

**Ministry of Public Health of Ukraine  
Zaporozhye State Medical University  
Department of propedeutics of internal diseases with patients' care**

# **THERAPEUTIC PATIENTS' CARE**

Manual

*(for the second-year students of the international faculty and teachers – chiefs of practice)*

**ZAPOROZHYE - 2016**

The methodical recommendations are worked out by the assistant – professor I.V. Likhasenko

The manual are approved by the Central Methods Board of ZSMU

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Reviewers:

V.D. Syvolap, Professor, Doctor of Medical Science, the Head of Department of Internal disease 1

V.A. Vizir, Professor, Doctor of Medical Science, the Head of Department of Internal disease 2

## EXPLANATORY MESSAGE

Program of production practice patients' care for higher medical education in Ukraine III-IV levels of accreditation was made for speciality 7.12010001 the «General medicine» of direction of preparation «Medicine» in accordance with educationally qualifying description and educationally professional program of preparation of specialists, ratified Order MES of Ukraine from 16.04.2003 № 239 and curriculum, MPH of Ukraine ratified Order from 23.07.2007 № 414. Studies on the specialties indication are carried higher out during 6 years, from them the first 5 years are the general medicine preparation.

Organization of educational process is carried out according to the credit-module system and the requirements of Bologna declaration.

In accordance with Order of MPH of Ukraine № 414 from 23.07.2007, the number of educational hours of discipline «Care of patients» (practice), which is studied by the students on the II course, was changed and expounded in such release:

Credits of ECTS – 5.

Number of hours: all – 150, the audience – 80, independent work of students – 70.

Production practice of care of patients is conducted consistently in the therapeutic, surgical and pediatric departments of permanent establishment directly during the II course. The program practice of patients' care is presented by the module, divided into the substantial modules:

### **Module 1. Patients' Care. Its role in the treatment and organization at inpatient hospital.**

**Substantial module 1.** Structure and the main tasks of care in general system of patients' treatment in therapy department.

**Substantial module 2.** Surgical care.

**Substantial module 3.** Pediatric care.

**Substantial module 1.** The structure and the main tasks of care in general system of patients' treatment in therapy department.

***Specific aims:***

- to demonstrate of the main principles of medical deontology;
- to determine the substance of care and its role in general therapeutic treatment;
- to demonstrate skills of medicoprotective regime keeping and hygiene and sanitary regime protection in the main units of therapeutic hospital;
- to demonstrate skills of questioning and examination of a patient, to know the rules of determination of the main characteristics of cardio-vascular and respiratory systems activity, to render the first aid;
- to make the preliminary estimate of temperature homeostasis state of a patient according to the results of temperature measurements and registrations of temperature curves, to demonstrate skills of taking care of patients with fever;
- to demonstrate skills of providing personal hygiene of patients and taking care of seriously ill patients;
- to demonstrate the knowledge of the main methods of resuscitation.

After the study of this topic is conducted control of knowledges and practical preparation of students on care of therapeutic patients.

***Topic 1. The main principles of the general and specific caring of patients in therapy department***

*The main principles of the general and specific caring of patients in therapy department.*

*Historical beginning of medical aid to a sick person. Role the patients' care in diagnostic process, its structure definitions and realization conditions. Moral, ethical and deontological professional principles. Major professional nursing obligation in hospitals and clinics. Major deontological principals of medical worker. Subordination in the doctors -nurses, nurses – aidman systems.*

**Medical regiment definitions in the therapy department.**

Caring of patient is one of the most important parts of treatment. Taking care means complex of medical, routine, hygienic and epidemiological actions for patient's recovering and warning aggravation.

Often patient can't do their routine because of limited physical activity. Toilet of the skin, mouth, perineum, helping during defecation, urination, feeding, exchanging of underwear and so on all of these are the caring about patients.

Nurse's observation, changes in patient conditions, making a first aid in cases of fever also mean caring about patients. Also caring includes supporting cleanness and warning of inflammation in the hospital.

This action includes regular cleaning, aeration, sanitary disposal services and disinfection. The important part of caring is creating comfortable emotional and physical conditions. Main principles of hospital safe regime are silence and goodwill of medical staff to the patients, elimination unfavorable factors.

Also medical staff have to do all administrations: give pills to the patients, put pots, sinapism, make injections, preparing patients for different diagnostics.

Caring about patients divides on general and specialized one. General caring is to do manipulations to each patient independently on illness.

Specialized caring includes medical manipulations only for particularly specialized group of ill people: surgical group (make bandages, immobilization) gynecological (caring about patients after operation), therapeutical (help to the doctor during pleural and abdominal puncture), urological (instillation of urinary bladder) and so on.

*REMEMBER!*

*Main principles about caring:*

1. Making and providing hospital safety and sanitary-epidemiological regimes in medical institutions.
2. Executing doctors administrations.
3. Helping to hard patients to do their routines and during nutritions.
4. Execution of sanitary-hygienic handling (decubitus prophylaxes and treatment, bath, shower, rubdown etc).
5. First pre-doctor aid execution.

Caring about patients is nurse's duty. Only some manipulations can be done by aidmen: cleaning rooms, giving bedpan or urinal bag, sanitary patient cleaning (bath, shower, rubdown) etc.

*Nurse medical ethic and deontology in nurse's routines.*

One of the main parts of treatment is moral characteristics of medical staff.

Medical specific consists in daily communications with patients. By the way we should be concerned about the patient in physic - emotional aspect, compared to particularities of a healthy person. Illnesses especially in chronic forms for their majority can also cause some psychical damage often leading not only to physical aggravation but also to serious psychological problems. Patients are expecting to get qualified and effective medical aid. So patients have to be sure not only in professional of doctors' qualification but also in their honestly, kindness and decency. That's why society have defined particular requirements to doctors' moral characteristics since old times.

Science about moral goodness in medicine called medical ethic. This is the knowledge about moral part of the medical workers.

The part of the medical ethics is medical deontology, which studies how a medical worker has to behave in different life situations, such as emergency during professional activities and in their ordinary life.

Hippocrates was the first one, who formulated the main principle of the medical deontology (460-377 B.C.): "Everything used in treatment should benefit". He said: "Everyone, who dedicated himself to medicine, must have such features as unselfishness, modesty, chastity, common sense, self-possession...".

What kind of human a nurse has to be, to help people in the hard battle against the illness?

"Love and care - are the best treatment" - Paracelsus wrote. I. Hardy also mentioned these features in his book "A Doctor, a Nurse, a Patient": "Tenderness, patience, kindness and politeness - are the main elements of the good work style, they express care, attention and love to her patients".

In many cases the recovery depends on the nursing manipulations, as clysterizing, temperature measurement, and even the way they change beds.

In the hospital the patient spends most of their time with the nurse. That's why people are more frankly, they trust her. The well-known Hippocratic Oath says: "WHATEVER IN CONNECTION with my professional practice or not in connection with it I may see or hear in the lives of my patients which ought not be spoken abroad, I will not divulge, reckoning that all such should be kept secret".

The concept of patient confidentiality is spread all over the workers because the information about patients, the results of the research, facts from the medical history are also available to the nurses.

The medical confidence - is the main obligation of health care workers.

Using her professional skills, the nurse has to help patients to defeat the illness, pain, to get rid of the discomfort and to distract from the disease.

Bad influence can be caused by the iatrogenic condition - morbid condition, which is the result of the activity of medical staff.

While talking about the clinical manifestations of the illness, the nurse must not hurt feelings of the patient, has to be tolerant and remember about the dander or phobias - obsession, when a person is afraid of getting sick. Even if she knows the clinics of cancer, myocardial infarction and leukosis - it's forbidden to talk about it with a sick human. Hippocrates said: "Surround your patient with some care and love, and - the main - to keep in secret what he should be scared of...".

Documents with investigation and analysis can't be available for patients. It's also unacceptable to discuss with someone the results of medical research, because the doctor could already inform the patient and the interpretation of the nurse may cause phobia and distrust of the doctor.

Working process also includes communication with relatives and families, but also with certified nurse assistant, colleagues and the administration of a medical institution.

The collaboration between a nurse and a doctor has to be based on subordination - obedience to someone with a higher post.

If doctor or someone from the administration asks a nurse about something while she is working and seating, she should stand up. Any doctor's appointment must be done correctly and accurate.

It is necessary to think creatively and, sometimes, critically: if the condition of the patient is getting improved and the earlier treatment had become needless, the nurse may inform the physician, but to do it polite and ethical manner.

The collaboration among health care workers should be built on the basis of respect and readiness to mutual help. Also the critic of colleagues in the presence of patients is unacceptable, because the result of it is undue excitement of a sick person and such behavior undermine the authority of the nurse.

While dealing with nurse's aide the nurse must not be arrogant. All comments as for the work of aides and barmaids should be done calmly and correctly and not in the presence of visitors.

The appearance play very important role, forms the attitude of the patient and helps to calm down. It is obligatory to avoid make-upping, nails should be short and without bright polish. Robe or other medical clothing must be clean, crisped and ironed. Sleeve length should be rolled-up to the elbows, because the nurse often washes her hands and the robe sleeves will disturb them. The shoes should be sensitive ones as the additional noise can disturb the patients.

## ***Topic 2. Structure and functions of therapeutical hospital***

*The main departments and subdivisions of therapeutic inpatient hospital. The concept of treatment, preventive, sanitary and hygienic regimes, their peculiarities. The functions of the reception department in receiving patients and appointing them to the specialized departments. Registration of the patients, the rules of filling in the medical documents (reception journal, case history, statistics card). Sanitary and hygienic regimes of the reception department. The rules of the anthropometrical measuring. Transportation of patients to the specialized departments.*

*General characteristics of therapeutic department, its structure and functions. The main duties of junior nurse. Organization of visits to the hospital. Providing the sanitary and hygienic regimes in the department. Preparation and usage of disinfective solutions. Peculiarities of clearing up in the therapeutic department.*



Medical aid to the population of Ukraine is given by different types of therapeutic and prophylactic establishments and can be ambulant, polyclinical, hospital, sanitary, and health resort, emergency and ambulance medical care.

*Outpatient clinic* is a therapeutic and prophylactic establishment, which renders extra hospital medical aid to the population of urban type small settlement, small industrial enterprise or rural district. In the rural locality feldsher obstetrical centres can render ambulatory aid. Patients' reception in outpatient clinic is conducted only in the basic specialties (therapist, surgeon, dentist, gynecologist and others). District principle of work makes it possible to actively reveal patients, to render them skilled assistance, to study morbidity, to carry out preventive and sanitary education work. Outpatient clinic differs from polyclinic by the number of specialists, the volume of activity. At important industrial enterprises medical aid is rendered by medical and sanitary units, which can be composed of in-patient department, polyclinic, medical center and preventorium. To approach the medical aid to industrial enterprises workers medical centers are organized included into the structure either of industrial enterprise or medical and sanitary unit. Doctor heads medical center.

*Medical center* is a subdivision of medical and sanitary unit or a polyclinic, which is organized at industrial enterprises, construction sites, in the higher and secondary education institutions and schools. Besides rendering the first medical aid in injuries, sudden diseases and occupational poisonings medical center gives planned sanitary hygienic, therapeutic and prophylactic measures.

*Polyclinic* is a highly developed specialized therapeutic and prophylactic establishment in which medical aid is given to incoming patients and to patients at home, a complex of therapeutic and prophylactic measures for treatment and preventive maintenance of diseases and their complications is carried out. Polyclinic is urban type independent therapeutic and prophylactic establishment; either it is included into medical and sanitary unit or into multiprofile hospital. In the polyclinic the reception of patients is conducted by the doctors of all specialities. There are laboratory, diagnostic and treatment rooms. Patients, who cannot come to the polyclinic, call a doctor to their house where they get qualified assistance but if it is necessary they will be hospitalized. Polyclinic carries

out work aimed to reveal patients, to render medical aid, to study morbidity, to conduct preventive examinations.

Ambulatory polyclinical establishments also accomplish prophylactic medical examination i.e. active observation of specific contingent of patients' health.

*Dispensaries* are specific specialized therapeutic and prophylactic establishments, which work according to dispensary method. Dispensaries treat patients with specific diseases: cardiological, oncologic, psychoneurological, endocrine, skin, and venereal and others. Besides treatment and prevention dispensaries carry out home nursing-patients active systematic visits, sanitary-enlightening work, fulfillment of medical prescriptions.

At present specialized consultative-diagnostic centers have been created on the basis of large multiprofile hospitals, clinics, medical universities and research institutes, medical academies, in which highly skilled ambulatory examination and in-patient treatment of patients is performed.

*First aid stations* give medical aid to the population in urgent cases working twenty-four hours. A team can be headed by a feldsher who goes to calls gives the first aid and will hospitalize patients independently. A team headed by a doctor gives specialized medical aid which requires high skills and a feldsher helps doctor in it and to transport patients. Many first aid stations have ambulances with the contemporary equipment that makes possible to render emergency aid and to take reanimation measures on the way to the hospital.

In-patient medical aid is given to patients who need systematic observation, complex methods of study and treatment. There are several forms of in-patient establishments.

*Hospital* is a therapeutic and prophylactic establishment which provides highly skilled medical service of population on the basis of the achievements of contemporary medical science and technology. Urban hospital can be multiprofile for treating patients with different diseases and a specialized one for treating the specific category of patients (tuberculosis, infectious, mental, and others). Regional or republic hospital gives highly skilled specialized consultative polyclinical and in-patient medical aid to rural inhabitants.

*Military hospital* is a medical establishment treating soldiers or handicapped.

*Clinic* is a hospital establishment where not only in-patient treatment is given but research work, students', doctors, average medical personnel training is carried out too.

*Sanatorium* is a permanent establishment, where the recuperation of patients is conducted. It is usually built in the locality (health resort) with a favorable climate, where there are mineral waters and therapeutic muds.

### **Reception department of a hospital**

*Reception department* is a part of a hospital, intended for the registration, receiving of patients, examination, sanitary hygienic treatment of patients and rendering urgent medical aid. Each patient to be received must feel careful and affable altitude to himself, only in this case a patient will confide in the medical establishment where he will be treated.

Reception department junior nurse duties:

- 1) observation of the sanitary regime;
- 2) attending a patient to a doctor's room;
- 3) conducting patient's sanitation;
- 4) transporting and attending patient into the profile department.

Reception department consists of the waiting room, registration, examination room (one or several), sanitation point, procedure room, dressing room. In large hospitals there are a small operating room, a traumatological room, X-ray room and a laboratory. In the reception department there must be an isolation ward to accommodate the patients, who are suspected for an infectious disease. Reception department works in strict consistency: 1) registration of patients; 2) medical examination; 3) sanitary hygienic treatment.

Waiting room is intended for the patients, who don't need bed regime, and for their relatives accompanying them. There must be a table and enough chairs here. On the walls there is information on therapeutic departments work, attending doctor's hours for conversation with patient's relatives, the list of products permitted. Next to it there is a registration where patients registering and filling in the necessary documentation is performed and inquiry office.

A doctor examined patients in an examination room, makes a provisional diagnosis and determines the sanitation form. Here thermometry and sometimes other studies (e.g. electrocardiography) are carried out. In cases when a patient is brought in a grave or an

unconscious condition he is given medical aid without wasting time for registering and only after that all the necessary information is gathered either from the patient himself or from his relatives or person accompanying him. Procedure room, dressing room and a small operating room are intended to give an emergency aid. There is a sanitary admission room for the patients (a bath, a shower, a room for changing clothes and so on).

A reception department must be equipped with the following inventory: stretchers, wheel cart, linen, and patients' clothes.

### **Receiving and registration of patients.**

Patients be in the receiving department:

- by emergency car (accidents, traumas, acute diseases and aggravation of diseases);
- after doctor's assignment – planning hospitalization;
- after transference from other medical institution;
- after asking about medical help.

All medical documents are taken shape by nurse of receiving department after patient's examination and after taking of decision about patient's hospitalization in this hospital.

### **Sanitary-hygienic cleansing of patient in the receiving department.**

This cleansing is used in the blotting room of the receiving department and include the following:

- 1) *disinsection* – a destroying of harmful insects (louses);
- 2) hygienic bath, shower and rubbing of patient;
- 3) changing of patient's cloth in hospital underwear (linen) and cloth.

There are one- and two-streamly sanitary-hygienic cleansing of patient. There is a *one-streamly system* in hospitals with not many numerous of beds (men and women are taken in turn). By *two-streamly system* men and women are taken at the same time.

A *blotting room* of receiving department consist of an examination room, a cloak-room, a bath-shower room and a room, where patients dress.

In examination room a patient is undressed and prepared to bath. There are a couch, a table, chairs, thermometer on the wall (the temperature there is not below +25°C).

There are wooden planks. It is washed with piece of bost, broom with soap and disinfectant solution (1% choramine solution), spots are washed with 3% saline acid solution, rinsed with hot water and filled it before patient appearance. It must be an electric urn for linen warming. There are sterile parcels with clean linen and peace of boast. After procedure a bath is washed with soap, rinsed with 1% chloramines solution. An oil-cloth cushion and oil-cloth is wiped with moisten duster in 2% chloramine solution or in 0,5% lime chlorine solution. Then they are washed with soap. A sheet is individual for each patient. A dump room cleaning is done some times a day.

The inventory must have a marking. Bosts must be in different urns (“Used”, ”unused”).

*Disinfection* – is a destroying of infection disease agents (bacteriums, viruses).

*Disinsection* - is a destroying of insects, what are carriers of infection diseases agents. Before a sanitary-hygienic cleansing a younger nurse of receiving department must examine a patients hairsute part of body for finding out of pediculosis. By pediculosis hair is processed with soap K, combed out with dense comb.

On the tittle-page of case record is made a mark about pediculosis “P” and in 5-7 days is done the second sanitary cleansing. By pediculosis revealing hair must be cut short (it must be gathered and burnt), if a patient were agreeable.

By pediculosis a linen is processed with dissolution and directed for disinfection and specially cleansing. On bags with such clothes it must be an inscription “Pediculosis”.

If a patient had an infection disease, linen would be put down in the tank with lime chlorine or chloramines for two hours and directed to special house.

If the linen is clean, it is put in a bag. A list of things is drawn up in two copies. The one is put in bag, the other is sticked to case record.

The all data about patient’s cleansing must be written down in case record, that a ward nurse can make a repeated cleansing in 5-7 days.

If a patient hadn’t pediculosis, a nurse would have to help by undressing and then would have to fill a receiving receipt in 2 copies. The one – for case record the other is proped to patient’s cloth.

The hygienic cleansing must be different; it depends on condition of patient and must be as a total shower (a bath), as a partial (rubbing). If a shower (bath) were contraindicated for patient, a rubbing (washing) would be allowed (with solution “vinegar, or alcohol”).

A hygienic bath isn't recommended for women in birth, patients with cutaneous diseases, hemorrhage, myocardial infarctions, tuberculosis in active period, acute cardiac and vascular failure, violation of cerebral blood circulation. If it were necessary, a patient would cut nails on feet and hands.

If a patient had a satisfactory condition, he would be weighed, measured a height and a circle of chest (*anthropometry*). A weighting is done in time of hospitalization, every week and in time of discharging from hospital. The mass of body is very important. By exhaustion the increase of body mass says about improvement of patient's condition, but by obesity a lowering of body mass testifies about right treatment. By cardiac failure the increase of body mass is bad sign (a liquid retention in organism) and a lowering – good sign (a lowering of edemas). The mass of body is measured with scales. This procedure is always doing by definite conditions: in the morning, on an empty stomach, after defecation and urination, in underwear only.

The height of a man is definite with high meter. It consists of a plank with centimeter scale and a planshette. Heels, nates and back of the head must be touch a plank, and a head must be in such position, that an ear and an outer corner of eye must be on the one horizontal line.

For a measure of a chest circle a centimeter stripe must be under the low corner of scapulas (behind), in front of IV rib level. By men – under papilla's.

### **The transportation of patient into department.**

Into department a patient goes by foot, he is delivered on weel-litter after doctor's decision. Weel-litters are provided with sheets, blankets, which are changed after each using.

Patients, who go without help, enter a room by accompaniment of younger nurse. In the department a ward-nurse meets a patient, reads his case record, shows him a room, a toilet, tells him about department regime.

Then she reports a doctor about patient, gives him a case record. A doctor's examination depends on a patient's condition.

If a patient needed, a doctor would give him an addition prescription.

Patients, who are untransportable, are delivered into department on wheel-litter. 2 - 3 nurses carry a patient from a wheel-litter on a bed. It must be careful wheel-litter is put under a rectal angle parallely as regards a bed.

It is difficult for patient to lay in bed, when a wheel-litter stands closely to bed. This way is not always acceptable.

### **Topic 3. Questioning of a patient**

*The role of questioning the patient in making a diagnosis. The rules of questioning the patient and summarizing the findings.*

In order to arrive at a correct diagnosis it is necessary to be able to identify the signs of the disease, and to reveal the appropriate changes in the patient. Various methods are used to reveal and study the numerous symptoms of the disease. These methods include questioning the patient, measuring his body temperature, and complicated techniques of examination (microscopy of the formed elements of the blood, chemical studies of the bodily fluids, X-ray examination of the patient, etc.).

A healthy person does not feel any unpleasant sensations. Pain, nausea, vomiting, elevated body temperature, enlargement of certain internal organs, e.g. of the spleen, occur only in the sick, and are considered as signs or symptoms (Gk *symptoma* that which happens) of diseases. Some symptoms indicate changes that occur in the entire body (e.g. elevated temperature), while others (e.g. diarrhea) may only indicate dysfunction of a particular organ or a system, or changes in the structure of an organ (e.g. an enlarged and firm spleen).

Pain or nausea is *subjective symptoms* experienced by the patient. These sensations reflect objective changes that occur in the patient's body. Signs of the disease that are revealed by the physician during his examination of the patient, e.g. jaundice or enlarged liver, are *objective symptoms* of the disease.

It is almost impossible to diagnose a disease by only one symptom. A correct diagnosis can only be established by investigating several symptoms. Most incorrect diagnoses are the result of an insufficient examination. The main requirement is therefore a thorough and systematic examination of the patient. A correct diagnosis can be established if the physician follows a definite plan in his examinations.

The examination begins with an *interview*. The patient tells his complaints which often are of no less importance than a thorough objective examination of the patient. Some diseases are diagnosed almost exclusively by the patient's complaints. Angina pectoris for example, is frequently diagnosed almost entirely from the character of pain in the region of the heart. Cholelithiasis is diagnosed by attacks of pain in the right upper abdominal quadrant. A detailed questioning of the patient concerning the time of the onset of the disease, its early symptoms (until the time of medical examination) is even more important in establishing a correct diagnosis. All this information is usually called *anamnesis morbi*, i.e. remembering the present disease by the patient, as distinct from *anamnesis vitae* which is the history of previous diseases of the patient. Stages of development of the present disease are traced back while collecting an *anamnesis* from the history of the disease as given by the patient himself and also from the information supplied by his relatives.

Another stage of examination is *objective examination* of the patient's condition at the present time (*status praesens*). This examination includes various diagnostic procedures (inspection, measuring temperature, percussion, auscultation, palpation, laboratory tests, X-ray examination, etc.) and reveals changes in the patient's body and deviations from normal structure and function of various organs that could not be sensed by the patient himself.

As a rule, a patient undergoes repeated examinations during his observation by medical personnel. These examinations reveal subjective and objective changes in the state of the patient, the disease progression, and the efficacy of the therapy given. This is information on the course of the disease (*decursus morbi*).

All information obtained by questioning the patient and by objective examinations, information on the course of the disease and the prescribed treatment are recorded to



make a history of the case. A complete diagnosis (i.e. the main disease and the accompanying diseases and complications, if any) is given on the first page.

At the end of the history record, when observation of the patient is over, a conclusion or epicrisis should be given, where the special character of the disease and the result of the treatment should be described.

Typically, the physical examination follows a methodical, head-to-toe format. Patient preparation includes providing a clear explanation of the examination as well as proper positioning and draping before and during the examination. During this procedure, the nurse must make every effort to recognize and respect the patient's feelings (particularly embarrassment and anxiety) as well as to provide comfort measures and follow appropriate safety precautions.

### **Questioning**

- Review the patient's health history *to obtain subjective data about the patient and insight into problem areas and subtle physical changes*. Investigate the patient's chief complaint.
- Obtain biographical data, including the patient's name, address, telephone number, contact person, sex, age and birth date, birthplace, Social Security number, marital status education, religion, occupation, race, nationality, and cultural background as well as the names of persons living with the patient.
- Ask about health and illness patterns, the reason for seeking health care, current and past health status, family health status, and condition of body systems.
- Ask about health promotion and protection patterns, including health beliefs, personal habits, sleep and wake cycles, exercise, recreation, nutrition, stress level and coping skills, socioeconomic status, environmental health conditions, and occupational health hazards.
- Explore the patient's role and relationship patterns, including self-concept, cultural and religious influences, family roles and relationships, sexuality and reproductive patterns, social support systems, and any other psychosocial considerations.
- Explain the physical examination and answer questions.
- Instruct the patient to void if possible. Collect a urine specimen if ordered. Emptying the bladder increases patient comfort during the examination.

- Help the patient undress, and provide a gown. Then measure and record height, weight, and vital signs.

### **Exploring a patient's symptoms**

A clear understanding of your patient's symptoms is essential to a complete physical assessment. One method of gaining that understanding involves using the mnemonic device PQRST as a guide.

#### **Provocative or palliative**

*What causes the symptom? What makes it better or worse?*

- What were you doing when you first noticed it?
- What seems to trigger it? Stress? Position? Certain activities? An argument? (For a sign such as an eye discharge: What seems to cause it or make it worse? For a psychological symptom such as depression: Does the depression occur after specific events?)
- What relieves the symptom? Changing diet? Changing position? Taking medication? Being active?
- What makes the symptom worse?

#### **Quality or quantity**

*How does the symptom feel, look or sound? How much of it are you experiencing now?*

- How would you describe the symptom - how it feels, looks, or sounds?
- How much are you experiencing now? Is it so much that it prevents you from performing any activities? Is it more or less than you experienced at any other time?

#### **Region or radiation**

*Where is the symptom located? Does it spread?*

- Where does the symptom occur?
- In the case of pain, does it travel down your back or arms, up your neck, or down your legs?

#### **Severity**

*How does the symptom rate on a scale of 1 to 10, with 10 being the most severe?*

- How bad is the symptom at its worst? Does it force you to lie down, sit down, or slow down?
- Does the symptom seem to be getting better, getting worse, or staying about the same?

## Timing

*When did the symptom begin? Did it occur suddenly or gradually? How often does it occur?*

- On what date and time did the symptom first occur?
- How did the symptom start? Suddenly? Gradually?
- How often do you experience the symptom? Hourly? Daily? Weekly? Monthly?
- When do you usually experience the symptom? During the day? At night? In the early morning? Does it awaken you? Does it occur before, during, or after meals? Does it occur seasonally?
- How long does an episode of the symptom last?

## The Present Complaints

The main complaints of the patient should first be determined. If the patient complains of retrosternal pain, the character and exact location of this pain, its focus and intensity should be determined; the time of the onset, and possible causes that provoked the pain (strain, cough, taking food, etc.) should be established. The patient should be asked which remedies remove this pain. Other complaints should also be analyzed. In pneumonia, for example, the patient would normally complain of weakness, high temperature, side pain (pleurodynia), and cough; he would note that the onset of the disease was marked a few days ago by a sudden chill and pricking in the side when coughing and breathing deeply.

The study of the main complaints can often lead the examiner to a conclusion concerning the general character of the disease, e.g. high body temperature would normally indicate an infectious process, cough and expectorated sputum indicate possible disease of the lungs. Knowledge of the exact time of the onset of the disease is informative of the character of the disease (acute or chronic).

The inquiry should not be limited to these main points. So as not to omit any symptoms and determine the functional condition of all the organs (status functionalis) the patient should be questioned according to a specially outlined scheme. Changes in the patient's general state should be established (loss of weight, fever, weakness, edema,

headache). The condition of the respiratory system (cough, expectoration of sputum and blood, pain in the throat) should also be established. Next is the cardiovascular system (tachycardia, dyspnoea, heart pain, swelling of feet). Then follows the gastro-intestinal system (appetite, swallowing, vomiting, epigastric pain, etc.).

The condition of the nervous system is established by asking the patient about his subjective condition, his sleep, irritability or indifferent attitude to the surroundings, weakness, excitement, headache, state of consciousness and the main senses. The patient should be asked about his conduct, responses to external stimuli, his attitude to work and his associates. The inquiry at this stage gives the physician information concerning the condition of various organs and systems of the patient (respiration, blood circulation, digestion, urinary function, motor function, nervous system, etc.).

### **History of the Present Disease**

Exact answers should be obtained from the patient concerning the following aspects of his present disease (anamnesis morbi): (1) the time of the onset of the disease; (2) the character of the first symptoms; (3) the course of disease; (4) examinations and their results; (5) treatment, if any, and its efficacy. The answers to these questions may give the physician the necessary information on the present disease.

The history of the disease should include information concerning the onset of the disease and its development until the present. The patient's general condition before the disease should first be determined and the causes that might have provoked the disease established wherever possible. The patient should be questioned in detail about the first signs of the disease and the chronology of their development (dynamics), about relapses or exacerbations, remissions and their duration. If the patient was examined during an exacerbation of the disease by some other physician, the results should be studied. Excess verbosity of the patient should be prevented, because the results of the examinations and treatment only are important (therapy with cardiac glycosides, vasodilators, diuretics, antibiotics, hormones, etc.). Motives for hospitalization should also be determined (exacerbation of the disease, verification of the diagnosis, etc.).

### **Life history (anamnesis vitae)**

The past history is often very important for establishing the character, the cause, and conditions for the onset of the disease. Anamnesis vitae is a history or a medical biography of the patient in every period of his life (childhood, adolescence, and maturity).

Collecting the anamnesis begins with the *general biographical information*. Birth place is important, because some diseases (e.g. endemic goiter) is usually predominate in one locality and are not met in others. The patient's parents are also important. The patient should be asked if he was born in term, if there were other children in the family, if he was breast fed or artificially; the age at which the patient began walking and talking is important, and the patient should inform the physician if he had marked signs of rickets during his childhood. This information is important to evaluate the patient's health at birth and during childhood. Conditions of life in childhood and adolescence and health during these periods of life are important information. It is necessary to find out if the patient's physical and mental development was retarded and what was his progress at school. The time of sex maturity should be determined. Women should report the number of pregnancies and parturitions, and the course of labors.

Social conditions are important, for the health of people. The patient should inform the physician on the conditions of his housing (separate apartment, hostel, country house, illumination, the presence of dampness, if any, hygienic conditions, etc.). The composition of the family is important: large or small family, their health, well-being, income etc. Malnutrition is an important factor for the onset of some diseases. The way in which the patient spends his leisure time is also important.

*Unfavorable working conditions and industrial hazards* (some harmful dusts) are important, for they may cause bronchial asthma and chronic diseases of the bronchi and lungs. Strong noise, vibration, high ambient temperature, drafts, and cold (work in the open) can cause pathology. Industrial poisoning by mercury, lead, carbon monoxide and other harmful agents, and also exposure to radiation (improper safety measures) may also cause disease.

*Past illnesses* are also important. Then it is necessary to establish which diseases, operations, traumas the patient survived, if he is frequently ill with grippe, tonsillitis. Some infectious diseases, such as measles or scarlet fever, do not recur because of acquired immunity, while other diseases, such as rheumatism or erysipelas, tend to recur. Rheumatism or diphtheria often provoke heart diseases. Nephropathy often develops after scarlet fever, and incompetence of heart valves often results from the previous endocarditis. Contacts with infectious patients are important, especially in the presence of epidemics (e.g. influenza).

*Family history.* Health of the parents, sisters or brothers is often informative. If some of the family had tuberculosis, the other members of the family may also develop tuberculosis. Syphilis may be transmitted by an intrauterine route. By comparing the pathology of the patient with diseases of his relatives, the physician can make a conclusion on the role of hereditary factors in the development or origin of the disease.

*Allergological anamnesis* is very important. Some patients (and even healthy subjects) often develop a pathologically heightened (or an inverted) response of the immune system (allergy), and this factor is essential in the pathogenesis of certain diseases of internal organs. It is necessary therefore to collect an allergological anamnesis, that is determine whether the patient or his relatives had allergic reactions to various foods, because strawberry, eggs, canned crabs, and other foods may frequently act as allergen. Some medicinal preparations, perfumes, pollen also do. Allergic reactions in man are quite varied: from vasomotor rhinitis, nettle rash or Quincke's edema to anaphylactic shock.

#### **Topic 4. Role of patient's inspection in the test of the general state of the patient.**

*The rules of the general examination of the patient. Determination of the general condition of the patient. Determination of the patient's position in bed, his bearing and gait. The rules of examining the skin and mucous membranes.*

**Illumination.** The patient should be examined in the daytime, because electric light will mask any yellow coloring of the skin and the sclera. In addition to direct light, which outlines the entire body and its separate parts, side light will also be useful to reveal

pulsation on the surface of the body (the apex beat), respiratory movements of the chest, peristalsis of the stomach and the intestine.

**Inspection technique.** The body should be inspected by successively uncovering the patient and examining him in direct and side light. The trunk and the chest are better examined when the patient is in a vertical posture. When the abdomen is examined, the patient may be either in the erect (upright) or supine (dorsal) position. The examination should be carried out according to a special plan, since the physician can miss important signs that otherwise could give a clue for the diagnosis (e.g. liver palm or spider angiomas which are characteristic of cirrhosis of the liver).

The entire body is first inspected in order to reveal general symptoms. Next, separate parts of the body should be examined: the head, face, neck, trunk, limbs, skin, bones, joints, mucosa, and the hair cover. The following signs characterize the general condition of the patient: consciousness and the psyche posture and body-built.

**Consciousness.** It can be clear or deranged. Depending on the degree of disorder, the following psychic states are differentiated.

1. **Stupor.** The patient cannot orient himself to the surroundings, he gives delayed answers. The state is characteristic of contusion and in some cases poisoning.

2. **Sopor.** This is an unusually deep sleep from which the patient recovers only for short periods of time when called loudly, or roused by an external stimulus. The reflexes are preserved. The state can be observed some infectious diseases and at the initial stage of acute uremia.

3. **Coma.** The comatose state is the full loss of consciousness with complete absence of response to external stimuli, with the absence of reflexes, and deranged vital functions. The causes of coma are quite varied but the loss of consciousness in a coma of any etiology is connected with the cerebral cortex dysfunction caused by some factors, among which the most important are disordered cerebral circulation and anoxia. Edema of the brain and its membranes, increased intracranial pressure, effect of toxic substances on the brain tissue, metabolic and hormone disorders, and also upset acid-base equilibrium are also very important for the onset of coma. Coma may occur suddenly or develop gradually, through various stages of consciousness

disorders. The period that precedes the onset of a complete coma is called the precomatose state. The following forms of coma are most common.

General inspection can also give information on other psychic disorders that may occur in the patient (depression, apathy).

*The posture* or attitude of the patient is often indicative of his general tone, the degree of muscle development, and sometimes of his occupation and habits. Most patients with grave diseases or with psychic depression are often stooped. Erect posture, easy gait, and free and unconstrained movements indicate the normal condition of the body. Some gaits are specific for certain diseases of the nervous system (hemiplegia, sciatica, etc.). Surgical diseases of the bones and joints, rheumatism, or deranged blood circulation in the lower extremities change the gait and make walking difficult. The so-called waddling gait is characteristic of osteomalacia or congenital dislocation of the femur.

**Posture of the patient.** It can be active, passive, or forced.

1) The patient is *active* if the disease is relatively mild or at the initial stage of a grave disease. The patient readily changes his posture depending on circumstances. But it should be remembered that excessively sensitive or alert patients would often lie in bed without prescription of the physician.

2) *Passive posture* is observed with unconscious patients or in rare cases, with extreme asthenia. The patient is motionless, his head and the limbs hang down by gravity, the body slips down from the pillows to the foot end of the bed.

3) *Forced posture* is often assumed by the patient to relieve or remove pain, cough, dyspnoea. For example, the sitting position relieves orthopnea: dyspnea becomes less aggravating in cases with circulatory insufficiency. The relief that the patient feels is associated with the decreased volume of circulating blood in the sitting position (some blood remains in the lower limbs and the cerebral circulation is thus improved). Patients with dry pleurisy, lung abscess, or bronchiectasis prefer to lie on the affected side. Pain relief in dry pleurisy can be explained by the limited movement of the pleural layers when the patient lies on the affected side. If a patient with lung abscess or bronchiectasis lies on the healthy side, coughing intensifies because the intracavitary contents penetrate the bronchial tree. And quite the reverse, the patient cannot lie on the affected side if the ribs are fractured because



pain intensifies if the affected side is pressed against the bed. The patient with cerebrospinal meningitis would usually lie on his side with his head thrown back and the thighs and legs flexed on the abdomen. Patients with angina pectoris and intermittent claudication prefer to stand upright. The patient is also erect (standing or sitting) during attacks of bronchial asthma. He would lean against the edge of the table or the chair back, with the upper part of the body slightly inclined forward. Auxiliary respiratory muscles are more active in this posture. The supine posture is characteristic of strong pain in the abdomen (acute appendicitis, perforated ulcer of the stomach or duodenum). The prone position (lying with the face down) is characteristic of patients with tumors of the pancreas and gastric ulcer (if the posterior wall of the stomach is affected). Pressure of the pancreas on the solar plexus is lessened in this posture.

*Habitus.* The concept of habitus includes the body-build, i.e. constitution, height, and body weight.

*Constitution* (L *constituero* to set up) is the combination of functional and morphological bodily features that are based on the inherited and acquired properties, and that account for the body response to endo- and exogenic factors. The classification adopted in the Soviet Union (M. Chernorutsky) differentiates between the following three main constitutional types: asthenic, hypersthenic, and normosthenic.

The *asthenic* constitution is characterized by a considerable predominance of the longitudinal over the transverse dimensions of the body by the dominance of the limbs over the trunk, of the chest over the abdomen. The heart and the parenchymatous organs are relatively small, the lungs are elongated, the intestine is short, the mesenterium long, and the diaphragm is low. Arterial pressure is lower than in hypersthenics; the vital capacity of the lungs is greater, the secretion and peristalsis of the stomach, and also the absorptive power of the stomach and intestine are decreased; the haemoglobin and red blood cells counts, the level of cholesterol, calcium, uric acid, and sugar in the blood are also decreased. Adrenal and sexual functions are often decreased along with thyroid and pituitary hyperfunction.

The *hypersthenic constitution* is characterized by the relative predominance of the transverse over the longitudinal dimensions of the body (compared with the normosthenic

constitution). The trunk is relatively long, the limbs are short, the abdomen is large, the diaphragm stands high. All internal organs except the lungs are larger than those in asthenics. The intestine is longer, the walls are thicker, and the capacity of the intestine is larger. The arterial pressure is higher; haemoglobin and red blood cell count and the content of cholesterol are also higher; hypermobility and hypersecretion of the stomach are more normal. The secretory and the absorptive function of the intestine are high. Thyroid hypofunction is common, while the function of the sex and adrenal glands is slightly increased.

*Normosthenic constitution* is characterized by a well proportioned make-up of the body and is intermediate between the asthenic and hypersthenic constitutions.

The colour, elasticity, and moisture of *the skin*, eruptions and scars are important. The *colour of the skin* depends on the blood filling of cutaneous vessels, the amount and quality of pigment, and on the thickness and translucency of the skin. Pallid skin is connected with insufficiency of blood circulation in the skin vessels due to their spasms of various etiology or acute bleeding, accumulation of blood in dilated vessels of the abdominal cavity in collapse, and in anemia. In certain forms of anemia, the skin is specifically pallid: with a characteristic yellowish tint in Addison-Biermer anemia, with a greenish tint in chlorosis, earth-like in malignant anemia, brown or ash-coloured in malaria, *cafe au lait* in subacute septic endocarditis. Pallid skin can also be due to its low translucency and considerable thickness; this is only apparent anemia, and can be observed in healthy subjects.

Red colour of the skin can be transient in fever or excess exposure to heat; persistent redness of the skin can occur in subjects who are permanently exposed to high temperatures, and also in erythraemia. Cyanotic skin can be due to hypoxia in circulatory insufficiency, in chronic pulmonary diseases, etc. Yellowish colour of the skin and mucosa can be due to upset secretion of bilirubin by the liver or due to increased haemolysis. Dark red or brown skin is characteristic of adrenal insufficiency. Hyperpigmentation of the breast nipples and the areola, in women, pigmented patches on the face and the white line on the abdomen are signs of pregnancy. When silver preparations are taken for a long time, the skin becomes grey on the open parts of the body (*argyria*). Foci of depigmentation of the skin (*vitiligo*) also occur.

The skin can be wrinkled due to the loss of elasticity in old age, in prolonged debilitating diseases and in excessive loss of water.

*Elasticity and turgor of the skin* can be determined by pressing a fold of skin (usually on the abdomen or the extensor surface of the arm) between the thumb and the forefinger. The fold disappears quickly on normal skin when the pressure is released while in cases with decreased turgor, the fold persists for a long period of time.

*Moist skin* and excess perspiration are observed in drop of temperature in patients recovering from fever and also in some diseases such as tuberculosis, diffuse toxic goiter, malaria, suppuration, etc. Dry skin can be due to a great loss of water, e.g. in diarrhea or persistent vomiting (toxicosis of pregnancy, organic pylorostenosis).

*Eruptions on the skin* vary in shape, size, colour, persistence, and spread. The diagnostic value of eruptions is great in some infections such as measles, German measles, chicken- and smallpox, typhus, etc. *Roseola* is a rash-like eruption of 2-3 mm patches, which disappears when pressed. This is due to local dilatation of the vessels. Roseola is a characteristic symptom of typhoid fever, paratyphus, louse-borne typhus, and syphilis.

*Erythema* is a slightly elevated hyperemic portion of the skin with distinctly outlined margins. Erythema develops in some persons hypersensitive to strawberries, eggs, and canned crabs. Erythema can develop after taking quinine, nicotinic acid, after exposure to a quartz lamp, and also in some infectious diseases, such as erysipelas and septic diseases.

*Weals* (urticaria, nettle rash) appear on the skin as round or oval itching lesions resembling those, which appear on the skin bitten by stinging nettle. These eruptions develop as an allergic reaction,

*Herpetic lesions* are small vesicles 0.5 to 1 cm in size. They are filled with transparent fluid, which later becomes cloudy. Drying crusts appear in several days at the point of the collapsed vesicles. Herpes would normally affect the lips (herpes labialis, or cold sore) and the ala nasi (herpes nasalis). Less frequently herpetic lesions appear on the chin, forehead, cheeks, and ears. Herpetic lesions occur in acute lobar pneumonia, malaria, and influenza.

*Purpura* is a hemorrhage into the skin occurring in Werlhoff's disease, hemophilia, scurvy, capillarotoxicosis, and longstanding mechanical jaundice. The lesions vary in size from small pointed hemorrhages (petechiae) to large black and blue spots (ecchymoses).

Lesions of the skin are quite varied in character when they appear as allergic manifestations.

*Desquamation of the skin* is of great diagnostic value. It occurs in debilitating diseases and many skin diseases. Scars on the skin, e.g. on the abdomen and the hips, remain after pregnancy (*striae gravidarum*), in Itsenko-Cushing disease, and in extensive edema. Indented stellar scars, tightly connected with underlying tissues, are characteristic of syphilitic affections. Postoperative scars indicate surgical operations in past history. Cirrhosis of the liver is often manifested by development of specific vascular stellae (*telangiectasia*). This is a positive sign of this disease.

During examination of the *muscular system* the physician should assess its development, which depends on the patient's occupation, his sporting habits, etc. Local atrophy of muscles, especially muscles of the extremities, is diagnostically important. Atrophy can be determined by measuring the girth of the symmetrical muscles of both extremities. Determination of muscular strength and detection of functional muscular disturbances (cramps) are also important for diagnosis. Muscular dysfunction may occur in renal insufficiency (*eclampsia*), disorders of the liver (*hepatic insufficiency*), affections of the central nervous system (*meningitis*), tetanus, cholera, etc.

Defects (deformities or bulging) of the *bones* of the skull, chest, spine, and the extremities, may be revealed by external inspection. But in many cases palpation is necessary. Peripheral bones of the extremities (of the fingers, toes), cheek bones or the mandible grow abnormally in acromegaly. Rachitic changes occur in the form of the so-called pigeon breast, rachitic rosary (beading at the junction of the ribs with the cartilages), deformities of the lower extremities, etc. Tuberculous lesions (the so-called haematogenic osteomyelitis) are localized mainly in the epiphyses of the bones, with formation of fistulae through which pus is regularly discharged. Multiple affections of the flat bones of the skeleton (the skull included) that can be seen radiographically as round light spots (bone tissue defects) are typical of myeloma. Diseases of the spine cause deformation of the spinal column and the chest. Considerable deformities of the spine (*kyphosis*, *scoliosis*) can cause dysfunction of the thoracic organs.

When examining *the joints* attention should be paid to their shapes, articulation, tenderness in active or passive movements, edema, and hyperemia of the adjacent tissues. Multiple affections of large joints are characteristic of exacerbated rheumatism. Rheumatoid arthritis affects primarily small joints of the hands with their subsequent deformation. Metabolic polyarthritis, e.g. in gout, are characterized by thickening of the terminal phalanges of the fingers and toes (so-called Heberden's nodes). Monarthritis (affection of one joint) would be usually observed in tuberculosis and gonorrhoea.

Examination of the *extremities* can reveal varicosity of the veins, edema, changes in the skin, muscles, tremor of the extremities, deformities, swelling and hyperemia of the joints, ulcers, and scars. Diseases of the central nervous system (tumors, cerebral hemorrhage) and also of the peripheral nervous system can cause atrophy and paralysis of the muscles.

Hippocrates fingers or clubbing of the terminal phalanges of the fingers and toes are important diagnostic ally. The changed shape of the nails resembles hour glass. This symptom is characteristic of prolonged diseases of the lung (chronic purulent processes), heart (subacute septic endocarditis, congenital heart defects) and liver (cirrhosis). Periodically occurring vascular spasms in the extremities cause the development of the symptom known as the dead finger, transient pallor of the fingers and toes, which is characteristic of Raynaud's disease. Prolonged spasms of blood vessels can cause gangrene of the fingers.

When examining the legs, attention should be paid to possible flat foot. Saber shins occur in rickets and sometimes in syphilis. Uneven thickening of the leg bones indicates periostitis which can sometimes be of syphilitic etiology.

## **Topic 5. Body temperature and the rules of its measuring and registration.**

### **Patients' care with fever.**

*Body temperature and the rules of its measuring and registration. The role of temperature homeostasis in assurance of organism vital activity. Methods of measuring temperature. Thermometers, their structure, keeping and disinfection. Methods of measuring temperature with mercurial thermometer. Modern thermometers - electric thermometers and thermometers on the basis of liquid crystals. Circadian temperature*

*variations. Registration of body temperature and temperature curves in temperature charts. Care of patients with fever.*

Body temperature represents the balance between heat produced by metabolism, muscular activity, and other factors and heat lost through the skin, lungs, and body wastes. A stable temperature pattern promotes proper function of cells, tissues, and organs; a change in this pattern usually signals the onset of illness.

Temperature can be measured with mercury, an electronic digital, or a chemical-dot thermometer. Oral temperature in adults normally ranges from 36.1° to 37.5°C; rectal temperature, the most accurate reading, is usually 0.6°C higher; axillary temperature, the least accurate, reads 0.6° to 1.1°C lower (36.0° to 36.9°C); and tympanic temperature reads 0.5° to 1°C higher.

Temperature normally fluctuates with rest and activity. Lowest readings typically occur between 4 and 5 a.m.; the highest readings occur between 4 and 8 p.m. Other factors also influence temperature, including sex, age, emotional conditions, and environment. Keep the following principles in mind. Women normally have higher temperatures than men, especially during ovulation. Normal temperature is highest in neonates and lowest in elderly persons. Heightened emotions raise temperature; depressed emotions lower it. A hot external environment can raise temperature; a cold environment lowers it.

### **Using a mercury thermometer**

- Hold the thermometer between your thumb and index finger at the end opposite the bulb.
- If the thermometer has been soaking in a disinfectant, rinse it in cold water. *Rinsing removes chemicals that may irritate oral or rectal mucous membranes or axillary skin.* Avoid using hot water *because it expands the mercury, which could break the thermometer.* Using a twisting motion, wipe the thermometer from the bulb upward.
- Then quickly snap your wrist several times while holding the thermometer to shake it down to below 38.5° C. *Shaking causes the mercury to descend into the bulb.* The mercury will then expand in response to the patient's body temperature and be forced upward.

- To use a disposable sheath, disinfect the thermometer with an alcohol sponge. Insert it into the disposable sheath opening; then twist to tear the seal at the dotted line. Pull it apart.

### ***Taking an oral temperature***

- Position the tip of the thermometer under the patient's tongue, as far back as possible on either side of the frenulum linguae. *Placing the tip in this area promotes contact with superficial blood vessels and contributes to an accurate reading.*
- Instruct the patient to close his lips but to avoid biting down with his teeth. *Biting can break the thermometer, cutting the mouth or lips or causing ingestion of broken glass or mercury.*
- Leave a mercury thermometer in place for at least 2 minutes or a chemical-dot thermometer in place for 45 seconds *to register temperature*; for an electronic thermometer, wait until the maximum temperature is displayed.
- For a mercury thermometer, remove and discard the disposable sheath; then read the temperature at eye level, noting it before shaking down the thermometer. For an electronic thermometer, note the temperature; then remove and discard the probe cover. For the chemical-dot thermometer, read the temperature as the last dye dot that has changed color, or fired; then discard the thermometer and its dispenser case.

### ***Taking a rectal temperature***

- Position the patient on his side with his top leg flexed, and drape him to provide privacy. Then fold back the bed linens to expose the anus.
- Squeeze the lubricant onto a facial tissue *to prevent contamination of the lubricant supply.*
- Lubricate about 3.8 cm for an adult. *Lubrication reduces friction and thus eases insertion.* This step maybe unnecessary when using disposable rectal sheaths *because they're prelubricated.*
- Lift the patient's upper buttock, and insert the thermometer about 3.8 cm for an adult. Gently direct the thermometer along the rectal wall toward the umbilicus. *This will avoid perforating the anus or rectum or breaking the thermometer. It also will help ensure an*

*accurate reading because the thermometer will register hemorrhoidal artery temperature instead of fecal temperature.*

- Hold the mercury thermometer in place for 2 to 3 minutes, or the electronic thermometer until the maximum temperature is displayed. *Holding the thermometer prevents damage to rectal tissues caused by displacement or loss of the thermometer into the rectum.*
- Carefully remove the thermometer, wiping it as necessary. Then wipe the patient's anal area *to remove any lubricant or feces.*

### ***Taking an axillary temperature***

- Position the patient with the axilla exposed.
- Gently pat the axilla dry with a facial tissue *because moisture conducts heat.* Avoid harsh rubbing, *which generates heat.*
- Ask the patient to reach across his chest and grasp his opposite shoulder, lifting his elbow.
- Position the thermometer in the center of the axilla, with the tip pointing toward the patient's head.
- Tell him to keep grasping his shoulder and to lower his elbow and hold it against his chest. *This promotes skin contact with the thermometer.*
- Remove a mercury thermometer after 10 minutes; remove an electronic thermometer when it displays the maximum temperature. Axillary temperature takes longer to register than oral or rectal temperature *because the thermometer isn't enclosed in a body cavity.*
- Grasp the end of the thermometer and remove it from the axilla.

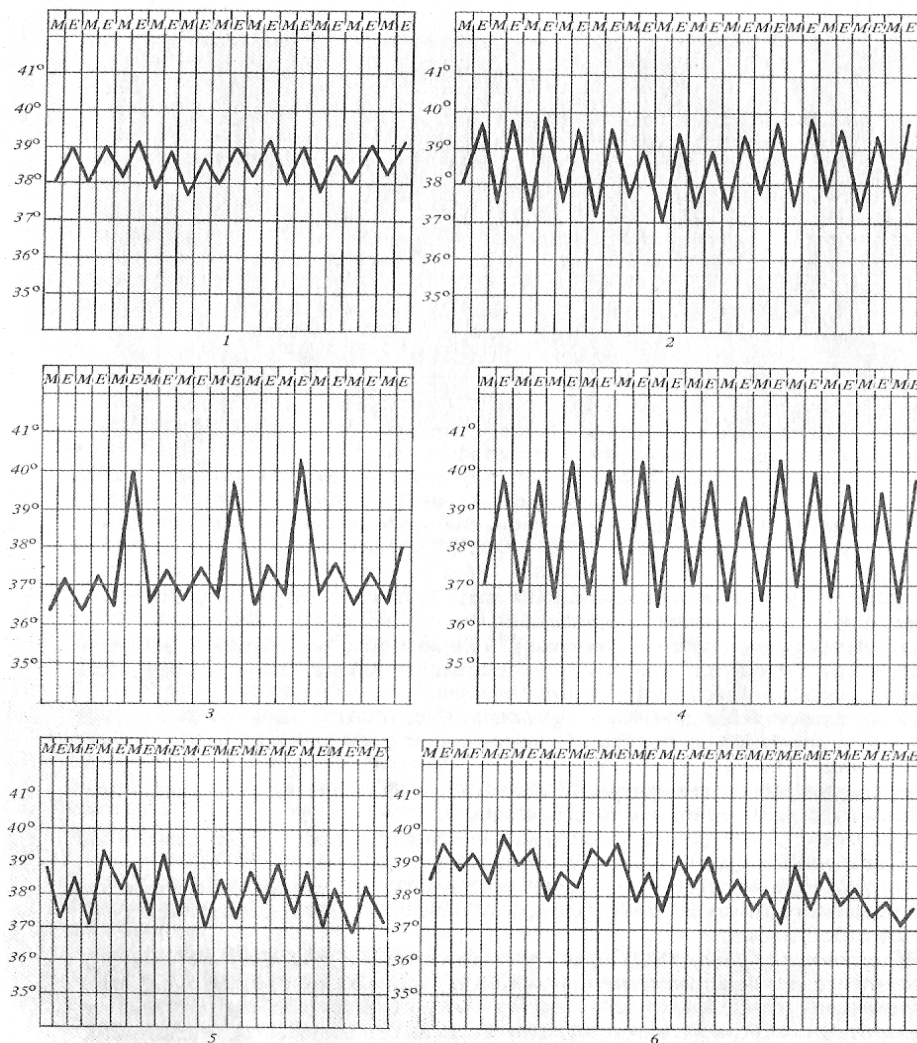
A quick and intense rise in temperature (e.g. in malaria or pneumonia) is often attended by chills, which can last from a few minutes to an hour, and in rare cases for longer periods. The skin blood vessels strongly contract in chills, the skin becomes pallid, goose-flesh (cutis anserina) appears, the nailbeds become cyanotic; the patient feels intense cold, he shivers, the teeth begin chattering. If the temperature rises gradually, the chills are only slight. At high temperature the skin reddens and becomes warm; the patient feels hot. A sudden drop in temperature is accompanied by heavy perspiration. The temperature of the patient with fever is higher in the evening than in the morning. Its rise over 37°C suggests a disease.



Elevated temperatures are characterized as follows: temperatures from 37° to 38°C are called *subfebrile*, from 38° to 39 °C *moderately high*, from 39° to 40 °C *high*, and over 40 °C *very high*. Temperatures over 41° and 42 °C are called *hyperpyretic* and are dangerous to the patient's life.

Not only elevated temperature itself but also its circadian variations are very important for diagnosing the diseases. Variations of temperature during the day determine the *type of fever* (Fig. 1). The following main six types of fever are differentiated.

**Fig. 1.** Circadian temperature variations. 1-continuous fever; 2-remittent fever; 3-intermittent fever; 4-hectic fever; 5-inverted fever; 6-irregular fever.



1. *Continued fever (febris continua)*. The circadian variation does not exceed 1°C. It is observed in patients with acute lobar pneumonia or II stage typhoid fever.

2. *Remittent fever (febris remittens)*. The circadian variations exceed  $1^{\circ}\text{C}$ , the morning lowest temperature being over  $37^{\circ}\text{C}$ ; it often occurs in tuberculosis, III stage typhoid fever, purulent diseases, and lobular pneumonia.

3. *Intermittent fever (febris intermittens)*. The daily variations exceed  $1^{\circ}\text{C}$ , with complete apyrexia in remissions.

4. *Hectic fever (febris hectica)*. The temperature rises sharply (by  $2^{\circ}$ -  $4^{\circ}\text{C}$ ) and drops to normal and subnormal level. The fever is often accompanied by excessive sweating. It usually occurs in grave pulmonary tuberculosis, suppuration, and sepsis.

5. *Inverse fever (typhus inversus)*. The morning temperature is higher than in the evening; it sometimes occurs in sepsis, tuberculosis, and brucellosis.

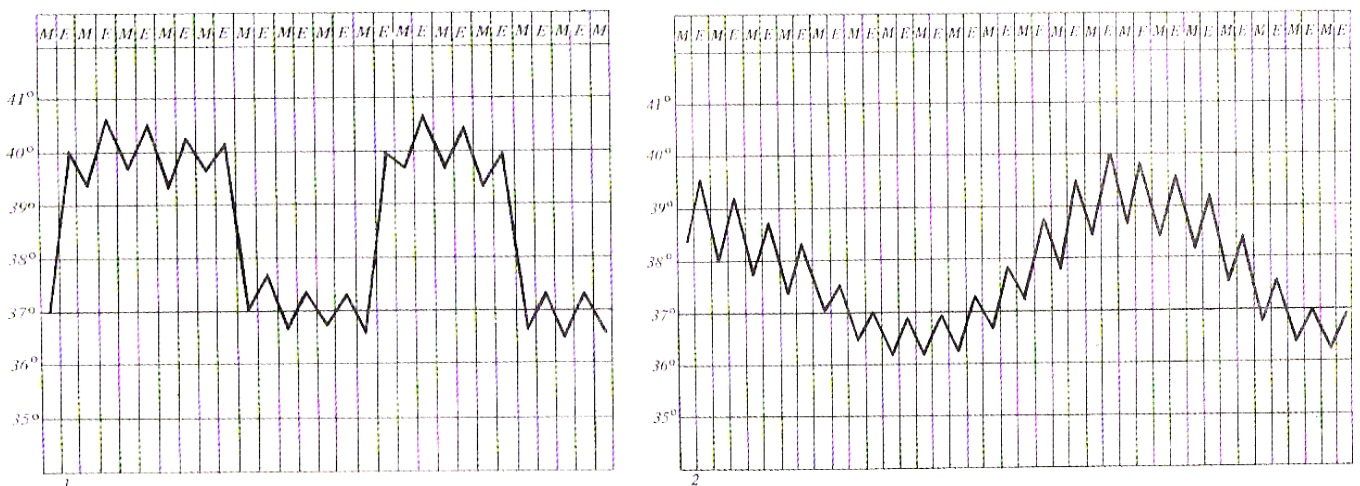
6. *Irregular fever (febris irregularis)*. Circadian variations are varied and irregular. It often occurs in rheumatism, endocarditis, sepsis, tuberculosis, etc.

According to the *temperature curve* recurrent (relapsing) and undulant (Malta) fevers are distinguished (Fig. 2).

*Recurrent fever (febris recurrens)* is characterized by alternation of fever and afebrile periods; it occurs in relapsing fever.

*Undulant fever (febris undulans)* is characterized by periodic elevation of temperature followed by its drop; it often occurs in brucellosis and lymphogranulomatosis.

**Fig. 2.** Special forms of temperature curves. 1—recurrent fever; 2—undulant fever.



The *course of fever* is characterized by the period of elevation of temperature (*stadium incrementi*), which is followed by the period of high temperature (*fastigium*), and ending with the period of decreasing temperature (*stadium decrementi*). The temperature may decrease gradually, during several days. This termination of fever is called lysis. A sudden temperature drop (to norm within 24 hours) is called crisis. During abatement of fever in some diseases (e.g. in typhoid fever), the daily variation of sometimes after intravenous injections of medicinal preparations.

Fever lasting up to 15 days is called *acute*, and over 45 days - *chronic*.

Care of patients during a fever is defined by the periods of the last. At increase of temperature when are expressed a fever, a headache, the cyanosis of the lips and finitenesses, the patient is necessary for covering, giving to drink well warm it is expected, to put a hot-water bottle to the legs. During the maximal rise of temperature give a plenty of a liquid (juices, tea with a lemon, etc.). By a headboard place a bubble with ice, wipe off the person and a neck a damp cold towel or use cold lotions so that was not hypothermia. Mucous membranes of a mouth and lips are processed in appropriate way in order to prevent drying and occurrence of cracks. The third period of a fever (decrease in temperature) is characterized high sweating, weakness, sometimes (at crisis) is reduced arterial pressure, comes a cold snap of finitenesses, cyanosis. It is necessary to change is more often the bed-clothes to wipe off skin by the dry towel, and also the water mixed half-and-half with spirit either dissolved vinegar, or cologne. Apply the preparations raising arterial pressure.

### ***Topic 6. Determination of the main hemodynamics and respiration indices.***

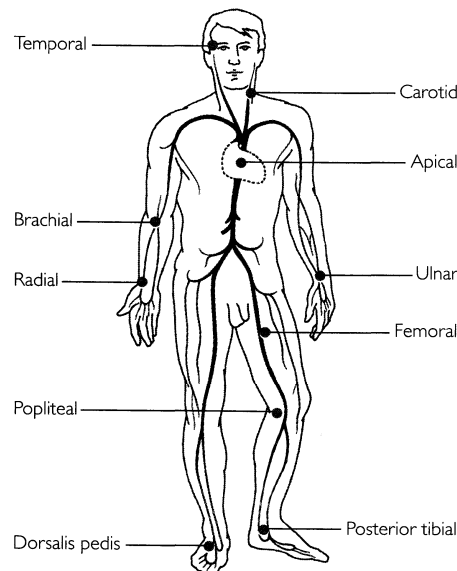
*Methods of measuring the pulse on the radial artery. Pulse, its main properties. Palpable Vessels. The main rules of stopping the bleeding from the arterial and venous vessels. Normal arterial pressure. The main rules of determining the frequency, depth, rhythm of respiration. The first aid to the patient with cough, dyspnea and asphyxia.*

## **PULSE**

Blood pumped into an already-full aorta during ventricular contraction creates a

fluid wave that travels from the heart to the peripheral arteries. This recurring wave - called a pulse - can be palpated at locations on the body where an artery crosses over bone on firm tissue. In adults the radial artery in the wrist is the most common palpation site.

Shown below are anatomic locations where an artery crosses bone or firm tissue and can be palpated for a pulse.



Pulse taking involves determining the rate (number of beats per minute), rhythm (pattern or regularity of the beats), and volume (amount of blood pumped with each beat). If the pulse is faint or weak, use a Doppler ultrasound blood flow detector if available.

### ***Taking a radial pulse***

- Place the patient in a sitting or supine position, with his arm at his side or across his chest.
- Gently press your index, middle, and ring fingers on the radial artery, inside the patient's wrist. You should feel a pulse with only moderate pressure; excessive pressure may restrict blood flow distal to the pulse site. Don't use your thumb to take the patient's pulse because your thumb's own strong pulse may be confused with the patient's pulse.
- After locating the pulse, count the beats for 60 seconds, or count for 30 seconds and multiply by 2. Counting for a full minute provides a more accurate picture of irregularities. While counting the rate, assess pulse rhythm and volume by noting the pattern and

strength of the beats. If you detect an irregularity, repeat the count, and note whether it occurs in a pattern or randomly. If you're still in doubt, take an apical pulse.

After comparison of the pulse on the both hands, it is necessary to study the properties the pulse on one hand. If the pulse is different on the both hands, it is studied on the hand where it is more intensive.

**Pulse rate**, the number of pulse beats per minute. In healthy individuals pulse rate is 60-90 beats per minute. *Rapid pulse* (pulsus frequens, more than 90) may be due to physiological conditions. In women the pulse rate is 7-8 beats more than in man, the pulse accelerates with physical work, excitement, during digestion, on breathing in, in persons over 60, in some diseases (it increases by 8-10 beats per each degree of the body temperature, in thyrotoxicosis, anemia, acute and chronic diseases of the heart, endocarditis, myocarditis, pericarditis, cardiac failure, after taking some drugs and poisons, such as alcohol, atropine, caffeine, adrenaline). *Rare pulse* (pulsus rarus, less than 60) in healthy subjects is not frequent, chiefly observed in sleep. Pulse deceleration is observed in the following pathological conditions: complete atrioventricular block, aortic stenosis, cachexia, hunger, jaundice, cerebral hemorrhage, brain tumors, fracture of the skull, myxedema.

**Rhythm of the pulse**, the beats follow with equal intervals and are equal, i.e. *regular pulse* (pulsus regularis). In disturbances of the heart function, this regularity changes, it becomes arrhythmical, irregular, an *irregular pulse* (pulsus irregularis). If the pulse is arrhythmical, it is necessary to determine if the number of the pulse waves corresponds to the number of the heart contractions. In frequent arrhythmical contractions of the heart, separate systoles of the left ventricle may be so weak that the blood is not ejected to the aorta, or the amount of the blood is so small that the pulse wave does not reach the periphery. The difference between the number of the heart contractions and pulse waves per one minute is termed *pulse deficiency*, the pulse is called *a deficiency pulse* (pulsus deficiens). The more is the deficiency, the more unfavorable is its effect on the blood supply of the organs and tissues. Pulse rhythm disorders: a) extrasystole; b) bigeminal pulse; c) atrial fibrillation.

**Pulse tension** is the pressure of the blood exercised on the wall of the artery. It is determined by the force, which should be exercised to compress the artery completely in order to arrest the blood flow in it. This property of the pulse gives the information about the state of the vascular system and the arterial pressure. In healthy persons the pulse tension is satisfactory. In a tense pulse, the force of compression to arrest the pulse wave should be great (*pulsus durus*), this is a sign of hypertension of various origin or arterial sclerosis. Reduction of tension, *soft pulse (pulsus mollis)* suggests decreased arterial pressure (reduction of the heart contractile function, shock, collapse, blood loss).

**Pulse filling** is the amount of blood in the vessel. This property is most difficult to determine, namely according to the maximum and minimum volume of the vessel (how the diameter of the vessel changes in the period of dilation and collapse). To do this, proximal fingers on the radial artery should press the vessel gradually, the distal finger determines its maximum filling. In healthy persons the pulse is satisfactory. In reduction of the volume of circulating blood (blood loss, shock, collapse), disturbances of contractile function of the heart, the pulse filling decreases, *pulsus vacuus*, in increased volume of the circulating blood, blood filling increases, *full (strong) pulse (pulsus plenus)*. Pulse filling and tension give similar information.

## **BLOOD PRESSURE**

Defined as the lateral force exerted by blood on the arterial walls, blood pressure depends on the force of ventricular contractions, arterial wall elasticity, peripheral vascular resistance, and blood volume and viscosity. Systolic, or maximum, pressure occurs during left ventricular contraction and reflects the integrity of the heart, arteries, and arterioles. Diastolic, or minimum, pressure occurs during left ventricular relaxation and directly indicates blood vessel resistance. The **normal systolic (maximal) pressure** varies from 100 to 139 mm Hg and **diastolic (minimal) pressure** from 60 to 89 mm Hg.

Pulse pressure - the difference between systolic and diastolic pressures - varies inversely with arterial elasticity. Rigid vessels, incapable of distention and recoil, produce high systolic pressure and low diastolic pressure. Normally, systolic pressure exceeds diastolic pressure by about 40 mm Hg. Narrowed pulse pressure - a difference of less than 30 mm Hg - occurs when systolic pressure falls and diastolic rises.

Blood pressure is measured in millimeters of mercury with a sphygmomanometer and a stethoscope, usually at the brachial artery (less often at the popliteal or radial artery). Many diseases are attended by changes in arterial pressure. Elevation of systolic pressure over 140 mm Hg and of diastolic over 90 mm Hg is called *arterial hypertension*. A drop in the systolic pressure below 100 mm Hg and of diastolic below 60 mm Hg is known as *arterial hypotension*. Longstanding elevation of arterial pressure occurs in essential hypertension, many renal diseases (glomerulonephritis, vascular nephrosclerosis), in certain endocrinological diseases, and heart diseases, etc. Arterial pressure may be decreased due to constitutional properties in asthenic persons, especially in the upright position (orthostatic hypertension). As a pathological symptom, hypotension occurs in many acute and chronic infectious diseases, Addison's disease, etc. A sudden drop in the arterial pressure occurs in profuse blood loss, shock, collapse, or myocardial infarction.

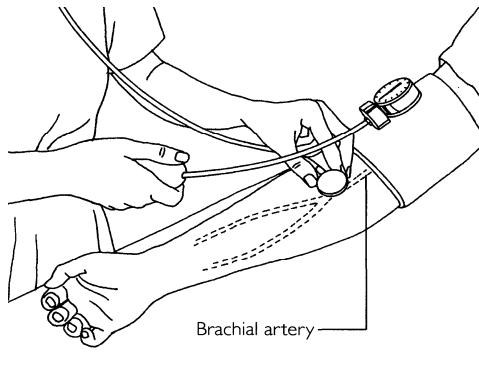
Three techniques exist to take blood pressure indirectly. These are auscultatory, palpatory, and oscillographic. The auscultatory method is commonly used in medical practice. The method was proposed by J. Korotkoff in 1905 and is used to measure systolic and diastolic blood pressure.

The sphygmomanometer consists of an inflatable compression cuff linked to a manual air pump and a mercury manometer or an aneroid gauge. The mercury sphygmomanometer is more accurate and requires calibration less frequently than the aneroid model but is larger and heavier. To obtain an accurate reading, you must rest its gauge on a level surface and view the meniscus at eye level; you can rest an aneroid gauge in any position but must view it directly from the front.

Hook, bandage, snap, or Velcro cuffs come in six standard sizes ranging from newborn to extra-large adult. Disposable cuffs are available.

The automated vital signs monitor is a noninvasive device that measures pulse rate, systolic and diastolic pressures, and mean arterial pressure at preset intervals.

## Positioning the blood pressure cuff



Wrap the cuff snugly around the upper arm above the antecubital area (the inner aspect of the elbow). When measuring an adult's blood pressure, place the lower border of the cuff about 2,5 cm above the antecubital space. The center of the cuff bladder should rest directly over the medial aspect of the arm. Most cuffs have an arrow for you to position over the brachial artery. Then place the bell of the stethoscope on the brachial artery at the point where you hear the strongest beats.

### Implementation

- Tell the patient that you're going to take his blood pressure.
- The patient can lie supine or sit erect during blood pressure measurement. His arm should be extended at heart level and be well supported. *If the artery is below heart level, you may get a false-high reading.* Make sure the patient is relaxed and comfortable when you take his blood pressure so *it stays at its normal level.*
- Wrap the deflated cuff snugly around the upper arm.
- If necessary, connect the appropriate tube to the rubber bulb of the air pump and the other tube to the manometer. Then insert the stethoscope earpieces into your ears.
- Locate the brachial artery by palpation. Center the bell of the stethoscope over the part of the artery where you detect the strongest beats, and hold it in place with one hand. *The bell of the stethoscope transmits low-pitched arterial blood sounds more effectively than does the diaphragm.*
- Using the thumb and index finger of your other hand, turn the thumbscrew on the rubber bulb of the air pump clockwise to close the valve.
- Then pump air into the cuff while auscultating for the sound over the brachial artery *to compress and, eventually, occlude arterial blood flow.* Continue pumping air until the



mercury column or aneroid gauge registers 160 mm Hg or at least 10 mm Hg above the level of the last audible sound.

- Carefully open the valve of the air pump, and then slow-deflate the cuff - no faster than 5 mm Hg/second. While releasing air, watch the mercury column or aneroid gauge and auscultate for the sound over the artery.
- When you hear the first beat or clear tapping sound, note the pressure on the column or gauge. This is the systolic pressure. (The beat or tapping sound is the first of five Korotkoff sounds. The second sound resembles a murmur or swish; the third sound, crisp tapping; the fourth sound, a soft, muffled tone; and the fifth, the last sound heard.)
- Continue to release air gradually while auscultating for the sound over the artery.
- Note the diastolic pressure - the fourth Korotkoff sound. If you continue to hear sounds as the column or gauge falls to zero (common in children), record the pressure at the beginning of the fourth sound. This is important *because, in some patients, a distinct fifth sound is absent.*
- Rapidly deflate the cuff. Record the pressure, wait 15 to 30 seconds, and then repeat the procedure and record the pressures *to confirm your original findings.* After doing so, remove and fold the cuff, and return it to storage.

### **The urgent help at a hypertonic crisis**

A headache can be a symptom of numerous diseases when the first aid is necessary. Pulsative, pressing pain localizing in the back of the head, is one of the first symptoms of hypertonic crisis.

A hypertonic crisis is called a sharp increase of arterial pressure with the patients which is accompanying with headache, dizziness, noise in the head, nausea, sometimes vomiting and flickering of flies before eyes.

Consistent of actions:

1. Call for a doctor;
2. Measure arterial pressure;
3. Put the patient to bed with half-rise head of the bed providing him with a full ward;
4. Provide with an onflow of fresh air (oxygen inhalation is possible).
5. Put mustard plasters on the back of the head and calf muscles;

6. Do hot or mustard bath for feet, warm bath for hands and cold compress for a head.
7. Prepare all necessary medicines.

## **RESPIRATION**

Controlled by the respiratory center in the lateral medulla oblongata, respiration is the exchange of oxygen and carbon dioxide between the atmosphere and body cells. External respiration, or breathing, is accomplished by the diaphragm and chest muscles and delivers oxygen to the lower respiratory tract and alveoli.

Four measures of respiration - rate, rhythm, depth, and sound - reflect the body's metabolic state, diaphragm and chest-muscle condition, and airway patency. Respiratory rate is recorded as the number of cycles (with inspiration and expiration comprising one cycle) per minute; rhythm, as the regularity of these cycles; depth, as the volume of air inhaled and exhaled with each respiration; and sound, as the audible digression from normal, effortless breathing.

The number of respiratory movements in a healthy adult at rest should be 16 to 20 per minute, in the newborn 40-45, this rate gradually decreasing with age. The respiration rate decreases during sleep to 12-14 per minute, while under physical load, emotional excitement, or after heavy meals the respiration rate increases. Increase of breath is higher 20 per minute designates as *tachypneu*, and reducing less than 16 per minute – as *bradypneu*.

### **Implementation**

- The best time to assess your patient's respirations is immediately after taking the pulse rate. Keep your fingertips over the radial artery, and don't tell the patient you're counting respirations. *If you tell him, he'll become conscious of his respirations and the rate may change.*
- Count respirations by observing the rise and fall of the patient's chest as he breathes. Alternatively, position the patient's opposite arm across his chest and count respirations by feeling its rise and fall. Consider one rise and one fall as one respiration.
- Count respirations for 30 seconds and multiply by 2 or count for 60 seconds if respirations are irregular *to account for variations in respiratory rate and pattern.*
- As you count respirations, be alert for and record such breath sounds as stertor, stridor, wheezing, and an expiratory grunt. *Stertor* is a snoring sound resulting from secretions in

the trachea and large bronchi. Listen for it in patients with neurologic disorders and in those who are comatose. *Stridor* is an inspiratory crowing sound that occurs with upper airway obstruction in laryngitis, croup, or the presence of a foreign body.

Deep and slow respiration, with marked respiratory movements, is sometimes attended by noisy sounds. This is *Kussmaul's respiration* (Fig. 3) occurring in deep coma. In respiratory pause (lasting from a few seconds to a minute) or a temporary arrest of respiration (apnoea). This respiration is known as periodic.

*Biot's respiration* (Fig. 3) is characterized by rhythmic but deep respiratory movements which alternate (at approximately regular intervals) with long respiratory pauses (from few seconds to half a minute). Biot's respiration occurs in meningitis patients and in agony with disorders of cerebral circulation.

*Cheyne-Stokes' respiration* (Fig. 3) is characterized by periods (from few seconds to a minute) of cessation of respiration, followed by noiseless shallow respiration, which quickly deepens becomes noisy to attain its maximum at the 5-7th inhalation, and then gradually slows down to end with a new short respiratory pause. During such pauses, the patient often loses his sense of orientation in the surroundings or even faints, to recover from the unconscious condition after respiratory movements are restored. This respiratory disorder occurs in diseases causing acute or chronic insufficiency of cerebral circulation and brain hypoxia, and also in heavy poisoning. More frequently this condition develops during sleep and is more characteristic of aged persons with marked atherosclerosis of the cerebral arteries.

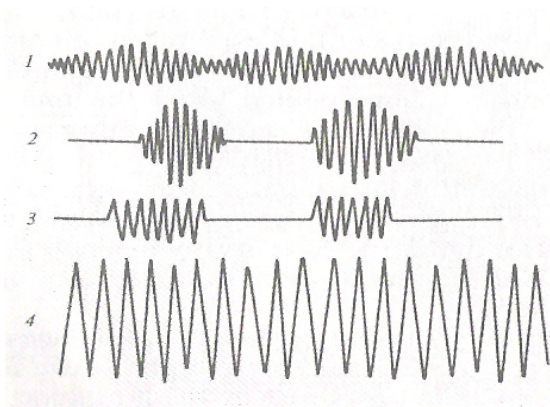


Fig. 3. Spirograms in pathological respiration.

1- Grocco's respiration; 2 - Cheyne-Stokes' respiration; 3 - Biot's respiration; 4 - Kussmaul's

respiration.

*Undulant (wave-like) Grocco's* respiration (Fig. 3) somewhat resembles Cheyne-Stokes' respiration except that a weak shallow respiration occurs instead of the respiratory pause with subsequent deepening of the respiratory movement, followed by slowing down. This type of arrhythmic dyspnea can probably be regarded as the early stages of the same pathological processes which are responsible for Cheyne-Stokes respiration.

Distinguish *three types of breath*: thoracic, abdominal and mixed. At thoracic type the thorax extends, mainly, in ventrodorsal and lateral directions. This type of breath is observed usually at women. At abdominal type of breath expansion of a thorax occurs, mainly, in a vertical direction, due to a diaphragm. Such type of breath is observed at men. At the mixed breath the thorax extends in regular intervals in all directions.

Respiration of a healthy person is rhythmic, of uniform depth and equal length of the inspiration and expiration phases.

### **The first aid to patients with asthma and cough**

The sudden developing of asphyxia attacks are called asthma. Asthma of any origin (bronchial or cardiac) requires special medical measures, that's why it's necessary to inform the doctor about asphyxia of the patient. Moreover, it's necessary to set free the patient's breast of clothes, to give him a semi-sitting position using the adaptation of functional bed, some cushion or located under the head, provide with the maximum on flow of fresh air or begin oxygenotherapy. At the time of bronchial asphyxia attack it allows (on doctor's prescription) to put medicamentous preparation not only as the injection but as aerosol inhalation too.

Dry and painful cough with acute respiratory diseases is suppressed with natrium hydrocarbonate solution inhalations, hot steam, and hot drinks. Cups, mustard plasters, mustard bathes for feet are used broadly as a diverting agent.

## ***Topic 7. Use of the main types of medical preparations and simple methods of physical therapy***

*Classification of medicinal remedies according to the methods of their administration. Medicinal forms. The role and duties of medical personnel in providing*

*patients with medicinal preparations. The rules of dispensing tablets and liquid medicinal preparations for peroral administration.*

*Concepts of asepsis and antisepsis. The main methods of parenteral administration of medicinal preparations. The rules of handling of single-use instruments after the usage. Sterilization of medical instruments for many times usage: the main methods, preparing instruments for sterilization.*

*Mechanism of physiotherapeutic procedures action. Use of cups, mustard plasters, compresses, hot-water bottles, ice-bags. The main indications and contraindications for their use. The rules of cleansing cups, hot-water bottles, ice-bags after their usage. Simple light and hydrotherapeutic procedures. The rules of cleansing baths and instruments, which were used for procedures. Peculiarities of cleaning rooms where the physiotherapeutic procedures are done. Peculiarities of physiotherapeutic procedures for patients of middle and old age. Care of patients during physiotherapeutic procedures and rendering before-doctor assistance in case of complications.*

## **ENTERAL ADMINISTRATION**

### **Oral drugs**

Because oral administration is usually the safest, most convenient, and least expensive method, most drugs are administered by this route. Drugs for oral administration are available in many forms: tablets, enteric-coated tablets, capsules, syrups, elixirs, oils, liquids, suspensions, powders, and granules. Some require special preparation before administration, such as mixing with juice to make them more palatable; oils, powders, and granules most often require such preparation.

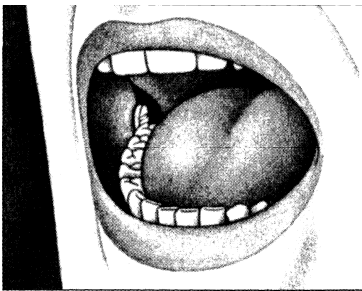
Sometimes oral drugs are prescribed in higher dosages than their parenteral equivalents because after absorption through the GI system, they are immediately broken down by the liver before they reach the systemic circulation. Oral dosages normally prescribed for adults may be dangerous for elderly patients.

Oral administration is contraindicated for unconscious patients; it may also be contraindicated in patients with nausea and vomiting and in those unable to swallow.

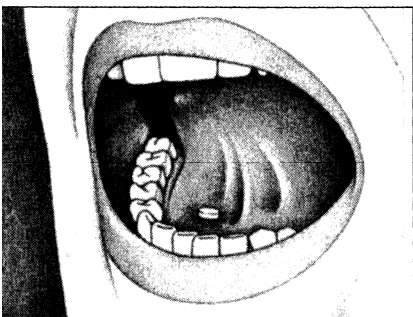
### **Buccal, sublingual and translingual drugs**

Certain drugs are given buccally, sublingualis or translingually to prevent their destruction or transformation in the stomach or small intestine. These drugs act quickly because the oral mucosa's thin epithelium and abundant vasculature allow direct absorption into the bloodstream.

Drugs given buccally include nitroglycerin and methyl-testosterone; drugs given sublingually include ergotamine tartrate, isosorbide dinitrate, and nitroglycerin. Translingual drugs, which are sprayed onto the tongue, include nitrate preparations for patients with chronic angina.



To give a drug sublingualis place it under the patients tongue (as shown below), and ask him to leave it there until it's dissolved.



### **Skin medication**

Topical drugs are applied directly to the skin surface. They include lotions, pastes, ointments, creams, powders, shampoos, patches, and aerosol sprays. Topical medications are absorbed through the epidermal layer into the dermis. The extent of absorption depends on the vascularity of the region.

Nitroglycerin, fentanyl, nicotine, and certain supplemental hormone replacements are used for systemic effects. Most other topical medications are used for local effects. Ointments have a fatty base, which is an ideal vehicle for such drugs as antimicrobials and antiseptics. Typically, topical medications should be applied two or three times a day to achieve their therapeutic effect.

## **Transdermal drugs**

Through an adhesive patch or a measured dose of ointment applied to the skin, transdermal drugs deliver constant, controlled medication directly into the bloodstream for a prolonged systemic effect.

Medications available in transdermal form include nitroglycerin, used to control angina; scopolamine, used to treat motion sickness; estradiol, used for postmenopausal hormone replacement; clonidine, used to treat hypertension; nicotine, used for smoking cessation; and fentanyl, a narcotic analgesic used to control chronic pain. Nitroglycerin ointment dilates coronary vessels for up to 4 hours; a nitroglycerin disk or pad can produce the same effect for as long as 24 hours. A scopolamine patch can relieve motion sickness for as long as 72 hours, transdermal estradiol lasts for up to 1 week, clonidine and nicotine patches last for 24 hours, and a fentanyl patch can last for up to 72 hours.

Contraindications for transdermal drug application include skin allergies or skin reactions to the drug. Transdermal drugs shouldn't be applied to broken or irritated skin because they would increase irritation, or to scarred or callused skin, which might impair absorption.

## **Eye medications**

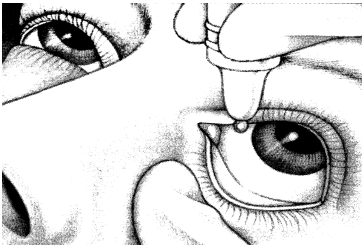
Eye medications - drops, ointments, and disks - serve diagnostic and therapeutic purposes. During an eye examination, eyedrops can be used to anesthetize the eye, dilate the pupil to facilitate examination, and stain the cornea to identify corneal abrasions, scars, and other anomalies. Eye medications can also be used to lubricate the eye, treat certain eye conditions (such as glaucoma and infections), protect the vision of neonates, and lubricate the eye socket for insertion of a prosthetic eye.

Understanding the ocular effects of medications is important because certain drugs may cause eye disorders or have serious ocular effects. For example, anticholinergics, which are often used during eye examinations, can precipitate acute glaucoma in patients with a predisposition to the disorder.

### ***Instilling eyedrops***

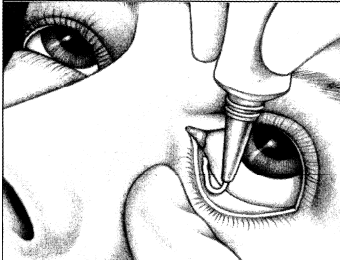
- Remove the dropper cap from the medication container, if necessary, and draw the medication into it. Be careful to avoid contaminating the dropper tip or bottle top.

- Before instilling the eyedrops, instruct the patient to look up and away. This moves the cornea away from the lower lid and minimizes the risk of touching the cornea with the dropper if the patient blinks.
- You can steady the hand holding the dropper by resting it against the patient's forehead. Then, with your other hand, gently pull down the lower lid of the affected eye and instill the drops in the conjunctival sac. Try to avoid placing the drops directly on the eyeball to prevent the patient from experiencing discomfort.



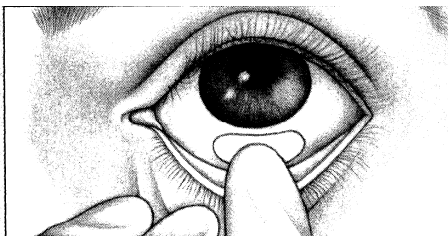
### ***Applying eye ointment***

- Squeeze a small ribbon of medication on the edge of the conjunctival sac from the inner to the outer canthus. Cut off the ribbon by turning the tube. You can steady the hand holding the medication tube by bracing it against the patient's forehead or cheek.



### ***Using a medication disk***

- A medication disk can release medication in the eye for up to 1 week before needing to be replaced. Pilocarpine, for example, can be administered this way to treat glaucoma.



### ***After instilling eyedrops or eye ointment***

- Instruct the patient to close his eyes gently, without squeezing the lids shut. If you instilled drops, tell the patient to blink. If you applied ointment, tell him to roll his eyes behind closed lids to help distribute the medication over the surface of the eyeball.



- Use a clean tissue to remove any excess solution or ointment leaking from the eye. Remember to use a fresh tissue for each eye to prevent cross-contamination.
- Apply a new eye dressing if necessary
- Return the medication to the storage area. Make sure you store it according to the label's instructions.
- Wash your hands.

### **Complications**

Instillation of some eye medications may cause transient burning, itching, and redness. Rarely, systemic effects may also occur.

### **Eardrops**

Eardrops may be instilled to treat infection and inflammation, produce local anesthesia, or facilitate removal of an insect trapped in the ear by immobilizing and smothering it.

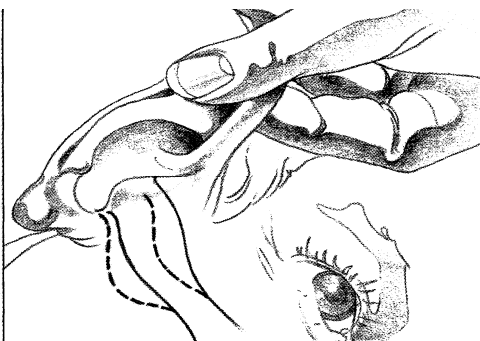
Instillation of eardrops is usually contraindicated if the patient has a perforated eardrum, but it may be permitted with certain medications and adherence to sterile technique. Other conditions may also prohibit instillation of certain medications into the ear. For instance, instillation of drops containing hydrocortisone is contraindicated if the patient has herpes, another viral infection, or a fungal infection.

### **Implementation**

- Wash your hands.
- Confirm the patient's identity by asking his name and checking the name, room number, and bed number on his wristband.
- Provide privacy if possible. Explain the procedure to the patient.
- Have the patient lie on the side opposite the affected ear.
- Straighten the patient's ear canal. For an adult, pull the auricle of the ear up and back.
- Using a light source, examine the ear canal for drainage. If you find any, clean the canal with the tissue or cotton-tipped applicator because drainage can reduce the medication's effectiveness.

- Compare the label on the eardrops with the order on the patient's medication record. Check the label again while drawing the medication into the dropper. Check the label for the final time before returning the eardrops to the shelf or drawer.
- To avoid damaging the ear canal with the dropper, gently support the hand holding the dropper against the patient's head. Straighten the patient's ear canal once again, and instill the ordered number of drops. To avoid patient discomfort, aim the dropper so that the drops fall against the sides of the ear canal, not on the eardrum. Hold the ear canal in position until you see the medication disappear down the canal. Then release the ear.
- Instruct the patient to remain on his side for 5 to 10 minutes to let the medication run down into the ear canal.
- If ordered, tuck the cotton ball loosely into the opening of the ear canal to prevent the medication from leaking out. Be careful not to insert it too deeply into the canal because this would prevent drainage of secretions and increase pressure on the eardrum.
- Clean and dry the outer ear.
- If ordered, repeat the procedure in the other ear after 5 to 10 minutes.
- Assist the patient into a comfortable position.
- Wash your hands.

Before instilling eardrops, have the patient lie on his side. Then straighten the patient's ear canal to help the medication reach the eardrum. For an adult gently pull the auricle *up and back*.



## **Handheld oropharyngeal inhalers**

Handheld inhalers include the metered-dose inhaler (or nebulizer), the turbo-inhaler, and the nasal inhaler. These devices deliver topical medications to the respiratory tract, producing local and systemic effects. The mucosal lining of the respiratory tract absorbs the inhalant almost immediately. Examples of common inhalants are bronchodilators, used to improve airway patency and facilitate mucous drainage; mucolytics, which attain a high local concentration to liquefy tenacious bronchial secretions; and corticosteroids, used to decrease inflammation.

The use of these inhalers may be contraindicated in patients who can't form an airtight seal around the device and in patients who lack the coordination or clear vision necessary to assemble a turbo-inhaler. Specific inhalant drugs may also be contraindicated. For example, bronchodilators are contraindicated if the patient has tachycardia or a history of cardiac arrhythmias associated with tachycardia.

### ***Using an inhaler***

- Shake the inhaler bottle to mix the medication and aerosol propellant.
- Remove the mouthpiece and cap.
- Insert the metal stem on the bottle into the small hole on the flattened portion of the mouthpiece. Then turn the bottle upside down.
- Have the patient exhale; then place the mouthpiece in his mouth and close his lips around it.
- As you firmly push the bottle down against the mouthpiece, ask the patient to inhale slowly and to continue inhaling until his lungs feel full. This action draws the medication into his lungs. Compress the bottle against the mouthpiece only once.
- Remove the mouthpiece from the patient's mouth, and tell him to hold his breath for several seconds to allow the medication to reach the alveoli. Then instruct him to exhale slowly through pursed lips to keep the distal bronchioles open, allowing increased absorption and diffusion of the drug and better gas exchange.
- Have the patient gargle with normal saline solution, if desired, to remove medication from the mouth and back of the throat. (The lungs retain only about 10% of the inhalant; most of the remainder is exhaled, but substantial amounts may remain in the oropharynx.)

- Rinse the mouthpiece thoroughly with warm water to prevent accumulation of residue.

### **Nasal medications**

Nasal medications may be instilled by means of drops, a spray (using an atomizer), or an aerosol (using a nebulizer). Most drugs instilled by these methods produce local rather than systemic effects. Drops can be directed at a specific area; sprays and aerosols diffuse medication throughout the nasal passages.

Most nasal medications, such as phenylephrine, are vasoconstrictors, which relieve nasal congestion by coating and shrinking swollen mucous membranes. Because vasoconstrictors may be absorbed systemically, they are usually contraindicated in hypersensitive patients. Other types of nasal medications include antiseptics, anesthetics, and corticosteroids. Local anesthetics maybe administered to promote patient comfort during rhinolaryngologic examination, laryngoscopy, bronchoscopy, and endotracheal intubation. Corticosteroids reduce inflammation in allergic or inflammatory conditions and nasal polyps.

### **Implementation**

- Verify the order on the patient's medication record by checking it against the doctor's order. Note the concentration of the medication. Phenylephrine, for example, is available in various concentrations from 0.125% to 1%. Verify the expiration date.
- Confirm the patient's identity by asking his name and checking the name, room number, and bed number on his wristband.
- Explain the procedure and provide privacy.
- Wash your hands. Put on gloves if you notice drainage from the nostrils.

### ***Instilling nose drops***

- When possible, position the patient so that the drops flow back into the nostrils, toward the affected area.
- Draw up some medication into the dropper.
- Push up the tip of the patient's nose slightly. Position the dropper just above the nostril, and direct its tip toward the midline of the nose so that the drops flow toward the back of the nasal cavity rather than down the throat.

- Insert the dropper about 1 cm into the nostril. Don't let the dropper touch the sides of the nostril because this would contaminate the dropper or could cause the patient to sneeze.
- Instill the prescribed number of drops, observing the patient carefully for signs of discomfort.
- To prevent the drops from leaking out of the nostrils, ask the patient to keep his head tilted back for at least 5 minutes and to breathe through his mouth. This also allows sufficient time for the medication to constrict mucous membranes.
- Keep an emesis basin handy so that the patient can expectorate any medication that flows into the oropharynx and mouth. Use a facial tissue to wipe any excess medication from the patient's nostrils and face.
- Clean the dropper by separating the plunger and pipette and flushing them with warm water. Allow them to air-dry.

### ***Using a nasal spray***

- Have the patient sit upright with his head tilted back slightly. Alternatively, have the patient lie on his back with his shoulders elevated, neck hyperextended, and head tilted back over the edge of the bed. Support his head with one hand to prevent neck strain.
- Remove the protective cap from the atomizer.
- To prevent air from entering the nasal cavity and to allow the medication to flow properly, occlude one of the patient's nostrils with your finger. Insert the atomizer tip into the open nostril.
- Instruct the patient to inhale, and as he does so, squeeze the atomizer once, quickly and firmly. Use just enough force to coat the inside of the patient's nose with medication. Then tell the patient to exhale through his mouth.
- If ordered, spray the nostril again. Then repeat the procedure in the other nostril.
- Instruct the patient to keep his head tilted back for several minutes and to breathe slowly through his nose so that the medication has time to work. Tell him not to blow his nose for several minutes.

### ***Using a nasal aerosol***

- Instruct the patient to blow his nose gently to clear his nostrils.

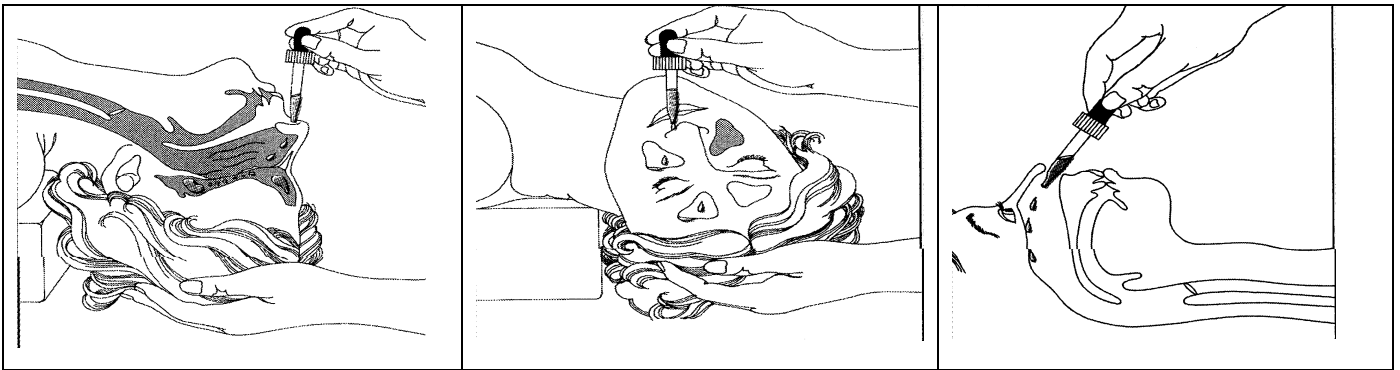
- Insert the medication cartridge according to the manufacturer's directions. With some models, you'll fit the medication cartridge over a small hole in the adapter. When inserting a refill cartridge, first remove the protective cap from the stem. Spacer inhalers maybe recommended.
- Shake the aerosol well before each use, and remove the protective cap from the adapter tip.
- Hold the aerosol between your thumb and index finger, with your index finger positioned on top of the medication cartridge.
- Tilt the patient's head back, and carefully insert the adapter tip in one nostril while sealing the other nostril with your finger.
- Press the adapter and cartridge together firmly to release one measured dose of medication.
- Shake the aerosol and repeat the procedure to instill medication into the other nostril.
- Remove the medication cartridge, and wash the nasal adapter in lukewarm water daily. Allow the adapter to dry before reinserting the cartridge.

### **Complications**

Some nasal medications may cause restlessness, palpitations, nervousness, and other systemic effects. For example, excessive use of corticosteroid aerosols may cause hyperadrenocorticism and adrenal suppression.

### **Positioning the patient for nose drop instillation**

To reach the ethmoid and sphenoid sinuses, have the patient lie on her back with her neck hyperextended and her head tilted back over the edge of the bed. Support her head with one hand to prevent neck strain.	To reach the maxillary and frontal sinuses, have the patient lie on her back with her head toward the affected side and hanging slightly over the edge of the bed, Ask her to rotate her head laterally after hyperextension, and support her head with one hand to prevent neck strain.	To administer drops for relief of ordinary nasal congestion, help the patient to a reclining or supine position with her head tilted slightly toward the affected side. Aim the dropper upward, toward the patient's eye, rather than downward, toward her ear.
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## **PARENTERAL ADMINISTRATION**

There are several types of injections or infusions, including intradermal, subcutaneous, and intramuscular intravenous injections, and intravenous or intraosseous infusions.

### **Intradermal injection**

Because little systemic absorption of intradermally injected agents takes place, this type of injection is used primarily to produce a local effect, as in allergy or tuberculin testing. Intradermal injections are administered in small volumes (usually 0.5 ml or less) into the outer layers of the skin.

The ventral forearm is the most commonly used site for intradermal injection because of its easy accessibility and lack of hair. In extensive allergy testing, the outer aspect of the upper arms may be used as well as the area of the back located between the scapulae. Secure the forearm. Insert the needle at a 10- to 5-degree angle so that it just punctures the skin's surface. The antigen should raise a small wheal as it's injected.

### **Subcutaneous injection**

A subcutaneous injection is administered as a bolus into the subcutis, the layer of skin directly below the dermis and epidermis, collectively referred to as the cutis. Subcutaneous injections are highly effective in administering vaccines and such medications as insulin, morphine. An insulin pump with a subcutaneous injection site. A person with Type I diabetes mellitus typically injects insulin subcutaneously. Places on the body where people can inject insulin most easily are:

- the outer area of the upper arm;
- just above and below the waist, except the area right around the navel (a 2-inch circle);

- the upper area of the buttock, just behind the hip bone;
- the front of the thigh, midway to the outer side, 4 inches below the top of the thigh to 4 inches above the knee.

These areas can vary with the size of the person. Changing the injection site keeps lumps or small dents called lipodystrophies from forming in the skin.

### **Intramuscular injection**

In an intramuscular injection, the medication is delivered directly into a muscle. Many vaccines are administered intramuscularly, as well as codeine, metoclopramide, and many other medications. Many drugs injected intramuscularly are absorbed into the muscle fairly quickly, while others are more gradual.

Generally, intramuscular injections are not self-administered, but rather by a trained medical professional. However, prescribed self-administered intramuscular injections are becoming more common for patients that require these injections routinely.

### **Intravenous injection and infusion**

A medicine being administered intravenously through a peripheral I.V. line. An intravenous infusion is a liquid administered directly into the bloodstream via a vein. When a rapid onset of action is needed, medications may be administered intravenously. Selection and preparation of appropriate equipment are essential for accurate delivery of an I.V. solution. Selection of an I.V. administration set depends on the rate and type of infusion desired and the type of I.V. solution container used. Two types of drip sets are available: the macrodrip and the microdrip. The macrodrip set can deliver a solution in large quantities at rapid rates because it delivers a larger amount with each drop than the microdrip set. The microdrip set, used for pediatric patients and certain adult patients who require small or closely regulated amounts of I.V. solution, delivers a smaller quantity with each drop.

### **Equipment and Supplies Precautions**

Equipment and supplies contaminated by pathogens can become vehicles for infection transmission if effective barriers are not developed. Equipment which is reused in providing patient care, such as a sphygmomanometer, stethoscope, and other



physical examination equipment, should be left in the patient's room whenever possible for his exclusive use until the illness has subsided. Disinfection of the equipment should be in the manner appropriate to the causative organisms and situation. Disposable thermometers are available and preferable. If a reusable thermometer is used, it should also be left at the patient's bedside in a container of disinfectant. Cleaning the thermometer before placing it the disinfectant and appropriate changing of the disinfectant solution are important points to remember. It is recommended that electronic thermometers not be used for patients on isolation because of the difficulty in rendering them safe for the next patient. Needles and syringes must be handled carefully, especially if contaminated by the hepatitis virus. Nondisposable syringes and needles should be rinsed thoroughly in cold water and then disinfected before they are prepared for reuse. The extensive availability of disposable equipment today makes the safe handling of contaminated supplies much easier. Disposable thermometers, physical examination equipment, and needles and syringes can be merely prepared for destruction after use. If linen and personal laundry are contaminated with pathogens, they should be removed from the patient's immediate environment using the double-bag technique described earlier. The outer bag's external surface should always remain clean and the bag's contents should be clearly marked to indicate that the contents are contaminated. Vigorous movements when changing bed linen should be avoided to prevent air movement and spread of microorganisms.

Modern hospital laundering processes make it possible for almost all linens of patients with communicable diseases to be handled in the usual manner. Preferable hot water-soluble bags are available so that linen and bags can be placed directly in the hospital washing machine. Nonsoluble bags should be opened and the linen carefully placed in the washer.

For items of clothing that are not washed easily in a machine, gas sterilizers, discussed earlier in this chapter may be used. This would be a suitable procedure for items that are not washable, such as decorative bed jackets.

Home laundering can generally be safely accomplished with sufficient hot water or boiling the items and using an appropriate detergent and household bleach or disinfectant, such as Clorox or Lysol.

Most health agencies use mechanical dishwashers that leave dishes free of pathogens. If this is not the case, it then becomes necessary to take special precautions when a patient has a communicable disease, especially one that is transmitted via secretions from the mouth. In some agencies, the dishes are rinsed and then boiled. Other agencies use disposable dishes so that only the silverware needs boiling. The technique of placing soiled dishes in a container of water and boiling them before being washed is a questionable practice. The heat of the water often coagulates the food particles remaining on the dishes. If the organism is contained within these solids and is particularly resistant, it may survive the washing process. Therefore, the dishes should be rinsed thoroughly first before being washed and subjected to heat. Many mechanical dishwashers used in restaurants and hospitals provide for rinsing the dishes before they are washed. Rubber gloves should be worn if the dishes are rinsed by hand.

If contaminated, leftover food should be wrapped and discarded along with other wastes from the patient's room. Liquids should be poured down the drain or the toilet if a satisfactory sewage system is available. If not, they may be disinfected before discarding.

### **Cold application**

The application of cold constricts blood vessels; inhibits local circulation, suppuration, and tissue metabolism; relieves vascular congestion; slows bacterial activity in infections; reduces body temperature; and may act as a temporary anesthetic during brief, painful procedures. Because treatment with cold also relieves inflammation, reduces edema, and slows bleeding, it may provide effective initial treatment after eye injuries, strains, sprains, bruises, muscle spasms, and burns. Cold doesn't reduce existing edema, however, because it inhibits reabsorption of excess fluid.

Cold may be applied in dry or moist forms, but ice should not be placed directly on a patient's skin because it may further damage tissue. Moist application is more penetrating

than dry because moisture facilitates conduction. Devices for applying cold include an ice bag or collar and chemical cold packs and ice packs. Devices for applying moist cold include cold compresses for small body areas and cold packs for large areas.

Apply cold treatments cautiously on patients with impaired circulation, on children, and on elderly or arthritic patients because of the risk of ischemic tissue damage.

### ***Applying a cold compress or pack***

- Place a linen-saver pad under the site.
- Remove the compress or pack from the water, and wring it out *to prevent dripping*. Apply it to the treatment site, and begin timing the application.
- Cover the compress or pack with a waterproof covering *to provide insulation and to keep the surrounding area dry*. Secure the covering with tape or roller gauze *to prevent it from slipping*.
- Check the application site frequently for signs of tissue intolerance, and note complaints of burning or numbness. If these symptoms develop, discontinue treatment and notify the doctor.
- Change the compress or pack as needed *to maintain the correct temperature*. Remove it after the prescribed treatment period (usually 20 minutes).

**Hydrotherapy** may be defined as the use of water, in any of its forms, for the maintenance of health or the treatment of disease. Although one of the oldest known therapies, it has received little attention from the research community, particularly recently. The physiological effects of hydrotherapy may be classified as *thermal*, *mechanical*, and *chemical*. *Thermal* effects are produced by the application of water at temperatures above or below that of the body. The greater the variation from body temperature, the greater the effect produced, other factors being equal. The *mechanical* effects are produced by the impact of water upon the surface of the body in the form of sprays, douches, frictions, whirlpools, etc. The *chemical* effects are produced when it is taken by mouth or used to irrigate a body cavity, such as the large colon. The most commonly utilized effect, therapeutically, is the thermal one. Heat may be transferred from one object to another in several different ways, including *conduction*, *convection*, or *conversion*. In hydrotherapy, the heating and cooling effects are produced by conduction

of heat from the water to the body. The contact of water with the body is accomplished by means of baths, showers, sprays, packs, compresses, etc. The range of temperatures useful in hydrotherapy applications varies from very cold to very hot. Deep well water is near 53° F. Cold tap water varies in temperature throughout the year depending on location and the depth of the pipes and other exposures to the environment. During the winter it may be as low as 40° F and in the summer as high as 60° F. This temperature variation may be a significant factor in hydrotherapy treatments; therefore, it is advisable to be aware of your water temperature when using hydrotherapy techniques.

*Hydrotherapy Techniques.* The variety and ways in which water may be applied to the human body therapeutically is only limited by the imagination of the practitioner. To successfully use hydrotherapy, one must be familiar enough with the procedure to use it in an efficient and competent manner. Although the equipment required for these techniques is quite simple, it is important that it be clean, easily available, and maintained properly. Care for the comfort and confidence of the patient will greatly increase the effectiveness of the treatments.

*Baths.* Baths are full or partial immersions of the body into water of various temperatures. Bath waters may contain additional substances such as salts, minerals, herbs, or medications and may be in an agitated state, as with a whirlpool.

*Hot Full Immersion Baths.* These are given within a temperature range of 100-106° F for up to 20 minutes. They are indicated as home treatment for rheumatoid arthritis, to aid in relief of muscular spasms, for cleansing the body, and to induce sweating. Given for brief periods, they may help to reduce fevers by creating peripheral vasodilatation, thereby promoting an increased heat loss. In most instances they are best followed by a brief cool bath, shower, or spray. Prolonged hot tub baths are never appropriate in the very old or very young, weak or anemic persons, individuals with severe organic disease, or in anyone with a tendency to hemorrhage.

*Neutral Bath.* The neutral bath is a full immersion bath given at the average temperature of the skin, 92-95° F, in which the recipient has neither the sensation of being warmed nor that of being cooled. A minor variation in temperature of as little as 2° F may create a totally different therapeutic effect. As the ideal temperature is dependent on the

patient's condition and reaction to the water, it is often better to use their sensation, rather than a thermometer, as a guide to adjusting the temperature. The duration of a neutral bath may vary from 15 minutes to 4 hours. If the bath lasts longer than 20 minutes, it will be necessary to add warm water to maintain the temperature. The primary effect of a neutral bath is to create a state of decreased excitation. This sedative effect, similar to that produced in deprivation tanks, calms the nervous system. A second effect is activation of the kidneys, creating increased urinary output due to the absorption of water into the body during periods of prolonged immersion. It is aided by the neutral temperature, which provides no stimulus for water loss through sweating. Nephrotic patients display increased phosphate excretion following prolonged immersion; therefore, they warrant special care when given prolonged immersion baths. Lastly, the neutral bath causes a decrease in the surface temperature of the body due to the lack of the normal heat-producing stimulus of cool air on the skin. As a result, the surface may be cooled as much as 6° F, creating a tendency to chilling following the bath. This effect necessitates special care in keeping the patient warm. When prescribed for home treatment, a neutral bath is best taken just before getting into bed, in order to avoid chilling. Therapeutically, neutral baths are most commonly used for their calmative effects in cases of insomnia, anxiety, nervous irritability, exhaustion, or chronic pain. By increasing kidney output, they may be appropriate in detoxification programs for substances such as alcohol, tobacco, or coffee, or as an adjunct treatment for peripheral edema. They also serve a valuable role in the control of fevers in individuals who would not be able to react to stronger measures. These patients would include the very young, very old, feeble, or exhausted. Start the baths at about 98° F and lower the temperature slowly over a period of 5-10 minutes to 92-93° F, until the desired body temperature is reached. *Sitz Bath*. The sitz bath is a partial immersion bath of the pelvic region. It is more easily given in a specially constructed tub but may also be effectively done in a regular bath tub. Often it is taken with the feet immersed in a separate tub of hot water before or during the bath. A sitz bath may be taken hot, neutral, cold, or contrast hot and cold.

The *hot sitz bath* is generally taken for 3-10 minutes at 105-115° F. The primary effect is analgesic. It may be helpful in cramps of the uterus or ureters, pain from

hemorrhoids, ovaries or testicles, sciatica, urinary retention, and after cystoscopy or hemorrhoidectomy. It is followed by cool sponging or effusion of the area. Hot sitz baths are not indicated in cases of acute inflammation, but may be appropriate for chronic PID. Hot applications to the pelvis are also contraindicated during menses in most instances. The hot sitz bath is best taken with a hot foot bath at 110-115° F. *Neutral sitz baths* are more appropriate for situations of acute inflammation, such as cystitis and acute *pelvic inflammatory disease* (PID). They are given at 92-95° F for between 15 minutes and 2 hours. It is necessary to provide adequate coverings during this period to avoid chilling. Neutral sitz baths may also be very effective for pruritis of the anus or vulva. Appropriate herbs, salts or other medications may be added to the water to optimize the treatment.

The *cold sitz bath* is given immediately following a warm-to-hot sitz bath of 1-3 minutes, and lasts (at a temperature of 55-75° F) from 30 seconds to 8 minutes. It is important to ensure that the water level of the hot bath on the body is at least 1 inch above the level of the cold water. This insures adequate warming of the area, thereby preventing chilling. Friction rubs to the hips during the cold sitz bath promote an increased reaction. The cold sitz bath is used mainly for its tonifying effects. It may be used for subinvolution of the uterus, menorrhagia, atonic constipation, enuresis, atony of the bladder, and chronic prostatic congestion. Since it increases the tone of the smooth muscles of the uterus, bladder, and colon, it lessens the tendency to bleed from the uterus, the lower bowel and rectum.

*Contrast sitz baths* are given in groups of three, i.e. three alterations of hot to cold. Two separate tubs are necessary to facilitate this process. The hot is at 105-115° F, the cold at 55-85° F, with the temperatures again dependent on the condition being treated and the strength of the patient. A standard treatment would be 3 minutes hot and 30 seconds cold. The water level in the hot tub is set 1 inch higher than in the cold. Adequate draping is necessary to prevent chilling. As with all hydrotherapy treatments, one always finishes with the cold. The contrast sitz bath increases pelvic circulation and tone of the smooth muscles of the region. It is indicated in chronic PID, chronic prostatitis, atonic constipation, and other atonic conditions of the pelvis. The strong revulsive effect created increases the blood flow in the pelvic region dramatically.

### **Topic 8. General and specific care of critical and agonizing patients.**

*General rules of care of patients with bed regimen, critical patients and patients in agony. Control of convenient patient's position in bed, prophylaxis of bedsores, personal hygiene, changing of underwear and bed-clothes, control of physiological evacuations (urination, defecation). Use of a bedpan and an urinal. Use of a rectal tube and enemas. Types of enemas, methods and technique of their administration, methods of disinfection and keeping of enemas. Nutrition of critical patients with strict bed regime. Parenteral method for artificial feeding. Nutrition of middle aged and old patients.*

*The concept of resuscitation. Methods and technique of simple resuscitation measures: method of artificial breathing "mouth to mouth" and "mouth to nose", external cardiac massage. The concept of clinical and biologic death. The rules of handling a corpse.*

For convenience of the leaving these patients do not dress underwear, therefore it is necessary to watch, that they have been carefully covered and were not exposed to cooling. At the expressed excitation, the broken consciousness patients can break bandages, drainages, to injure wounds, to fall from the bed. In the situations of them fix to bed, appoint an individual post for rendering assistance and supervision.

The hygienic care of the skin, eyes, ears, the cavity of the nose, the mouth at the therapeutic patient in the heaviest or the unconsciousness is rather important part of the treatment. Daily all body is wiped off by the warm water and horrify by the dry towel. If the condition of the patient allows it is necessary to change is more often his position and is more often to re-make the bed that were not formed the bedsores. If it is necessary to enclose the inflatable rubber circles, wipe the skin by the disinfectant solution. At corpulent patients, it is especial at the women; the special attention is necessary for paying on the prevention of the dermatitis on the dairy glands, in the inguinal crimps and in the area of the perineum. These sites daily wash by the disinfectant solution of permanganate kalium or a boric acid, dry and powder by the talc. To the women daily and for the night make the hygienic washes. The similar washes are carried out by the patient after the defecation and urination.

At seriously ill patients it is necessary to make the washing of the eyes from excretions, sticking together the eyelashes. The each eyewash out by the separate tampon moistened in the warm 3 % a solution of a boric acid. To wash out follows from an external corner of an eye to the internal. At an inflammation conjunctive cause on consultation of the ophthalmologist which purpose should be carried out.

For the prevention of the drying of the conjunctive of the eye at patients without consciousness on them is imposed with the wadded tampons moistened with a physiological solution of chloride of sodium (0,9 %) or 1 % a solution of a boric acid.

The most careful care demand-nursing courses. Quite often they inflame as a result of the wound of the mucous membrane by various probes, catheters. The patients frequently breathe not through the nose but the open mouth. It conducts to drying a mucous membrane, inflammatory process (a stomatitis, a parotitis) and to other complications. It is necessary on the regular basis, in each 1-2 hour to wipe by the damp tampon an oral cavity and to grease with a solution of glycerin, Vaseline or sunflower oil. It is not less important to watch and for excretions of the patients at whom are possible involuntary urination and defecation. It is necessary to have additional linen, to set up lay oilcloths which immediately vary in process of pollution.

At vomiting the head of the patient should be revolved on one side so that it was little bit lower than a trunk. The tray is brought to a mouth. For protection from pollution of a pillow, linen it is necessary to enclose the towel. After vomiting to the patient give to rinse a mouth warm water and wipe lips and corners of a mouth. If the patient in the unconsciousness, make a careful toilet of an oral cavity with the using of the mouthwiding, gauze tampons and antiseptic solutions.

The care about the dying includes a complex of hygienic actions: rubdown of the skin by the disinfecting solution, giving of corresponding position to watch an oral cavity, to delete emetic weights. To moisten lips, mucous a mouth, to wipe a disinfectant solution, to change the clothes more often and the bedclothes to allow oxygen, if necessary to impose with hot-water bottles. To provide constant supervision with registration of the basic vital signs. Good care of seriously ill patients is better than any words convince relatives that all measures take for rescue of a life of the patient.



Hygienic care of an integument gets especially great value from persons of elderly and senile age. The long confinement to bed results in squeezing fabrics therefore are formed the *bedsores* – the necrosis of the skin, hypodermic fat, and is frequent also the muscles. They arise in the area of the sacrum, scapulas, the big spits, elbows, heels and waned shoots. First attribute of the bedsores is the pallor or reddening and puffiness of the skin with the subsequent scaling of the epidermis, occurrence of the bubbles. Connection of an infection results to the heavy suppurative processes, the sepsis and the death. In this connection, the medical personnel should change sometimes in day the position of the patient, under the sacrum and the buttocks to lay the inflatable rubber circle, 2-3 times day wipe the skin in places of bone ledges by the camphor spirit, 40 % a solution of spirit or warm water with the subsequent wiping dry. At the maceration of the skin it is washed by the water with soap, dry up and powder up the powder. For improvement of a local blood-groove appoint the massage, quartzing. Bed and underwear should be dry, clean, without the pleats.

### **Bedpan and urinal**

These devices permit elimination by the bedridden patient and accurate observation and measurement of urine and stool by the nurse. A bedpan is used by the female patient for defecation and urination and by the male patient for defecation; a urinal is used by the male patient for urination. Either device should be offered frequently - before meals, visiting hours, morning and evening care, and any treatments or procedures. Whenever possible, allow the patient privacy.

### **Implementation**

- If the patient's condition permits, provide privacy. Put on gloves to prevent contact with body fluids and comply with standard precautions.

### ***Placing a bedpan***

- If allowed, elevate the head of the bed slightly *to prevent hyperextension of the spine when the patient raises the buttocks.*
- Rest the bedpan on the edge of the bed. Then, turn down the corner of the top linens and draw up the patient's gown. Ask him to raise the buttocks by flexing his knees and pushing

down on his heels. While supporting the patient's lower back with one hand, center the curved, smooth edge of the bedpan beneath the buttocks.

- If the patient can't raise his buttocks, lower the head of the bed to horizontal and help the patient roll onto one side, with buttocks toward you. Position the bedpan properly against the buttocks, and then help the patient back onto the bedpan. When the patient is positioned comfortably, raise the head of the bed as indicated.
- After positioning the bedpan, elevate the head of the bed further, if allowed, until the patient is sitting erect. *This position, like the normal elimination posture, aids in defecation and urination.*
- If elevation of the head of the bed is contraindicated, tuck a small pillow or folded bath blanket under the patient's back *to cushion the sacrum against the edge of the bedpan and support the lumbar region.*
- If the patient can be left alone, place the bed in a low position and raise the side rails *to ensure his safety.* Place toilet tissue and the call button within the patient's reach, and instruct him to push the button after elimination. If the patient is weak or disoriented, remain with him.
- Before removing the bedpan, lower the head of the bed slightly. Then ask the patient to raise his buttocks off the bed. Support the lower back with one hand, and gently remove the bedpan with the other *to avoid skin injury caused by friction.* If the patient cannot raise his buttocks, ask him to roll off the pan while you assist with one hand. Hold the pan firmly with the other hand to avoid spills. Cover the bedpan and place it on the chair.
- Help clean the anal and perineal area, as necessary, *to prevent irritation and infection.* Turn the patient on his side, wipe carefully with toilet tissue, clean the area with a damp washcloth and soap, and dry well with a towel. Clean a female patient from front to back *to avoid introducing rectal contaminants into the vaginal or urethral openings.*

### ***Placing a urinal***

- Lift the corner of the top linens, hand the urinal to the patient, and allow him to position it.
- If the patient can't position the urinal himself, spread his legs slightly and hold the urinal in place *to prevent spills.*

- After the patient voids, carefully withdraw the urinal.

### ***After use of a bedpan or urinal***

- Give the patient a clean, damp, warm washcloth for his hands. Check the bed linens for wetness or soiling, and straighten or change them if needed. Make the patient comfortable. Place the bed in the low position, and raise the side rails.
- Take the bedpan or urinal to the bathroom or hopper room. Observe the color, odor, amount, and consistency of its contents. If ordered, measure urine output or liquid stool, or obtain a specimen for laboratory analysis.
- Empty the bedpan or urinal into the toilet or hopper. Rinse with cold water and clean it thoroughly, using a disinfectant solution. Dry and return it to the patient's bedside stand.
- Use an air freshener, if necessary, *to eliminate offensive odors and minimize embarrassment.*
- Remove gloves and wash your hands.

## **Cardiopulmonary resuscitation**

Cardiopulmonary resuscitation (CPR) seeks to restore and maintain the patient's respiration and circulation after his heartbeat and breathing have stopped. CPR is a basic life support (BLS) procedure that is performed on victims of cardiac arrest. Another BLS procedure is clearing the obstructed airway.

Most adults who experience sudden cardiac arrest develop ventricular fibrillation and require defibrillation; CPR alone doesn't improve their chances of survival.

In most instances, you perform CPR to keep the patient alive until advanced cardiac life support can begin. Basic CPR procedure consists of assessing the victim, calling for help, and then following the ABC protocol: opening the airway, restoring breathing, then restoring circulation. After the airway has been opened and breathing and circulation have been restored, drug therapy, diagnosis by electrocardiogram (ECG), or defibrillation may follow.

### **Implementation**

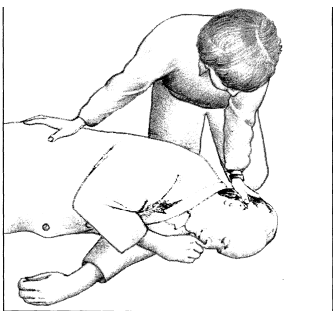
- The following illustrated instructions provide a step-by-step guide for CPR as currently recommended by the American Heart Association (AHA).

### **One-person rescue**

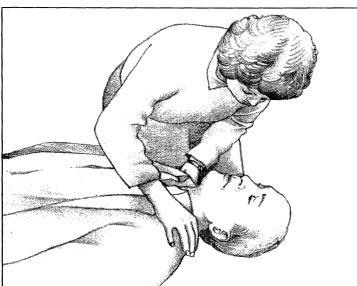
- If you're the sole rescuer, expect to open the patient's airway, check for breathing, assess for circulation, and call for help before beginning compressions.
- Assess the victim to determine if he's unconscious (as shown below). Gently shake his shoulders and shout, "Are you okay?" This helps ensure that you don't start CPR on a person who's conscious. Check whether he has an injury, particularly to the head or neck. If you suspect a head or neck injury, move him as little as possible to reduce the risk of paralysis.



- Call out for help. Send someone to contact the EMS or call a code, if appropriate. Place the victim in a supine position on a hard, flat surface. When moving him, roll his head and torso as a unit (as shown at top of next column). Avoid twisting or pulling his neck, shoulders, or hips.

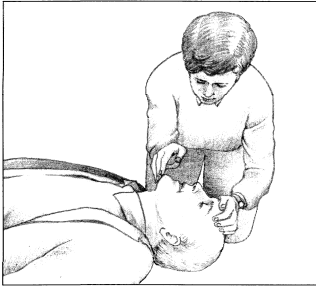


- Kneel near his shoulders (as shown below). This position will give you easy access to his head and chest.

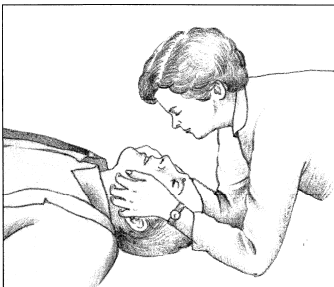


- In many cases, the muscles controlling the victim's tongue will be relaxed, causing the tongue to obstruct the airway. If the victim doesn't appear to have a neck injury, use the

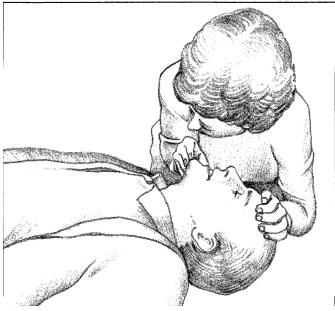
*head-tilt, chin-lift maneuver* to open his airway. To accomplish this, first place your hand that is closer to the victim's head on his forehead. Then apply firm pressure. The pressure should be firm enough to tilt the victim's head back. Next, place the fingertips of your other hand under the bony part of his lower jaw near the chin. Now lift the victim's chin (as shown below). At the same time, keep his mouth partially open.



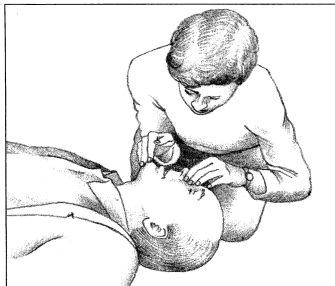
- Avoid placing your fingertips on the soft tissue under the victim's chin *because this maneuver may inadvertently obstruct the airway you're trying to open.*
- If you suspect a neck injury, use *the jaw-thrust maneuver* instead of the *head-tilt, chin-lift maneuver*. Kneel at the victim's head with your elbows on the ground. Rest your thumbs on his lower jaw near the corners of the mouth, pointing your thumbs toward his feet. Then place your fingertips around the lower jaw. To open the airway, lift the lower jaw with your fingertips (as shown below).



- While maintaining the open airway, place your ear over the victim's mouth and nose (as shown below). Now, listen for the sound of air moving, and note whether his chest rises and falls. You may also feel airflow on your cheek. If he starts to breathe, keep the airway open and continue checking his breathing until help arrives.



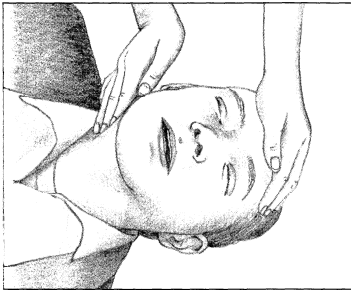
- If the victim doesn't start breathing after you open his airway, begin rescue breathing. Pinch his nostrils shut with the thumb and index finger of the hand you've had on his forehead (as shown below).



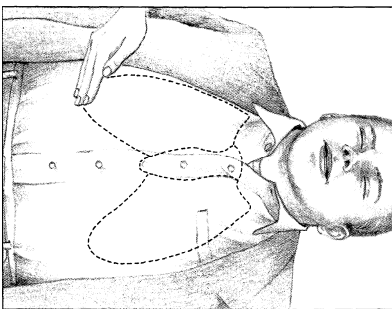
- Take a deep breath and place your mouth over the victim's mouth, creating a tight seal (as shown below). Give two full ventilations, taking a deep breath after each to allow enough time for his chest to expand and relax and to prevent gastric distention. Each ventilation should last 1½ to 2 seconds.



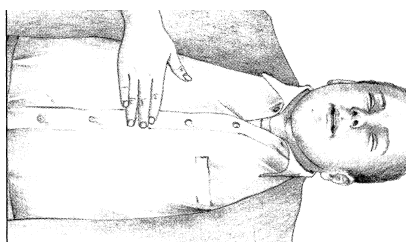
- If the first ventilation isn't successful, reposition the victim's head and try again. If you still aren't successful, he may have a foreign-body airway obstruction. Check for loose dentures. If dentures or any other objects are blocking the airway, follow the procedure for clearing an airway obstruction.
- Keep one hand on the victim's forehead so his airway remains open. With your other hand, palpate the carotid artery that is closer to you (as shown below). To do this, place your index and middle fingers in the groove between the trachea and the sternocleidomastoid muscle. Palpate for 5 to 10 seconds.



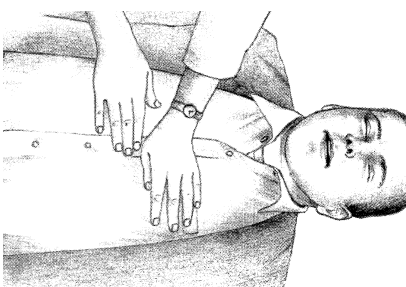
- If you detect a pulse, don't begin chest compressions. Instead, perform rescue breathing by giving the victim 12 ventilations per minute (or one every 5 seconds). After every 12 ventilations, recheck his pulse.
- If there is no pulse, start giving chest compressions. Make sure your knees are apart for a wide base of support. Using the hand closer to his feet, locate the lower margin of the rib cage (as shown below). Then move your fingertips along the margin to the notch where the ribs meet the sternum.



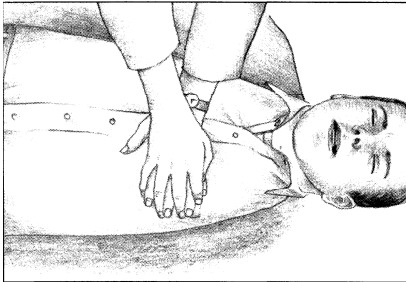
- Place your middle finger on the notch and your index finger next to your middle finger. Your index finger will now be on the bottom of the sternum (as shown below).



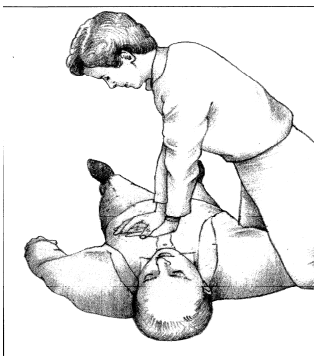
- Put the heel of your other hand on the sternum, next to the index finger. The long axis of the heel of your hand will be aligned with the long axis of the sternum (as shown below).



- Take the first hand off the notch and put it on top of the hand on the sternum. Make sure you have one hand directly on top of the other and your fingers aren't on his chest (as shown below).



- This position will keep the force of the compression on the sternum and reduce the risk of a rib fracture, lung puncture, or liver laceration.
- With your elbows locked, arms straight, and your shoulders directly over your hands (as shown below), you're ready to give chest compressions. Using the weight of your upper body, compress the victim's sternum 3.8 to 5 cm, delivering the pressure through the heels of your hands. After each compression, release the pressure and allow the chest to return to its normal position so that the heart can fill with blood. Don't change your hand position during compressions - you might injure the victim.



- Give 15 chest compressions at a rate of 80 to 100 per minute. Count, "One and two and three and ..." up to 15. Open the airway and give 2 ventilations. Then find the proper hand position again and deliver 15 more compressions. Do four complete cycles of 15 compressions and 2 ventilations.
- Palpate the carotid pulse again. If there is still no pulse, continue performing CPR in cycles of 15 compressions and 2 ventilations. Every few minutes, check for breathing and a pulse at the end of a complete cycle of compressions and ventilations. If you detect a pulse but he isn't breathing, give 12 ventilations per minute and monitor his pulse. If he has a pulse and is breathing, monitor his respirations and pulse closely. You should stop

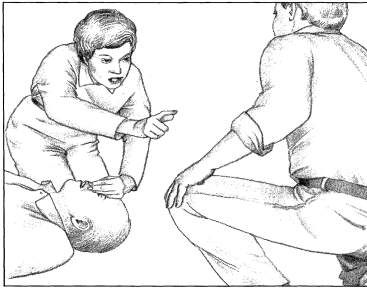


performing CPR only when his respirations and pulse return, he's turned over to the EMS, or you're exhausted.

### Two-person rescue

If another rescuer arrives while you're giving CPR, follow these steps:

- If the EMS team hasn't arrived, tell the second rescuer to repeat the call for help. If he isn't a health care professional, ask him to stand by. Then, if you become fatigued, he can take over one-person CPR (as shown below).

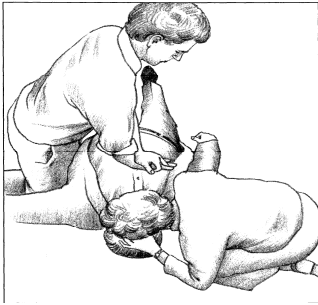


- Have him begin by checking the victim's pulse for 5 seconds after you've given 2 ventilations. If he doesn't feel a pulse, he should give 2 ventilations and begin chest compressions.
- If the rescuer is another health care professional, the two of you can perform two-person CPR. He should start assisting after you've finished a cycle of 15 compressions, 2 ventilations, and a pulse check.
- The second rescuer should get into place opposite you. While you're checking for a pulse, he should be finding the proper hand placement for delivering chest compressions (as shown below).

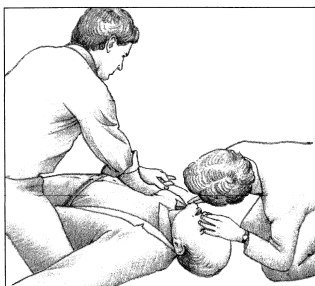


- If you don't detect a pulse, say, "No pulse, continue CPR", and give 1 ventilation. Then the second rescuer should begin delivering compressions at a rate of 80 to 100 per minute. Compressions and ventilations should be administered at a ratio of 5 compressions to 1

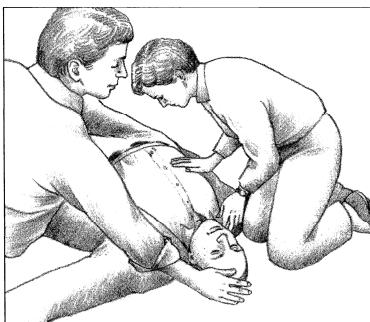
ventilation. The compressor (at this point, the second rescuer) should count out loud so the ventilator can anticipate when to give ventilations. To ensure that the ventilations are effective, the rescuer performing the chest compressions should stop briefly or at least long enough to observe the victim's chest rise with the air supplied by the rescuer giving ventilations (as shown below).



- As the ventilator, you must check for breathing and a pulse. Signal the compressor to stop giving compressions for 5 seconds so you can make these assessments (as shown below).



- After a minimum of 10 cycles, the compressor (second rescuer) may grow tired and call for a switch. When the rescuer is giving a ventilation, the compressor can simply say "change" or "switch." This switch should be done carefully, so as not to interrupt CPR. You would then give a ventilation and become the compressor by moving down to the victim's chest and placing your hands in the proper position (as shown below).



- The second rescuer would become the ventilator and move to the victim's head. He would check the pulse for 5 seconds. If he found no pulse, he would say, "No pulse" and

give ventilation. You would then give compressions at a rate of 80 to 100 per minute - or 5 compressions for each ventilation. As shown below, both of you should continue giving CPR in this manner until the victim's respirations and pulse return, he's turned over to the EMS, or both of you are exhausted.



### **Complications**

CPR can cause certain complications - especially if the compressor doesn't place her hands properly on the sternum. These complications include fractured ribs, a lacerated liver, and punctured lungs. Gastric distention, a common complication, results from giving too much air during ventilation.

### **Manual ventilation**

A handheld resuscitation bag is an inflatable device that can be attached to a face mask or directly to an endotracheal (ET) or tracheostomy tube to allow manual delivery of oxygen or room air to the lungs of a patient who can't breathe by himself. Usually used in an emergency, manual ventilation also can be performed while the patient is disconnected temporarily from a mechanical ventilator, such as during a tubing change, during transport, or before suctioning. In such instances, use of the handheld resuscitation bag maintains ventilation. Oxygen administration with a resuscitation bag can help improve a compromised cardiorespiratory system.

Unless the patient is intubated or has a tracheostomy, select a mask that fits snugly over the mouth and nose. Attach the mask to the resuscitation bag.

If oxygen is readily available, connect the handheld resuscitation bag to the oxygen. Attach one end of the tubing to the bottom of the bag and the other end to the nipple adapter on the flowmeter of the oxygen source.

Turn on the oxygen, and adjust the flow rate according to the patient's condition. To increase the concentration of inspired oxygen, you can add an oxygen accumulator (also called an oxygen reservoir).

### **Implementation**

- Before using the handheld resuscitation bag, check the patient's upper airway for foreign objects. If present, remove them *because this alone may restore spontaneous respirations in some instances. Also, foreign matter or secretions can obstruct the airway and impede resuscitation efforts.* Suction the patient *to remove any secretions that may obstruct the airway.* If necessary, insert an oropharyngeal or nasopharyngeal airway *to maintain airway patency.* If the patient has a tracheostomy or ET tube in place, suction the tube.
- If appropriate, remove the bed's headboard and stand at the head of the bed *to help keep the patient's neck extended and to free space at the side of the bed for other activities such as cardiopulmonary resuscitation.*
- Tilt the patient's head backward, if not contraindicated and pull his jaw forward *to move the tongue away from the base of the pharynx and prevent obstruction of the airway.*
- Keeping your nondominant hand on the patient's mask, exert downward pressure *to seal the mask against his face* For an adult patient, use your dominant hand to compress the bag every 5 seconds to deliver approximately 1 L of air.

*Clinical death* – a short-term transitive stage between a life and death, its duration 3-6min. Breath and intimate activity are absent, pupils are expanded, integuments cold, reflexes are not present. During this short period still probably restoration of vital signs by means of reanimation. All reanimative actions are directed on restoration of blood circulation, breath, metabolism. The choice of methods of the reanimation is defined by the mechanism of definition of the death and frequently does not depend on character of the basic disease. The death is the termination of ability to live of an organism. After clinical death there comes *biological death*, which is characterized by such infringements of the central nervous system at which restoration of ability to live of an organism is impossible. At biological death there comes a relaxation of muscles, cooling of a body up to an ambient temperature. Appear cadaver a stain on underlying departments of a body later.

The death is ascertained by the doctor and writes down in the case record day, hour and minutes its approach. A corpse undress, stack on a back, tie up the bottom jaw, lower the blepharon, cover with a bedsheet and leave in bed for a while from 30 minutes up to 2 hours. On a hip died write down a surname, a name, a patronymic, number of the case record. Make out an accompanying note and together with the case record a corpse deliver in pathoanatomical development. Values with died removing in the development at the presence of the doctor and transfer to storage to the senior nurse or in a reception. If values to remove it are not possible, about it do record in the case record and a corpse direct to a mortuary with values.

### **Topic 9. Organization of the patients' feeding**

*Role of medical nutrition is in the structure of health process. Concept of a medical nutrition and diets. Organization of medical nutrition in therapeutic department. Order of meal distribution. Nutrition of critical patients with the severe bed regime. Enteral and parenteral routes of administration of nutrition. Nutrition of old - aged persons. Testimonies for the artificial feed of patients.*

*Methods of cleaning an intestine. Application of rectal tube, enemas. Types of enemas, method and technique of their application, methods of disinfections and keeping of enema.*

Confusion, arm or hand immobility, injury, weakness, or restrictions on activities or positions may prevent a patient from feeding himself. Feeding the patient then becomes a key nursing responsibility. Injured or debilitated patients may experience depression and subsequent anorexia. Meeting such patients, nutritional needs requires determining food preferences, conducting the feeding in a friendly, unhurried manner, encouraging self-feeding to promote independence and dignity, and documenting intake and output.

#### **Implementation**

- *Because many adults consider being fed demeaning, allow the patient some control over mealtime, such as letting him set the pace of the meal or decide the order in which he eats various foods.*

- Raise the head of the bed if allowed. *Fowler's or semi-Fowler's position makes swallowing easier and reduces the risk of aspiration and choking.*
- Before the meal tray arrives, give the patient soap, a basin of water or a wet washcloth, and a hand towel *to clean his hands*. If necessary, you may wash his hands for him.
- Wipe the overbed table with soap and water or alcohol, especially if a urinal or bedpan was on it.
- When the meal tray arrives, compare the name on the tray with the name on the patient's wristband. Check the tray to make sure it contains foods appropriate for the patient's condition.
- Encourage the patient to feed himself if he can. If he's restricted to the prone or the supine position but can use his arms and hands, encourage him to try foods he can pick up such as sandwiches. If he can assume Fowler's or semi-Fowler's position but has limited use of his arms or hands, teach him how to use assistive feeding devices.
- If necessary, tuck a napkin or towel under his chin *to protect his gown from spills*. Use a linen-saver pad or towel *to protect bed linens*.
- Position a chair next to the patient's bed *so you can sit comfortably if you need to feed him yourself*.
- Set up the patient's tray, remove the plate from the tray warmer, and discard all plastic wrappings. Then cut the food into bite-sized pieces.
- To help the blind or visually impaired patient feed himself, tell him that placement of various foods on his plate corresponds to the hours on a clock face. Maintain consistent placement for subsequent meals.
- Ask the patient which food he prefers to eat first *to promote his sense of control over the meal*. Some patients prefer to eat one food at a time, while others prefer to alternate foods.
- If the patient has difficulty swallowing, offer liquids carefully with a spoon or feeding syringe *to help prevent aspiration*. Pureed or soft foods, such as custard or flavored gelatin, maybe easier to swallow than liquids. If the patient doesn't have difficulty swallowing, use a flexible straw *to reduce the risk of spills*.

- Ask the patient to indicate when he's ready for another mouthful. Pause between courses and whenever the patient wants to rest. During the meal, wipe the patient's mouth and chin as needed.
- When the patient finishes eating, remove the tray. If necessary, clean up spills and change the bed linens. Provide mouth care.

**Recording fluid intake and output.** Accurate intake and output records help evaluate a patient's fluid and electrolyte balance, suggest various diagnoses, and influence the choice of fluid therapy. These records are mandatory for patients with burns, renal failure, electrolyte imbalance, recent surgical procedures, heart failure, or severe vomiting and diarrhea, and for patients receiving diuretics or corticosteroids. Intake and output records are also significant in monitoring patients with nasogastric (NG) tubes or drainage collection devices, and those receiving I.V. therapy.

Fluid intake comprises all fluid entering the patient's body, including beverages, fluids contained in solid foods taken by mouth, and foods that are liquid at room temperature, such as flavored gelatin, custard, ice cream, and some beverages. Additional intake includes GI instillations, bladder irrigations, and I.V. fluids.

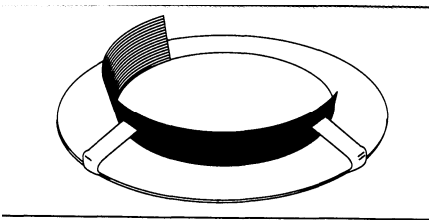
Fluid output consists of all fluid that leaves the patient's body, including urine, loose stools, vomitus, aspirated fluid loss, and drainage from surgical drains, NG tubes, and chest tubes.

When recording fluid intake and output, enlist the patient's help if possible. Record amount in cubic centimeters (cc) or milliliters (ml). Monitor intake and output during each shift, and notify the doctor if amounts differ significantly over a 24-hour period. Document your findings in the appropriate location; describe any fluid restrictions and the patient's compliance.

Introduce the assistive device before mealtime, with the patient seated in a natural position. Explain its purpose, show the patient how to use it, and encourage him to practice. After meals, wash the device thoroughly and store it in the patient's bedside stand. Document the patient's progress and share it with staff and family members to help reinforce the patient's independence. Specific devices include the following:

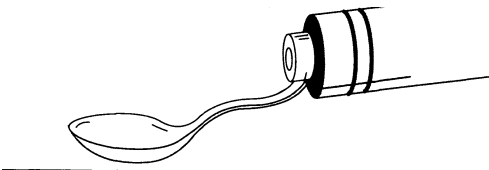
### Plate guard

This device blocks food from spilling off the plate. Attach the guard to the side of the plate opposite the hand the patient uses to feed himself. Guiding the patient's hand, show him how to push food against the guard to secure it on the utensil. Then have him try again with food of a different consistency. When the patient tires, feed him the rest of the meal. At subsequent meals, encourage the patient to feed himself for progressively longer periods until he can feed himself an entire meal.



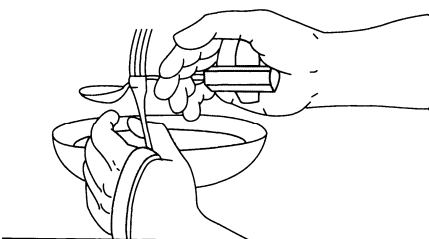
### Swivel spoon

This utensil helps the patient with limited range of motion (ROM) in his forearm and will fit in universal cuffs.



### Universal cuffs

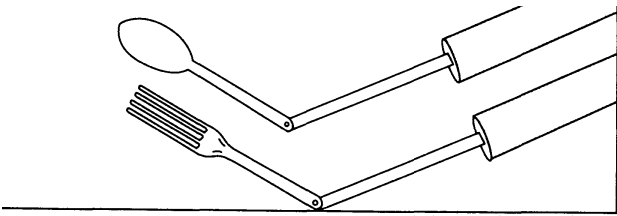
These flexible bands help the patient with flail hands or diminished grasp. Each cuff contains a slot that holds a fork or spoon. Attach the cuff to the hand the patient uses to feed himself. Then place the fork or spoon in the cuff slot. Bend the utensil to facilitate feeding.



### Long-handled utensils

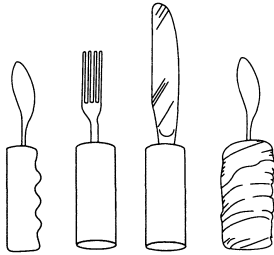
These utensils have jointed stems to help the patient with limited ROM in his elbow and shoulder.





### Utensils with built-up handles

These utensils can help the patient with diminished grasp. They can be purchased or can be improvised by wrapping tape around the handles.



**Rectal tube.** Whether GI hypomotility simply slows the normal release of gas and feces or results in paralytic ileus, inserting a rectal tube may relieve the discomfort of distention and flatus. Decreased motility may result from various medical or surgical conditions, certain medications (such as atropine sulfate), or even swallowed air. Conditions that contraindicate using a rectal tube include recent rectal or prostatic surgery, recent myocardial infarction, and diseases of the rectal mucosa.

### Implementation

- Bring all equipment to the patient's bedside, provide privacy, and wash your hands.
- Explain the procedure and encourage the patient to relax.
- Check for abdominal distention. Using the stethoscope, auscultate for bowel sounds.
- Place the linen-saver pads under the patient's buttocks *to absorb any drainage that may leak from the tube.*
- Position the patient in the left-lateral Sims' position *to facilitate rectal tube insertion.*
- Put on gloves.
- Drape the patient's exposed buttocks.
- Lubricate the rectal tube tip with water-soluble lubricant *to ease insertion and prevent rectal irritation.*
- Lift the patient's right buttock *to expose the anus.*

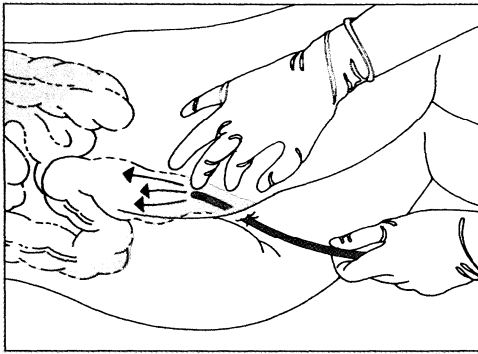
- Insert the rectal tube tip into the anus, advancing the tube 5 to 10 cm into the rectum. Direct the tube toward the umbilicus along the anatomic course of the large intestine.
- As you insert the tube, tell the patient to breathe slowly and deeply, or suggest that he bear down as he would for a bowel movement *to relax the anal sphincter and ease insertion*.
- Using tape, secure the rectal tube to the buttocks. Then attach the tube to the container *to collect possible leakage*.
- Remove the tube after 15 to 20 minutes. If the patient reports continued discomfort or if gas wasn't expelled, you can repeat the procedure in 2 or 3 hours if ordered.
- Clean the patient, and replace soiled linens and the linen-saver pad. Make sure the patient feels as comfortable as possible. Again, check for abdominal distention and listen for bowel sounds.
- If you will reuse the equipment, clean it and store it in the bedside cabinet; otherwise discard the tube.

**Enema** is an introduction of a liquid in large intestines through the anus. Enema is appointed for removal of the contents of intestines, introduction of a medicine or rentgenocontrast substances (suspension of barium) at radiological research. Distinguish cleansing, purgetive, medical and drip (nutrient) enemas.

**Cleansing enema** is appointed at constipations, poisonings, before labors, radiological researches of organs of abdominal cavity and small (true) pelvis, application medical and nutrient enemas. These enemas are contraindicated at gastric and intestinal bleedings, ulcer processes in a large intestine and rectum, haemorrhoids, wounds of a large intestine and rectum, purulent and ulcer processes in a large intestine and anus, sharp appendicitis and a peritonitis, rectal prolapses.

For enema use pure water (1-2 l), and for amplification of the action, 2-3 dining spoons of glycerin or Vaseline oils. Temperature of water at hypokinetic constipations should be 15-20°C, at spastic - 37-39°C. In the Esmarch's bag draw pour water of the necessary temperature and open the crane due to what the tube is filled, superseding air. After that the crane close, and a mug is hung on a support at height of 1-1,5 m.

Unless contraindicated, help the patient into the left-lateral Sims' position. After lubricating the end of the tube, separate the patient's buttocks and push the tube gently into the anus, aiming it toward the umbilicus. For an adult insert the tube 5 to 10 cm. Avoid forcing the tube *to prevent rectal wall trauma*. If it doesn't advance easily, allow a little solution to flow in *to relax the inner sphincter enough to allow passage*.



If the patient complains of occurrence of a pain, it is necessary to lower a mug to reduce speed of introduction of a liquid. If a tip is obdurate with excriments, it is necessary to clean, and then to introduce it again. In those cases if excriments have been hardened, it should be taken out from a rectum with a finger or a spoon. After the ending of instillation, the tip is taken out. The entered liquid will penetrate into the top departments of a large intestine, causing amplification of peristaltics and desire to defecate. The patient should detain the entered liquid for 5-10 minutes.

**Purgative enemas** apply at long constipations or paresis of intestines if introduction of a plenty of a liquid is inefficient or harmful. To purgative enemas refer oil and hypertonic.

*Oil enemas* appoint at the expressed constipations if hardened excrement weights accumulate in a rectum, and also at inflammatory and ulcer processes in a large gut and rectum. To these enemas apply sunflower, olive and Vaseline oil, which will penetrate between walls of a gut and excriments that facilitates its conclusion. Creating weak irritation of an intestinal wall, oil assists reduction of the inflammatory processes and recovery of normal peristaltic. It is necessary to have 50-100 ml of oils of temperature 37-39C° for one enema. Oil is provided with the help of a cylinder or a Janet's syringe, pulling a rubber tip on a cylinder or a syringe. After introduction of oil the patient should

lay some time. Purgetive action may come somewhere during 8-12 hours. After use, tools wash in hot water with a hydrocarbonate of sodium and boil.

*Hypertonic enemas* are made of 50-100 ml of 10 % solution of chloride of sodium or of 25 % solution of sulphate of magnesium. It is applied at paresis of intestines and swelling of an intestinal wall. This enema is contra-indicated at ulcer processes of large intestines, anal fissures. Hypertonic solutions enter at warm condition in the same way, as oils. After introduction of a solution, during 15-30 minutes the patient should abstain of defecation.

**Medical enemas** apply for introduction of medicines, mainly of local action. A warm solution is provided in amount of 50-200 ml with the help of a balloon or a Janet's syringe with a rubber tip on depth 15-20 cm. After introduction of a solution the patient should keep it at least for 30 min. Medical enema is put in 20-30 minutes after cleansing.

**Drip enemas** use for introduction of a plenty (up to 2 l) of isotonic solution of chloride of sodium or 5 % of glucose for struggling against the intoxication, desiccation etc. The device for drip enemas consists of an Esmarch's mug, a rubber tube, a dropper and a tip. The speed of admission of a liquid is adjusted by a screw clip. Position of the patient during procedure is lying on a back. The mug fill with a solution of temperature 41-42°C, then fill the system of tubes and with the help of a clip adjust the speed of introduction. Then a tip is provided in a rectum on depth of 20-25 cm. During the procedure it is necessary to watch for the speed of introduction of a solution, for its temperature and its uniform admission.

## LIST OF PRACTICAL SKILLS

for the final module control

1. Preparation of disinfectant solutions and conducting the sanitization of bedside tables and windowsills in a room
2. Preparation of disinfectant solutions and moist cleaning up of manipulation
3. Preparation of disinfectant solutions and conducting of reusable medical equipments (cups, thermometer, tip of enema, bedpans)
4. Conducting questioning of patient and filling the title page of case report
5. Conducting questioning of patient. To define basic symptoms
6. Measuring of body temperature
7. Examination of patients for scabies and pediculosis
8. Anthropological measurements: height, body weight and calculate BMI
9. Application of a hygienic bath
10. To conduct transportation of patients
11. To show skills of using a functional bed and giving forced positions to patients at the attack of asphyxia and collapse
12. Taking the pulse on radial arteries and define its characteristics
13. Taking the pulse on legs
14. Measurement of blood pressure
15. Definition of characteristics of breath
16. Filling of temperature lists
17. Change of the underwear and furnishing
18. Distribution and decomposition of medicines
19. To demonstrate instillation of drops in the eyes, ears, nose
20. Preparation necessary solutions and show governed conduct with disposable syringe after his application.
21. Application of a hot-water bottle, a bubble with ice
22. Application of mustard plaster
23. Nutrition of patients
24. Administration of enemas

25. Use of bedpans, urinals
26. Preparation of Zymnitskyj urine analyze
27. The toilet of oral cavity, eyes and ears
28. Prophylaxis of bedsores
29. To demonstrate technique of simple resuscitation measures: method of artificial breathing “mouth to mouth” and “mouth to nose”, external cardiac massage

**JOURNAL**

of practical training on therapeutic patients' care in clinic done by the 2nd-year student  
 \_\_\_\_\_ of the medical faculty, group No. \_\_\_\_\_

Name

Place of practical training:

Department on propedeutics of internal diseases with patients' care of ZSMU

Name of the hospital: clinical hospital 6

Date, hours of the work	The contents of the executed work	The signature of the teacher
5.09.2012 Classes (hours) Independent work (hours)		

Instructor from the clinic (hospital) \_\_\_\_\_ (name)

Teacher from the university \_\_\_\_\_ (name)

### The FINAL REPORT

of practical training on therapeutic patients' care in clinic done by the 2nd-year student \_\_\_\_\_ of the medical faculty, group No. \_\_\_\_\_

Name

Place of practical training: Department of propedeutics of internal diseases with patients' care of ZSMU

Name of the hospital: clinical hospital 6

From \_\_\_\_\_ 20\_\_ up to \_\_\_\_\_ 20\_\_

No.	Practical tasks	Executed
1.	Sanitary – hygienic cleaning of premises	
2.	Preparation and application of disinfectant solutions	
3.	Sanitary cleansing of patients in the admission department	
4.	Application of a hygienic bath	
5.	Transportation of patients	
6.	Anthropological measurements: height, body weight, girth of head, chest and abdomen	
7.	Examination of patients for scabies and pediculosis	
8.	Realization injury of the patients	
9.	Taking the pulse on hands	
10.	Taking the pulse on legs	
11.	Measurement of blood pressure and respiration rate	
12.	Definition of characteristics of breath	
13.	Measurement of body temperature	
14.	Filling of temperature lists	
15.	Distribution and decomposition of medicines	
16.	Instillation of drops in the eyes, ears, nose	
17.	Application of mustard plasters, cups, compresses	
18.	Application of a hot-water bottle, a bubble with ice	
19.	Administration of enemas	
20.	Use of bedpans, urinals	
21.	Nutrition of patients	
22.	The toilet of a skin, care of nails, hair	
23.	The toilet of oral cavity, eyes	
24.	Prophylaxis of bedsores	
25.	Preparation of utensils for a capture of analyses	
26.	Participation in rendering reanimation measures	
27.	Preparation of toolkit for sterilization	
28.	Realization of tests on quality of presterilizing processing	
29.	Another (to specify)	

Instructor from the clinic (hospital) \_\_\_\_\_ (name, signature)

Teacher from the university \_\_\_\_\_ (name, signature)



## Contents

Explanatory message.....	3
<i>Topic 1.</i> The main principles of the general and specific caring of patients in therapy department.....	4
<i>Topic 2.</i> Structure and functions of therapeutical hospital.....	8
<i>Topic 3.</i> Questioning of a patient.....	15
<i>Topic 4.</i> Role of patient's inspection in the test of the general state of the patient.....	22
<i>Topic 5.</i> Body temperature and the rules of its measuring and registration. Patients' care with fever.....	29
<i>Topic 6.</i> Determination of the main hemodynamics and respiration indices.....	35
<i>Topic 7.</i> Use of the main types of medical preparations and simple methods of physical therapy.....	44
<i>Topic 8.</i> General and specific care of critical and agonizing patients.....	63
<i>Topic 9.</i> Organization of the patients' feeding.....	77
List of practical skills.....	85
Journal.....	87
Final report.....	88