The patient lies. Two fields are treated per day: the front neck surface and upper half of the thorax 2-3 biodoses; back surface of the neck and interscapular space 3-4 biodoses. Over 1 – 2 days, 2 – 3 procedures.
3. Ultra-violet radiation treatment of the ulcer region. Dose -  $\frac{1}{2}$  –  $1\frac{1}{2}$  of the biodose with 2-3 day intervals. The treatment is realized not only at the ulcer surface but at the surrounding undamaged skin, too. The treatment course from 3 – 4 to 10 procedures.

### **MATERIALS FOR INDEPENDENT AUDITORIUM WORK**

#### **PRACTICAL SKILLS ACCORDING TO THEME:**

1. Examination of the patients and determination of the indications and contra-indications for the phototreatment.
2. Write out the prescriptions and fill in the procedure cards .
3. Determine the biodose.
4. Master the procedure realization process.

#### **THEME: *HEAT-WATER THERAPY.***

#### **THEME BASING:**

Water-cure and heat-cure are very important parts in physiotherapy and balneology. These methods are widely used in medical practice, prophylactic and rehabilitative medicine.

These kinds of therapy are tightly bounded with natural health-giving factors. They influence on the nervous and vasal systems of the organism, metabolism processes and functions of the endocrine glands.

The sections «water-cure» and «heat-cure» are tightly connected with the notion of the “heat” like one of the main medical factors of the method and the “water” like one of the carriers of this factor. However almost all water-cure and heat-cure procedures have mechanical and chemical actions, besides the heat action.

#### **EDUCATIONAL AIMS:**

##### **Student must know:**

- Biophysical action of water-cure procedures;
- Physiological basing of heat and cold affect on organism;
- Physico-chemical characteristics of heat-carrying environments;
- Mechanisms of water-heat therapy action;
- Indications and contra-indications;

##### **Student must be able:**

- To explain water therapy action on organism;
- To choose needed method of water-cure;
- To explain the main principles of heat transmission and heat exchange;
- To use ozocerite, therapeutic muds with medical purposes.

## SHORT CONTENT OF THE THEME:

The water is a very good environment for heat transmission to the organism because it has great thermal conductivity and heat capacity.

Thermal water factor influences the temperature receptors of the skin. Prolonged heat or cold influence oppresses the receptors reducing the pain. Too high or too low temperatures which influence on the organism for a short period of time improve the excitability.

Chemical action of the water depends on minerals and gases contained in it. In dependence of the components water procedures can give different effects: sedative, antiphlogistic, methabolitic, tonic or trophic. Mechanical affect of water action is conditioned by its pressure on the skin surface, n.receptors and blood vessels in it.

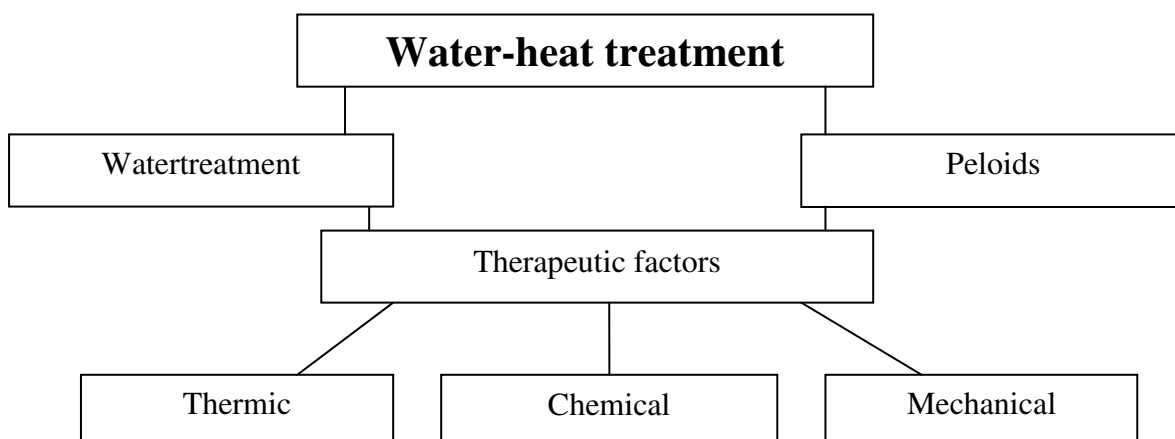
Physical factors which affect organism by the contact lapping are also used for heat transmission to the organism. They are: therapeutic muds, or peloids, paraffin, clay, sand, peat, bischofite. Those substances are heat-carriers, or peloids, so their usage in medical practice is called pelotherapy.

Human organism responds on the influence of water-cure and heat-cure procedures by a complicated neurohumoral reaction that reflexes on work of all organs and systems but especially on nervous, endocrine and cardiovascular systems.

## REFERENCE CARD FOR STUDENTS WORK

(Stages of water-cure and heat-cure study)

**I STAGE:** – study of water-cure and heat-cure affect mechanisms.

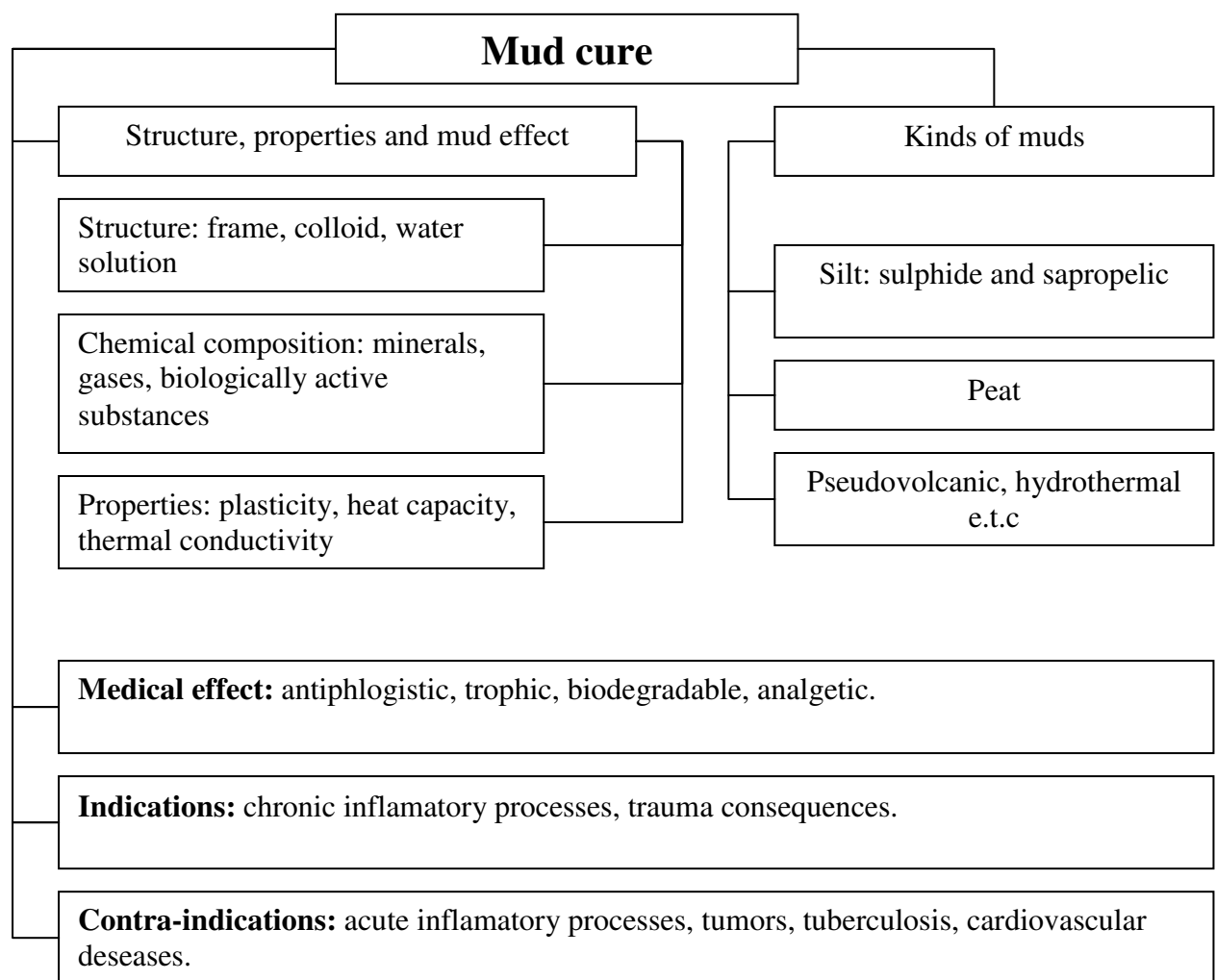


**II STAGE:** study of the physiological and therapeutic affects of water-cure and heat-cure procedures.

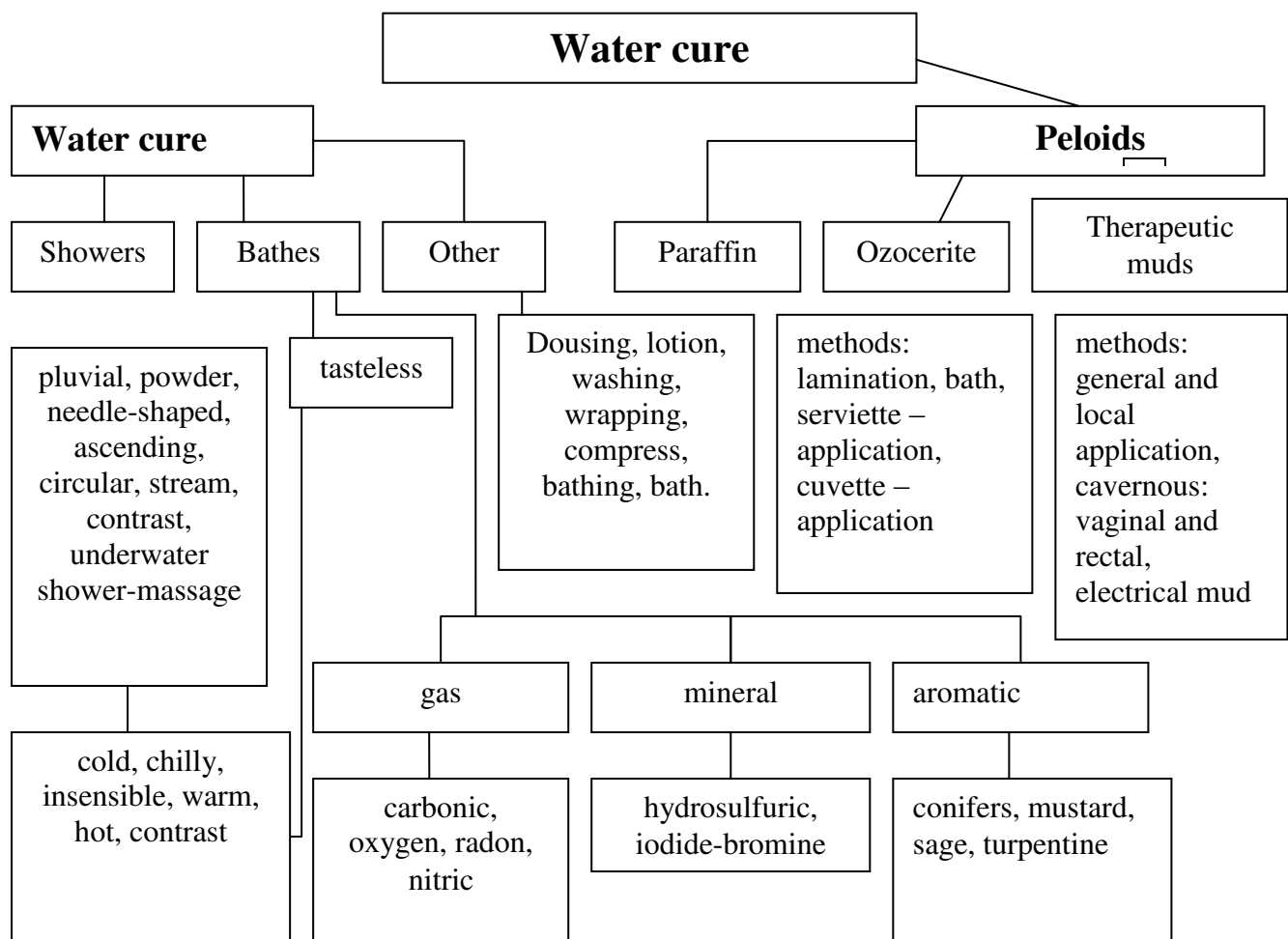
### The physiological and therapeutic affects of water-cure procedures.

Method	physiological and therapeutic affects
Cold compress, ice	Antiphlogistic
Warm compress	Analgetic, antispastic, biodegradable.
Lotion, dousing	Hardening, tonic.
Bath local cold	Antiphlogistic.
Bath local warm	Antispastic, relaxing.
Bath local with variable temperature	Normalization of vegetative blood vessel innervation.
Bathes by Gauffe	Hypotensive, improvement of blood circulation, power supply and retractive function of the myocardium.
Bathes general insensible, duration 10 –15 min	Tonic.

Bathes general insensible, duration 10 –15 min.	Sedative, hypnotic action.
Bathes general warm	Sedative, hypnotic action.
Bathes general hot	Stimulation, metabolism improvement, diaphoretic action.
Fresh showers	Tonic, hardening.
Warm showers	Sedative.
Spray shower	Stimulant, tonic, metabolism improvement.
Underwater shower-massage	Improvement of blood and lymph circulation, trophic action.
Underwater intestinal irrigation	Antiphlogistic, antispastic, disintoxicational.
General wet cowering for 10 – 15 min. 30 –40 min. 60 –80 min.	Antipyretic Sedative, hypnotic action. Metabolism improvement, diaphoretic action.



### III STAGE: water-heat treatment study.



### REFERENCE CARD FOR STUDENTS WORK

(Stages of diagnostical search)

**I STAGE:** Acquaintance with the patient, his/her case history. Clarification of the complaints, anamnesis, objective examination of the patient, study of the analysis results.

**II STAGE:** Substantiation of the diagnosis, choice of the physiotherapy treatment method.

**III STAGE:** Clarification of indications and contra-indications for impulse therapy prescription.

**IV STAGE:** Choice of a specific treatment method accordingly to the indications.

**V STAGE:** Procedure realization or assistance.

**VI STAGE:** Evaluation of the procedure results, observation of the patients condition, temperature, pulse, AP, local manifestations.

**VII STAGE:** Evaluation of the procedure results in the end of treatment.

**VIII STAGE:** Evaluation of the physiotherapy significance factor in whole treatment picture. Give recommendations after the treatment course (treatment staging, changing one treatment course to another).

## **MATERIALS FOR SELFCONTROL.**

### **SITUATIONAL TASKS.**

1. Patient K., 40 years old. Diagnosis: chronic duodenal ulcer I stage, recurrent clinical course with retained secretory and acid-forming stomach function, intensification stadium. What methods of water treatment can you suggest?
2. Patient B., 45 years old. Diagnosis: Morbus hipertonicus II stage. Prescribe the water treatment.
3. Patient H., 34 years old. Diagnosis: Rheumatoid joint inflammation, predominantly articular form, I stage activity, exudation stage, sub acute clinical course with articular function violation of I stage. Prescribe the heat-cure.

### **Standards of tasks solution.**

1. Pine-mineral bath, water temperature is 37°C, duration is 10 min, daily, treatment course is 10 – 12 procedures.
2. Oxygen bathes, water temperature is 35°C, daily, duration is 15 min; treatment course is 12 – 15 procedures. Circular douche is 33 – 35°C, duration is 3 – 5 min, every next day. Treatment course is 10 – 12 procedures.
3. Ozocerite, cuvette – application method (on upper extremities in the form of gloves). Temperature is 50 – 60°C, procedure duration is 30 – 60 min, every next day, treatment course is 10 – 15 procedures.

## **MATERIALS FOR INDEPENDENT AUDITORIUM WORK**

### **PRACTICAL SKILLS ACCORDING TO THEME:**

1. Examination of the patients and determination of the indications and contra-indications for the water and heat treatment.
2. Write out the prescriptions and fill in the procedure cards.
3. Master the procedure realization process.

## **MATERIALS FOR THE EXTRACURRICULAR WORK (SESW)**

Aromatic bathe using.

## **THEME: *SANATORIUM-AND-SPA TREATMENT.***

### **THEME BASING:**

Sanatorium-and-spa treatment can be considered as the most natural and physiologic. It is very effective in remission period. The sanatorium-and-spa treatment is usually connected with other methods of treatment: electrotreatment, phototherapy, water cure, physiotherapy exercises, massage etc. The spa rest in good conditions under the effect of beautiful landscape creates favourable psychologic background. All this intensify the affect of the treatment and influence the organism effectively.

### **EDUCATIONAL AIMS:**

#### **Student must know:**

- Mechanisms of sanatorium-and-spa treatment influence on human organism.
- The main rules of sanatorium-and-spa treatment prescription.
- Indications and contra-indications for sanatorium-and-spa treatment;
- The main principles of inner pathology prophylactics.

#### **Student must be able:**

- To explain the physiological affect of sanatorium-and-spa treatment;
- To choose the method of sanatorium-and-spa treatment;
- To fill in the certificate for ticket receiving;
- To fill in the sanatorium-and-spa card .

### **SHORT CONTENT OF THE THEME:**

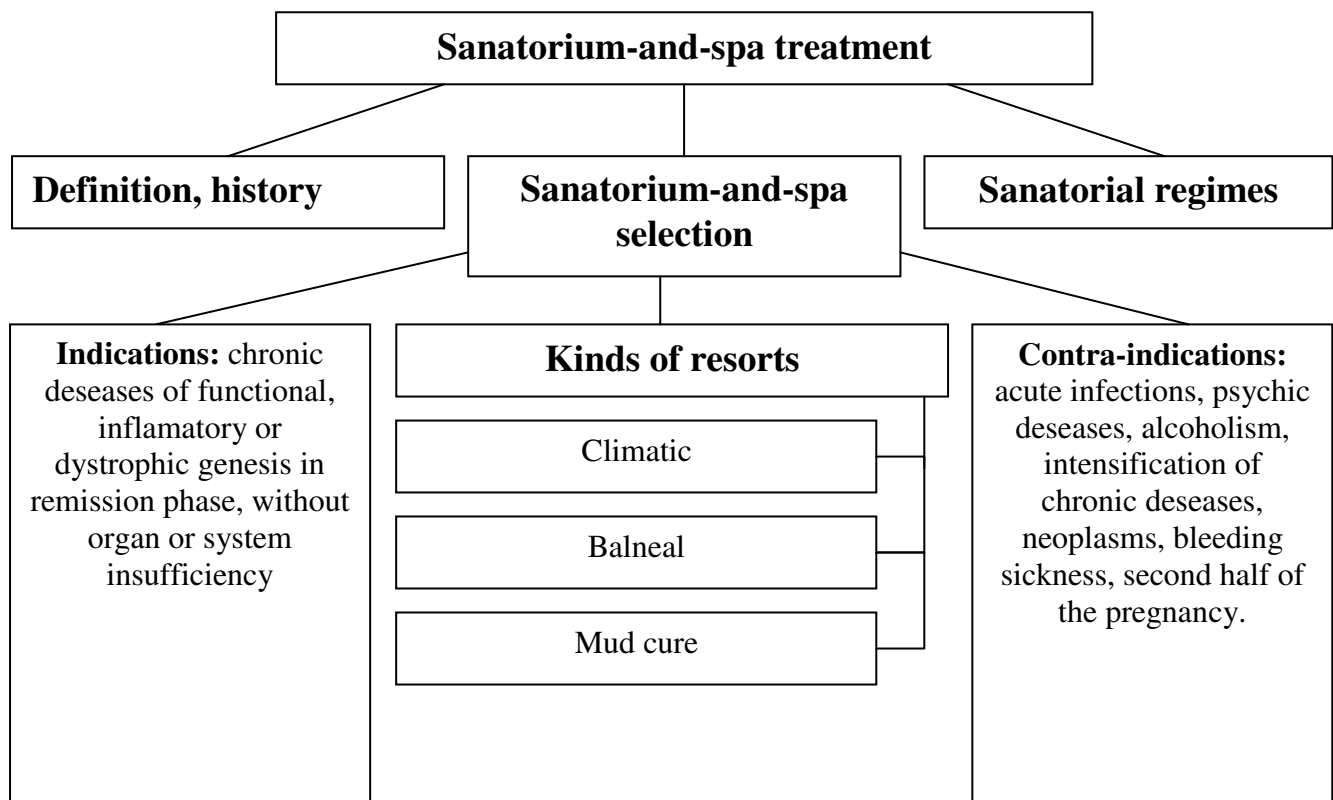
Natural health-giving factors include: climate, mineral waters, therapeutic muds etc. They are spread non-uniformly in nature. The places where the natural health-giving factors are concentrated and used for human's organism treatment are called resorts.

The resort territories are used for creation of the specialized medical establishments: sanatoria, balneal and hydroengineering structures and resort policlinics. Sanatorium is the medicinal – prophylactic establishment that provides comfortable placing of the patients and the conditions for their treatment. That is why they contain necessary buildings and devices which provide all needed procedures.

### **REFERENCE CARD FOR STUDENTS WORK**

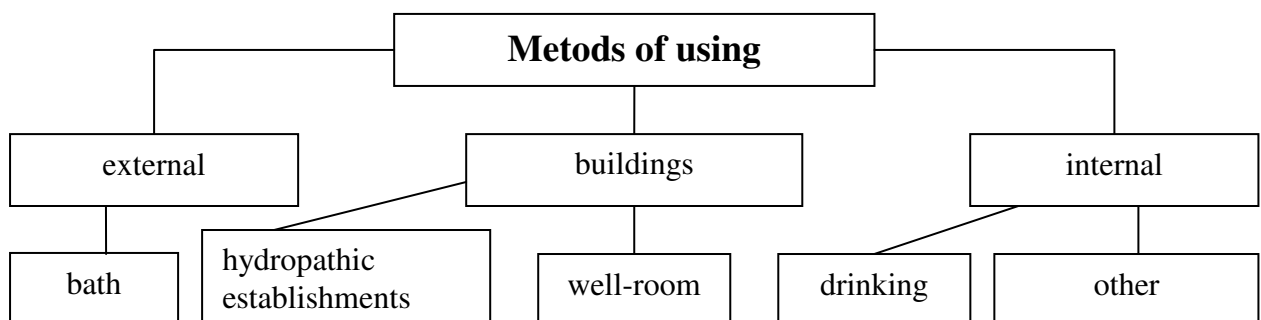
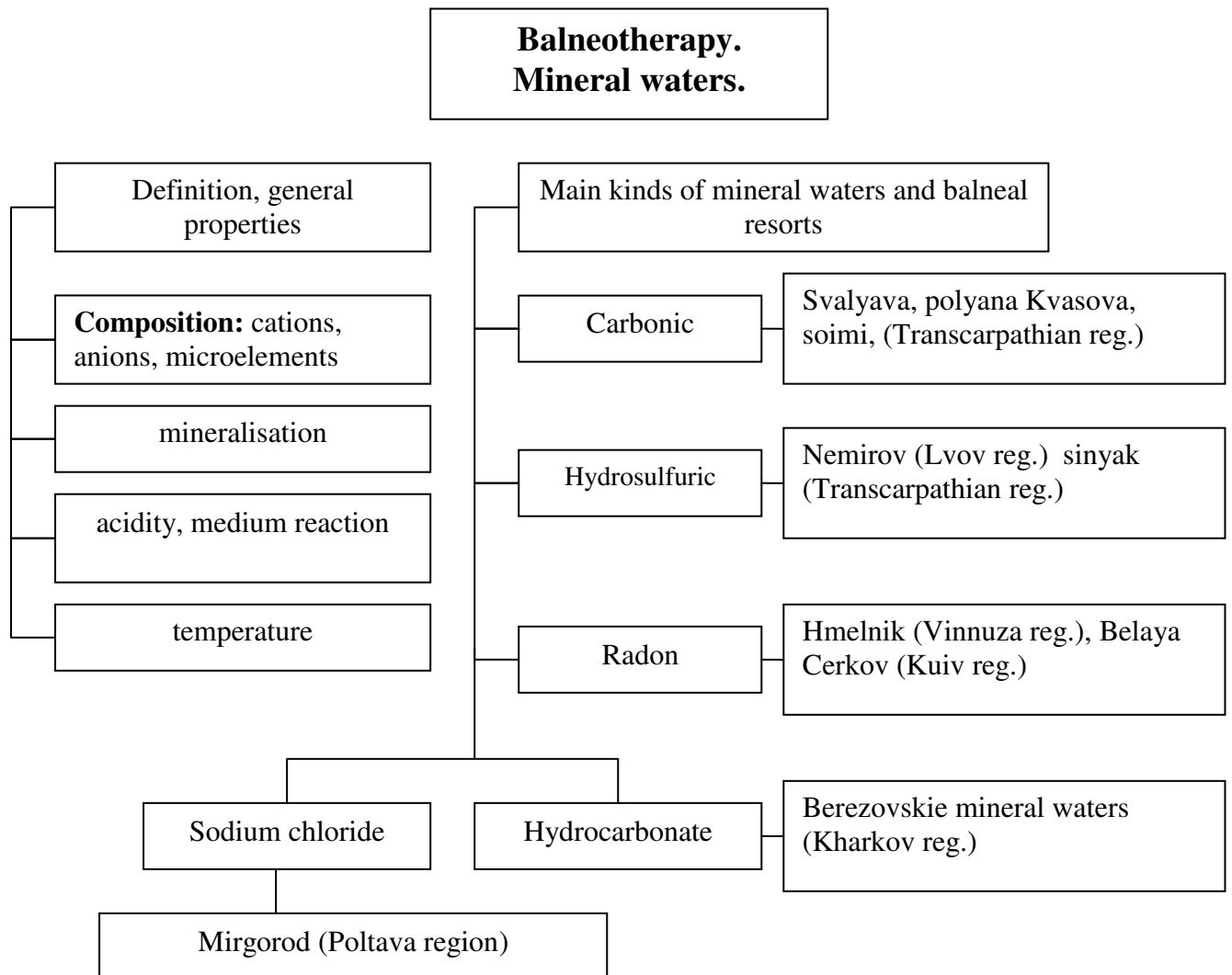
(Stages of sanatorium-and-spa treatment study)

**I STAGE:** indications and contra-indications for sanatorium-and-spa treatment, treatment types.

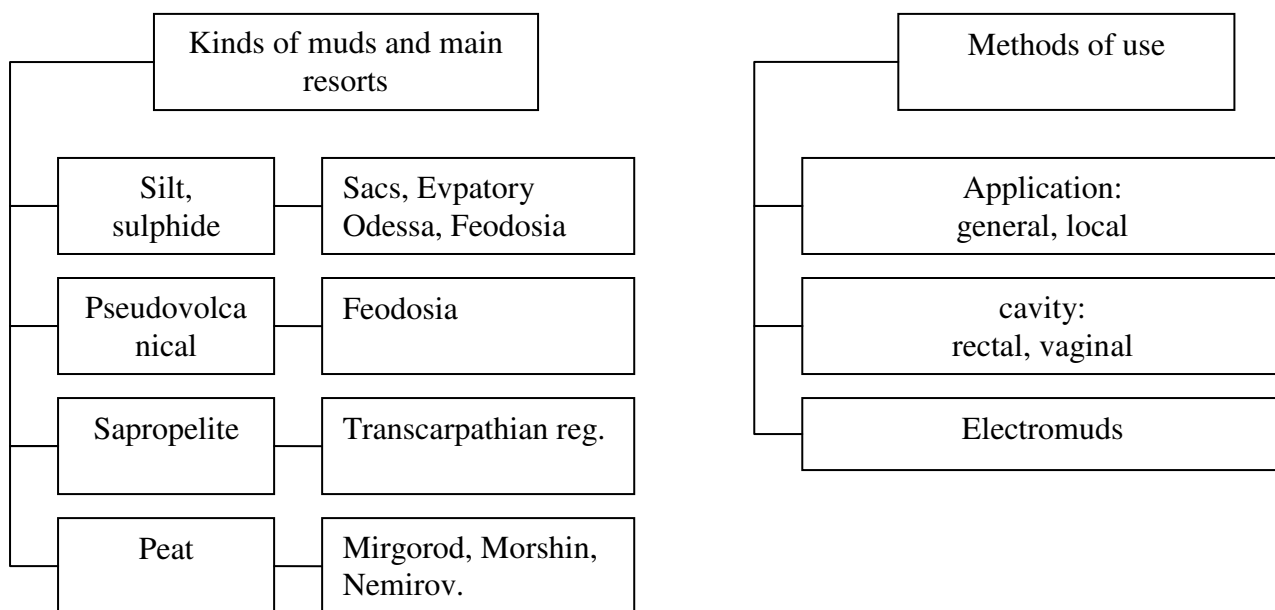


## II STAGE: resort kinds study.

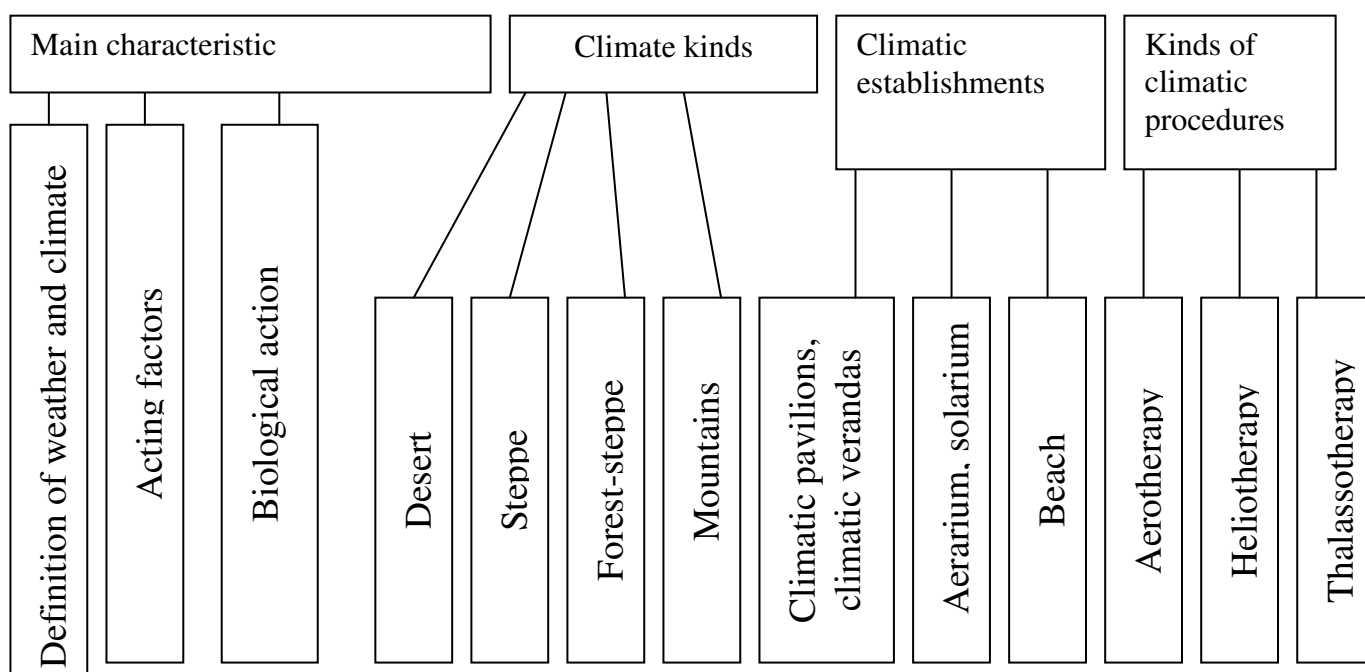
### Balneal resort classification.



### Mud cure resort classification.



### Classification of the climate factors.



### REFERENCE CARD FOR STUDENTS WORK

(Stages of diagnostical search)

**I STAGE:** Acquaintance with the patient, his/her case history. Clarification of the complaints, anamnesis, objective examination of the patient, study of the analysis results.

**II STAGE:** Substantiation of the diagnosis, choice of the physiotherapy treatment method.

**III STAGE:** Clarification of indications and contra-indications.

**IV STAGE:** Choice of a specific treatment method accordingly to the indications. Dosing.

**V STAGE:** Procedure realization or assistance.

**VI STAGE:** Evaluation of the procedure results, observation of the patient's condition, temperature, pulse, AP, local manifestations.

**VII STAGE:** Evaluation of the procedure results in the end of treatment

**VIII STAGE:** Evaluation of the physiotherapy significance factor in whole treatment picture. Give recommendations after the treatment course (treatment staging, changing one treatment course to another).

## **MATERIALS FOR SELFCONTROL.**

### **SITUATIONAL TASKS.**

1. Patient D., 34 years old. Diagnosis: Rheumatoid joint inflammation, predominantly articular form, I stage activity, subacute clinical course with articular function violation of the II stage. Recommend the sanatorium-and-spa treatment.
2. Patient M., 35 years old. Diagnosis: Chronic gastritis with lowered secretory and acid-forming stomach function, remission. What resorts can be used for treatment.

#### **Standards of tasks solution.**

1. The patient can be suggested to visit mud and balneal resorts – Odessa, Sacky, Eupatorium, Polyana Kvasova.
2. The patient can be send to balneal resorts with mineral waters – Mirgorod, Morshin.

### **PRACTICAL SKILLS ACCORDING TO THEME:**

- examination of the patients with the substantiation of sanatorium-and-spa treatment.
- fill in the certificate for ticket receiving;
- fill in the sanatorium-and-spa card

The scheme of general UV–radiation treatment  
(by M.G.Vorobyov, 1980)

The procedure number	Basis circuit		Rapid circuit		Slowed circuit	
	Biodose quantity	Distance from lamp (cm)	Biodose quantity	Distance from lamp (cm))	Biodose quantity	Distance from lamp (cm)
1	$\frac{1}{4}$	100	$\frac{1}{2}$	100	$\frac{1}{8}$	100
2	$\frac{1}{4}$	100	$\frac{1}{2}$	100	$\frac{1}{4}$	100
3	$\frac{1}{2}$	100	1	100	$\frac{3}{8}$	100
4	$\frac{1}{2}$	100	1	100	$\frac{1}{2}$	100
5	$\frac{3}{4}$	100	$1\frac{1}{2}$	100	$\frac{5}{8}$	100
6	$\frac{3}{4}$	100	2	100	$\frac{3}{4}$	100
7	1	100	$2\frac{1}{2}$	100	$\frac{7}{8}$	100
8	1	100	3	70	1	100
9	$1\frac{1}{4}$	100	$3\frac{1}{2}$	70	$1\frac{1}{8}$	100
10	$1\frac{1}{2}$	100	4	70	$1\frac{1}{4}$	100
11	$1\frac{3}{4}$	100	4	70	$1\frac{3}{8}$	100
12	2	100	4	70	$1\frac{1}{2}$	100
13	$2\frac{1}{4}$	100	4	70	$1\frac{5}{8}$	100
14	$2\frac{1}{2}$	100	4	70	$1\frac{3}{4}$	100
15	$2\frac{3}{4}$	100	4	70	$1\frac{7}{8}$	100
16	3	70			2	100
17	3	70			$2\frac{1}{8}$	100
18	3	70			$2\frac{1}{4}$	100
19	3	70			$2\frac{3}{8}$	100
20	3	70			$2\frac{1}{2}$	100
21					$2\frac{5}{8}$	100
22					$2\frac{3}{4}$	100
23					$2\frac{7}{8}$	100
24					3	70
25					3	70

**THE BASIC MEDICINAL SUBSTANCES WHICH ARE USED FOR  
ELECTROPHORESIS**

Ion or the particle, that is insert	Used substance	Concentration, or quantity of the substance on one procedure	Polarity
Adrenalin	Adrenalin hydrochloride	0,1% 0,5–1 ml	+
Aloe	Fluid extract of aloe	1:3	+/-
Aminazine	Aminazine	1%	+
Analgin	Analgin	2–5% (hydrate) 5–10% in 25% ДМСО	– +/-
Propranolol	Propranolol	0,5%, 5 ml	+
Ascorbic acid radical	Ascorbic acid	2–5%	–
Atropine	Atropine sulphate	0,1%, 1 ml	+
Acetylsalicylic acid radical	Acetylsalicylic acid	5–10% in 50% ДМСО	–
Acetylcholine	Acetylcholine hydrochloride	0,1–0,5%	+
Benzogeksonii	Benzogeksonii	1–2%	+
Bromide	Natrii (kalii) bromide	2–5%	–
Vitamin B <sub>1</sub>	Thiamine bromide	2%	+
Vitamin B <sub>12</sub>	Cianocobollamine	0,1–0,2 mg	+
Vitamin E	tocopherol acetate	2% in 5% ДМСО, 0,5 ml 1%	+
Vitamin U	Метилметионинсульфония хлорид	1%	+
Ганглерон	Ганглерон	0,25–0,5%	+
Heparin	Heparin	5000–10000 AU	–
Hyaluronidase	Hyaluronidase	0,1–0,2 г in 30 ml of distilled water	+
Hydrocortisone	Hydrocortisone succinite	1 amp. in 0,2% sol. of natrium hydrogen carbonate	–
Histamine	Histamine hydrochloride	0,1% (up to 1 ml)	+
Dibazole	Dibazole	0,5–2%	+
Pantocaine	Pantocaine	0,5–1%	+
Benadryl	Benadryl	0,25–1%	+
Iodine	Kalii (natrii) iodine	2–5%	–
Cavinton	Cavinton	1 ml (5 mg) of amp. sol. (0,5%) in 1 ml ДМСО	+
Potassium	Potassium chloride	2–5%	+
Calcium	Calcium chloride	2–5%	+
Caffeine	Caffeine –1% in 5% sol. of natrium hydrogen carbonate	1–2%	+/-
Lidaze	Lidaze	0,1 г in 30 ml acidulated water with pH 5,2	+
Lithium	Lithium benzoate	2–5%	+
Magnesium	Magnesium sulphate	2–5%	+
Manganese	Manganese sulphate	2–5%	+
Copper	Copper sulphate	0,2–5%	+
Mesaton	Mesaton	1–2%	+
Natrium	Natrium chloride	2–5%	+
Nicotinic acid radical	Nicotinic acid	0,5–1%	–

Nitroglycerine	Nitroglycerine	0,5 ml of 1% alcoholic solution + 99,5 ml of distilled water (single dose 5–10 ml)	+
Novocaine	Novocaine hydrochloride	0,25–5%	+
Noshpa	Noshpa	1–2%	+
Obzidane	Obzidane	0,1% 5 ml	+
Papaverine	Papaverine hydrochloride	0,1–0,5–1%	+
Peloidine	Peloidine	1%	+/-
Penicillin	sodium salt of penicillin	5000–10000 AU in 1 ml of 0,9% sol. of sodium chloride	–
Pentamine	Pentamine	5%	+
Pilocarpine	Pilocarpine hydrochloride	0,1–0,5%	+
Platyphyllin	Platyphyllin hydrotartrati	0,05–0,1%, 1 ml	+
Prednisolone	Prednisolone	0,5%	+
Proserin	Proserin	0,1%	+
Ronidaze	Ronidaze	0,5 g in 30 ml acetated bufer sol.	+
Sodium salicylate radical	Sodium salicylate	1–5%	–
Seduxen	Seduxen	0,5%, 2 ml	+
Cerumen	Ichthyol	10–30%, 2–5%	
Silver	Silver nitrate	0,5–1%	+
Cincocaine hydrochloride	Cincocaine hydrochloride	0,25–1%	+
Vitreous body	Vitreous body	2 ml	+/-
Toephillin	Toephillin	2–5%, pH 8,6–8,8	–
Tetracycline	Tetracycline hydrochloride	5000–10000 AU in 1 ml of distilled water	–
Tetramecaine	Tetramecaine	0,5–2%	+
Tripsin	Tripsin	0,5 in distilled water, pH 5,0	+
Fencarol	Fencarol	0,5% in 25% sol of ДМСО	+
Phosphoric acid radical	Sodium phosphate	2–5%	–
Fluorine	Sodium fluoride	2%	–
Quinine	Quinine hydrochloride	1%	+
Chlorine	Chlorine	2–5%	–
Zinc	Zinc sulphate	0,5–1%	+
Euphiline	Euphiline	2–5%	+/-
Ephedrine	Ephedrine hydrochloride	0,1–1%	+

### The minimal age for different methods of physiotherapy

Method	Age of a child	Second course
Galvanization local	4–6 weeks	1 month
Galvanization general	5 years	1 month
Electrosleep	2–3 years	2–3 months
Diadynamic therapy	2–3 years	10 days
Amplipulse therapy	3 months	6 days
Fluctuating current	6 months	6 days
D'arsonvalization local	2 years	1 month
Ultratonotherapy	1 years	1–2 months
Inductothermy	5 years	2–3 months
UHF–therapy	First days of life	2–3 months
НВЧ–терапия	2 years	2–3 months
Magnetotherapy	1–1,5 years	1–2 months
Franklinization general	14–15 years	1–2 months
Franklinization local	5–7 years	2 months
Infrared radiation	First months	1 month
U-V radiation general	First months	2–3 months
U-V radiation local	First days of life	1 month
Lazertherapy	2 years	2–3 months
Ultrasound therapy	2–3 years	3 months
Massage	First days of life	1 month
Underwater shower–massage	2 years	2–3 months
Bathes carbonic, pearl	2–3 years	2–3 months
Bathes hydrosulfuric, turpentine	5–7 years	5–6 months
Ozokeritotherapy	First days of life	1–2 months
Mud cure local	2–3 years	2–3 months
Thalassotherapy	2–3 years	1 month

**Recommended literature:**

1. Goldman's Cecil medicine / [edited by] Lee Goldman, Andrew I. Schafer. – 24th ed. USA 2012, Elsevier p. 2569
2. Harrison's Principles of Internal Medicine / D.Kasper, A.Fauci, S.Hauser, D. Longo.-19 ed. –N.Y.: McGraw-Hill Professional, 2015. - Vol. 1, Vol.2. - 3000 p.
3. Rome IV criteria: functional gastrointestinal disorders.  
<http://theromefoundation.org/wp-content/uploads/gallbladder-and-sphincter-of-oddi-disorders.pdf>

Composed by Radionova T. O.