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**Patients care with internal diseases.**

**Course of training practice**

Textbook of Medicine for medicine faculty students

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The educational textbook provides basic care for patients in a therapeutic clinic with a count of the current specifics of nursing. Special attention is paid to detailed analysis of medical procedures and manipulations performed by the nursing staff, the care of patients with pathology of different internal organs and systems. Consider measures to provide first aid in emergency therapeutic conditions. The textbook is intended for students of medical universities.

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## **THE CONTENTS OF A TEXT BOOK**

<b>Theme 1. TYPES AND HEALTH CARE FACILITIES.</b>	<b>6</b>
<b>The Duties of medical nurse</b>	<b>7</b>
<b>Decontamination for patients with head lice</b>	<b>7</b>
<b>Current and general cleaning of offices therapeutic profile. disinfectant solutions</b>	<b>9</b>
<b>Theme 2. PERSONAL HYGIENE OF PATIENTS.</b>	<b>10</b>
<b>Skin care</b>	<b>10</b>
<b>The oral cavity care</b>	<b>10</b>
<b>Eye care</b>	<b>11</b>
<b>Ear care</b>	<b>11</b>
<b>Care of the nose</b>	<b>11</b>
<b>Hair care</b>	<b>12</b>
<b>Change sheets in critically ill</b>	<b>12</b>
<b>Bedsore</b>	<b>13</b>
<b>Anthropometry</b>	<b>15</b>
<b>Theme 3. CLINICAL NUTRITION.</b>	<b>16</b>
<b>Basic principles of clinical nutrition.</b>	<b>16</b>
<b>Therapeutic diets (dietary tables)</b>	<b>17</b>
<b>Feeding patients</b>	<b>21</b>
<b>Artificial feeding</b>	<b>22</b>
<b>Theme 4. MEASURING BODY TEMPERATURE. FEBRILE PATIENTS CARE. THE SIMPLEST PHYSICAL THERAPY.</b>	<b>24</b>
<b>Features of the care of febrile patients</b>	<b>27</b>
<b>Simple physical therapy</b>	<b>29</b>
<b>Theme 5-6. DRUGS AND ADMINISTRATION OF MEDICATION.</b>	<b>31</b>
<b>Rules of discharge, accounting and storage of drugs (including, potent and narcotic drugs).</b>	<b>31</b>
<b>Storage and registration of medicines in the post</b>	<b>32</b>
<b>Methods of administration of drugs</b>	<b>33</b>
<b>First aid for anaphylactic shock</b>	<b>35</b>
<b>Theme 7. MONITORING AND PATIENTS CARE WITH RESPIRATORY DISEASES.</b>	<b>36</b>

<b>The main complaints in respiratory system diseases</b>	<b>37</b>
<b>The use of nebulizers</b>	<b>39</b>
<b>The basic rules for using different types of inhalers</b>	<b>40</b>
<b>Oxygen Therapy Uses</b>	<b>43</b>
<b>Thoracentesis</b>	<b>49</b>
<b>First aid for bronhial asthma attack</b>	<b>53</b>
<b>Emergency care in pulmonary bleeding</b>	<b>54</b>
<b>Theme 8. MONITORING AND PATIENTS CARE WITH CARDIOVASCULAR DISORDERS.</b>	<b>55</b>
<b>The main complaints in patients with cardiovascular disorders</b>	<b>55</b>
<b>The study of the pulse on peripheral arteries</b>	<b>56</b>
<b>Technique and rules for the measurement of blood pressure</b>	<b>59</b>
<b>First aid for fainting</b>	<b>61</b>
<b>Emergency care in a collapse</b>	<b>61</b>
<b>First aid for angina, cardiac asthma</b>	<b>61</b>
<b>First aid for hypertensive crisis</b>	<b>63</b>
<b>Theme 9-10. MONITORING AND PATIENTS CARE WITH PATHOLOGY OF DIGESTIVE ORGANS.</b>	<b>63</b>
<b>Complaints of patients with diseases of the digestive system</b>	<b>63</b>
<b>Preparing for irigaray and colonoscopy</b>	<b>65</b>
<b>Preparation for ultrasound of the abdominal organs</b>	<b>66</b>
<b>Gastric lavage</b>	<b>67</b>
<b>Intestinal lavage</b>	<b>68</b>
<b>Enema</b>	<b>69</b>
<b>First aid with vomiting</b>	<b>73</b>
<b>First aid for gastrointestinal bleeding</b>	<b>74</b>
<b>Theme 11. MONITORING AND PATIENTS CARE WITH DISORDERS OF THE URINARY ORGANS.</b>	<b>45</b>
<b>The concept of dieresis, disorders of the dieresis</b>	<b>75</b>
<b>Rules of collection, Diagnostic relevance of urinalysis tests</b>	<b>78</b>
<b>Ultrasound of the bladder</b>	<b>81</b>
<b>Application of external collection systems</b>	<b>81</b>
<b>Catheterizing the Female Urinary Bladder</b>	<b>84</b>
<b>Catheterizing the Male Urinary Bladder</b>	<b>85</b>
<b>Theme 12. CARDIOPULMONARY RESUSCITATION.</b>	<b>87</b>

<b>Technique for chest compressions in adult CPR. Complications.</b>	<b>88</b>
<b>Pronouncement of death and the rules of post-mortem care</b>	<b>95</b>
<b>Final test questions of "<i>Course of training practice</i>".</b>	<b>96</b>
<b>The answers to the test questions</b>	<b>113</b>
<b>Resources</b>	<b>114</b>

## **Theme 1. TYPES AND HEALTH CARE FACILITIES**

In our country an extensive network of health care facilities is created.

It includes: outpatient (ambulatory, polyclinics, health centers, medical and obstetric items), beauty clinics, health centers on water transport, rail transport clinics, dental clinics, community health centers, central district clinic, etc.

Ambulatory is a out-patient clinic, where medical care is provided for coming patients and patients at home. In out-patient clinic only doctors of the main specialties conduct reception: therapist, surgeon, dentist.

Polyclinic is equipped with the necessary equipment for examination and treatment of patients.

Outpatient Department of a hospital is an outpatient health care facility, which has: physician offices on basic clinical specialties, as therapy, surgery, neurology, eye diseases, diseases of the ear, nose and throat, endocrinology, orthopedics, traumatology, cardiorheumatology. The clinic has also basic diagnostic studies: x-ray, ultrasound, functional diagnostics, clinical and biochemical laboratories and rooms for medical procedures and doctor's appointments. The clinic has a reception, offices and a number of outbuildings.

The dispensary is a health care facility outpatient type, which responsibilities include treatment and prevention of diseases of a certain profile. There are following, most widespread types of clinics: TB, neuropsychiatric, skin diseases, cancer and physical therapy.

Medical and sanitary part is the establishment of out-patient type for workers of certain enterprise or military unit. The main objective of medical and sanitary part is a first medical aid, the prevention of the diseases connected with process of work and their treatment.

The stationary institutions (or hospital) include hospitals, clinics, hospitals, maternity hospitals, sanatoriums.

Hospital is a medical institution for patients requiring long-term bed rest, careful examination and treatment.

Hospital: district and city, regional. District and city hospitals consist of the following structural divisions: a hospital with a reception, policlinics, medical and diagnostic offices, laboratories, points of emergency aid, an organizational and methodical office, mortuary, drugstore, kitchen.

The regional hospital incorporates also sanitary and epidemiologic service. The regional hospital has other structure because it is the advisory and organizational and methodical center at the same time. Its structure, except specialized offices, includes radiological office, office of the emergency and planned and advisory medical care with means of sanitary aircraft and land transport, organizational and methodical department with separate offices of medical statistics, the polyclinic providing the advisory help to the patients directed from areas.

The clinic is the hospital on the basis of which students are trained and research works are carried out.

Hospital - it is accepted to call in our country hospital for military and disabled people of the Great Patriotic War and other wars.

Maternity hospital is a treatment-and-prophylactic establishment giving medical care to pregnant women, women in labor.

Sanatoria — it is hospitals in which the aftercare of patients with use of factors of the nature is carried out: air, sea water, mineral waters, therapeutic muds, etc.

## **THE DUTIES OF MEDICAL NURSE.**

Admission department: sanitization, anthropometry and taking part in the reception of patients as a physician assistant, filling in the log book of patients and registration of passport data in the medical history, emergency medical assistance, escorting patients to the appropriate hospital Department.

In the hospital room: preparing the bedside, information about internal regulations, the sanitation of houses, feeding and caring for the seriously ill;

Nursing: the layout and proper storage of drugs, journal of medical prescriptions, the assignment sheet medical nutrition, log transfer duty.

In the treatment room (procedure room): conducting diagnostic and therapeutic procedures (all types of injections, blood collection for clinical and biochemical analyses, determination of blood groups, thoracentesis, paracentesis, diagnostic puncture of the liver, measurement of venous pressure and blood flow, gastric and duodenal intubation, assembly systems for intravenous administration).

## **DECONTAMINATION FOR PATIENTS WITH HEAD LICE.**

Pediculosis - lice parasitism in humans. If you find nits or lice it is necessary to process both head and body. Lice are vectors of various infectious diseases.

You need to prepare:

- styling for processing patient pediculoses
- uniforms for nurses (coat, scarf, gloves)
- oilcloth size of 1 X 1 m
- oilskin cloth and scarves for the patient
- fine-tooth comb
- 0,15% aqueous emulsion solution of Malathion (carbophos), 6 % solution of vinegar, cotton swabs; the laundry bag
- magnifying glass
- grooming appliance
- medical card of the inpatient
- emergency notification of infectious patient.

Malathion is an organophosphate parasympathomimetic which binds irreversibly to cholinesterase. Malathion is an insecticide of relatively low human toxicity. In the former USSR, it was known as carbophos, in New Zealand and Australia as maldison and in South Africa as mercaptothion.

Medical use

Malathion in low doses (0.5% preparations) is used as a treatment for:

Head lice and body lice. Malathion is approved by the United States Food and Drug Administration for treatment of pediculosis. It is claimed to effectively kill both the eggs and the adult lice. Preparations include Derbac-M, Prioderm, Quellada-M and Ovide.

Technique treatment with Malathion.

1. To wear a special robe, a scarf and gloves.
2. The position of the patient is sitting, if the state is on the couch with oilcloth.
3. The patient's hair to process 0,15% aqueous solution of Malathion.
4. To cover his hair oilcloth and lined gusset.



5. After 20 minutes rinse hair with warm water.
6. For rinsing is required to use 6% solution of vinegar.
7. Comb the hair with the fine toothed comb.
8. Linen of a patient to send to the disinfection chamber in a special bag.
9. On the title page of the medical records marked "P" in the upper right corner - head lice.
10. The room and everything that was in contact with patient, treated with Malathion.
11. Clothing in which treatment was carried out, also be folded into a bag and send them for the disinfection.
12. To fill out an emergency notification of infectious disease and send to sanitary-epidemiological station by place of residence.

To combat head lice currently has a variety of special medications, which are non-toxic, and do not require cutting hair. The insecticide is applied on the hair and cover with wax paper, on the head tie a scarf or wear a special cap, or just wash the hair with a special shampoo. To remove nits in a few days re-comb hair with the fine toothed comb with a cotton cloth soaked in hot 10 % solution of vinegar. SPECIAL INSECTICIDES: Cream shampoo NOC, Parasites (shampoo 0.2%), ITEX (shampoo 0,3%), the combined aerosol Para-plus , Aerosol Spray-pax is used to treat pubic lice

## **CURRENT AND GENERAL CLEANING OF OFFICES THERAPEUTIC PROFILE. DISINFECTANT SOLUTIONS**

The provision of sanitary-hygienic regime in the medical institution provides a thorough regular cleaning. A thorough wet cleaning of hospital premises and the maintenance of clean equipment, medical equipment, health products, furniture - with the obligatory observance of sanitary-hygienic regime in the hospital. Cleaning is carried out by brush, rags, moistened with a disinfectant solution.

Current cleaning conducted at least 2 times a day with disinfectants. All cleaning material (buckets, cans, rags, mops) should be clearly marked indicating the room and the type of harvesting. Bulleted cleaning equipment is stored in a strictly prescribed and is used only for its intended purpose. Cleaning equipment is disinfected after using one of the disinfectants.

Routine cleaning includes:

- processing of surfaces, equipment, doors, sinks by wiping with a cloth dampened with disinfectant solution followed by rinsing with tap water using a clean cloth;

- irradiation of the premises germicidal lamp. The exposure time is calculated on the basis of passport data specific germicidal lamp and the area of the treated areas.

General cleaning according to the type of the final disinfection is carried out by medical personnel in accordance with the approved schedule.

General cleaning involves the processing solution disinfectant walls to ceiling, ceiling, floor, and working hard to reach surfaces, hardware, windows, including interior surfaces of window glasses (on schedule).

Disinfectant solution: DIEBACK , DIMACS-chlor., Nick-Neodes, Nick-policed, Nick-Extra M, Pureevil.

## **Theme 2. PERSONAL HYGIENE OF PATIENTS**

### **Skin care**

Sebum and sweat in long-term patient in bed accumulate on the surface of the skin along with microorganisms and contaminate it. It causes itching which leads to scratching, abrasions. In this regard, nurse must ensure that patients comply with the rules of personal hygiene and perform procedures on the contents of the skin clean. Nurse maintains a schedule of hygienic baths with a simultaneous change of linen of the patient is able to move, and being on bedrest should be daily cleaned with a skin disinfectant that contains alcohol camphor. To wipe the skin one end of a towel moistened with water, slightly wring out and wipe: behind the ears, neck, back, chest, axillary folds then dry wipe in the same sequence. The feet of the patient are washed 1-2 times a week, putting a basin in the bed, and then as needed nails are cut short. Long-term host of hygiene is carried out the vagina with a heated weak solution of permanganate potassium 35-36 gr. For cleaning you need to have a jug of sterile cotton balls. Place under the buttocks the container when washing. Women produce douching from a mug Esmarch with a heated weak solution of potassium permanganate, a solution of potassium hydrogen carbonate (2 tsp. per 1l) or boric acid (2-3 tsp 0.5 l).

### **The oral cavity care**

In the oral cavity can be accumulated food debris, microorganisms. So patients 2 times a day brush teeth (in the morning and evening), after eating, rinse mouth with slightly salted water (1\4 tsp 200 g) and a weak solution of bicarbonate of sodium. The nurse treats the oral cavity with tweezers and a cotton ball in seriously ill. If the patient is experiencing stomatitis (gum inflammation, inflammation of the oral mucosa) the nurse produces appliques wipes moistened with 2% solution of chlorine bleach or 0.1% of nitrofurazone on mucosa, within 3-5 minutes, the procedure is repeated 4-5 times a day. Analgesics may be applicated.

Irrigation of the oral cavity produce from the syringe. With the appearance of dryness of the lips and cracks at corner of mouth on the lips apply a cloth dampened with water, then grease with any oil. If it is smell from the mouth, rinse the mouth with 0.5% chloramine solution, 2% sodium carbonate solution, NaCl solution.

### **Eye care**

Eye care is carried out in the presence of secretions, gluing the eyelashes and eyelids that appear usually in inflammation of the mucous membrane of the eyelids. In such cases, using a cotton swab moistened with 2% solution of boric acid, first soften and remove the crust formed, and then rinse conjunctival cavity with boiled water or saline. The nurse spreads the eyelids by index finger and thumb of the left hand and by the right hand, not touching the eyelids, makes irrigation of the conjunctival bag using a rubber balloon or a special glass vessel.

For instillation of eye drops or laying eye ointment pull lower eyelid away with a wet swab, after which the pipette release 1-2 drops (room temperature) on the mucous membrane of the lower eyelid or to the same by the broad end of a small glass rod eye ointment is applied.

### **Ear care**

Nurse periodically cleans the ears, not to accumulate sulfur. With the appearance of cerumen in the ear buried 2-3 drops of hydrogen peroxide, and then it is removed with a cotton pellet rotational moving of the tube. Or produce flushing with a syringe Janet. To straighten the natural curve of the external

auditory canal auricle left hand pulled backward and upward, the tip is inserted to a depth of 1 cm, after which some portions of a stream of fluid is sent to rear upper wall of the external auditory canal. After removal of cerumen ear canal is thoroughly dried.

### **Care of the nose**

To remove the crusts, the head is tilted and is administered into the nasal passages cotton bud soaked in vaseline oil, glycerin, or oil solution. After 2-3 minutes in a circular motion remove cotton bud and remove the crust with a small tweezers or a special nasal probe wrapped around it with cotton wool.

### **Hair care**

Bad hair care with a non-regular washing can lead to increased breakage, loss, forming on the skin greasy or dry scalp scales (dandruff).

Oily hair is recommended to wash 1 time a week and dry and normal - 1 time in 10-14 days.

Shampooing in critically ill spend in bed. The basin is placed at the head end of the bed, and the patient's head somewhat lifted and tilted. To wash hair is better to use soft water (boiled or with the addition of borax at the rate of 1 tsp per 1l of water). It is better not to wash your hair with a bar of soap, which leads to their trauma, and use soapy foam. After washing hair, gently towel-drying, then carefully and gently brush, starting from the root, if the hair is short, or, conversely, starting at the ends with long hair. Used combs and brushes should be strictly individual. Cutting the hair it is advisable to do 1 per month.

It is also necessary to perform a systematic treatment of the nails, regularly removing dirt that collects under them, and cutting short their at least once a week.

### **CHANGE SHEETS IN CRITICALLY ILL.**

When changing the sheets of the patient gently push on the edge of the bed, the vacant part of the dirty sheets stacked along (like a bandage) and on the place spread a clean sheet.

In cases where the patient forbidden to move, a dirty sheet rolled top and bottom half of the torso of the patient, simultaneously enclose a blank top sheet

and spread it from top to bottom; then a dirty sheet removed from the bottom, and a clean sheet down on top, and a fully straighten.

## **BEDSORE**

Bedsore (lat. decubitus) — necrosis of soft tissues as a result of constant pressure, accompanied by local disorders of blood circulation of tissues.

Localization of pressure sores: the area of the sacrum, shoulder blades, heels, knees, ribs, toes, big thigh skewers, feet, ischium, iliac crest bone and elbow joints.

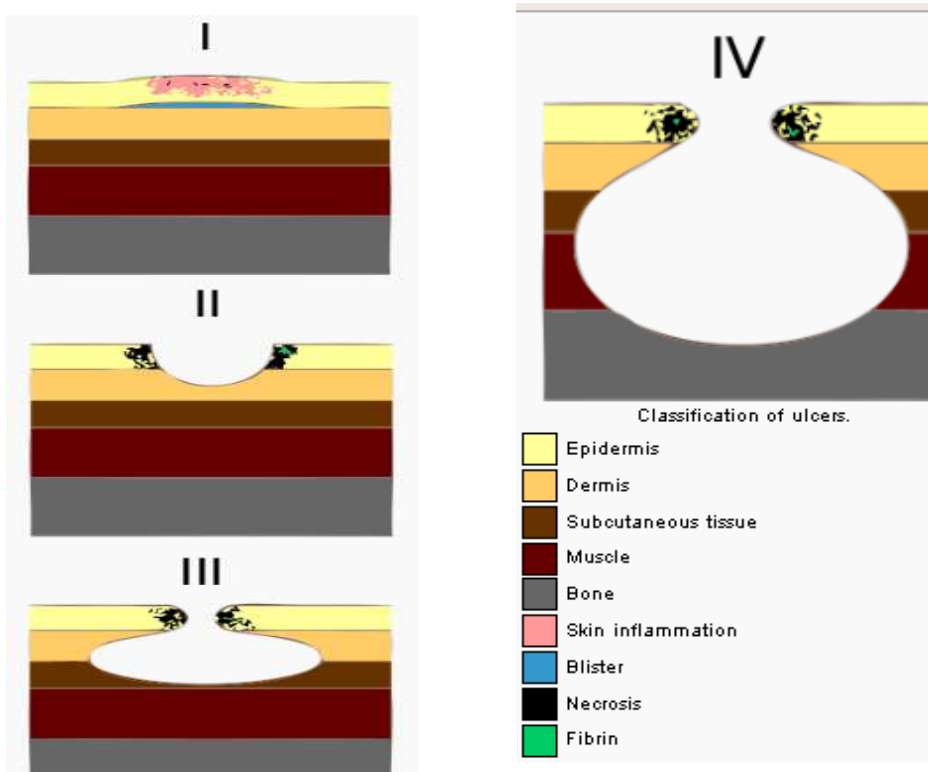
### Causes:

- 1) Lack of patient care;
- 2) Too high or too low the weight of the patient;
- 3) Dry skin;
- 4) Incontinence of urine or feces;
- 5) Disease, leading to disruption of the trophic tissues;
- 6) Anemia;
- 7) Limited mobility.
- 8) The increase or decrease of body temperature.
- 9) Insufficient protein diet.

### Stages of bedsores

Stage I: Intact skin with non-blanchable redness of a localized area usually over a bony prominence. Darkly pigmented skin may not have visible blanching; its color may differ from the surrounding area. The area differs in characteristics such as thickness and temperature as compared to adjacent tissue. Stage I may be difficult to detect in individuals with dark skin tones. May indicate "at risk" persons (a heralding sign of risk).

Stage II: Partial thickness loss of dermis presenting as a shallow open ulcer with a red pink wound bed, without slough. May also present as an intact or open/ruptured serum-filled blister. Presents as a shiny or dry shallow ulcer without slough or bruising. This stage should not be used to describe skin tears, tape burns, perineal dermatitis, maceration or excoriation.



**Fig. 1. Stages of bedsores**

Stage III: Full thickness tissue loss. Subcutaneous fat may be visible but bone, tendon or muscle are not exposed. Slough may be present but does not obscure the depth of tissue loss. May include undermining and tunneling. The depth of a stage III pressure ulcer varies by anatomical location. The bridge of the nose, ear, occiput and malleolus do not have (adipose) subcutaneous tissue and stage III ulcers can be shallow. In contrast, areas of significant adiposity can develop extremely deep stage III pressure ulcers. Bone/tendon is not visible or directly palpable.

Stage IV: Full thickness tissue loss with exposed bone, tendon or muscle. Slough or eschar may be present on some parts of the wound bed. Often include undermining and tunneling. The depth of a stage IV pressure ulcer varies by anatomical location. The bridge of the nose, ear, occiput and malleolus do not have (adipose) subcutaneous tissue and these ulcers can be shallow. Stage IV ulcers can extend into muscle and/or supporting structures (e.g., fascia, tendon or joint capsule) making osteomyelitis likely to occur. Exposed bone/tendon is visible or directly palpable.

When bedsores III-IV stages, the main method of treatment is surgical.

### Prevention.

1. The change of body position of the patient in bed several times a day, to avoid bedsores
2. Shaking off the sheets several times a day to avoid crumbs
3. The lack of linen and underwear of the folds
4. The placing of an inflatable rubber circle attached to the pillowcase half of the sacrum and shoulder blades so that they were above the surface.
5. Rubbing the reddened areas with a dry towel or ultraviolet radiation by UV lamp to improve circulation, followed by dusting.

### Treatment.

Ultraviolet radiation, electrostatic shower, bioclusive dressings, lubrication: 10% camphor spirit at stage 1, ointment Solcoseryl" at stage 2; stage 3 and 4 — surgical treatment, bandages, ointment "Irucsol", restorative measures. Shock wave therapy. Also very effective the silver-containing drugs (Alocrom" - in the 1st degree, "Argogel" - at 2-4 degrees bandage from a 2% solution of silver cluster). They not only have to contend with possible infections that may complicate trauma, but also stimulate local immunity.

Fixed assets the treatment of bedsores.

- 1) Antibacterial drugs for local treatment of pressure sores (bactericidal and fungicidal agents)
- 2) Chemical debridement, or enzymatic debridement, is the use of prescribed enzymes that promote the removal of necrotic tissue (collagenase, deoxy-ribonuclease, trypsin, chymotrypsin, turrilites)
- 3) Dehydrating – hyperosmolar drugs
- 4) Drugs, improving microcirculation (periorbit, tribenoside)
- 5) anti-inflammatory agents (dexamethasone, hydrocortisone, prednisone)
- 6) stimulants reparative processes (methyluracil, Vinylinum ointment Kalanchoe)
- 7) modern silver-containing drugs (Argovit, Alocrom, Argogel)

## **ANTHROPOMETRY**

Anthropometry (anthropos - the person, metron - a measure) - the research method based on measurement of morphological and functional features of the person. Measurement of growth and length of a trunk is of great importance for

an assessment of the general physical development of the patient and proportionality of development of the separate parts of his body which are broken at a metabolic disorder, congenital anomalies of development.

Body weight is determined by special medical scales - in the morning on an empty stomach after a defekation and depletion of a bladder, it is best of all naked, as a last resort - in easy clothes

Growth is defined in vertical situation with the help of the standard wooden height meter. However when the patient can't keep independently standing, it is necessary to measure his growth in a prone position.

The circle of the head is measured by a tape measure on the maximum perimeter of the head (behind - on a ledge of an occipital hillock, and in front - on brow arches).

The circle of a thorax is measured in a standing position by the tape measure passing under corners of shovels, in front - over nipples. The circle of a thorax is measured at height of the maximum breath, limit exhalation and during a respiratory pause.

### **Theme 3. CLINICAL NUTRITION**

Food is one of the main factors that have a significant impact on the health, efficiency and resistance of the body to impact the surrounding environment.

One of the basic principles of nutrition is a balanced diet (number of food products that provide the daily requirement of nutrients and energy): healthy people a day consumes: 80-100 gr. protein 80-100 grams. fat, 400-500 gr. Carbohydrates (sugar), 1500-200 ml. of water.

In determining the composition of the diet is taken into account the energy value.

Clinical nutrition involves keeping a diet regime – the best is 4 meals a day: 25% of the diet for breakfast, 15% - for second breakfast, 35% - for lunch, 25% - for dinner. Nutritional therapy is an integral part of the treatment process of the disease.

#### **Basic principles of clinical nutrition.**

- individual diet based on anthropometric data (height, body weight, etc.) and the results of studies of metabolism in an individual patient.



- support of digestion for disorder of secretion of digestive enzymes. For example, deficiency in the intestine of the enzyme peptidase that breaks down the protein gluten of wheat, rye, barley, oats (celiac disease), or increased sensitivity to gluten (celiac disease) from the diet to exclude all products with these protein cereals.

-Accounting for the interaction of food substances in the gastrointestinal tract and the body: it is necessary to provide a balance of nutrients that are able to influence their absorption – for example, calcium absorption from the gastrointestinal tract decreases when excess food fats, phosphorus, magnesium, oxalic acid.

-Stimulation of regenerative processes in organs and tissues by selection of necessary nutrients, especially amino acids, vitamins, minerals, essential fatty acids.

-Compensation nutrients lost by the body of the patient. For example, with anemia, particularly after blood loss, the diet should be increased content of trace elements necessary for hematopoiesis (iron, copper etc.), some vitamins and complete proteins of animal origin.

- Modification of diet in order to workout biochemical and physiological processes in the body (e.g., frequent meals low in energy value in obesity).

- In case of irritation or functional failure of an organ or system to use a nutritional method of a restriction of chemical, mechanical, thermal stimuli.

-The use of nutritional methods of unloading and “contrasting days” - on the background of basic therapeutic diets “contrasting days” - a load (for example, supplementing the diet with excluded nutrients) and fasting days. Load days not only contribute stimulation function, but also serve as functional test of endurance. The purpose of fasting days – short-term to facilitate the functions of organs and systems, promote the body's excretion of the products of disturbed metabolism. The predominance of nutrients fasting diet is divided into protein (milk, cottage cheese, meat and vegetable), carbohydrate (fruit, sugar and vegetable), fat (cream, sour cream), combined.

### **Therapeutic diets (dietary tables)**

Currently use a single number system diets to ensure the individualization of therapeutic feeding a large number of patients with certain diseases—

therapeutic diets or dietary tables No. 0-15, developed in the Institute of nutrition of the Academy of medical Sciences of the USSR.

#### Diet №1

Indications: gastric ulcer and duodenal ulcer in the recovery period after a severe exacerbation and mild exacerbation, mild exacerbation of chronic gastritis with preserved or increased secretion, acute gastritis in the recovery period.

This diet provides moderate protection of the stomach from mechanical, chemical and thermal aggression. Diet № 1 is a nearly complete diet calorific value of 3200 kcal containing 100 g of protein, 200 grams of fat and 500 grams of carbohydrates. Prohibited coarse vegetable food, concentrated meat and fish broth, all fried foods, fresh bread. Allowed lean meat, steam fish, meat and fish boiled, vegetables puree, milk, omelets, sausages, cheese, stale white bread.

Diet № 2. The assigned diet for gastritis with low acidity, in the absence of hydrochloric acid, chronic colitis without exacerbations, as well as during convalescence after illness. The effect of this diet on the body is to avoid mechanical irritation of the stomach with preservation of chemical irritation to excite the secretory function of the stomach. The caloric content of this table is 3000 kcal, includes 100 g protein, 100 g fat and 400g of carbs. The content of salt in the diet to 15 g. Products meeting the diet: egg dishes, casseroles, cereals, vegetables in the form of purees, compotes, mousses, juices, soups of meat and fish broth with vegetables, meat gravies, white stale bread.

Diet № 3. This diet is used for constipation, caused by improper diet. The diet aims to increased peristalsis, aims bowel movements with inclusion in the diet of the mechanical, physical and thermal stimuli. The caloric content of this table — 4000 kcal daily diet is 110 grams of protein and fat, to 600 g of carbohydrates. Table salt is consumed in increased quantities. Limited hot food, jelly and pureed porridge. It is recommended to consume foods rich in fiber: vegetables and fruits, herbs, black bread, sauerkraut and carbonated drinks, cold soups, hard boiled eggs.

Diet № 4. The diet is used for in diseases of the intestine that occur with diarrhea: dysentery, gastroenteritis in the period of exacerbation, chronic colitis

in the acute stage. This diet provides moderate protection of the intestines from mechanical, chemical and thermal aggression. Diet № 4 has reduced the amount of carbohydrates (up to 250 g), protein (100 g) and fat (70 g) per day, its calories — 2000 calories. From the diet should exclude white bread and milk. Products used in this diet: pureed soups on the water or low-fat broth, porridge on the water, and steam meats, cottage cheese, black coffee, strong tea, stale white bread, berry juices. This table is assigned for a few days followed by transfer to the Diet №2 or №5A.

Diet № 5. Diets used in diseases of liver and biliary tract, the stagnation of the liver, chronic colitis with a tendency to constipation, chronic gastritis without severe disorders. The purpose of this diet is unloading lipid and cholesterol metabolism, sparing of the liver, stimulation of normal bowel activity. In the diet limit cholesterol, purine bases and fats. Daily diet includes 100 g protein, 70 g fat, 50 g carbohydrates. From the daily diet is necessary to exclude liver, fried foods, sweet pastry, butter, cream, eggs and legumes. Products that are allowed: milk and vegetarian soups, low-fat boiled fish and meat dishes, vegetables and fruits, milk products.

Diet № 7. Indications: acute nephritis in the recovery period (3-4 weeks of treatment); chronic nephritis without exacerbation and without renal insufficiency. Destination: sparing renal function, weakening of arterial hypertension and reduce swelling. Free liquid is allowed to consume up to 0.8 liters and the amount of total liquid up to 1.5 L. This diet is a transitional stage for daily nourishment. Its calorie is about 3000 calories, which come at the expense of 80 g of protein, 100 grams of fat and 430 g of carbohydrates. Table salt can be handed to the patient, the physician's discretion, in an amount up to 5 grams per day for self more salt dishes.

Diet № 8. Indication for the use of this diet is the increased weight of the patient. The purpose of this table is reducing the amount of fats in the diet, carbohydrates, salt, liquid, whereby a reduced calorie intake. The amount of food supplemented with foods rich in plant fiber, balanced protein content. The caloric content of this diet— from 2000 to 2600 kcal (depending on patient's weight). Nutrient composition: 110 g protein, 65 grams of fat and 300 grams of

carbohydrates. Permitted foods: white bread, low-fat cottage cheese, vegetables, fruit with a small amount of carbohydrates, cereals, boiled lean fish and meat, fruit and vegetable soups. Vitamins ingested with raw vegetables and fruits.

Diet № 9. This diet is used in the treatment of diseases such as diabetes, diseases of the joints, allergic diseases. The purpose of this diet is limiting the number of carbohydrates consumed. Calorie this table is 2300 kcal, nutrient composition: 120 g of protein and fat, 250 g of carbohydrates. Need frequent meals and limit physical activity. You must consume foods with minimal glucose diet: eggs, meat, fish, dairy products, vegetables (cabbage, turnips), fruits sour varieties, herbs, buckwheat, animal fats.

Diet № 10. This diet has been widely used and is used in diseases of the cardiovascular system, hypertension, atherosclerosis and kidney disease. Is a complete diet with restriction of consumption of table salt and fluid. It is forbidden to eat fried, salty and spicy food. All food is cooked without salt, the salt may be handed to the patient in a quantity not exceeding 5 grams daily fluid intake is limited to 1.5 L. Calori of the diet is 3000 kcal, nutrient composition: 80 g protein, 70 g fat and 400g of carbs. Products permitted for use: milk, cream, sour cream, meat and fish boiled, vegetables and fruits, lean dough pastry, berry and fruit compotes.

Diet № 15. Rational, is designed to power virtually healthy people in the recovery period from a variety of common diseases. The supply of all products, which contain the optimal qualitative and quantitative ratio of the level of proteins, fats and carbohydrates. Allowed all the products that are selected according to taste preferences of the person. Calorie this diet — 3700 kcal, chemical composition: 110 g proteins and fats, 550 g of carbohydrates. Diet three times a day.

Hypoallergenic diet. The indication for its use is food allergy. The duration of appointment is for up to 10 days. This diet is healthy, chemically gentle, with restriction of consumption of table salt to 7 g per day. In the presence of edema should limit the intake of free fluid. You must eliminate all food allergens: meat and fish products, citrus fruits, red grapes, chocolate, coffee, salted and smoked

products, mayonnaise, ketchup, honey. It is necessary to restrict juices, eggs, chicken, cheese, sugar and jam, given the idiosyncrasy. Cooking: all dishes should be boiled with three times the change of the broth when cooking meat, fish, chicken, no salt. Calorie this diet is 2800 kcal, chemical composition: 90 g protein, 80 g fat and 400g of carbs. Diet fractional, 6 times a day.

### **Feeding patients**

Depending on the way of eating there are the following forms of nutrition of patients.

- Active feeding – the patient takes their own meals, according to table diet
- Passive feeding – the patient takes food with nurses.
- Artificial feeding – the feeding of the patient special feedings by mouth or tube (gastric or intestinal), or by intravenous drip preparations.

#### **Passive feeding**

With strict bed rest and critically ill patients in elderly and senile age assistance in feeding has a medical nurse.

When feeding should be used one hand to lift the patient's head with a pillow, the other to hold to his mouth feeding cup with liquid food or the spoon with food.



**Fig. 2.**

**Feeding the patient: flow feeder cup; b - feeding with a spoon.**

The procedure

1. To ventilate the room.
2. To wash or wipe the hands of the patient with a damp warm towel.

3. To put on the neck and chest of the patient clean cloth.
4. To set on the bedside table a dish with warm food.
5. To give patients a comfortable position (sitting or half-sitting)
6. To choose a position so that it was convenient for the patient and nurse (for instance, in patients with fracture or acute disorders of cerebral circulation).
7. Feed small portions of food, definitely leaving the patient time for chewing and swallowing.
8. Give to drink a patient by using a cup or glass.
9. Remove the dishes, cloth (apron), to help rinse mouth, wash his hands.
10. Lay the patient in the initial position.

### **Artificial feeding**

Artificial nutrition is introduction to the body of food, bypassing the digestive tract.

Enteral nutrition – the kind of nutritional therapy (lat. nutricium – power) is used when it is impossible to ensure adequate supplies of energy needs of the body in a natural way. When nutrients enter through the mouth or through a stomach tube, intraluminal probe.

Indications :

- neoplasms, especially in the head, neck and stomach;
- disorders of the Central nervous system – coma, cerebrovascular accident;
- radiation therapy and chemotherapy;
- gastrointestinal disease – chronic pancreatitis, ulcerative colitis.
- nutrition in pre - and postoperative periods;
- trauma, burns, acute poisoning;
- infectious diseases – botulism, tetanus
- mental disorders – anorexia nervosa, due to mental illness refusal of food intake, severe depression.

Contraindications: intestinal obstruction, acute pancreatitis, severe malabsorption, ongoing gastrointestinal bleeding; shock; anuria; the presence of food allergy to the components assigned to the nutrient mixture; uncontrollable vomiting.

Depending on the course duration of enteral nutrition and the preservation of the functional state of gastrointestinal distinguish the following ways of introduction of nutrient mixtures.

1. The use of nutrient mixtures in the form of a drink through a tube in small sips.
2. Tube feeding using nasogastric, nasoduodenal and dual probes
3. Through the stoma (gr. stoma – an opening created by surgery external fistula of a hollow organ)

There are several ways enteral delivery of nutrients:

- individual portions (fractional) according to the assigned diet (for example, 8 times a day for 50 ml; 4 times a day, 300 ml);
- drip, slowly, long, automatically adjusting the flow of food through a special dispenser.

For enteral feeding use liquid diet (broth, juice, milk mixture), mineral water; can also be applied a homogeneous diet canned food (meat, vegetable) and mixtures balanced content of proteins, fats, carbohydrates, mineral salts and vitamins.

A selection of mixes for adequate enteral nutrition depends on the type and severity of the disease, and the degree of conservation of functions of the gastrointestinal tract. So, it is normal for the needs and safety of the functions of the gastrointestinal tract standard nutrient mixture, while critical and immunodeficiency – nutrient mixture with a high content of easily digestible protein, enriched with trace minerals, glutamine, arginine and omega-3 fatty acids, when kidney dysfunction – nutrient mixture with high content of biologically valuable protein and amino acids. When non-functioning gut (intestinal obstruction, severe malabsorption) patient is prescribed parenteral nutrition.

Parenteral nutrition (feeding) is carried out by intravenous infusion of drugs.

The main indications.

- Mechanical obstacle to the passage of food in various parts of the gastrointestinal tract
- Preoperative preparation of patients with extensive abdominal operations, depleted patients.
- Postoperative management of patients after operations on the gastrointestinal tract.
- Burn disease, sepsis.
- Large blood loss

- Disorder of processes of digestion and absorption in the gastrointestinal tract (cholera, dysentery, enterocolitis, a disease of the operated stomach, etc.), uncontrollable vomiting.

- Anorexia nervosa and refusal of food.

For parenteral feeding apply the following types of nutrient solutions.

- Protein – protein hydrolysates, amino acid solutions: "VAMIN", "Aminosol", Polyamin, etc.

- Fat – fat emulsions.

- Carbohydrates – 10% glucose solution, with the addition of trace elements and vitamins.

- Plasma, plasma substitutes.

There are three main types of parenteral nutrition.

Total - all the nutrients enter the bloodstream.

Partial (incomplete) – use only major nutrients (e.g. proteins and carbohydrates).

Auxiliary –feeding through the mouth is not sufficient and requires additional introduction of a number of nutrients.

#### **Theme 4. MEASURING BODY TEMPERATURE. FEBRILE PATIENTS CARE.**

##### **THE SIMPLEST PHYSICAL THERAPY.**

**THE TEMPERATURE OF THE HUMAN BODY** – one of the indicators of his health. The measurement of body temperature is a thermometer.

Body temperature is provided by complex processes of thermoregulation, the constancy of which provides a functional system: the skin, the vessels, the hypothalamus.

Depending on environmental conditions and the internal state of the organism may be physiological fluctuations in the body temperature.

Intensive physical work, emotional stress, eating also increase temperature.

Thermometer (T) is a device for measuring T. are mercury, digital, instant (when measuring T in patients who are unconscious and the excited state).

The rules of disinfection and storage of thermometers:

- rinse the thermometer under running water



- prepare capacity (Cup) of dark glass, putting cotton on the bottom and filling disinfectant solution
- lay the thermometers for 15 minutes in a suitable container
- remove, rinse under running water, wipe dry
- get rid of the processed thermometers in another container, filled disinfectant solution labeled "clean thermometers"

Temperature (t) measurement is carried out twice a day – first thing in the morning (7-8 a.m.) and evening before the last meal (17-18 hours). At the disposal of the doctor t can be measured every 2-3 hours.

When measuring t need to shake the thermometer (up to 35 deg.(C), the skin in the armpit should be dry, the duration of temperature measurement 10 min After measurement T the thermometer is shaken and immersed in a glass with des. solution. Nurse fixes the T in the temperature sheet, which is located in patient's card and in the log book in the post nurses.

### **Fever**

In a healthy person the body temperature can range from 36 to 37 degrees. C. the maximum temperature is celebrated in the evening, the minimum in the morning.

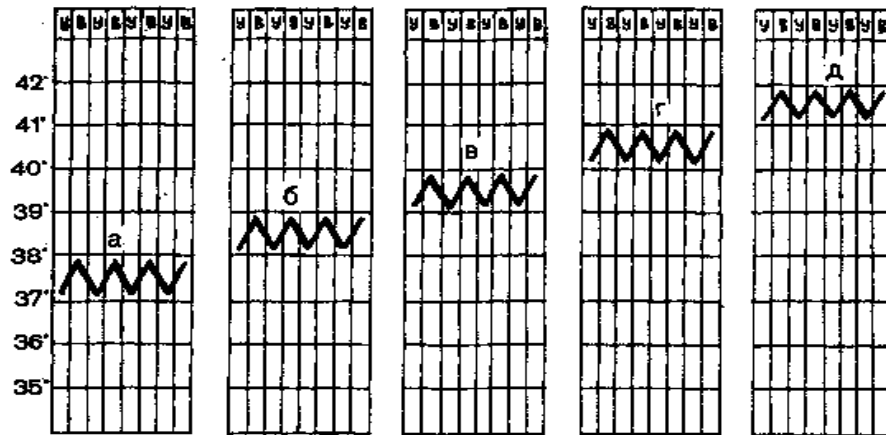
Fever – increase in body temperature over 37 ° C.

The increase in body temperature by 1 ° C is accompanied by an increase in the frequency of respiratory movements of 4 respiratory movements per minute and rapid pulse at 8-10 per minute in adults and up to 20 per minute in children.

Fever, its types

Fever — fever, caused by the disorder and the restructuring processes of thermoregulation associated with the formation of the body of the patient specific substances (pyrogens) that modifies the functional activity of thermoregulatory centers.

According to the degree of fever distinguish between low-grade (not above 38 °C), moderate (38-39 °C), high (39-41 °C) and hyperpyrexia, (over 41 °C), fever (Fig. 1). Fever is often subject to diurnal rhythm oscillations, when the highest temperature is observed in the evening and lower in the morning.



**Fig. 3. Types of fever depending on the degree of temperature rise. and — low-grade; б — moderate; в, г — high; д — hyperpyrexia.**

The pattern of temperature changes may occasionally hint at the diagnosis:

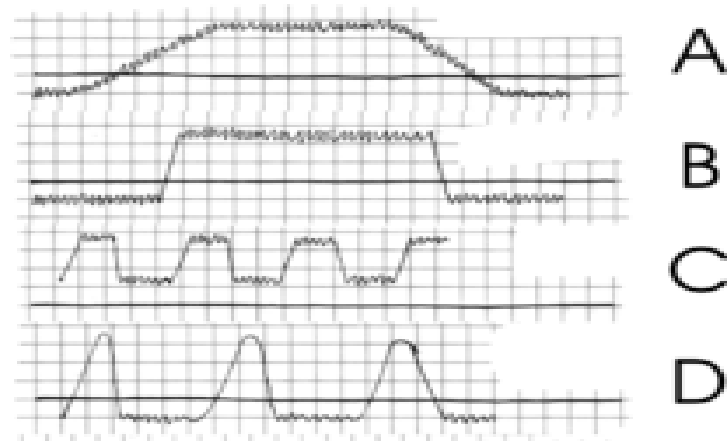
Continuous fever: Temperature remains above normal throughout the day and does not fluctuate more than 1 °C in 24 hours, e.g. lobar pneumonia, typhoid, meningitis, urinary tract infection, brucellosis, or typhus.

Intermittent fever: The temperature elevation is present only for a certain period, later cycling back to normal, e.g. malaria, pyaemia, or septicemia.

Remittent fever: Temperature remains above normal throughout the day and fluctuates more than 1 °C in 24 hours, e.g., infective endocarditis.

#### Hyperpyrexia

Hyperpyrexia is a fever with an extreme elevation of body temperature greater than or equal to 41.5 °C. Such a high temperature is considered a medical emergency as it may indicate a serious underlying condition or lead to significant side effects. Immediate aggressive cooling to less than 38.9 °C (102.0 °F) has been found to improve survival. Hyperpyrexia differs from hyperthermia in that in hyperpyrexia the body's temperature regulation mechanism sets the body temperature above the normal temperature, then generates heat to achieve this temperature, while in hyperthermia the body temperature rises above its set point due to an outside source.



**Fig. 4. Performance of the various types of fever**

- a) Fever continues b) Fever continues to abrupt onset and remission c) Fever remittent  
d) Intermittent fever**

### Hyperthermia

Hyperthermia is an example of a high temperature that is not a fever. It occurs from a number of causes including heatstroke, neuroleptic malignant syndrome, malignant hyperthermia, stimulants such as amphetamines and cocaine, idiosyncratic drug reactions, and serotonin syndrome.

### Features of the care of febrile patients

Caring for febrile patients is largely determined by the stages of the febrile period.

In the first stage (stadium incrementi) the patient must be warm (to put to bed and cover with the extra blanket, lined pad, drink hot tea), closely monitor the condition of various organs and body systems.

The second stage (stadium fastigii) sustainable period of preservation temperature on the high numbers and is characterized by a balance of processes of heat production and heat transfer. With the termination of the temperature rise significantly weakens chills, and muscle tremors, decreases and disappears vasospasm skin, so pale skin is replaced by hyperemia (redness). The patients may complain about weakness, headache, hot flashes, dry mouth. Serious disorders of the cardiovascular and respiratory systems may occur: increased heart rate (tachycardia), rapid breathing (tachypnea), sometimes low blood pressure (hypotension).

At the height of fever in some patients, delusions and hallucinations, and in young children convulsions may happen.

Febrile patients need careful care for the oral cavity, lubrication appearing in the corners of the mouth and lips cracking paraffin oil or glycerine. When lack of an appetite, it is advisable to appoint frequent, smaller meals, trying to use for feeding periods of lower temperature. Given the presence of fever phenomena of the General intoxication, in the absence of contraindications recommend drinking plenty of fluids — frequent, small sips (juice, juice, juice, mineral water). Constipation that occurs due to an involuntary stay in bed and receiving easily digestible food, should be administered to a patient laxatives or enema. Because patients are often on strict bedrest, they served the bedpan and a sack. Long stay patients in bed conduct mandatory prevention of bedsores.

The third stage of fever — the stage of decline or decay of temperature (stadium decrementi) is characterized by a significant predominance of heat transfer over the heat production due to the expansion of peripheral blood vessels, a significant increase perspiration.

Slow the temperature drop that occurs over several days (Fig. 5, a), called lysis (from the Greek. lysis — dissolution). Fast, often within 5-8 hours, the temperature drop with high numbers (39-40 °C) to normal or even subnormal values (Fig. 5, b) is called a crisis (from the Greek. krisis — the turning point).

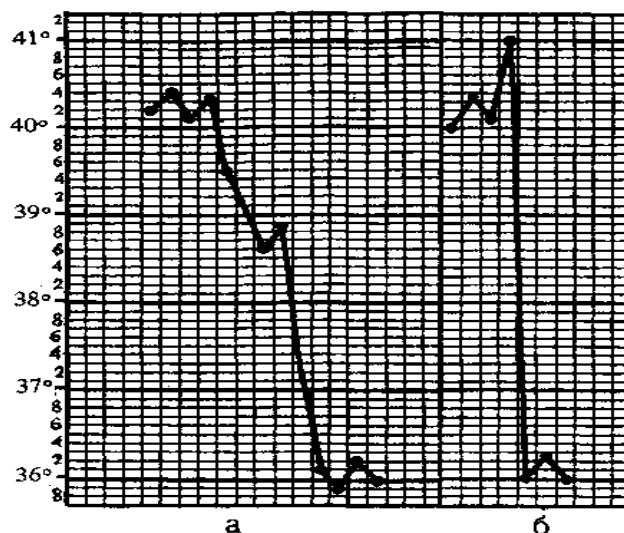


Fig. 5. The temperature drop, a — lysis; b — crisis.

As a result of a sharp adjustment of the mechanisms regulating the cardiovascular system crisis may carry with it the risk of acute vascular insufficiency, which manifests severe weakness, sweating, pallor and cyanosis

of the skin, drop in blood pressure, rapid pulse and decrease of its filling up to filiform.

The patient is surrounded by heaters, warm up, and give him strong coffee and hot tea, promptly change underwear and bed linen.

### **SIMPLE PHYSICAL THERAPY.**

Cold procedures cause local cooling of the body and narrowing of the blood vessels of the skin and surrounding internal organs. Used for the purpose of 1) reducing / limiting inflammatory or traumatic edema, 2) stopping (deceleration) bleeding, and (3) for analgesia.

#### **COMPRESS (COLD)**

Used in the first hours after injuries and traumas, when bow and hemorrhoidal bleeding, during the second period of fever.

Moisten the prepared cheesecloth in cold water, gently squeeze it.

To apply a compress to the corresponding part of the body.

Change the gauze every 2-3 minutes (as it warms).

#### **THE ICE PACK.**

Fill in the bubble for  $\frac{2}{3}$  of the volume of the pieces of ice and tightly to close. Hanging bubble on the corresponding area of the body (head, stomach etc.) at a distance of 5-7 cm or by wrapping it with a towel, apply to the affected place. When long-term treatments every 30 minutes to take breaks for cooling for 10 min.

#### **The application of heat**

Heat treatments (compress, poultices, hot water bottles) cause local heating of the area of the body and long-lasting dilation of blood vessels and increased blood circulation in the tissues. Used for the purpose of 1) stimulation of resorption of the inflammatory process and 2) reduction of pain (relieves muscle spasm in the internal organs).

#### **DRY HOT COMPRESS.**

Consists of several layers: 1) the first layer (inner imposed on the skin) damp cloth (soft cloth), 2) the second layer (middle) - oilcloth, plastic sheeting or waxed paper, the length and width of this layer should be 2 cm larger than

that of the first layer (swipe), 3) the third layer (outer) - vata, the dimensions of this layer should be 2-3 cm longer than the second layer.

#### WET HOT COMPRESS

To prepare a solution (warm water, weak solution of vinegar (1 tsp 9% solution to 0.5 liters of water) or 96% ethanol diluted with warm water in the ratio 1:2). The use of undiluted fragrances or alcohol may cause burns. Moisten the prepared solution of the cloth, squeeze it. Apply a damp cloth to the area of the body and tight it squeeze. From above to lay the other layer 2: wax paper, then cotton wool. To fix a compress by bandage. Remove the compress after 8-10 hours, wipe the skin with water (alcohol), wipe dry with a towel.

#### Warmer.

Fill the bottle 2/3 full with hot water. Gently dislodge from the warmer air, clenching it towards the opening. Tightly close the bottle stopper (cap). Check the heater for leaks, flipping it. Wrap a heating pad with a towel and apply to the appropriate area of the body. The use of warmer contraindicated in operation abdominal pain of unknown reason, appendicitis, pancreatitis, cholecystitis, bleeding and infected wounds, unconscious of the patient.

#### HIRUDOTHERAPY (therapy by leeches).

The hirudotherapy conduct for local blood extraction and reduction blood clotting (anticoagulant effect). Along with the secret of salivary glands of leeches in the human body fall hirudin (a potent anticoagulant substance) and histamine-like substances, expanding the lumen of small blood vessels and increasing bleeding. The leech therapy is used in hypertensive crisis, hypertension, angina pectoris, myocardial infarction, venous stasis in the liver, thrombosis and thrombophlebitis.

The method of storage of leeches. Leeches should be stored in clean well, spring or tap water at a temperature of from 10 to 18 C°, in a wide-mouthed glass jars, securely closed with gauze, in a dark place. The water should be changed 1 time per day. Tap water to store leeches should stand at least one day in enamel bucket.

Before the application of leeches skin is wiped with alcohol and wash with warm water, moisten skin with water with sugar content.

With the application of leeches to pre-placed in the tube head end outwards. You cannot detach a leech, after the procedure it apply to cotton wool soaked in alcohol. After removing the leeches on the skin surface impose a sterile bandage.

### **Theme 5-6. DRUGS AND ADMINISTRATION OF MEDICATION.**

The doctor inspecting a patient in the department daily writes in the paper assignments required drug, the dose, dosing frequency, route of administration.

Ward nurse, making the sample assignments from the assignment sheet, rewrites them in a special notebook. Information about assigned patients injections are transmitted into the treatment room for the nurse performing the injection.

List of all designated medications, written in Russian, procedural nurse serves senior nurse of the Department that summarizes this information and writes on a certain form invoice to receive medications from the pharmacy.

#### **Rules of discharge, accounting and storage of drugs (including, potent and narcotic drugs).**

The requirements are written to head nurse of Department on letterhead with the stamp of the medical institution, certified by the seal of a medical institution, signed by the Department head, the chief doctor in charge of the Department or his Deputy.

The requirements are numbered in order from the beginning of the year, and are written in the health care setting in triplicate, if a treatment facility is supplied from the pharmacy of the hospital (1st copy is kept in the pharmacy, 2nd the head nurse office, 3rd is passed to accounting).

On a poisonous, narcotic, expensive drugs, ethanol requirements are issued in four copies.

The requirements shall specify the full name of the medication, dosage, dosage form, packaging and quantity. This data is essential, as they allow you to set the cost of the drug.

Separately compiled requirement for finished medicines, drugs for emergency care, dressings, drugs, poisonous drugs, ethanol.

To obtain narcotic drugs name of the drug in the requirement is written in Latin, it is underlined in red pencil, the number stamped in numeral and in words, indicate the number of patient's cards, surname, name, patronymic of the

patient to which are prescribed this remedy. To obtain narcotic drugs in trauma, surgical and intensive care Department are allowed to prescribe drugs without specifying patient's chart marked "for emergencies", including 5-day need for these drugs.

### **Storage and registration of medicines in the post**

In the Department at the post medicines are stored in a special Cabinet (locked) on a separate labeled the shelves depending on the route of administration (internal, external, for injection). Separately stored flammable substances (alcohol, ether), dressings, instruments, strong-smelling drugs (iodoform, Lysol), disinfectants.

Vaccines, serums, antibiotics, water infusions and decoctions should be stored in a dedicated refrigerator at a temperature of 2-4°C.

Poisonous and narcotic drugs (atropine, pilocarpine, platifillin, morphine, promedol, sombrevin, etc.) are stored in metal boxes attached to the floor / wall that needs to be locked with a key. On the inside door of the safe or Cabinet should be the words "A" and a list of poisonous and narcotic medicines.

After the end of the day metal safes sealed. The persons authorized by the order of the healthcare facility, in conditions that ensure their complete safety have the keys and printing. At night the keys are passed to the duty doctor or the nurse, who signs in a special register, and the persons who brought and took the keys put the signatures in a special register.

Stocks of narcotic drugs in offices should not exceed 5-day needs, psychotropic – 7-day.

Medicinal products containing narcotic substances, or drugs having narcotic effect, shall be marked in a special book, numbered, bound, and signed by the chief physician and seal of the medical institution.

Narcotic medicines are prescribed by a doctor, procedural nurse introduces it with a mark on the history of their introduction. If it is entered part of the dose, the timestamp of the introduction and destruction of the remaining amount must be marked in the certificate medical appointments and in the medical record of the patient. Entries are confirmed by the signature of the nurse and the doctor. A similar entry is made in the special book of the office.

Used vials from the narcotic drugs shall be removed from the report on the same day, excluding weekends and holidays, the person authorized to it by order



of the chief physician of the institution. The fact of putting nurses empty vials from narcotic drugs are recorded in a special book, numbered, bound, sealed and signed by the head of the institution.

In the distribution of medicines should remember the terms of their storage. In particular, manufactured in pharmacy in bottles under running sterile solutions of glucose, potassium chloride, novocaine, sodium chloride and other injectable solutions are to store 1 month. Opened vials must be used within one day. Eye drops made in bottles under running-in, sterilized 1 month, aseptically manufactured (not sterilized) – 2 days; emulsions and suspensions – 3 days.

### **Methods of administration of drugs**

1. enteralny (per os, sublingual reception, per rectum). Shortcomings of reception of per os: possibility of destruction in a stomach and a liver and adverse action on a gastrointestinal tract. The indications of sublingual reception are the necessity of fast absorption and protection against destruction in a liver (nitroglycerine, validol, etc.). Indications to reception per rectum: vomiting, swallowing disorders, unconsciousness of the patient, damage of a mucous membrane of a stomach. Ways of introduction: microenemas or rectal suppositories

2. parenteral (intradermal, subcutaneous, intramuscular, intravenous, intra-arterial injection, subdural, subarachnoid, intrapleural, intramedullary, intracardiac, intra-articular injection, application, inhalation).

### **The injection technique**

- subcutaneous injection:

1. injection sites: the outer surface of the shoulder and thigh, subscapular region, lateral surface of the abdomen.

2. first stage: the left hand form a skin fold after skin treatment with a cotton ball with ethanol.

3. second stage: the right hand at the base of the resulting triangle is injected with a syringe needle at 1/3 of its length. After insertion of the needle of the syringe is placed in the left arm and inject the contents by the right hand.

4. third stage: after removing the needle, the injection site is wiped with alcohol and pressed a cotton ball.

- intramuscular injection:

1. injection sites: upper and external quadrant of the buttocks, the front-outer surface of the thigh, subscapular region.

2. first stage: after cleaning the skin with alcohol with the left hand hold the skin around the intended puncture, a syringe with a needle length of 8-10 cm placed perpendicular to the skin surface.

3. second stage: the right hand inserts the syringe needle to 7-8 cm, before the introduction of drugs pull back the plunger of the syringe to ensure the needle does not hit a blood vessel. After insertion of the needle the syringe is placed in the left arm and inject the contents by the right hand.

4. third stage: after removing the needle, the injection site is wiped with alcohol and pressed a cotton ball.

- intravenous injection:

1. injection sites: vein of the elbow bend, the superficial veins of the forearm and hand, veins of the lower extremities.

2. first stage: under the elbow of the outstretched arm of the patient is placed special small pad so as the arm must be in the position of maximum extension. Above the proposed injection site a special plait must be impose for compression on the superficial veins. To increase the blood supply to the veins of the patient offer the patient a few times to compress and decompress the hand.

3. second stage: after cleaning the skin with alcohol pull the skin of the elbow for fixing the veins and reduce movement. The venipuncture into vacutainers carried out in two steps, first piercing the skin, and then the vein at an angle of 30 degree. Before administration of the medication you are to draw back the plunger of the syringe to ensure the needle is in the vein, in this case the needle is in the vein the blood appears in the syringe. Then plait dismiss, the syringe is placed in the left arm and slowly inject the contents by the right hand.

4. third stage: after removing the needle, the injection site is wiped with a sterile cotton swab with ethanol and impose a pressure bandage on for 1-2 minutes.

#### Medical complications of injections.

1. introduction of medicine not in right site. Examples: introduction of CaCl<sub>2</sub> under skin - a necrosis; introduction the oil solutions in a gleam of blood vessels - a fatty embolism of branches of a pulmonary artery.

2. post-injection infiltrate and abscess because of non-compliance with rules of an asepsis and antiseptics, use of cold solutions, especially oil.
3. a trauma of vessels with the subsequent formation of hematomas, phlebitis and thrombophlebitis (usually as a result of an unsuccessful puncture of a vein with a puncture of 2 of its walls).
4. a needle fiasco in tissues because of the rough manipulations leading to reflex reduction of muscles.
5. allergic reactions in the form of urticaria, a knotty eritema, allergic dermatitis, rhinitis, conjunctivitis, allergic damages of a gastrointestinal tract, anaphylactic shock.

### **FIRST AID FOR ANAPHYLACTIC SHOCK**

ASH is characterized by gross disorders of hemodynamics, circulatory insufficiency and hypoxia of organs due to severe allergic reactions as a result of exposure to the organism sensitized with antigen (antibiotics, serum, radiopaque substances, insect bites, etc.).

ASH symptoms are contraction of smooth muscle, dysfunction of the endocrine glands, coagulability disorders, ↑ vascular permeability.

The time of onset of symptoms - from a few seconds up to 30 minutes.

CLINIC: cough, choking, stridor, ↓BP, filiform Ps, marble pale skin, acrocyanosis, because of severe brain hypoxia - convulsions, foaming at the mouth.

#### **EMERGENCY CARE:**

1. **TERMINATION of CONTACT WITH the ALLERGEN:** stop the infusion, remove the sting of an insect. Above the place of introduction of the medication or stings to put pressure. The injection drugged 0.5 ml of 0.1% solution of **ADRENALINE** diluted in 2-3 ml of 0.9% NaCl, while in/m to introduce 0.5 ml. of 0.1% solution of **ADRENALINE**.

2. **Securing the airway:** put the patient to lift the foot, turn his head to the side, to nominate the lower jaw and fix the language.

3. **INHALATION of HUMIDIFIED OXYGEN** by nasal catheter at a rate of 5-10 l/min.

4. **WHEN RESPIRATORY failure AND HYPOTENSION** sublingual injection of 0.5 ml of 0.1% solution **EPINEPHRINE** or intravenous bolus of 0.5

ml of 0.1% solution of ADRENALINE in 20 ml 0.9% NaCl slowly over 5 min. If necessary every 10-15 min epinephrine repeat.

5. CORTICOSTEROIDS: intravenous drip in 90-120 mg of PREDNISONE. Re-introduction of corticosteroids after 4-6 hours may be performed .

6. If the ineffectiveness restore respiration intubation, mechanical ventilation may be performed.

## **Theme 7. MONITORING AND PATIENTS CARE WITH RESPIRATORY DISEASES.**

The main functions of the respiratory system – provide the body with oxygen and eliminating carbon dioxide and water.

Breathing – the main life process, which task is the maintenance of a constant gas exchange, the exchange of oxygen and carbon dioxide:

1) between the organism and the external environment or, more precisely, between the pulmonary (alveolar) air and atmospheric air – external breathing;

2) between lung air and blood – lung breathing;

3) between the blood and tissues of our body – internal or tissue respiration.

A healthy adult produces between 16 to 20 breaths per minute. Inhale and exhale are considered to be one respiratory motion. The frequency of the respiratory movements is determined by the excursion of the chest. During physical exercise, the breathing quickens, during sleep – slows. However, the quickening and slowing of the number of breaths may occur in diseases of the patient. The increase in the number of respiratory movements (more than 20) is called tachypnea, decrease in the number of breaths (less than 16) – bradypnea. In athletes, sporty people may be physiological decrease in the number of breaths due to the increase of VC (vital capacity of lungs). Temporary cessation of breathing is called apnea. Between the number of respiratory movements and heart rate there is a fairly stable ratio of approximately 1:4.

Counting the breath should be unnoticed by the patient. For this purpose we take the hand of the patient, as if to determine heart rate and the other hand placed on the chest, counting the number of movements for 1 minute.

During the examination the patient pay attention to the character of the breathing, the rhythm, frequency, depth, which are regulated by the respiratory center and the cerebral cortex. The normal breathing should be rhythmic and moderate depth.

Irritation of the respiratory center leads to increased intensity of breath. This occurs when the increase in carbon dioxide in the blood and decrease of oxygen concentration. The excess concentration of oxygen in the blood is observed during hyperventilation or inhalation of pure oxygen and can lead to depression of the respiratory center, to reduce the frequency and depth of breathing and even stop.

In a healthy person the respiratory movements are effected by reducing the respiratory muscles: intercostal, phrenic, and partly of the muscles of the abdominal wall. There are thoracic, abdominal and mixed types of breathing.

Pathological changes of respiration can be in: 1) disorder of patency of the Airways; 2) the disorder of the properties of the lung tissue; 3) changes in the pleura and pleural cavities; 4) change from the side of the chest.

### **The main complaints in diseases of the respiratory system**

Specific symptom of diseases of the respiratory system is a cough. Cough is a protective reflex act aimed at the elimination of the bronchi and upper respiratory tract alien bodies, mucus, phlegm. The cough reflex helps expectoration. Cough with phlegm is called wet, and without sputum – dry. It must be remembered that the removal of phlegm from the respiratory tract is helpful for the body the act and with a cough should not fight, it is only necessary to apply measures to ensure that the sputum is not very viscous and easier to stand out. Dry cough irritates the respiratory system and exhausts the patient, it is therefore necessary to take measures to eliminate it.

The care of cough is mainly defined by the disease, which causes coughing. So, with acute respiratory diseases (acute laryngitis, tracheitis) dry and painful cough antitussives suppress the drugs that are prescribed orally, steam inhalation. It is useful to give the patient warm sweet tea, warm milk with baking soda or, better mineral water "Borjomi". Mustard, manual hot baths, hot compresses on the chest are widely used. In wet cough with the release of large amounts of sputum the patient should be given a position in which better stands

out phlegm. For example, if abscess the patient should lie on the healthy side of the chest.

One of the symptoms of respiratory diseases is pain in the chest. It is usually associated with involvement in inflammation of the pleura occur during inflammation of the lung and pleura. For pleural pain the appearance during a deep breath, coughing is characterized. To reduce the chest pain, the patient tries to breathe superficially, delaying cough. He takes a forced position on the sick side, thus limiting the movement of the pleura and decrease pain. To help these patients, you need to choose the most comfortable position, well covered, put mustard or grease the chest with iodine tincture. If the pain is not reduced from the distractions of therapy to patients analgetics are prescribed.

A serious sign of pulmonary diseases is hemoptysis, i.e. the appearance of blood in the sputum. Hemoptysis, even minor, is dangerous, because you cannot be sure that it does not go into a life-threatening patient pulmonary hemorrhage, requiring emergency measures. Patient with any bleeding, you have to calm, to create it a complete mental and physical rest, not allowed to talk and smoke. In bed, you should give the patient an elevated position, on all sides to impose his pillows. Food should be given in cold, semi-liquid, easily digestible. Drink only cold. If you know what lung is bleeding on that side of the chest put a bubble with ice. With the appearance of hemoptysis cough it is necessary to suspend it by all available means, as the cough hemoptysis and enhances the patient's condition worsens. It must be remembered that when hemoptysis and pulmonary hemorrhage banks, mustard, heating pads on the chest is strictly contraindicated. If the patient is not able to rinse his mouth, the nurse takes a sterile cloth, spoons on the spatula and gently rubs the oral cavity, removing the remnants of bloody sputum. Duty staff should all the time be at the bedside until the complete cessation of bleeding. It is necessary to monitor the condition of the cardiovascular system, as possible the collapse. It is therefore necessary to monitor the pulse, blood pressure and ready to have a sterile syringe with needles for injecting medications.

Shortness of breath – dyspnea (gr. dis – frustrated, bad; rpoe – to breathe) – labored, broken breath. It is accompanied by painful sensation of shortage of air, due to which the patient breathes deeper and faster. Shortness of breath is a protective physiological adaptation, which compensated for the lack of oxygen and released the accumulated excess of carbon dioxide. Shortness of breath

occurs in a number of diseases, and as a clinical symptom is of great diagnostic value. There are the following types of dyspnea:

1. Inspiratory – characterized by a prolonged, elongated breath and occurs when the reflex spasm of the glottis and the disorder of patency of the large bronchi. Thus there is a noisy breath.

2. Expiratory – occurs when narrowing of the lumen of small bronchi and bronchioles due to spasm of the bronchial musculature and decreased elasticity of the alveoli (emphysema). It is characterized by shortness of breath and most often observed in bronchial asthma, obstructive bronchitis. During the asthma attack patient, usually takes a forced sitting position, rests hands on the bed, which promotes involvement in respiratory act auxiliary muscles.

3. Mixed dyspnea that simultaneously difficult to inhale and exhale. This develops shortness of breath with a substantial reduction in the respiratory surface of the lungs. It can be temporary (acute pneumonia, pneumothorax) and constant (with emphysema).

Pronounced shortness of breath that occurs suddenly is called suffocation. Asphyxiation arising attacks, is called asthma. Asthma can be bronchial and cardiac.

## **THE USE OF NEBULIZERS**

The advantages of NEBULIZER THERAPY: the lack of the necessary coordination of the breath with the flow of aerosol; the use of high doses of drugs with rapid effect; easy technique of inhalation.

### **TECHNIQUE INHALATION VIA NEBULIZER:**

1. access the nebulizer;
2. pour the liquid from the nebula or instill the solution from the vial;
3. add saline to 2-3 ml;
4. assemble the nebulizer;
5. attach the mouthpiece or face mask;
6. start the compressor, connect the nebulizer and compressor;
7. perform inhalation to use the solution;

**SANITARY TREATMENT NEBULIZER:** disassemble the nebulizer, rinse the nozzle with warm water and detergent, dry nebulizer parts. Then the nebulizer and the nozzle can be sterilized in an autoclave at 120°C and 1.1 atmosphere (OST 12-21-2-85).

## **THE BASIC RULES FOR USING DIFFERENT TYPES OF INHALERS.**

### **THE BASIC RULES FOR USING AEROSOL INHALER:**

1. Remove case (case, cover) mouthpiece and vigorously shake the inhaler.
2. First do a quiet expiration, then take the mouthpiece in your mouth, holding lips tightly.
3. After the beginning of inhalation press down on the inhaler to get the dose of medication.
4. Continue slow breath to fill the lungs.
5. Hold breath for 10 seconds.
6. After 1 or 2 minutes repeat steps 2— 5 if you want to get more than one dose of medication.
7. Rinse mouth with water.

The most common mistakes when using a inhaler.

1. Lips loosely embraces the mouthpiece of the inhaler, a portion of the medication is lost.
2. If the head in the upturned position, a large amount of the drug remains on the back wall of the pharynx and does not enter the lungs.
3. The use of more than one (usually two) dose in one breath.
4. Missing the timing of depressing the canister and inhale.
5. Not deep enough breath.
6. A sharp inhale instead of slow and not smooth.
7. Don't hold your breath on the inhale and immediately after the inhalation should exhale.

The use of aerosol inhaler with a spacer:

A special device spacer significantly improves the efficiency of aerosol inhalation. Be careful, the rules of use of an aerosol inhaler with a spacer have a number of features (see below).

1. Shake the inhaler before use.
2. Attach the inhaler to the spacer



3. Take a deep breath.
4. Tightly embrace the mouthpiece of the spacer lips.
5. Click once on the inhaler.
6. Slowly begin to inhale.
7. Slowly continue to inhale to maximum.
8. Hold your breath for 10 seconds or if it is impossible for so long to hold your breath as possible without removing the spacer from the mouth.
9. Exhale through the mouth back into the spacer.
10. Again slow breath through the mouth without the injection of a new inhaled doses of the drug.
11. Again the breath and exhale without the spacer.
12. Repeated inhalation at least 30 seconds.
13. Rinse mouth with water.

### THE USE OF POWDER INHALERS

In powder inhalers the drug is contained in the form of fine dry powder and thrown under the force of breath.

This type of inhaler increases the efficiency and safety of treatment. In the bronchi gets up to 40% of the dose, measured with a powder inhaler, and less medication remains in the upper respiratory tract. The therapeutic effect of the drug is enhanced, and the risk of adverse events is reduced.

Dry powder inhalers are divided into two groups: single-dose and multi-dose. Single-dose devices charged capsule with medication before each inhalation. Multi-dose inhalers contain a medication for the entire life of the inhaler from 30 to 200 doses

Today, there are a number of different powder inhalers: multi-disk, turbuhaler, handihaler, etc.

### INSTRUCTIONS FOR USE of TURBUHALER (multi-dose dry powder inhaler):

Turbuhaler - multi-dose inhaler, allows to inhale the drug in very small doses.

Before first use, turbuhaler need to prepare to work

1. Unscrew and remove the cap.

2. Keep the inhaler upright red feeder down. Do not hold the inhaler with the mouthpiece during turning of the dispenser. Turn the dispenser until it stops in one direction and then to another in the opposite direction. Perform the procedure twice.

For a single dose, the patient should perform the following procedure

1. Unscrew and remove the cap.

2. Keep the inhaler upright red feeder down. Do not hold the inhaler with the mouthpiece during turning of the dispenser. In order to measure the dose, turn the dispenser until it stops in one direction and then to another in the opposite direction.

3. Exhale. Do not exhale through the mouthpiece.

4. Carefully place the mouthpiece between your teeth, squeeze the lips and inhale strongly and deeply through the mouth. Do not chew and bite down the mouthpiece.

5. Before breathing out, remove the inhaler from your mouth.

6. If you need more than one inhalation dose should be repeated, PP. 2-5.

7. Close the inhaler cap, check that the cap of the inhaler is thoroughly screwed.

8. Rinse mouth with water without swallowing.

You cannot remove the mouthpiece, because it is fixed on the inhaler and can not be removed. The mouthpiece of turbuhaler is spinning but not turning it.

The sound that you hear when shaking the inhaler, is a drying agent and not the drug substance.

A method of using the INHALER HANDIHALER (HANDIHALER) (single-dose dry powder inhaler):

Inhaler Handihaler is especially designed for use Spirivy and is not designed to accept other drugs.

The inhaler includes dust cap, mouthpiece, base, piercing the button, a central chamber.

When using the inhaler Handihaler should open the dust cap by lifting it up; then open the mouthpiece; get the capsule Spirivy from the blister (only immediately prior to use) and put it in a central chamber (doesn't matter which

side the capsule is placed in the camera). Tightly close the mouthpiece until you hear a click, the dust cap is left open.

Holding the Handihaler mouthpiece up, press the piercing button once until the end and then release. Thus, there is formed an opening through which Spiriva is released from the capsule during inhalation. Exhale completely. Never exhale into the mouthpiece.

Take Handihaler to your mouth and tightly compress lips around the mouthpiece. Keeping your head straight, you should breathe slowly and deeply, but at the same time with enough force to hear the vibration of the capsule. Inhale to fill the lungs; then hold the breath as long as possible and remove the Handihaler from your mouth.

Continue to breathe calmly. To repeat the procedure that will lead to a complete devastation of the capsule Spirivy.

This is followed again to open the mouthpiece, take it out and throw the used capsule Spirivy. Close the mouthpiece and dust cap.

Cleaning the inhaler Handihaler (HandiHaler):

Cleaning Handihaler should be carried out 1 time per month. To do this you must open the mouthpiece and dust cap, then open the base by lifting the lancing button. Thoroughly wash inhaler in warm water to remove the powder. Handihaler should be wiped with a paper towel and an open mouthpiece, base and dust cap left to dry in air for 24 h.

After cleaning in this manner the device is ready for subsequent use. If necessary the outer surface of the mouthpiece can be cleaned with a damp, but not wet cloth.

## **OXYGEN THERAPY USES**

Oxygen therapy is widely used in the management of a number of chronic and acute health conditions. The therapy may be used in a hospital setting or pre-hospital setting (e.g. in the ambulance) to manage emergency situations or in the home setting to manage long-term health conditions. The mode of delivery and device used for oxygen therapy depends upon several factors including the patient's specific needs and the opinion of the medical professionals involved.

Some of the indications for oxygen therapy are described below.

Use in the chronic setting

The therapy may be used to deliver supplemental oxygen to patients with chronic obstructive pulmonary disease (COPD) on a long-term basis. COPD is one of the long-term effects of smoking and patients may need additional oxygen, either through periods where their condition has worsened or as a permanent support throughout the day and night. The use of supplemental oxygen is indicated when a patient with COPD has a partial pressure of oxygen (PaO<sub>2</sub>) level of 55 mmHg or less or an oxygen saturation (SaO<sub>2</sub>) level of 88% or less. The therapy has been shown to significantly increase patients' lifespan.

Other examples of chronic conditions that may benefit from oxygen therapy include:

- Chronic asthma

- Cystic fibrosis

- Pulmonary hypertension

- Obstructive sleep apnea

- Heart failure

- Use in the acute setting

During a medical emergency, oxygen therapy is often used both in the hospital setting and by first aiders in the ambulance while a patient is in transit. In the pre-hospital setting, high flow oxygen therapy may be administered as part of resuscitation or in the case of anaphylaxis, major trauma, seizure or hypothermia, for example.

In cases where injury or illness has caused hypoxemia, oxygen therapy may be used to increase the availability of oxygen to bodily tissues until target oxygen saturation levels are achieved, based on pulse oximetry testing. The target level for most patients is 94-98% and for those with COPD, the level is 88-92%.

Oxygen used in the medical setting is separated using several different methods including chemical reaction and fractional distillation. This oxygen is then either used immediately or stored for future use.

The main sources of oxygen therapy include:

- Liquid storage - Liquid oxygen is stored in tanks which are kept at a chilled temperature until the oxygen is needed. It is then boiled at a temperature of 90.188 K (−182.96 °C) and oxygen is emitted in the form of gas. This method is widely used in hospitals and other settings.

Compressed gas - Oxygen gas can also be stored as compressed gas in a gas cylinder. This is a convenient storage method that eliminates the need for refrigeration. Large oxygen cylinders can provide a flow rate of 2 litres per minute over a period of two days. Smaller, portable cylinders that last around 4 to 6 hours when used with a conserving regulator, are also available. The regulator senses the patient's respiration rate and adjusts the oxygen pulse accordingly.

Instant usage - An electrically powered device called an oxygen concentrator can be used to generate enough oxygen for a patient to use immediately. These devices are widely used as home oxygen therapy tools or portable devices that can provide an instant oxygen supply, without the need for bulky cylinders.

Oxygen therapy may be given as an acute therapy or may be used in the home management of long-term illnesses. Before long-term oxygen therapy is prescribed, the patient undergoes a detailed examination to assess their suitability for the therapy. This involves measuring the amount of oxygen present in their blood, which can be achieved using a sample of arterial blood. An approximate blood oxygen concentration can also be obtained using oxygen sensors attached to the earlobe, wrist or finger. This is referred to as a pulse oximetry test. The breathing pattern is also assessed using a device called a spirometer.

### Oxygen Therapy Administration

Oxygen therapy may be administered in several ways, using several different types of devices. Oxygen therapy may be needed on an emergency basis in an acute setting or on a long-term basis in the home management of chronic illness. Increasing the amount of oxygen supplied to the lungs can benefit the patient by making more oxygen available to the various bodily tissues.

In most oxygen delivery devices, the oxygen is first passed through a pressure regulator, which controls the pressure of the oxygen as it moves from an oxygen cylinder (or other source) to a lower pressure. Once at this lower pressure, the flow of oxygen is controlled by a flowmeter and measured in litres per minute (lpm). Typically, the flowmeter range for the delivery of medical oxygen is between 0 and 15 lpm, although the rate can be as high as 25 lpm in

some units. Many flowmeters are based on a design referred to as the “thorpe tube” style that can be set to “flush,” which can be useful in the emergency setting.

The atmospheric content of oxygen within room air is only 21%. Although this amount is adequate for healthy individuals, those with certain diseases can benefit from an increased oxygen fraction in the gas they breathe, which will increase the oxygen content of their blood. For most of these diseases, increasing the oxygen fraction to around 30% to 35% is enough to make a significant difference to the blood oxygen level. This supplementary level of oxygen can be achieved using a nasal cannula, a thin tube with an individual nozzle for each nostril. This can provide oxygen at a low flow rate of 0.25 to 6.00 lpm, to achieve an oxygen level of 24% to 40%.

For oxygen at greater concentrations, various face masks can be used. This includes the simple face mask, which can deliver oxygen at 5 to 15 lpm flow, to achieve an oxygen level between 28% and 50%; the Venturi mask which can provide oxygen to the trachea at concentrations of up to 40%; and a partial re-breathing mask which is similar to a simple mask but includes a reservoir bag and can deliver 40% to 70% oxygen at 5 to 15 lpm.

For patients who require 100% oxygen, several devices are available, the most common of which is the non-breather mask or reservoir mask. This is based on a similar design to the re-breathing mask but a number of valves line the device to stop air that has been exhaled returning to the bag. This device achieves a minimum flow of 10 lpm and the fraction of inspired oxygen achieved is between 60% and 80%. Air or oxygen that has been warmed or humidified can also be administered via nasal cannula so that the patient can still talk, eat and drink while they undergo therapy.

For patients who are unable to breathe independently, positive pressure may be needed to force air into their lungs. Systems used to deliver this therapy vary in complexity but essentially, they provide artificial respiration.

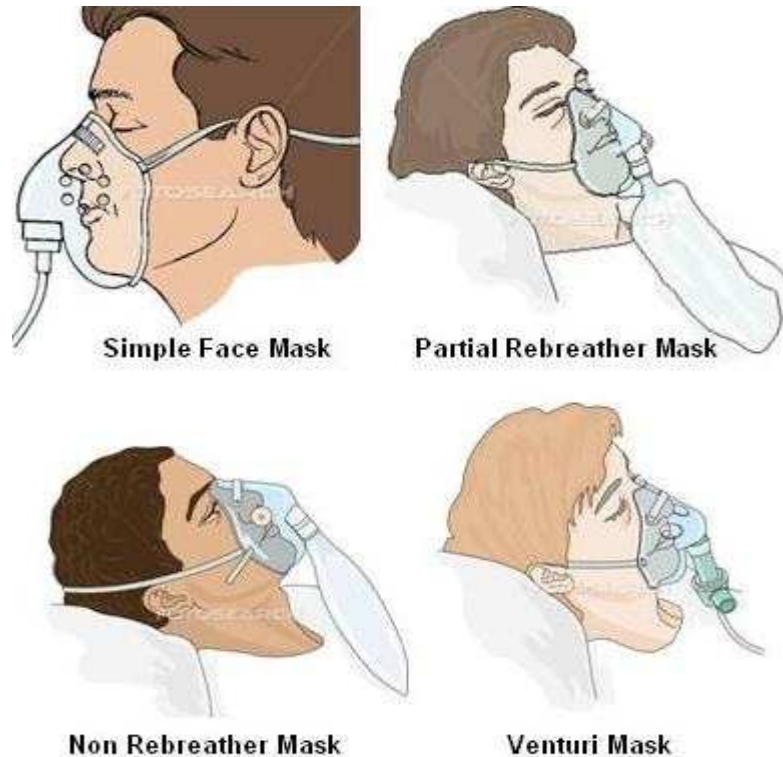
#### Types of Face Masks:

Simple Face Mask - Delivers oxygen concentrations from 40% to 60% at liter flows of 5 to 8 liters per minute, respectively.

Partial Rebreather Mask – Delivers oxygen concentration of 60% to 90% at liter flows of 6 to 10 liters per minute, respectively.

Non Rebreather Mask – Delivers the highest oxygen concentration possible 95% to 100% – by means other than intubation or mechanical ventilation, at liter flows of 10 to 15 liters per minute.

Venturi Mask – Delivers oxygen concentrations varying from 24% to 40% or 50% at liter flows of 4 to 10 liters per minute.



**Fig.6. Types of Face Masks.**

### 3. Face Tent

It can replace oxygen masks when masks are poorly tolerated by clients.

It provide varying concentrations of oxygen such as 30% to 50% concentration of oxygen at 4 to 8 liters per minute.



**Fig. 7. Face Tent**

#### 4. Transtracheal Oxygen Delivery

It may be used for oxygen-dependent clients.

The client requires less oxygen (0.5 to 2 liters per minute) because all of the low delivered enters the lungs.



**Fig. 8. Transtracheal Oxygen Delivery**

#### Oxygen Therapy Side Effects

Oxygen therapy can be a life saving treatment for patients with hypoxia and several other conditions.

In most countries, the law states that oxygen should never be withheld from a patient. However, in some clinical scenarios, the administration of oxygen therapy can do more harm than good.

Some of the adverse side effects of oxygen therapy are described below:

Oxygen is a blood vessel constrictor or vasoconstrictor. As blood vessels are constricted, circulation in the peripheral blood vessels is significantly reduced, an effect that was previously thought to increase the risk of stroke. However, according to “Henry’s law,” the additional oxygen is dissolved in the blood plasma, which enables a compensating change to occur where oxygen supports neurons that may be starved of oxygen, as well as reducing inflammation and post-stroke edema in the brain.



A form of oxygen therapy called hyperbaric oxygen therapy has been widely used in the treatment of stroke since 1990. The therapy has occasionally caused seizures but due to the effect of dissolved oxygen on neurons, the seizure is not usually followed by any further negative effect. Such seizures usually occur as a result of oxygen toxicity. Hypoglycemia can also contribute to the risk but careful monitoring of the patient's food intake can usually prevent this being a factor.

In infants, the administration of high levels of oxygen can induce overgrowth of the blood vessels in the eye and lead to blindness. This condition is referred to as retinopathy of prematurity (ROP).

Patients with chronic obstructive pulmonary disease are at a particular risk of accumulating carbon dioxide if they are administered supplemental oxygen and these patients needs to be carefully monitored to prevent supplemental oxygen becoming dangerous rather than beneficial.

## **Thoracentesis**

### **Definition**

Also known as pleural fluid analysis, thoracentesis is a procedure that removes fluid or air from the chest through a needle or tube.

### **Purpose**

The lungs are lined on the outside with two thin layers of tissue called pleura. The space between these two layers is called the pleural space. Normally, there is only a small amount of lubricating fluid in this space. Liquid and/or air accumulates in this space between the lungs and the ribs from many conditions. The liquid is called a pleural effusion ; the air is called a pneumothorax. Most pleural effusions are complications emanating from metastatic malignancy (movement of cancer cells from one part of the body to another). Most malignant pleural effusions are detected and controlled by thoracentesis. Thoracentesis is also performed as a diagnostic measure. In these cases, only small amounts of material need to be withdrawn.

Symptoms of a pleural effusion include breathing difficulty, chest pain, fever, weight loss, cough, and edema. Removal of air is often an emergency procedure to prevent suffocation from pressure on the lungs. Negative air pressure within the chest cavity allows normal respiration. The accumulation of air or fluid within the pleural space can eliminate these normal conditions and

disrupt breathing and the movement of air within the chest cavity. Fluid removal is performed to reduce the pressure in the pleural space and to analyze the liquid. In addition, thoracentesis was traditionally used to remove blood from the chest cavity. This is rare now that the placement of a thoracostomy tube has proven to be a more effective and safer method.

Thoracentesis often provides immediate abatement of symptoms. However, fluid often begins to reaccumulate. A majority of patients will ultimately require additional therapy beyond a simple thoracentesis.

There are two types of liquid in the pleural space, one having more protein in it than the other. More watery liquids are called transudates; thicker fluids are called exudates. On the basis of this difference, the cause of the effusion can more easily be determined.

#### Transudates

Thin, watery fluid oozes into the chest either because back pressure from circulation squeezes it out or because the blood has lost some of its osmotic pressure.

Heart failure creates back pressure in the veins as blood must wait to be pumped through the heart.

A pulmonary embolism is a blood clot in the lung. It will create back pressure in the blood flow and also damage a part of the lung so that it leaks fluid.

Cirrhosis is a sick, scarred liver that both fails to make enough protein for the blood and also restricts the flow of blood through it.

Nephrosis is a collection of kidney disorders that change the osmotic pressure of blood and allow liquid to seep into body cavities.

Myxedema is a disease caused by too little thyroid hormone.

#### Exudates

Thicker, more viscous fluid is usually due to greater damage to tissues, allowing blood proteins as well as water to seep out.

Pneumonia, caused by viruses and by bacteria, damages lung tissue and can open the way for exudates to enter the pleural space.

Tuberculosis can infect the pleura as well as the lungs and cause them to leak liquid.

Cancers of many types settle in the lungs or the pleura and leak liquids from their surface.

Depending upon its size and the amount of damage it has done, a pulmonary embolism can also produce an exudate.

Several drugs can damage the lung linings as an unexpected side effect. None of these drugs is commonly used.

An esophagus perforated by cancer, trauma, or other conditions can spill liquids and even food into the chest. The irritation creates an exudate in the pleural space.

Pancreatic disease can cause massive fluid in the abdomen, which can then find its way into the chest.

Pericarditis is an inflammation of the sac that contains the heart. It can ooze fluid from both sides—into the heart's space and into the chest.

Radiation to treat cancer or from accidents with radioactive materials can damage the pleura and lead to exudates.

A wide variety of autoimmune diseases attacks the pleura. Among these are rheumatoid arthritis and systemic lupus erythematosus (SLE).

Many other rare conditions can also lead to exudates.

#### Blood

Blood in the chest (hemothorax) is infrequently seen outside of two conditions:

- major trauma can sever blood vessels in the chest, causing them to bleed into the pleural space

- cancers can ooze blood as well as fluid, they do not usually bleed massively

#### Chyle

Occasionally, the liquid that comes out of the chest is neither transparent nor bloody, but milky. This is due to a tear of the large lymphatic channel—the thoracic duct carrying lymph fluid from the intestines to the heart. It is milky because it is transporting fats absorbed in the process of digestion. The major causes of chylothorax are:

- injury from major trauma, such as an automobile accident

- cancers eroding into the thoracic duct

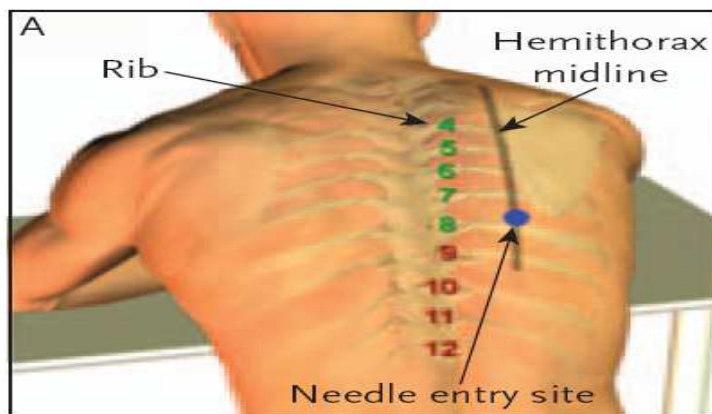
#### Air

Air in the pleural space is called pneumothorax. Air can enter the pleural space either directly through a hole between the ribs or from a hole in the lungs.

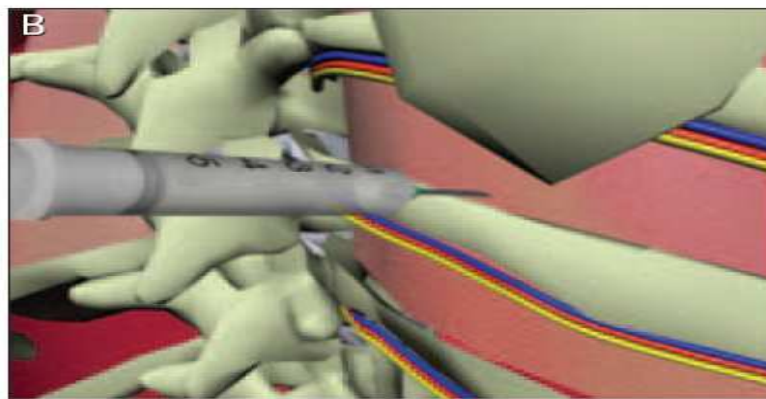
Holes in the lungs are sometimes spontaneous, sometimes traumatic, and sometimes the result of disease opening a communication to the air in the lung.

#### Precautions

Care must be taken not to puncture the lung when inserting the needle. Thoracentesis should never be performed by inserting the needle through an area with an infection. An alternative site needs to be found in these cases. Patients who are on anticoagulant drugs should be carefully considered for the procedure.



**Fig.9. Position of the patient and anatomical landmarks**



**Fig. 10. Placement of the needle to avoid intercostals vessels and nerves.**

#### Description

The usual place to tap the chest is below the armpit (axilla). Under sterile conditions and local anesthesia, a needle, a through-the-needle-catheter, or an over-the-needle catheter may be used to perform the procedure. Overall, the catheter techniques may be safer. Fluid or air is withdrawn. Fluid is sent to the

laboratory for analysis. If the air or fluid continue to accumulate, a tube is left in place and attached to a one-way system so that it can drain without sucking air into the chest.

#### Preparation

The location of the fluid is pinpointed through x ray or ultrasound. Ultrasound is a more accurate method when the effusion is small. A sedative may be administered in some cases but is generally not recommended. Oxygen should be given to the patient.

#### Aftercare

As long as the tube is in the chest, the patient must lie still. After it is removed, x rays will determine if the effusion or air is reaccumulating%—though some researchers and clinicians believe chest x rays do not need to be performed after routine thoracentesis.

#### Risks

Reaccumulation of fluid or air is a possible complications, as are hypovolemic shock (shock caused by a lack of circulating blood) and infection. Patients are at increased risk for poor outcomes if they have a recent history of anticoagulant use, have very small effusions, have significant amounts of fluid, have poor health leading into this condition, have positive airway pressure, and have adhesions in the pleural space. A pneumothorax can sometimes be caused by the thoracentesis procedure. The use of ultrasound to guide the procedure can reduce the risk of pneumothorax.

Thoracentesis can also result in hemothorax, or bleeding within the thorax. In addition, such internal structures as the diaphragm, spleen, or liver, can be damaged by needle insertion. Repeat thoracenteses can increase the risk of developing hypoproteinemia (a decrease in the amount of protein in the blood).

### **FIRST AID FOR BRONCHIAL ASTHMA ATTACK:**

**BRONCHIAL** asthma (BA) - a chronic relapsing disease predisposed individuals due to an inflammatory process of the respiratory tract predominantly allergic nature, leading to bronchial obstruction (narrowing) of the bronchi. Mandatory clinical manifestation **BA ASTHMA ATTACK** or **STATUS ASTHMATICUS**.

#### **EMERGENCY CARE:**

1. 1-2 ml (20-40 drops) to vaporize BERODUAL for 10 min using a nebulizer, with no effect or lack of effect inhalation repeat after 20 min.

2. With moderate (severe) exacerbations - oral PREDNISOLONE 30-60 mg (intravenous 60-90 150 mg) or PULMICORT via nebulizer 1000-2000 mcg (1-2 nebula) for 10 min

3. The ineffectiveness of items 1-2 and the threat of respiratory arrest - EPINEPHRINE 0,1% 0,5 ml subcutaneously, tracheal intubation, mechanical ventilation, the transfer to the intensive care unit.

### **EMERGENCY CARE IN PULMONARY BLEEDING**

**CAUSES:** tuberculosis, lung cancer, destructive pneumonia, lung abscess, bronchiectasis.

**SYMPTOMS:** Discharge of red frothy blood of alkaline reaction, often by coughing. Urgent pulmonary hemorrhage is not accompanied by cough and can lead to asphyxia.

#### **EMERGENCY CARE:**

1. to give the patient **SITTING OR SEMI-SITTING POSITION WITH the TILT** toward the **AFFECTED LUNG**. Persistent **COUGH SHOULD NOT BE SUPPRESSED COMPLETELY**, so as not to interfere with the expectoration of blood.

2. **TO PUT HARNESSSES ON A LIMB**

3. To **SUCK** the **BLOOD** through a catheter or bronchoscope

4. To **RELIEVE BRONCHOSPASM**: **SALBUTAMOL** inhalation.

5. Asphyxia - **TRACHEAL INTUBATION, SUCTIONING BLOOD AND ARTIFICIAL PULMONARY VENTILATION**

6. If it is impossible to identify indicators of blood coagulation - **HEMOFOBIN** (2-3 teaspoons inside) or **ETAMZILAT** (2-4 ml of 12.5% solution intramuscularly or intravenous).

7. In the absence of the hemostatic effect of the medications need to do **Bronchoscopy with BRONCHIAL OCCLUSION** of the bleeding segment.

## **Theme 8. MONITORING AND PATIENTS CARE WITH CARDIOVASCULAR DISORDERS.**

### **The main complaints in patients with cardiovascular disorders**

The main function of the circulatory system is to deliver the organs and tissues of oxygen, nutrients, enzymes necessary for the functioning of the body, and excretion of substances to be removed through the lungs, skin, liver, intestines, kidneys. The blood spreads throughout the body hormones and other active substances involved in the regulation of body functions. Distribution of heat is also conducted mainly through the blood.

#### **SHORTNESS OF BREATH – DISPNOE.**

Dyspnea is a subjective feeling sick of the lack of air.

The objective basis of dyspnea is the pathology of the cardiovascular system, leading to changes in the frequency, depth and rhythm of respiration, and the ratio of the duration of inhalation and exhalation. Species: expiratory, inspiratory, misc; physiological, pathological. D. is one of the major symptoms of HF

The **CARDIAC ASTHMA ATTACKS** – the most important manifestation of the left ventricular heart failure (mitral valvular heart disease, aortic valvular disease, hypertension, ischemic heart disease). Most often manifested by dyspnea, cough, hemoptysis, position orthopnea, with the development of pulmonary edema - cough with allocation of frothy pink sputum.

**HEARTBEAT** – In patients with diseases of the circulatory system is the heartbeat – the feeling increased and amplified heartbeats. The heartbeat occurs in diseases of the cardiovascular system and other internal diseases, fever, anemia, neurosis, and after taking certain medications (atropine sulfate, histamine, etc.).

The **DISRUPTION of the HEART** –often with ischemic heart disease

**ISCHEMIC CHEST PAIN WHEN STENOCARDIA (ANGINA):** chest pain that occurs during physical exertion, forcing the the patient to stop, at rest pain decrease or disappear, a short pass when receiving nitroglycerin.

**ISCHEMIC CHEST PAIN WITH MYOCARDIAL INFARCTION:** the pain is retrosternal, dagger, growing in intensity, taking over more and more area of the chest, accompanied by a feeling of "fear of death", there is no effect of nitroglycerin.

SWELLING, ASCITES, HEAVINESS IN the RIGHT HYPOCHONDRIUM – right ventricular heart failure type with signs of stagnation in the systemic circulation

HEMOPTYSIS – the symptom of cardiac asthma, pulmonary embolism

In various diseases of the heart, as well as increase or decrease blood pressure (BP) and other diseases of the cardiovascular system to heart are increased requirements, and it responds to them the same way for a long period of physical stress – muscle hypertrophy and compensatory expansion of cavities. In the future, the heart muscle weakens, and develop congestion in the vessels and organs. Weak heart, even increasing the frequency of its contractions, unable to pump all those who run to him the blood through the veins into the arteries.

The slowing of blood flow and increased pressure in the veins and capillaries and increase their permeability, delay kidneys sodium ions and decrease in the content of protein in the blood due to renal dysfunction and liver contribute to the development of edema. First, they are not visible (hidden). At this time, there is the increase in body mass and a decrease in urine output. When the number of stagnant fluid reaches 4-5 liters or more, the swelling already become visible. They appear earlier in the feet and legs which are furthest from the heart. With the progression of heart failure swelling increase and spread to other places, fluid may accumulate in the chest (hydrothorax), pericardial (hydropericardium) and in the abdomen (ascites). Heart swelling more pronounced in the evening. They are dense, when pressed with your finger the formation of "pits". The cyanotic skin over them.

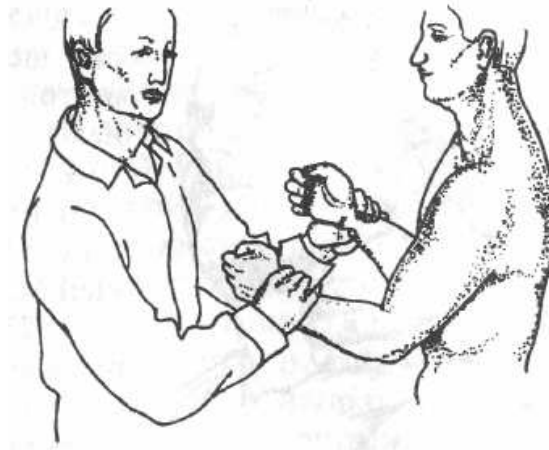
### **THE STUDY OF THE PULSE ON PERIPHERAL ARTERIES.**

Technique of determination of the pulse at the radial artery

The exploring pulse at the radial artery in the wrist joint. Normal rhythmic pulse, equally palpable on both hands, its frequency in the adult at rest is 60 to 90 per minute.

1. The fingers of hands at the same time embrace the wrist of the patient (in the area of the wrist) so that the pads of the index and middle fingers were on the front (inner) surface of the forearm in the projection of the radial artery.





**Fig. 11. Technique of determination of the pulse at the radial artery**

2. Carefully palpating the region of the radial artery against the underlying bone with different power; wherein the pulse wave is felt as an extension and lungs artery.

3. To compare the vibrations of the walls of the arteries on the right and left hands of the patient. In the absence of any asymmetry (inequality) further study of the pulse is carried out on one hand.

4. To determine the pulse frequency (if rhythmic pulse) count the number of pulses in 15 seconds and multiply the result by 4; in the case of arrhythmia, the counting is carried out for 1 min.

#### The technique of determining the pulse of the carotid artery

1. To determine on the anterior surface of the neck the most protruding part of the thyroid cartilage, the so - called "Adam's Apple".

2. To shift the index and middle fingers on the wall of cartilage outwards, and set them between cartilage and adjacent muscle.

3. Use your fingertips to determine the pulsation of the carotid artery. The study should be conducted carefully (on one side), you cannot pinch the carotid artery, as it is rich in the reflex area and there is a risk of a sharp reflex slowing of heart rate up to the loss of sick consciousness.



**Fig. 12. The technique of determining the pulse of the carotid artery**

Properties of the arterial pulse.

Define the following properties.

1. Rhythm heart rate - it is estimated by the regularity of successive pulse waves. If the intervals between them are equal, then the pulse is considered correct (rhythmic pulse, *pulsus regularis*), if different - wrong (irregular pulse, *pulsus irregularis*). In atrial fibrillation the heart rate is greater than the number of pulses - pulse deficit. For example, in a patient auscultation of heart tones identified 98 of heart beats per minute, and the pulse at the radial artery is 78 per minute, therefore, the pulse deficit is 20.

2. Heart rate - it is determined by counting the number of pulses per minute. Normal pulse rate is 60 to 90 per minute. A pulse with a frequency of less than 60 per minute is called rare (bradycardia), more than 90 per minute - frequent (tachycardia).

3. Filling pulse is determined by the volume of blood in the arteries, and depends on the systolic volume of the heart, determined by the amplitude of the pulse wave. With a good filling of the full pulse, *pulsus plenus*, at bad - bad palpated (empty pulse, *pulsus vacuus*). Barely perceptible, weak thready pulse called (*pulsus filiformis*); if so, the nurse should immediately inform the doctor.

4. The voltage pulse is defined the force that must be applied for the complete occlusion of the artery. If the pulse disappears with moderate compression of the radial artery, the pulse is described as satisfactory pulse voltage; when a strong compression of the pulse is evaluated as stressful, with a light - relaxed (soft). Voltage pulse rate can roughly estimate the AD inside the

artery: high pressure pulse is tense, or rigid (pulsus durus), low - soft (pulsus mollis).

5. The magnitude of the pulse - it is determined on the basis of the total evaluation of the voltage and filling pulse, it depends on the amplitude of the oscillations of the arterial wall. Distinguish a large pulse (pulsus magnus) and small pulse (pulsus parvus).

6. The shape of the pulse is determined by the rate of change of the volume of the artery, depending on the speed with which the left ventricle ejects blood into the arterial system. Quick stretching and lungs artery is characteristic of a short pulse (pulsus celer). This pulse is observed with aortic valve regurgitation, significant nervous overexcitement. Slow expansion and lungs artery is inherent for slow pulse (pulsus tardus) observed in aortic stenosis. The pulse on the right and left hands may be unequal (different filling and stress) when malformations, narrowing of, the relevant extrinsic compression of the radial, brachial, or subclavian arteries. In such cases, the study of the pulse is carried out separately on both hands, and for the performance of the actual heart on the hand where it is best palpated.

## **TECHNIQUE AND RULES FOR THE MEASUREMENT OF BLOOD PRESSURE.**

Distinguish between systolic and diastolic BP.

- Systolic blood pressure, or maximum occurs in the arteries after systole of the left ventricle and corresponds to the maximum rise of the pulse wave.

- Diastolic blood pressure maintained in the arteries during diastole due to their tone and corresponds to the lungs of the pulse wave.

- The difference between systolic and diastolic pressure is called pulse pressure.

In everyday practice, the pressure is measured indirect auscultatory method, proposed in 1905 by Russian surgeon Nikolai Sergeyevich Korotkov, using the sphygmomanometer (the device Riva- Rocci, also called a tonometer).

### **Rules of measurement**

1. The BP measurement is conducted with the person lying or sitting on a chair.

2. Blood pressure monitoring is recommended at 1-2 hours after eating and 1 hour after drinking coffee and Smoking.

3. Cuff (inner rubber part) of the sphygmomanometer should cover at least 80% of the circumference of the shoulder and cover 2/3 of its length.

4. You must make at least three measurements at intervals of not less than 5 min. For the arterial pressure value take the average value calculated from received for the last two measurements.

Technique of blood pressure measurements:

1. Offer the patient to adopt a comfortable position (lying or sitting on a chair; his hand must be loose, palm up).

2. Put on the patients` shoulder the cuff at the level of his heart so that the bottom edge of the cuff (on the place where a rubber tube) is about 2-2,5 cm above the elbow, and between the shoulder of the patient and the cuff could be held one finger.

3. Pump air into the cuff to a level at which it disappears pulsation of the brachial artery.

4. Open the valve to gradually release the air from the cuff at a speed of 2 mm Hg. Per 1 sec while listening (auscultation) of the brachial artery.

5. Mark on the gauge a value corresponding to the first sound (Korotkoff tones, due to the beats of the pulse wave), - systolic blood pressure; the value of the manometer at which the sounds disappear, corresponds to the diastolic BP.

BP 120/80 mmHg is considered optimal. BP from 130/85 to 139/89 mmHg considered high normal BP.

High blood pressure is considered with the level of 140/90 mmHg and above (arterial hypertension, or hypertension), low - less than 100/60 mm Hg (hypotension).

The degree of increase in blood pressure:

Grade I: 140/90-159/99 mmHg.

Grade II: 160/100-179/109 mmHg.

Grade III: 180/110 mmHg. and above.

When the BP systolic and BP diastolic corresponding to different degrees of hypertension, accepted a higher degree of hypertension (for example, 180/80 mmHg corresponds to the III degree of arterial hypertension).

## **FIRST AID FOR FAINTING**

SYNCOPE (syncope) - sudden brief loss of consciousness caused by cerebral hypoxia, accompanied by the weakening of cardiac activity and breathing, and a rapid recovery. The main symptom is loss of consciousness.

First aid:

1. to lay the patient horizontally with raised legs (30 °) without headrest;
2. unbutton clothes;
3. supply fresh air;
4. spray the face and chest with water, pat face;
5. give to fumes of ammonia.

If syncope continues to introduce 2 ml of 25% kordiamin i/m or 1 ml of 10% sodium caffeine benzoate subcutaneous.

## **EMERGENCY CARE IN A COLLAPSE**

COLLAPSE - clinical manifestation has developed acute vascular insufficiency with abrupt sustained decrease in blood pressure, and disorder of peripheral blood circulation because of changes to the blood volume, the incidence of vascular tone, etc.

Leading symptoms: weakness, pallor and humidity of the skin (cold, clammy sweat), tachycardia (bradycardia), thready pulse, decreased blood pressure (diastolic pressure < 80 mm Hg), decreased pulse pressure.

EMERGENCY CARE:

1. to lay the patient horizontally with raised legs (30 °) without headrest;
2. unbutton clothes;
3. To insulate (to cover with a blanket, a heating pad to the lower back and limbs).
4. Supply fresh air and oxygen therapy.
5. To introduce 1 ml of 1% solution MEZATONA i/m.
6. To enter intravenously 60-90 mg of PREDNISON.

## **FIRST AID FOR ANGINA, CARDIAC ASTHMA.**

For ANGINA characterized by pressing or squeezing pain in the heart that occur during physical activity, lasting up to 20 minutes radiating to left arm, shoulder, neck, jaw, with positive dynamics at rest or with the use of vasodilating agents (nitrates).

#### EMERGENCY CARE IN ANGINA:

1. Give humidified oxygen; 1-2 tablets of NITROGLYCERIN sublingual.
2. If no effect: 3-5 minutes re - NITROGLYCERIN (not more than three).
3. give chew 0,25 ACETYLSALICYLIC ACID.

CARDIAC ASTHMA (pulmonary EDEMA) - an asthma attack due to congestion in the pulmonary circulation with left ventricular (livepresets) failure. Characterized by inspiratory dyspnea and wet finely wheezing in the lower lung in the more severe case of edema of the lungs gurgling breath, the release of frothy pink sputum.

Pulmonary edema (American English), or oedema (British English; both words from the Greek οἴδημα), is fluid accumulation in the air spaces and parenchyma of the lungs. It leads to impaired gas exchange and may cause respiratory failure. It is due to either failure of the left ventricle of the heart to adequately remove blood from the pulmonary circulation ("cardiogenic pulmonary edema"), or an injury to the lung parenchyma or vasculature of the lung ("noncardiogenic pulmonary edema"). Treatment is focused on three aspects: firstly improving respiratory function, secondly, treating the underlying cause, and thirdly avoiding further damage to the lung. Pulmonary edema, especially in the acute setting, can lead to respiratory distress, cardiac arrest due to hypoxia, and death.

#### EMERGENCY CARE:

1. To give patients SEMI-SITTING POSITION;
2. oxygen therapy with antifoam pairs (ethyl alcohol) through a mask or nasal catheter: 96% ethyl alcohol is poured into the instrument or a special moisturizer and skip through the tracks. The rate of oxygen 2-3 l/min, and in a few minutes - 6-7 l/min. The intravenous introduction of 33% ETHYL ALCOHOL - 30 ml may be performed;
3. For the purpose of unloading of the pulmonary circulation under normal and high blood pressure - LASIX intravenous 4-8 ml. + NITROGLYCERIN sublingual 1-2 tab.
4. For the purpose of breathing - AMINOPHYLLINE 2,4% 10 intravenous drip with 200 ml of physiological solution.

## **FIRST AID FOR HYPERTENSIVE CRISIS**

HYPERTENSIVE CRISIS is a sudden sharp increase in blood pressure, accompanied by severe clinical symptoms: headache, dizziness, blurred vision, nausea, abdominal pain, discomfort in the heart region, nasal bleeding.

EMERGENCY care: a sitting position with lowered feet.

To reduce the pressure to take one of the following drugs:

CAPTOPRIL - 6,25 mg under the tongue, with little effect to take the drug again after 30-60 minutes;

CLONIDINE - 0.15 mg per os or under the tongue, repeated at 1 hour 0.075 mg;

HYDROCHLOROTHIAZIDE 25 mg or FUROSEMIDE 40 mg per os;

In cases of severe emotional stress can take 40 drops of CORVALLOL.

## **Theme 9-10. MONITORING AND PATIENTS CARE WITH PATHOLOGY OF DIGESTIVE ORGANS.**

### **Complaints of patients with diseases of the digestive system**

Complaints of patients with diseases of the digestive system depend on what section of the digestive tract involved in the pathological process.

Complaints characteristic for diseases of the esophagus include dysphagia, pain in the esophagus, esophageal vomiting.

Dysphagia is difficulty swallowing or the inability to completely adopted to swallow food. Dysphagia occurs in cancer of the esophagus, scarring after burns of the esophagus alkalis or acids, ulcers of the esophagus. Furthermore dysphagia can occur when compression of the esophagus aortic aneurysm or mediastinal tumors. Unlike dysphagia caused by organic diseases, and allocate more functional dysphagia due to esophageal spasm, achalasia of the cardia (disorder relaxation of the cardiac sphincter).

Dysphagia may be associated with pain in the esophagus (odynophagia). It happens with burns of the mucous membrane of the esophagus or esophagitis.

When narrowing of the esophagus usually there is vomiting. It differs from gastric that is alkaline and contains an unmodified pieces of food. Besides vomiting not preceded by nausea, and the patient necessarily observed dysphagia.

Blood in vomit mass is observed in the decay of the tumor, ulcer of the esophagus. Excessive bleeding may occur due to rupture of esophageal varices. It happens in liver cirrhosis.

In diseases of the stomach the main complaints are pain in the epigastric region, vomiting, nausea, impaired appetite, belching, and heartburn. There are early and late pain (occur in 1-1.5 hours after eating). It is also important to establish what relieves the pain. For example, in diseases of the stomach, accompanied by high acidity of gastric contents, pain relieves eating, induced vomiting, intake of soda solution.

Vomiting (vomit) is a common complaint and can occur in various diseases of the stomach (acute and chronic gastritis, gastric ulcer, pyloric stenosis, gastric cancer). However, it can occur in a wide range of other diseases not related to the disease of the stomach. Distinguish:

- 1) vomiting nervous (Central) origin (brain tumors, meningitis, traumatic brain injury, increased intracranial pressure, etc.);
- 2) vomiting visceral origin (peripheral reflex); observed in gastric ulcer and 12 duodenal ulcer, acute cholecystitis, gallstones;
- 3) hematogenous-toxic vomiting; observed in uremia, various intoxications and poisonings, including medicines.

In many cases, the mechanism of occurrence of vomiting is attended various reasons.

On questioning it is important to pay attention to the patient's appetite. Complete lack of appetite (anorexia), and especially an aversion to meat dishes typical for cancer of the stomach. Simultaneously with loss of appetite these patients complain of weight loss.

Heartburn (pyrosis). Heartburn is the sensation of severe burning sensation in the esophagus, which the patient feels in the chest. It happens more often with high acidity of gastric juice, but it may be at low pH. The reason is the insufficiency of the cardiac sphincter. As a result, stomach contents flow up into the esophagus. Contained in the gastric juice, the acid will irritate the esophagus and cause a burning sensation.

Diseases of the bowel the main complaints are pain during bowel, bloating (flatulence), diarrhea, constipation, and sometimes intestinal bleeding.

In diseases of the liver and bile ducts (BD), the most frequently observed pain in the right hypochondrias. When gallstones intense pain (biliary colic)



occurs in the right upper quadrant radiating to the right shoulder, right shoulder. The attack is often accompanied by vomiting, not bringing relief, increased body temperature. Long, dull pain, aching (a feeling of heaviness, fullness in the right hypochondrias) are observed in hepatitis, cirrhosis of the liver.

In diseases of the liver and biliary tract may be complaints of loss of appetite, even anorexia, feeling of bitterness in the mouth, belching, nausea, vomiting, bloating and rumbling in the abdomen, constipation or diarrhea.

In addition, in severe liver disease patients worried about weakness, decreased performance, fatigue, disturbances in the emotional sphere (irritability, mood instability, depression). Also often suffer from headaches, sleep disturbances.

### **PREPARING FOR IRIGARAY AND COLONOSCOPY.**

Examination of the colon. For conducting x-ray examination of the colon - barium enema - requires full cleaning the intestine contents and gases.

Contraindications to barium enema: diseases of the rectum and sphincters (inflammation, tumor, fistula, fissure sphincter).

There may be situations where the patient cannot hold entered it the fluid in the intestine (rectal prolapse, weakness of the sphincter), which makes this procedure impossible.

The stages of preparation of the patient to the study:

1. Appointment 2-3 days before the examination diet that excludes foods rich in fiber and contains other substances that contribute to the increased formation of gas. It is necessary to exclude from the diet of fresh rye bread, potatoes, beans, fresh milk, fresh vegetables and fruits, fruit juices.

2. Before the study, the patient is prescribed a light dinner (no later than 8 p.m.). Permitted scrambled eggs, yogurt, eggs, cheese, boiled meat and fish without seasoning, tea or coffee without sugar, semolina, boiled in water.

3. Prior studies before dinner patient give for intake of 30 g of castor oil (a contraindication to taking castor oil - intestinal obstruction).

4. Last night (after 30-40 minutes after dinner), the patient is put a cleansing enema with an interval of 1 h to obtain a "clean" rinsing water.

5. Morning for 2 h to study the patient put a cleansing enema before the "clean wash water".

6. The study was conducted on an empty stomach. If required by the physician to the patient in the morning allowed easy protein breakfast (low-fat cottage cheese, souffle whipped protein or egg white omelet, boiled fish), which allows you to cause reflex movement of the contents of the small intestine in fat and prevent accumulation of gas in the intestines. In this case, a morning enema put 20-30 minutes after Breakfast.

7. 30 minutes before the examination is administered to the patient gas outlet tube.

Preparation of the patient for endoscopic examination of the colon (colonoscopy) is performed according to the same rules.

Another way to clean the bowel before x-ray and endoscopic examination performs oral lavage. For its implementation apply isoosmotic solutions, such as FORTRANS. Packaging FORTRANS intended for one patient, consists of four packages. Each batch is dissolved in 1 liter of boiled water. Generally the first 2 liters of a solution the patient is prescribed after lunch on the day preceding the study; the second portion in an amount of 1.5-2 liters give morning research. The action of the drug (bowel movements) is not accompanied by pain and tenesmus, starts in 50-80 minutes after drinking the solution and lasts for 2-6 hours bowel movements the reappointment of FORTRANS morning begins in 20-30 minutes after taking the drug.

The use of FORTRANS contraindicated in patients with ulcerative colitis, Crohn's disease, bowel obstruction, pain in the abdomen of unknown etiology.

## **PREPARATION FOR ULTRASOUND OF THE ABDOMINAL ORGANS.**

The stages of preparation of the patient following.

1. 3 days before the examination the patient is prescribed a diet (see above).
2. Prior studies no later than 8 p.m., the patient is given a light supper. The study is conducted on an empty stomach; the patient also prohibit drinking and Smoking before the study (Smoking can cause contraction of the gallbladder).
3. To reduce gas activated carbon is used, or carbol or Espumizan. The day before the prescribed research ESPUMIZAN 2 capsules 3 times a day. Morning research - 2 capsules Espumizan (drink not needed).

Preparation of the patient to the conduct of gastroscopy is to release these parts of the digestive tract from food mass and gases and starts several days before the study.

The stages of preparation of the patient following.

1. Appointment 3 days prior to the study diets that exclude foods (see above).
2. Before the study, the patient is prescribed a light dinner (no later than 8 p.m.) for 12 hours before the study.
3. The night before and morning for 2 h to study the patient put a cleansing enema. The PURPOSE of LAXATIVES are CONTRAINDICATED, as they contribute to enhanced gas generation.
4. Morning research should not drink and take any medicines, Smoking.
5. Before research is necessary to remove dentures, glasses, tie.

### **GASTRIC LAVAGE**

Purpose: diagnostic, therapeutic.

Indications: acute food (poor quality food, mushrooms, alcohol) and medication (suicide, accidental) poisoning.

Contraindications: bleeding from the digestive tract, burns of the esophagus and stomach, bronchial asthma, myocardial infarction, cerebrovascular accident.

Necessary equipment:

- thick gastric probe;
- liquid vaseline oil;
- the mouth expander, glossotilt metal fingertip;
- rubber gloves, plastic aprons;
- a bucket of clean water at room temperature, a one-liter mug, funnel capacity of 1 l, a container for washing water.



**Fig.13 Gastric lavage**

The procedure (Fig. 13):

1. To enter a thick gastric probe to a certain label
2. Connect the funnel to the tube and lower it slightly inclining to the level of the knees of the patient that resulted stomach contents.
3. Pour into the funnel 1 liter of water, then slowly raise it until the water level in the funnel reaches its mouth (but no more!).
4. Lower the funnel below the level of the knees of the patient, merging appeared stomach contents into the container (Fig. 8-2; wash water fed to the bucket according to the law of communicating vessels).
5. Repeat the procedure of gastric lavage several times until the washings will be clean.
6. Disconnect the hopper from the probe, carefully remove the probe from the stomach of the patient.
7. To let the patient rinse the mouth with water, give him a rest.
8. Place the tube with funnel for 1 h in a container with disinfectant solution (3% solution of chloramine B).
9. you have to send the first portion of wash water in the lab (bacteriological, Toxicological, etc.).

### **INTESTINAL LAVAGE**

Intestinal lavage- multiple colonic on the principle of communicating vessels: the intestines are one of these vessels , the second is funnel inserted in

the free end of the rubber tubing, the other end of which is inserted into the rectum. First funnel, fluid-filled, raised 0.5 m above the level of the patient's body, then, as the flow of fluid in the intestine (when decreasing the level of water reaches the narrowing of the funnel), the funnel is lowered below the level of the patient's body and wait until it starts to flow the contents of the intestine. Raising and lowering alternate funnel, and at each increase of the funnel to add fluid. Intestinal lavage is carried out before until the funnel will not come out clean water. Enter usually 10-12 liters of water. The amount of liquid must be greater than the injected fluid volume.

Indications: lack of effect of cleansing enemas (due to prolonged constipation), poisoning by certain poisons, preparation for bowel surgery, sometimes with suspected colonic obstruction (colonic obstruction there are no gases in the washings).

For the production of intestinal lavage is used a special system consisting of the following elements:

- glass funnel capacity 1.2 l;
- rubber tube length of 1.5 m and a diameter of the lumen of 1-1,5 cm;
- connecting the glass tube to control the passage content);
- thick gastric tube (or a rubber tube provided with a nozzle for insertion into the intestine).

A glass tube connecting rubber tube with a thick gastric probe, the free end of the rubber tube wear funnel.

## **ENEMA**

An enema or clyster, is a fluid injected into the lower bowel by way of the rectum.

The most frequent use of an enema is as a cleansing enema (also called a soapsuds enema) which is given to relieve constipation or for bowel cleansing before a medical examination or procedure.

In standard medicine an enema may also be employed as a lower gastrointestinal series (also called a barium enema), to check diarrhea, as a vehicle for the administration of food, water or medicine, as a stimulant to the general system, as a local application and, more rarely, as a means of reducing

temperature as treatment for encopresis, and as rehydration therapy (proctoclysis) in patients for whom intravenous therapy is not applicable.

Absolute contraindications for all types of enemas:

1. gastrointestinal bleeding,
2. acute inflammatory processes in the colon,
3. acute inflammatory or ulcerative inflammation in the anus, oncology of the rectum,
4. acute appendicitis,
5. peritonitis,
6. the first few days after surgery on the digestive system,
7. bleeding from hemorrhoids,
8. prolapse of the rectum.

Currently, the most often in medical practice to use a cleaning and siphon enema (be sure to study).

Transanal irrigation (retrograde irrigation), the regular use of water and irrigation equipment with a catheter in the patient's home to assist in the emptying of feces in individuals with bowel dysfunction, including fecal incontinence and constipation.

As a bowel stimulant, similar to a laxative – the main difference being that laxatives are commonly thought of as orally administered while enemas are administered directly into the rectum, and thereafter, into the colon. When the enema injection into the rectum is complete, and after a set "holding time", the patient expels feces along with the enema in the bedpan or toilet. The increasing volume of the liquid causes rapid expansion of the lower intestinal tract, often resulting in very uncomfortable bloating, cramping, powerful peristalsis and a feeling of extreme urgency. Although very difficult for some, retaining an enema for 10 – 15 minutes causes a more thorough result.

Enemas may also be used to relieve constipation and fecal impaction, although in the U.S.A. and some other parts of the world, their use has been replaced in most professional health-care settings by oral laxatives and laxative suppositories.

Bowel stimulating enemas usually consist of water, which works primarily as a mechanical stimulant. Mineral oil functions as a lubricant and feces softener, but often has the side effect of sporadic seepage from the patient's anus which can soil undergarments for up to 24 hours. Glycerol is a specific bowel

mucosa irritant and when introduced in very dilute solution serves to induce peristalsis.

Emptying the lower bowel prior to a surgical procedure such as colonoscopy. Because of speed and supposed convenience, enemas used for this purpose are commonly the more costly, sodium phosphate variety – often called a disposable enema.

## ENEMA

For performances cleansing enemas use a special device (a device for cleansing enemas), consisting of the following elements.

1. enema mug (glass, rubber or metal vessel with a capacity of up to 2l).
2. Thick-walled rubber tube lumen diameter 1 cm, length 1.5 m, which is united by a tube mug Esmarch.
3. Connecting tube with stopcock (valve) for regulating the flow of the liquid.
4. The tip of glass, ebonite or rubber.

Necessary equipment: warm water in a volume of 1-2 liters, a device for cleansing enemas, tripod for hanging mugs, thermometer to measure temperature of liquid, oilcloth diaper, basin, vessel, marked capacity for "clean" and "dirty" intestinal tips, spatula, vaseline, protective clothing (mask, gown, apron and disposable gloves, containers with disinfectant solution.

The procedure (Fig. 8-5):

1. To prepare for the procedure: wash hands thoroughly with soap under warm running water, to wear a mask, apron and gloves.
2. Pour into a mug Esmarch boiled water or liquid designated composition, volume (typically 1-1.5 l) and temperature.
3. Hang the Cup on a tripod at a height of 1 m above the level of the patient's body.
4. open the valve, fill tube (the long rubber and connective), to produce a few milliliters of water to displace from the tubes air and close the valve.
5. Place on the floor near the couch container; on the couch to put the oilcloth (its free end to drop into the container in case the patient will not be able to hold water) and on top of it place a diaper.

Perhaps the use of enema with chamomile decoction (decoction prepared at the rate of 1 tbsp. (tablespoon) of dried chamomile in 1 Cup of water), with soap

(in water dissolve 1 tbsp finely planed baby soap), vegetable oil (2 tbsp). Chamomile has a moderately astringent action (which is shown with flatulence), and the soap and oil will contribute to greater leaching of toxins.

6. To offer the patient to lie on the edge of the couch on side (preferably the left), bending the knees and bringing them to the stomach to relax the abdominals (contraindicated if the patient movement, an enema can be put in the position of the patient on his back, placing it on the bedpan); the patient needs to relax and breathe deeply, with mouth, without straining.

7. To gain a spatula, a small amount of vaseline and lubricate them a tip.

8. The thumb and forefinger of left hand to push the buttocks and right hand carefully insert in the anus by light rotational movements, the tip is flush with the beginning towards the navel 3-4 cm, then parallel to the spine to a total depth of 7-8 cm.

9. To open the valve, making sure that water does not enter the intestines too quickly, as this can cause pain.

If the patient felt pain in the abdomen, it is necessary to immediately stop the procedure and wait until the pain goes. If the pain does not subside, you must inform your doctor.

10. If the water is not going to raise the Cup above, and/or change the position of the tip, you-

moving it back 1-2 cm; if the water still does not enter the intestine, remove the tip and replace it (as it can be hammered feces).

11. After the procedure, close the tap and remove the tip, pressing patient's right buttock to the left so that it does not leak fluid from the rectum.

12. To offer the patient himself to squeeze the anal sphincter and retain water as possible longer (at least 5-10 min).

13. If after 5-10 minutes the patient will feel the urge to defecate, to give him the bedpan or hold up to the toilet, warning that it is possible, let the water not once, but in portions.

14. Make sure that the procedure was effective; if the patient has emptied his bowels to water with a small amount of feces, after doctor see the patient, enema should be repeated.

15. To disassemble the system, place in a container with disinfectant solution.

16. To remove the apron, mask, gloves, wash hands.



The liquid is injected with enemas, has on the intestine mechanical and temperature impacts that may be adjusted. Mechanical action can increase or decrease, regulating amount of fluid injected (on average 1-1.5 l), pressure (the higher hanging mug, the greater the pressure of fluid) and the speed (adjustable crane unit for cleansing enemas). Observing certain temperature of fluid, you can enhance peristalsis: the lower the temperature of fluid, the stronger the reduction of the intestine. Usually recommended as the temperature of the water for enema 37-39 °C, but when atonic constipation use cold enema (12°C), spastic - warm or hot, reduce spasm (37-42 °C).

### **URGENT HELP WITH VOMITING.**

Vomiting is a complex reflex act associated with the excitation of the vomiting center located in the medulla oblongata.

Vomiting is a symptom of many diseases and conditions:

- diseases and infections of the digestive system (gastric ulcer and duodenal ulcer, acute and chronic pancreatitis, salmonellosis, dysentery);
- kidney disease - chronic renal failure;
- stroke, brain tumors;
- poisoning by various substances - drugs, alcohol.

Vomiting is one of the first symptoms of poisoning, in connection with vomit should be thoroughly investigated in the presence of suspected poisoning.

First aid for vomiting depends on its cause:

1. It is necessary to organize the lavage
- 2. When poisoning prohibited the introduction of antiemetic drugs.**
3. The patient should be seated, the chest should be closed with a towel, cloth, brought to the mouth of the basin. Dentures must be removed. If the patient cannot sit, the patient should be laid to turn his head to the side so that it was slightly lower torso, and hold a basin to the corner of his mouth.
4. After vomiting the patient should be given to rinse the mouth with warm water.
5. For relief of vomiting injected subcutaneously with 0.5-1 ml of 0.1% solution of ATROPINE SULFATE or i/m 2 ml (10 mg) solution of METOCLOPRAMIDE (REGLAN).

6. After repeated vomiting may appear signs of dehydration. In this case it is necessary to admit antiemetic drugs and intravenous infusion of isotonic sodium chloride with 5% GLUCOSE solution up to 2-3 liters or RINGER's solution.

### **FIRST AID FOR GASTROINTESTINAL BLEEDING.**

Gastrointestinal bleeding - the ingress of blood into the lumen of the esophagus, stomach and / or intestines due to the destruction (damage) of the vascular wall of these organs with the acceding clinical manifestations of blood loss.

Any gastrointestinal bleeding requires urgent measures and further examination due to its unpredictability.

Causes of gastrointestinal bleeding:

- ulcer of stomach and duodenum;
- varicose veins of the esophagus;
- cracks of the mucous membrane of the esophagus due to repeated vomiting;
- tumors of the stomach, duodenum and esophagus.

These are the most frequent causes of gastrointestinal bleeding.

Symptoms of gastrointestinal bleeding.

- common symptoms of acute post-hemorrhagic anemia: weakness, pallor, tinnitus, sweating, tachycardia, decreased blood pressure, nausea, dizziness, seeing dark spots in the eyes, until he lost consciousness;
- esophageal bleeding: vomiting streaked with blood, vomiting red blood or blood cherry color when bleeding from esophageal varices with undigested food particles, the reaction of vomit - base.
- stomach bleeding: vomiting the contents of the color "coffee grounds" (due to chemical interaction of blood hemoglobin with the hydrochloric acid of the gastric juice) mixed with digested food particles, the reaction of vomit is acidic; in low-intensity bleeding - liquid tarry feces (melena)
- intestinal bleeding: frequent loose feces with staining feces black tarry consistency - melena, bleeding from the upper gastrointestinal tract (not to be confused with the staining of a liquid feces in a dark color after dishes with beets or activated charcoal); the red blood - bleeding from the finite segments of the colon and rectum.

First aid for gastrointestinal bleeding.

1. Move the patient must be strictly on a stretcher.
2. Complete prohibition of receiving food and water.
3. At rest.
4. Put the patient in a position with raised 10 to 15° feet.
5. If the patient lost consciousness, but he is still a pulse and breathing, watching the main functions is to control the heart rate and breathing.
6. When you stop the circulation and (or) cardiac activity, start resuscitation, artificial respiration.
7. Cold in the stomach, the ingestion of pieces of ice, 5% solution of AMINOCAPROIC ACID inside the 2 tablespoons in 3 hours or HEMOFOBIN (2-3 tablespoons).
8. With hemostatic purpose ETAMZILAT 12.5% - 2 ml subcutaneously every 4-6 hours.
9. Filling the blood volume : R-R RINGER's 1-2 l, POLYGLUKIN 400 ml/drip, ALBUMIN 5-10% 100-200 ml/drip.

Endoscopic examination of the stomach, duodenum to identify the source of bleeding and local treatment (hemostasis) - having mucous around the bleeding vessel (ulcer) 0.1% solution of adrenaline, laser photocoagulation, electrocoagulation.

## **Theme 11. MONITORING AND PATIENTS CARE WITH DISORDERS OF THE URINARY ORGANS.**

### **The concept of diuresis, disorders of the diuresis**

Disorder of urine output is one of the most common symptoms of kidney disease and urinary tract.

#### Polyuria

Polyuria - increase daily amount of urine more than 2000 ml. typically, polyuria combined with increased thirst and the consumption of large quantities of liquid.

Causes of polyuria:

- reinforced drinking mode;
- pregnancy;

emotional stress;  
chronic kidney disease;  
toe swelling, especially compared to diuretic therapy;  
diabetes mellitus;  
chronic renal failure.

### Oliguria

Oliguria - decrease in amount of urine excreted per day to 500 ml or less.

Causes of oliguria:

kidney disease;  
heart failure;  
mechanical compression of the ureters;  
shock;  
pain;  
stress;  
profuse diarrhea and vomiting;  
fever.

### Anuria

Anuria - reducing the amount of urine less than 200 ml per day until the complete cessation of its release.

Causes of anuria:

renal failure;  
the drop in blood pressure.

### Ischuria

When ischuria urine is produced by the kidneys, but does not stand out from the crowded bladder

The reasons ischuria:

atony of the bladder;  
narrowing of the urethra (the most common cause in men - compression of the urethra by the enlarged prostate gland);  
stress;  
the psychological discomfort of the patient.

### Nocturia

Normally, the ratio of daytime and nighttime urine output of 3:1 or 4:1. When nocturia is the ratio changes towards the increase of night urine output, sometimes nocturnal urine volume exceeds the daily.

The causes of nocturia:

kidney disease, especially in people of advanced age;  
prostate adenoma;  
diabetes insipidus.

### Pollakiuria

Frequent urination up to 6-7 times or more per day.

Causes pollakiuria:

large quantities of fluid;  
inflammation of the urinary tract;  
prostate adenoma;  
emotional stress;  
hypothermia;  
receiving diuretics.

### Dysuria

Under dysuria understand the diuresis disorder, manifested more of these symptoms: frequent painful and/or difficulty urinating.

Causes of dysuria:

infectious-inflammatory processes in the urinary tract;  
the discharge of stones in the ureters.

### **Rules of collection, Diagnostic relevance of urinalysis tests**

A urinalysis (UA), also known as routine and microscopy (R&M), is an array of tests performed on urine, and one of the most common methods of medical diagnosis.

The target parameters that can be measured or quantified in urinalysis include many substances and cells, as well as other properties, such as specific gravity.

A part of a urinalysis can be performed by using urine test strips, in which the test results can be read as color changes. Another method is light microscopy of urine samples.

Rules for collection of urine.

1) 1-2 days before delivery, you must reduce the intake of vegetables and fruits, avoid diuretics;

2) For the study required morning urine volume of 100-200 ml.

3) Before collecting to make a careful toilet of the vulva. The vagina close to a tampon (for women);

4) Begin urinating into the toilet;

5) Continue to urinate into a container;

6) Close the container with urine cover;

7) Wash hands.

Urine test results should always be interpreted using the reference range provided by the laboratory that performed the test, or using information provided by the test strip/device manufacturer

Physical properties: transparency (transparent, opacity), urine color (straw-yellow, pale greenish to greenish-brown color, from the color of meat slops to red) , smell (mild, specific), reaction (acidic, alkaline, neutral), the relative density of urine (norm 1008-1025) (hyposthenuria, izostenuriya, hypersthenuria, hyposthenuria, izostenuriya)

The chemical composition of urine: quantitation of pathological parts: a protein (kidney disease, renal failure, hypertension, hepatic failure), glucose, acetone (diabetes), bilirubin (liver disease, hemolytic anemia), hemoglobin (congenital abnormalities of erythrocytes).

Microscopic examination of sediment: Pyuria increase in the number of leukocytes in the urine of over 20 (pyelonephritis, cystitis, urethritis). Erythrocyturia (hematuria) - the appearance of red blood cells in the urine (normally in single-void urine samples in sight meets from 1 to 3 cells (glomerulonephritis, urolithiasis)

Cylindruria - appearance in the urine protein or cellular formations of tubular origin (casts), having a cylindrical shape. Distinguish hyaline cylinders (pregnant nephropathy, pyelonephritis, tuberculosis of the kidney, tumors of the kidney), granular (glomerulonephritis, pyelonephritis, severe lead poisoning), waxy (chronic renal failure, amyloidosis kidney), epithelial (tubular necrosis of the kidneys, poisoning by salts of heavy metals, corrosive sublimate), erythrocytic (acute glomerulonephritis, venous thrombosis of the lower limbs).

Salt in the urine: in acidic urine are uric acid crystals (fever, leukemia), salts of uric acid (gout, fever, glomerulonephritis, chronic renal failure), malevolently lime – oxaluria (pyelonephritis, diabetes, epileptic seizure), the phosphates (cystitis, urolithiasis).

Bacteriuria the presence of bacteria in freshly collected urine (inflammatory diseases of the urinary tract and kidneys). Is estimated by the quantity (a little, moderately, a lot) and the type of flora (cocci, bacilli).

**Urine test by Zimnicky** is carried out to assess the concentration of kidney function.

The main indications for use: the clinical signs of renal failure, chronic glomerulonephritis, chronic pyelonephritis, diagnosis of diabetes insipidus, hypertension.

For the test prepare 8-10 containers with labels. Each of them put a sequence number (from 1 to 8, two banks — spare) and indicate the surname, initials of the patient, the room number and the interval of time over which urine must be collected in each container. Urine is collected during the day (24 h): for every 3 hours, including at night, the patient urinates into a separate container.

Rules for collection of urine.

- 1) To 6 a.m. the patient empties the bladder (urine not collected);
- 2) Next, the patient is consistently collects urine in 8 containers; depending on the frequency of urination per container he urinates once or several times, but only for 3 hours. If during this period of time the patient has no urge to urinate, nurse reminds him of the need to empty the bladder (if urine is missing the container remains empty); if the container is filled with urine before the expiration of the 3-hour period, the patient takes a container without it and urinates into it (he must inform the nurse);

3) the next morning all containers must be sent to the lab, completing required documentation.

Diagnostic value.

Normal values: 50-250 ml per serving, specific gravity - 1.005 - 1.028, the largest share - at least the portions of urine, 3:1 is the ratio of daytime and nighttime diuresis

In pathology reveal hyposthenuria (decrease in weight), Isuzu (urine equal portions), gipoizostenuriya - nocturia (increased amount of urine secreted during the night).

**The test of urine by Nechiporenko** — quantitative determination of urine leukocytes, erythrocytes and cylinders for the differential diagnosis of glomerulonephritis and pyelonephritis.

Rules for collection of urine.

1) 1-2 days before delivery, you must reduce the intake of vegetables and fruits, avoid diuretics;

2) For the study required morning urine volume of 100-200 ml.

3) Before collecting to make a careful toilet of the vulva. The vagina close to a tampon (for women);

4) Begin urinating into the toilet (first urine);

5) Continue to urinate into a container (the second portion of urine);

6) Finish urinating into the toilet;

7) Close the container with urine cover;

8) Wash hands.

Diagnostic value.

Normal values: leukocytes — to 2000 /ml; red blood cells — to 1000 /ml; cylinders — up to 20 /ml. In pathology: pyuria increase in the number of leukocytes (pyelonephritis, cystitis, urethritis); erythrocyturia (hematuria) - the appearance of red blood cells in the urine (glomerulonephritis, urolithiasis); cylindruria - appearance in the urine protein or cellular formations of tubular origin (casts), having a cylindrical shape and a varying amount (excessive exercise, condition after an epileptic seizure, hypertension, valvular heart disease, cardiac decompensation, toxemia of pregnancy, viral hepatitis, gout, etc.).



## **ULTRASOUND OF THE BLADDER**

### **INDICATIONS FOR ULTRASOUND OF THE BLADDER.**

- macro - and microscopic hematuria;
- traumatic injury;
- oncology;
- cystic formation;
- bladder stones;
- assessment of residual urine.

### **PREPARATION FOR ULTRASOUND EXAMINATION OF THE BLADDER.**

- for 1.5 hours before the study drink gradually 1-1.5 litres of any liquid tea, water, juice, and with a full bladder to arrive at the appointed time of the study;
- if it is impossible to tolerate and strong urge, a valid bit to empty the bladder to relieve tension and re-drink a bit of liquid to achieve complete filling of the bladder by the time of the study;
- the night before you need to hold the enema.

### **APPLICATION OF EXTERNAL COLLECTION SYSTEMS**

Patients on bed rest, forced to perform physiological functions lying. In such cases, patients served bedpan (a special device for collecting faeces) and a sack (a vessel for urine collection).

The bedpan can be used a metal enamel, plastic or rubber. Rubber bedpan is used for extremely weak patients, and in the presence of bedsores. To inflate rubber vessel use foot pump. It should not be too tight to inflate the bedpan, otherwise it will have on the sacrum considerable pressure.

#### **The technology of application of the bedpan**

- to wear gloves;
- to prepare the bedpan: warm, dry, on the bottom, pour a little water;
- ask the patient to bend the knees and lift the hips (if the patient is weak, help him to raise the buttocks);
- to put a draw sheet under the buttocks;

- to put the bedpan on the rubber sheet;
- to help the patient get down on the bedpan so that his crotch was over the opening of the vessel;
- to give time for the implementation of defecation;
- ask the patient to bend the knees, lift the pelvis;
- to remove the bedpan from beneath the patient;
- to wipe the anus, wet hygienic napkin. It is less traumatic than using toilet paper.
- thoroughly wash bedpan;
- pour over a bedpan of hot water, put under the patient;
- wash away the patient from the genitals to the anus;
- dry with a clean cloth;
- to remove the bedpan, oilcloth;
- to help the patient lie down.

#### Disinfection of the bedpan.

Bedpan after use, carefully wash with hot water and disinfected 1-2 % bleach solution, 3 % solution of chlorine bleach or Lysol or in solution disinfectant appropriate destination.

At a delay of urine in the bladder must be emptied. You can attempt to trigger a reflex diuresis by acting on the Central nervous system (sometimes gives the effect of the sound pouring out of the faucet or pitcher into a bowl of water). In the absence of applied heat: to put a heating pad on the lower abdomen, to make an irrigation of the external genitalia with warm water or, in the absence of contraindications, to place the patient in a warm bath. In case of failure of these measures should begin artificial emptying of the bladder – catheterization.

**Bladder catheterization** – the insertion of a catheter into the bladder is held for the purpose of deducing from it urine, bladder lavage, administration of the drug or extract of urine for the study. It requires special precautions not to make bladder infection, as its mucosa has low resistance to infection. Therefore, catheterization should be performed only if necessary. Catheterization produced using soft and hard catheters. A soft catheter is a flexible rubber tube with a

length of 25-30 cm and a diameter of 10 mm (No. 130). The upper end of the catheter is rounded, blind with side oval hole. The outer end of the catheter is slanted or funnel-shaped expanded so that it was easier to insert the tip of the syringe for injection of medicinal fluids and flush the bladder. Before use, the catheter should boil for 45 minutes. It must be remembered that the catheters during boiling gradually lose their elasticity and become unsuitable. After use, thoroughly washed with warm water and soap, then clean with water and immersed in 1% chloramine solution for 1 hour, then washed again, dried and stored in dry form. At the present stage are widely used disposable sterile catheters.

One of the most popular types of urological catheters used in medical practice, is the Foley catheter. Among the Foley catheters isolated 2-, 3-way catheters, all of them are designed for short-or long-term catheterization of the bladder (in men and women) in order to conduct medical procedures. Commonly, the Foley catheter is made of latex and is covered with silicone for messages appropriate functional characteristics. Fixation of the catheter in the cavity of the bladder is due to inflating the balloon located at the distal end of the catheter



**Fig. 14. The Foley catheter**

Indications:

– Acute urinary retention.

- Irrigation of the bladder and the introduction of medicines.
- The postoperative period on the organs of the urogenital system.

Contraindications.

- Rupture of the urethra.

Equipment (sterile): catheter, anatomical tweezers – 2 pack, forceps, tray, latex gloves, solution furatsilina 1:5000, vaseline oil, container for urine collection, a container of disinfectant, oilcloth, antiseptic solution for cleaning.

The procedure is performed in bed (on the gynecological chair).

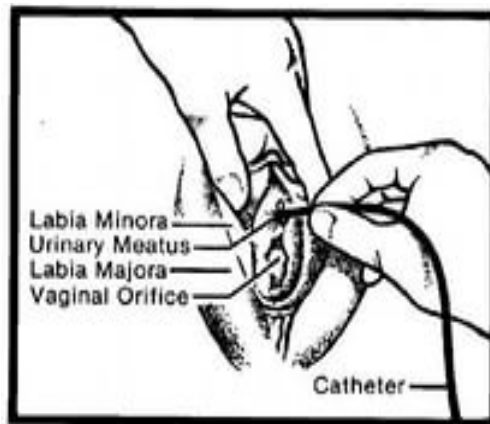
### **Catheterizing the Female Urinary Bladder**

1. Assemble equipment. Perform hand hygiene. Explain procedure and purpose to patient. Discuss any allergies with patient, especially iodine or latex.
2. Provide good light. Artificial light is recommended (use of flashlight requires an assistant to hold and position it).
3. Provide privacy by closing curtains or door.
4. Assist patient to the dorsal recumbent position with knees flexed and feet about 2 feet apart. Drape patient. Or, if preferable, place patient in the side-lying position. Slide waterproof drape under patient.
5. Clean genital and perineal areas with warm soap and water. Rinse and dry. Perform hand hygiene again.
6. Prepare urine drainage setup if indwelling catheter is to be inserted and separate urine collection system is used. Secure to bed frame according to manufacturer's directions.
7. Open sterile catheterization tray on overbed table using sterile technique.
8. Put on sterile gloves. Grasp upper corners of drape and unfold without touching unsterile areas. Fold back cuff over gloved hands. Ask patient to lift her buttocks. Slide sterile drape under her with gloves protected by cuff.
9. Place a fenestrated sterile drape over perineal area, exposing the labia.
10. Place sterile tray on drape between patient's thighs.
11. Open all supplies.
12. If catheter is to be indwelling, test catheter balloon. Remove protective cap on tip of syringe and attach syringe prefilled with sterile water to injection port. Inject appropriate amount of fluid. If balloon inflates properly, withdraw fluid and leave syringe attached to port.

13. Pour antiseptic solution over cotton balls or gauze. Open specimen container if specimen is to be obtained.
14. Lubricate 1 to 2 inches of catheter tip.
15. With thumb and one finger of your nondominant hand, spread labia and identify meatus. Be prepared to maintain separation of labia with one hand until urine is flowing well and continuously.
16. Using cotton balls held with forceps, clean both labial folds and then directly over meatus. Move cotton ball from above the meatus down toward the rectum. Discard each cotton ball after one downward stroke.
17. With uncontaminated gloved hand, place drainage end of the catheter in receptacle. For insertion of an indwelling catheter that is preattached to sterile tubing and drainage container (closed drainage system), position catheter and setup within easy reach on the sterile field.
18. Insert catheter tip into the meatus 5 to 7.5 cm (2-3 inches) or until urine flows. Do not use force to push catheter through the urethra into the bladder. Ask patient to breathe deeply. Rotate catheter gently if slight resistance is met as catheter reaches the external sphincter. For an indwelling catheter, once urine drains advance catheter another 2.5 to 5.0 cm (1-2 inches).
19. Hold catheter securely with the nondominant hand while bladder empties. Collect specimen if required. Continue drainage according to agency policy.
20. Remove catheter smoothly and slowly if a straight catheterization was ordered.
21. If the catheter is to be indwelling:
22. Inflate balloon according to manufacturer's recommendations.
23. Tug gently on catheter after balloon is inflated to feel resistance.
24. Attach catheter to drainage system if necessary.
25. Secure to upper thigh with a Velcro leg strap or tape. Leave some slack in catheter to allow for leg movement.
26. Check that drainage tubing is not kinked and that movement of side rails does not interfere with catheter or drainage bag.
27. Remove equipment and make patient comfortable in bed. Clean and dry perineal area, if necessary. Care for equipment according to agency policy. Send urine specimen to laboratory promptly or refrigerate it.

28. Perform hand hygiene.

29. Record time of catheterization, amount of urine removed, description of urine, patient's reaction to procedure, and your name.



**Fig. 15. Catheterizing the Female Urinary Bladder**

### **Catheterizing the Male Urinary Bladder**

1. Assemble equipment and follows Actions 1 to 3 for female catheterization in Skill 1.
2. Position patient on his back with thighs slightly apart, Drape patient so that only area around penis is exposed.
3. Follow Actions 5 through 7 for female catheterization in skill 1.
4. Put on sterile gloves. Open sterile drape and place on patient's thighs. Place the fenestrated drape with the opening over penis.
5. Place catheter set on or next to patient's legs on the sterile drape.
6. Open all supplies.
7. If catheter is to be indwelling, test catheter balloon. Remove protective cap on tip of syringe and attach syringe prefilled with sterile water to the injection port. Inject appropriate amount of fluid. If balloon inflates properly, withdraw fluid and leave syringe attached to port.
8. Pour antiseptic solution over cotton balls or gauze. Open specimen container if specimen is to be obtained.
9. Remove cap from syringe prefilled with lubricant.
10. Lift penis with your nondominant hand, which is then considered contaminated. Retract foreskin in the uncircumcised male patient. Clean area at meatus with cotton ball held with forceps. Use circular motion, moving from the meatus toward base of the penis for three cleansings.

11. Hold the penis with slight upward tension and perpendicular to patient's body. Gently insert tip of syringe with lubricant into urethra and instill 10 ml. of lubricant.
12. Ask patient to bear down as if voiding. With your dominant hand, place drainage end of catheter in the receptacle. For insertion of indwelling catheter that is preattached to sterile tubing and drainage container (closed drainage system), position the catheter and setup within easy reach on the sterile field.
13. Insert the tip into the meatus. Advance intermittent catheter 15 to 20 cm (6-8 inches) or until urine flows. Do not use force to introduce the catheter. Once balloon is inflated, catheter may be gently pulled back into place. Replace the foreskin in uncircumcised patient. Lower the penis.
14. Follow Actions 16 through 21 for female catheterization in Skill 1 except that the catheter may be secured to the upper thigh or lower abdomen with the penis directed toward the patient's chest. Slack should be left in the catheter to prevent tension.

## **Theme 12. CARDIOPULMONARY RESUSCITATION**

Cardiopulmonary resuscitation, commonly known as CPR, is an emergency procedure performed in an effort to manually preserve intact brain function until further measures are taken to restore spontaneous blood circulation and breathing in a person who is in cardiac arrest. It is indicated in those who are unresponsive with no breathing or abnormal breathing, for example, agonal respirations.

CPR involves chest compressions at least 5 cm (2 in) deep and at a rate of at least 100 per minute in an effort to create artificial circulation by manually pumping blood through the heart and thus the body. The rescuer may also provide breaths by either exhaling into the subject's mouth or nose or using a device that pushes air into the subject's lungs. This process of externally providing ventilation is termed artificial respiration. Current recommendations place emphasis on high-quality chest compressions over artificial respiration; a simplified CPR method involving chest compressions only is recommended for untrained rescuers.

CPR alone is unlikely to restart the heart. Its main purpose is to restore partial flow of oxygenated blood to the brain and heart. The objective is to delay

tissue death and to extend the brief window of opportunity for a successful resuscitation without permanent brain damage. Administration of an electric shock to the subject's heart, termed defibrillation, is usually needed in order to restore a viable or "perfusing" heart rhythm. Defibrillation is effective only for certain heart rhythms, namely ventricular fibrillation or pulseless ventricular tachycardia, rather than asystole or pulseless electrical activity. CPR may succeed in inducing a heart rhythm that may be shockable. In general, CPR is continued until the patient has a return of spontaneous circulation (ROSC) or is declared dead.

### **TECHNIQUE FOR CHEST COMPRESSIONS IN ADULT CPR. COMPLICATIONS.**

Chest compressions consist of forceful and fast oscillations of the lower half of the sternum.

#### **Patient Positioning**

The patient in cardiac arrest should be placed in supine position with the rescuer standing beside the patient's bed or kneeling beside the patient's chest. Adjustment of the bed height or standing on a feces allows leveraging the body weight above the waist for mechanical advantage. For optimal transfer of energy during chest compressions the patient should be positioned on a firm surface such as a backboard early in resuscitation efforts. This decreases wasting of compressive force by compression of the soft hospital bed. While re-positioning the patient, interruptions of chest compressions should be minimized and care should be taken to avoid dislodging any lines or tubes.

#### **Hand Position and Posture**

Place the dominant hand over the center of the patient's chest. This position corresponds to the lower half of the sternum. The heel of the hand is positioned in the midline and aligned with the long axis of the sternum. This focuses the compressive force on the sternum and decreases the chance of rib fractures. Next, place the non-dominant hand on top of the first hand so that both hands are overlapped and parallel. The fingers should be elevated off the patient's ribs to minimize compressive force over the ribs. Also avoid compressive force over the upper abdomen to minimize iatrogenic injury. For maximum mechanical advantage keep your arms straight and elbows fully extended. Position your shoulders vertically above the patient's sternum. If the compressive force is not



perpendicular to the patient's sternum then the patient will roll and part of the compressive force will be lost.

#### Compression Rate and Interruptions

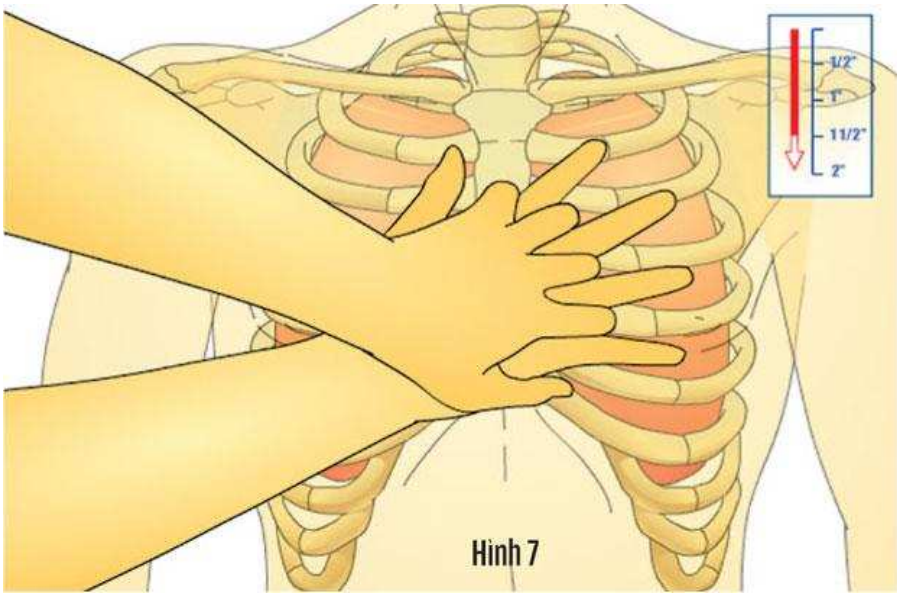
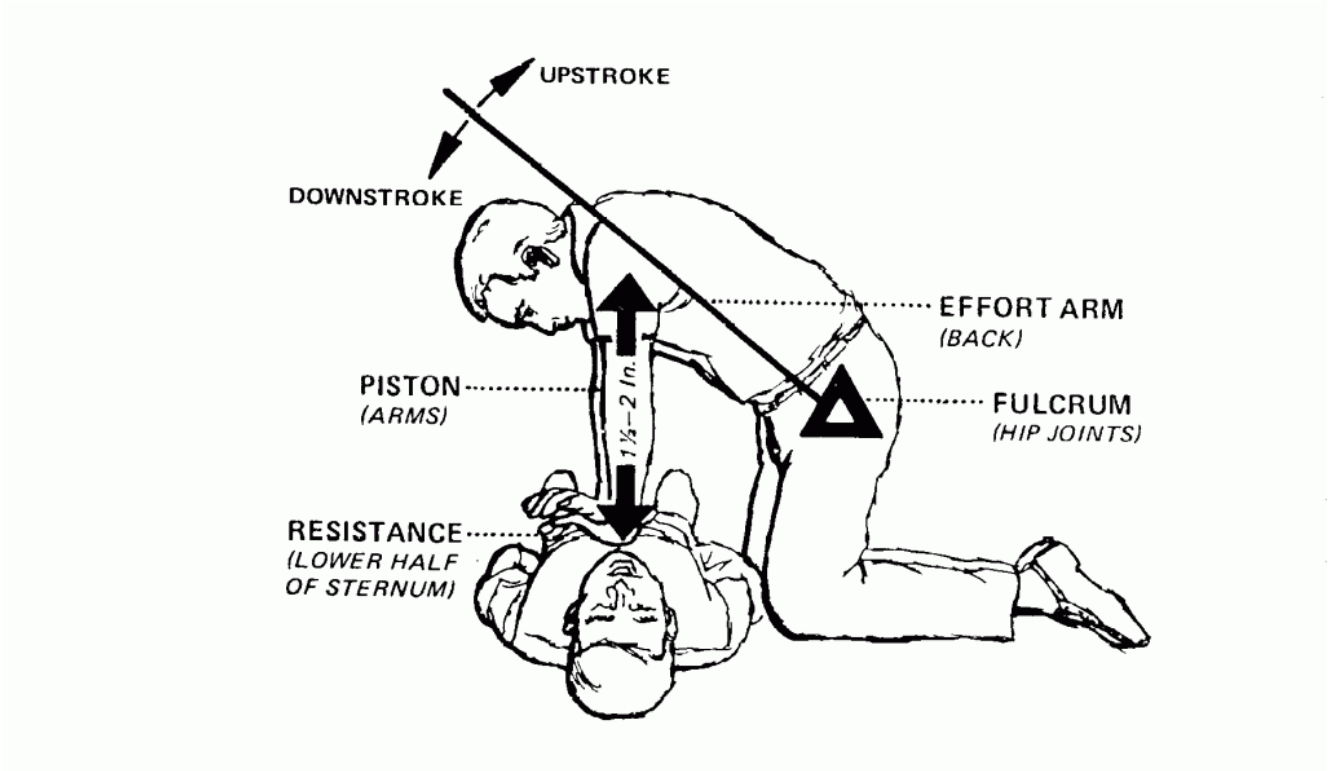
The blood flow generated by chest compressions is a function of the number of chest compressions delivered per minute and the effectiveness of each chest compression. The number of compressions delivered per minute is clearly related to survival. This depends on the rate of compressions and the duration of any interruptions.

#### Compression Depth, Recoil.

Compression depth should be at least 5 cm, since sternal depression of 5 cm and over . No upper limit for compression depth has been established in human studies but experts recommend that sternal depression should not exceed 6 cm. After each compression, allow the chest to recoil completely. Incomplete recoil results in worse hemodynamics, including decreased cardiac perfusion, cerebral perfusion and cardiac output. Complete recoil is achieved by releasing all pressure from the chest and not leaning on the chest during the relaxation phase of the chest compressions. However, avoid lifting the hands off the patient's chest, since this was associated with a reduction in compression depth.

#### Complications

Life-threatening complications of chest compressions are extremely rare. Such complications occur less frequently than 1%. If hypotension is noted following ROSC (Return of Spontaneous Circulation) then cardiogenic shock and abdominal injury are the most important complications of chest compressions that should be considered. Rib fractures are the most frequent complication, with an incidence of 1/3 at autopsy. However, rib fractures were noted in only 2% of non-arrest patients who received chest compressions from a bystander .



**Fig. 16. Hand Position and Posture**

# CPR - CARDIO PULMONARY RESUSCITATION

This information is published for those who have had training in cpr and should not be used by an untrained person except in the gravest emergency where no skilled help is available

- CHECK FOR DANGER
- STAY WITH THE PERSON
- CALL FOR HELP AND START RESUSCITATION

## 1 AIRWAY

- Quickly turn person on side
- Remove foreign material from mouth
- Place neck and jaw in correct positions
- Listen for breathing
- Watch for chest movement



## 2 BREATHING

- If not breathing
- Quickly turn person on back
  - Open Airway
  - Start mouth to mouth or mouth to nose
  - 5 full ventilations in ten seconds
  - Check neck pulse
  - If pulse is present, resuscitation at a rate of 15 per minute (one every 4 seconds) - check the circulation after 1 minute and then every 2 minutes
  - If breathing returns - place the person on side - keep the airway clear



## 3 AIRWAY

- Check neck pulse
- If absent
- Begin external cardiac compression
  - Place the heel of one hand on the lower half of the sternum
  - Lock the other hand to the first by grasping wrist or interlocking fingers
  - Keep fingers of the chest
  - Do 2 ventilations and 15 compressions every 15 seconds



Fig. 17. Cardiopulmonary resuscitation

## ARTIFICIAL RESPIRATION

Artificial respiration, breathing induced by some manipulative technique when natural respiration has ceased or is faltering. Such techniques, if applied quickly and properly, can prevent some deaths from drowning, choking, strangulation, suffocation, carbon monoxide poisoning, and electric shock.

Resuscitation by inducing artificial respiration consists chiefly of two actions: (1) establishing and maintaining an open air passage from the upper respiratory tract (mouth, throat, and pharynx) to the lungs and (2) exchanging air and carbon dioxide in the terminal air sacs of the lungs while the heart is still functioning. To be successful such efforts must be started as soon as possible

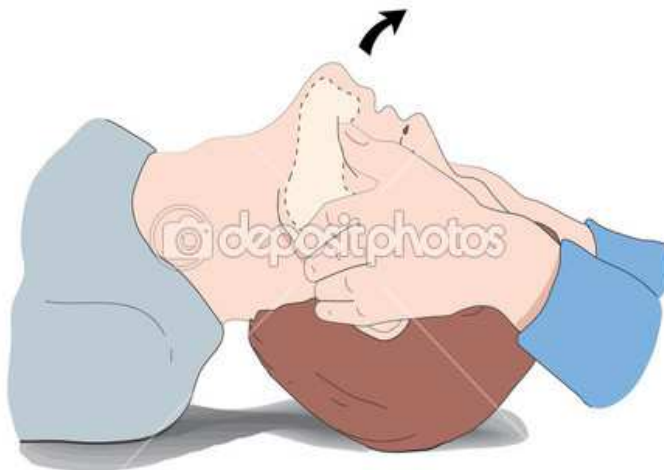
**Technique:**

The patient is placed horizontally on the back, the neck, the thorax and the abdomen of the patient free from clothing. Place under the shoulder region of the patient roller for straightening the axis of the airway. Clean the mouth and nasal cavity from foreign substances (vomit, dentures, etc.).

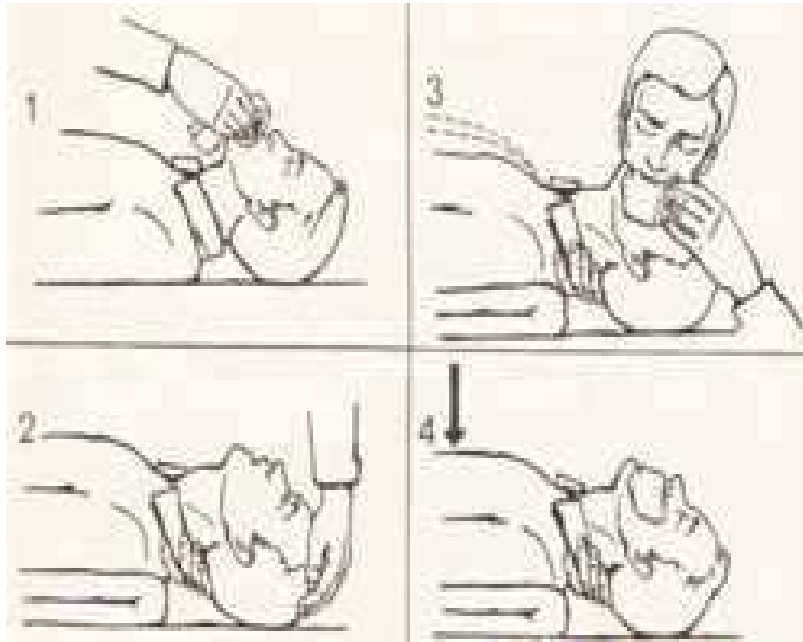


**Fig. 18. Tongue fallen backwards, blocking the airway.**

In case of tongue fallen backwards, blocking the airway, it is necessary to hyperextend the head and pull up the chin, so that the tongue lifts and clears the airway.



When using the method of "mouth to nose" assisting closes the mouth of the patient and after a deep breath, clamping his lips, the nose of the patient, it performs vigorous exhalation. With the method "mouth to mouth" close the patient's nose, and exhalation is carried out in the patient's mouth, pre-covered with gauze or a handkerchief (for hygiene reasons). Then slightly open the mouth and nose of the patient - occurs patients' passive exhalation. Providing assistance at this time makes one or two normal respiratory movements. Artificial respiration is highly desirable to carry out using the Ambu bag. Artificial respiration is carried out with a frequency of 16-20 per minute.



**Fig. 19. Stages of artificial respiration**

Criteria of correct artificial respiration is the excursion of the chest during a artificial breathing and passive exhalation.



**Fig. 20. Criteria of correct artificial respiration.**

## **PRONOUNCEMENT OF DEATH AND THE RULES OF POST-MORTEM CARE**

Biological death - the final stage, irreversible cessation of all vital processes of metabolism in cells and tissues, the decomposition of protein substances and structures. Biological death occurs immediately after clinical death. BIOLOGICAL DEATH is determined by the doctor based on the totality of the following signs.

1. The lack of spontaneous movements.
2. The cessation of breathing and heartbeat.
3. Maximum dilated pupils, absence of reaction to light.
4. The decrease in body temperature (ambient temperature).
5. The appearance of cadaveric spots.
6. The appearance of rigor muscle.

THE FIRST THREE FEATURES ARE ACTUALLY SIGNS OF CLINICAL DEATH. The next three are actually the signs of biological death. Additional important reference point in ascertaining biological death is the factor of time: 5-6 min from the stop of blood circulation + 30 min ineffective resuscitation.

The fact of death of the patient, the exact time and date of death the doctor notes in the history of the disease. If the patient died in the ward, other patients will be asked to leave. If patients are placed on strict bed rest, they need to offer to turn away or close my eyes. Nurse takes off from the corpse his clothes, puts on a specially designed gurney on the back with bent knees, closes eyelids, ties up the lower jaw, covering the sheets and out of in a sanitary room for 2 hours (until the appearance of cadaveric spots). After that, the nurse writes on the hip of the deceased by his last name, initials, number history. Clothes and precious thing are passed to the relatives or friends of the deceased on receipt. All bedding from the bed of the deceased is given to the disinfection. The bed, the bedside table wiped with a 5% solution of chloramine B, bedside vessel is soaked in a 5% solution of chloramine B.

During the day it is not customary to place a newly admitted patients on the bed where patient recently died. You must announce the death of a patient in a hospital admission department, relatives of the deceased, and in the absence of relatives in the police Department.

## **Final test questions of " *Course of training practice* ":**

1. Which of the following complaints are not typical for diseases of the cardiovascular system?

1. Chest pain during physical exertion.
2. Chest pain when swallowing.
3. Attacks of breathlessness and cough with serous bloody frothy sputum.
4. Swelling on the face.
5. Pain in chest when breathing and coughing.

2. What are the bounds of normal fluctuations in blood pressure in people over the age of 25 years (the WHO standards):

1. Systolic 105-130 mm Hg. article
2. Systolic 100-145 mmHg. article
3. Systolic 100-120 mm Hg. article
4. Diastolic 60-85 mm Hg. article
5. Diastolic 60-94 mm Hg. Article

3. Feeding specificity of patients with chronic heart failure:

1. The exclusion of fruits, vegetables.
2. The exclusion of fresh berries, juices.
3. Restriction of salt and fluid.
4. The purpose of food rich in vitamins and proteins.
5. To exclude strong tea and coffee.

4. Care and first first aid for asthma attack:

1. To provide a horizontal position.
2. Take advantage of a handheld inhaler.
3. To use the peak flow meter.
4. To ensure a flow of fresh air.
5. Inhalation of oxygen.

5. First aid in case of fainting:

1. To give an elevated position.
2. To provide a horizontal position.



3. Give smell of ammonia.
4. RUB the skin of the trunk with alcohol.
5. Sprinkle face with cold water.

6. First aid in pulmonary hemorrhage:

1. Take advantage of a handheld inhaler.
2. To give an elevated position.
3. To provide a horizontal position.
4. Ice pack on the chest.
5. A heating pad on the chest.

7. What means the term "sanitary and anti-epidemic regime" in the hospital?

1. Compliance with the diet.
2. The use of disinfectants in optimal concentrations.
3. Timely wet cleaning.
4. Observe the temperature.
5. The quartz treatment chambers.
6. The proper treatment.

8. What is meant by the term "polyuria"? The allocation for the day:

1. More 2000 ml urine.
2. More 1500 ml of urine per day.
3. More than 1000ml of urine per day.
4. More than 800ml per day.
5. More 1200 ml per day.

9. Types of medical institutions outpatient type:

1. Hospital.
2. Clinic.
3. The health center.
4. An outpatient clinic.

10. What kinds of regimes for patients in hospitals?

1. Outpatient.
2. Strict bed.
3. Outpatient.
4. Bed.
5. Nonstrict bed.
6. Free.

11. Types of compulsory medical documentation to the nurse:

1. Journal of patients admission.
2. Notebook transfer duty.
3. The history of the disease.
4. The temperature of the notebook.
5. sheet prescribing

12. Types of sanitary treatment of patients:

1. Local.
2. Full.
3. Trial.
4. Partial.
5. General.

13. How to transport a patient with myocardial infarction in the Department?

1. On foot, accompanied by nurses.
2. By elevator.
3. transportation on a stretcher
4. On the wheelchair.

14. Principles of clinical nutrition in gastric ulcer and 12 duodenal ulcer?

1. Restriction of salt and fluid.

- 2.Limit eating meat.
- 3.Mechanically, chemically, thermally gentle food.
- 4.The restriction of carbohydrates.
- 5.Frequent meals.

15. What solution is used for the prevention of bedsores?

- 1.Solution of rivanol.
- 2.Camphor spirit.
- 3.Solution alcohol.

16.Prevention of pressure sores include:

- 1.Bed rest.
- 2.Turning patients in bed.
- 3.Skin wipes disinfectants.
- 4.Breathing exercises.
- 5.The use of slip circles.

17. Types of fevers:

- 1.Low-grade.
- 2.Constant.
- 3.Laxative.
- 4.Deblitating.
- 5.High.

18.Indications for use of the bladder with ice:

- 1.Frostbite of the extremities.
- 2.Bleeding or hemorrhage.
- 3.The stab wound.
- 4.Bruises.
- 5.The initial stages of local inflammation.

19. How to collect sputum for bacteriological examination and the sensitivity of microflora to antibiotics?

1. In a clean glass jar.
2. Collect within 1-2 days up to 100 ml.
3. In a sterile Petri dish.
4. In a sterile tube.
5. In a sterile bowl.

20. How to properly provide oxygen to the patient?

1. Directly from the container.
2. Through the reducer.
3. oxygen moistened with alcohol
4. Through the mouthpiece.
5. Through a nasal catheter.

21. Pulse rate normal?

1. 50-60 beats per 1 minute.
2. 60-70 beats per 1 minute.
3. 80-90 beats per 1 minute.
4. 60-80 beats per 1 minute.
5. 70-90 beats per 1 minute.

22. What is a "water balance"?

1. The daily amount of urine.
2. The amount of the liquid per day.
3. The ratio of received per day free fluid and urine.
4. The number of urine for 1 hour.

23. First aid for stroke:

1. Put the patient to bed.

- 2.To reassure the patient.
- 3.Give the drink 1 Diett of aspirin.
- 4.To give a Diett of nitroglycerin under the tongue.
- 5.To call the doctor.

24.First aid for vomiting bedridden patients:

- 1.To put the patient and submit the basin.
- 2.Turn head to one side.
- 3.Bring to corner of mouth a large tray.
- 4.To put the probe and to wash out the stomach.
- 5.To give the patient rinse mouth with warm water.

25.What do you need for gastric lavage?

1. A thin probe.
- 2.Fat tube.
- 3.Squirt.
- 4.Glass funnel.
- 5.A jug of water.
- 6.Bucket.

26.What is required for performances cleansing enemas:

- 1.Rubber bulb.
- 2.Water at room temperature.
- 3.Sunflower oil.
- 4.Bedpan.
- 5.The oilcloth.

27. Barium enema is:

- 1.X-ray contrast study of the colon.
- 2.Contrast study of the small intestine.
- 3.Endoscopic examination of the rectum and Sigma.

4. Radiopaque study of the gallbladder.

28. Rules for collection of urine for analysis?

1. Collect in the morning.
2. Gather in the evening.
3. The amount of urine 100-200 ml.
4. The amount of 20-30 ml.
5. Take average serving.

29. Analysis of urine by Nechiporenko provides:

1. Counting corpuscles in the daily quantity of urine.
2. The counting of leukocytes and erythrocytes in the minute volume of urine.
3. Counting of erythrocytes, leukocytes and cylinders in 1 ml of urine.
4. Calculation of cellular elements in the three portions of urine.

30. Rules for collection of urine for bacteriological examination?

1. To gather in the morning in a clean jar.
2. Warm fresh urine immediately taken to the laboratory.
3. Urine gather simultaneously in three jars.
4. Collect in a sterile tube.

31. Basic resuscitation measures in clinical death:

1. Intravenous injection of strophanthin.
2. Closed cardiac massage.
3. Intravenous administration of prednisolone.
4. Artificial respiration.
5. Intramuscular kordiamina.

32. Evidence of effectiveness of chest compressions:

1. Dilated pupils.

- 2.The appearance of the pulse on the carotid arteries.
- 3.The appearance of respiratory movements.
- 4.Contraction of the pupils.
- 5.Disappearance of cyanosis.

33.What kind of diet prescribed to patients with diabetes mellitus:

1. Diet 1
2. Diet 5
3. Diet 9
4. Diet 10

34.The patient experiences increased nocturnal urine. This:

- 1.Oliguria.
- 2.Polyuria.
- 3.Nocturia.
- 4.Anuria.

35.Swelling due to kidney disease, characterized by:

- 1.Pale swelling.
- 2.Mainly on the face, around the eyes.
- 3.Appear toward evening.
- 4.Marked morning.
- 5.Cyanotic color.

36. The presence of melena is typical for:

1. Stomach bleeding
2. Intestinal bleeding
3. Pulmonary hemorrhage

37.The acute vascular insufficiency include:

- 1.Shock.
- 2.Collapse.
- 3.Coma.
- 4.Fainting.
- 5.Arterial hypertension.

38. Bronchial asthma attack is characterized by:

- 1.Paroxysmal cough.
- 2.Attacks of expiratory dyspnea.
- 3.The feeling of lack of air.
- 4.Inspiratory dyspnea.
- 5.Expectorated thick viscous sputum after asthma attack.

39.The number of respiratory movements in normal adults at rest:

- 1.20-30.
- 2.10-12.
- 3.12-18.
- 4.40-60.
- 5.25-30.

40.During exacerbation of peptic ulcer prescribed diet:

1. Diet 1
2. Diet 5
3. Diet 15
4. Diet 10

41.Gastritis with secretory insufficiency prescribed diet:

1. Diet 1
2. Diet 2
3. Diet 4
4. Diet 10



42. In diseases of the liver and gallbladder prescribed diet:

1. Diet 1
2. Diet 5
3. Diet. 4
4. Diet 10

43. Diseases of the bowel prescribed diet:

1. Diet 1
2. Diet 2
3. Diet 4
4. Diet 10

44. In diseases of the kidney (pyelonephritis, glomerulonephritis) with prescribed diet:

1. Diet. 7
2. Diet 2
3. Diet 4
4. Diet 10

45. In diseases of the cardiovascular system prescribed diet:

1. Diet 1
2. Diet 2
3. Diet 4
4. Diet 10

46. Artificial feeding through a tube introduced into the stomach, is performed at:

1. Obesity.
2. Unconscious patient.
3. A stomach ulcer.
4. Urolithiasis.

47. Ice pack apply at:

1. Hypertensive crisis.
2. Myocardial infarction.
3. The high fever.
4. Bruises (in the first days after injury).

48. There are the following methods of administration of drugs:

1. Gas.
2. Outer.
3. Internal.
4. Mixed.
5. Parenteral.

49. When internal medication the effect occurs most often:

1. After 1-2 minutes.
2. In 15-30 minutes.
3. Instantly.
4. After 2-3 hours.

50. For patients who are unconscious, it is preferable to use the following method of administration of drugs:

1. Through the mouth.
2. Outer.
3. Parenteral.
4. Sublingually.

51. Immediately after application of disposable syringe:

1. Placed in the trash.
2. Washed with tap water.
3. Soak in 3% solution of chloramine.
4. Washed in 0.5% chloramine solution.
5. Washed in 70° alcohol.

52. The cough happens in diseases:

1. Lungs.
2. Nose.
3. Some diseases of the heart.
4. Kidney.
5. The liver and gallbladder.

53. For inhalation of oxygen must be used:

1. The Apparatus Pirogov.
2. The Apparatus Elizarova.
3. The Bobrov's Apparatus.
4. The Apparatus Kussmaul.

54. The Bobrov's apparatus is used for:

- 1.Pre-sterilization processing of medical instruments.
- 2.Humidification of oxygen for oxygen therapy.
- 3.Immobilization of the limb in fractures.
- 4.Sterilization of the medical equipment.

55.When vomiting the nurse should:

- 1.Put the patient on his back.
- 2.Seat.
- 3.To carry out the inhalation of oxygen.
- 4.Call a doctor immediately.
5. administrate intramuscularly metoclopramide.

56.Vomiting "coffee grounds" is characterized:

- 1.For esophageal bleeding.
- 2.For poisoning coffee.
- 3.For stomach bleeding.
- 4.For intestinal bleeding.
- 5.When an attack of biliary colic.

57.A patient with gastrointestinal bleeding should:

- 1.Call a doctor immediately.
- 2.Put a heating pad on the epigastric.
- 3.Put an ice pack on the epigastric.
- 4.Eliminate the intake of food and liquids.
- 5.Assign to drink plenty of fluids.

58. Indications for gastric lavage:

1. food poisoning.

2. poisoning by medications taken internally.
3. ulcer bleeding.
4. bloating.

59. A more modern method of assessing the functions of stomach acid consider:

1. Acid test.
2. The study of gastric juice.
3. Intra-gastric pH-metric method.
4. Examination of feces (coprogram).
5. All the above methods.

60. Duodenal intubation is contraindicated:

1. At hemorrhoids.
2. In cholelithiasis.
3. Varicose veins of the esophagus.
4. Peptic ulcer 12 duodenal ulcer.
5. Acute cholecystitis.

61. When conducting a cleansing enema, the patient should lie:

1. On the back.
2. On the right side.
3. On the left side.
4. On the belly.
5. Accept any comfortable position for the patient.

62. The injection site for subcutaneous injection:

1. The outer surface of the shoulder and hip.
2. The inner surface of the shoulder and hip.
3. Subscapular region.

4. Anterior abdominal wall.

63. Injection site for intramuscular injection:

1. Upper outer quadrant of the buttocks.
2. The middle part of the outer surface of the thigh.
3. The outer surface of the shoulder

64. Contraindications for intravenous injection:

1. An allergic reaction to a drug.
2. Skin lesions and subcutaneous fat at the planned injection site.
3. Atrophy of muscle tissue
4. Phlebitis (inflammation) punctual veins.

65. What are the signs of pulmonary bleeding?

1. blood red, frothy;
2. dark blood, clots type "coffee grounds"
3. the blood coming out is alkaline
4. the blood coming out is acidic
5. emission of blood by coughing

66. Contraindications to the formulation of cleansing enemas

1. intestinal bleeding
2. flatulence
3. preparation for childbirth
4. the absence of the feces for more than two days (constipation)

67. What symptoms manifested intestinal bleeding?

1. melena
2. dark blood, clots type "coffee grounds"
3. the blood coming out is alkaline
4. the blood coming out is acidic
5. emission of blood by coughing
6. Pale skin

68. Any disorder of diuresis is called nocturia?

1. urine output less than 500 ml per day
2. daily diuresis 2 liters
3. the prevalence of nocturnal urine over a day more than 1:3
4. frequent urination

69. Contraindications for use are warmer

1. acute appendicitis
2. uncomplicated peptic ulcer
3. renal colic
4. acute cholecystitis

70. Contraindications for staging bladder with ice

1. bruises, in the early hours
2. bleeding
3. II period of fever

71. Enteral administration of drugs

1. through the digestive tract
2. through the respiratory tract
3. intradermally
4. on the skin

72. List the basic characteristics of the pulse at the radial artery in healthy human: 1) 2) 3) 4) 5)

73. First aid for anaphylactic shock: 1) 2) 3) 4)

74. List the major signs of clinical death: 1) 2) 3) 4) 5) 6)

75. What symptoms are signs of biological death?

1. cessation of breathing
2. cessation of cardiac activity
3. the appearance of cadaveric spots
4. lowering of body temperature below 20

5. the appearance of rigor Mortis.

76. The angle of the needle is injected at an intramuscular injection (in degrees)?

- a) 90
- b) 60
- c) 45
- g) 5

77. Urinalysis by Zimnicky is used to determine:

- 1. the amount of sugar, acetone
- 2. the number of corpuscles, bacteria
- 3. the presence of urobilin, bile pigments
- 4. to assess the concentration of kidney function

78. The subject of care required for artificial feeding

- 1. feeding Cup
- 2. the catheter
- 3. thin probe
- 4. a gas outlet tube

79. The type of fever with right shift normal and high temperatures within 1-2 days

- 1. continuous fever
- 2. intermittent
- 3. hectic

80. Severe allergic reactions of the patient to the introduction of medicinal substances

- 1. angioedema
- 2. anaphylactic shock
- 3. urticaria
- 4. redness of the skin

81. List the stages of bedsores: 1) 2) 3) 4)



82. The main characteristics of asthma attack: 1) 2) 3)

83. List the basic types of disorders diuresis: 1) 2) 3) 4) 5) 6)

84. What conditions can lead to the physiological increase in body temperature?

1 muscular work;

2. sleep;

3. eating;

4. emotional stress;

5. infectious diseases.

**The answers to the test questions**

1	2,4,5	22	3	43	3	64	1,2,4
2	1,4	23	1,2,4	44	1	65	5
3	3,4,5	24	2,3,5	45	10	66	1
4	2,4,5	25	2,3,5,6	46	2	67	1,6
5	2,3,5	26	1,2,4,5	47	4	68	3
6	2,4	27	1	48	5	69	1
7	2,3,5	28	1,3,5	49	1	70	3
8	1	29	3	50	3	71	1
9	2,3,4	30	4	51	3	72	-
10	2,4,5,6	31	2,4	52	1	73	-
11	2,3,5	32	2,3,4,5	53	3	74	-
12	2,4	33	3	54	2	75	3,4,5
13	3,4	34	3	55	2,5	76	a
14	3,5	35	1,2,4	56	3	77	4
15	2	36	2	57	1,3,4	78	3
16	2,3,5	37	1,2	58	1,2	79	2
17	1,2,4,5	38	2,3,5	59	1,3	80	1,2
18	3,5	39	3	60	3	81	-
19	3,5	40	1	61	3	82	-
20	3	41	2	63	1,4	83	-
21	1,2,4,5	42	2	63	1,2,3	84	1,3,4

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