Ministry of Health of Ukraine
Ukrainian Medical Stomatological Academy

APPROVED
at a meeting of the department
disaster medicine
and military medicine
«____» _____ 2020
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Methodical instructions
for independent work of students
during preparation for a practical (seminar) lesson
and in class

Academic discipline	**Training of reserve officers**
Module №1	Premedical help in extreme situations
Topic of the lesson	Impaired airway patency. Premedical help. Acute respiratory disorders in combat
Course	2
Faculty	foreign students training specialty "Medicine", "Stomatology"

Poltava 2020

Topic

5. RESPIRATORY TRACT PERMISSIBILITY. HOME CARE. ACUTE BREATHING DISORDERS IN COMBAT CONDITIONS

Relevance of the topic:

The main cause of mortality in critical patients in the prehospital stage is acute respiratory failure (AHD). The development of GDN leads to a complication of the critical condition of patients and victims, the appearance of delayed complications, which significantly worsen the prognosis, and is accompanied by high mortality (55-65%).

The most common (approximately 95-98% of all cases) airway foreign bodies are found in children aged 1.5 to 3 years. According to various authors, the frequency of penetration into different parts of the respiratory tract is as follows: foreign bodies of the larynx - 12%, foreign bodies of the trachea - 18%, foreign bodies of the bronchi - 70%.

Specific goals:

- Assess the scene;
- Assess airway obstruction;
- Apply technique to ensure airway patency;
- Apply the technique of artificial lung ventilation;
- Apply the gamelich technique;
- Apply the beating technique;
- Be able to use an air duct;
- Be able to apply the technique of flexion of the head;
- Be able to use a decompression needle;
- Be able to use the valve film;
- Practice the use of the AMBU bag.

Competences and learning outcomes, the formation of which is facilitated by the discipline (relationship with the normative content of training of higher education, formulated in terms of learning outcomes in the Standard).

In accordance with the requirements of the standard, the discipline provides students with the acquisition of **competencies**:

- *integral*: The ability to solve typical and complex specialized problems and practical problems in professional activities in the field of health care, or in the learning process, which involves research and / or innovation and is characterized by complexity and uncertainty of conditions and requirements. The ability of the individual to organize an integrated humanitarian educational space, the formation of a single image of culture or a holistic picture of the world.

- *general*: The ability to apply knowledge in practical situations. Ability to exercise self-regulation, lead a healthy lifestyle, ability to adapt and act in a new situation.

Ability to choose a communication strategy; ability to work in a team; interpersonal skills. Ability to abstract thinking, analysis and synthesis, the ability to learn and be modernly trained. Definiteness and perseverance in terms of tasks and responsibilities.

- *special* (professional, subject): Ability to carry out medical and evacuation measures. Ability to determine the tactics of emergency medical care. Emergency care skills. Skills to perform medical manipulations.

Names of previous disciplines	Acquired skills
1. Human anatomy	Anatomy of the head and neck, anatomy of the chest, abdomen, pelvis and limbs. Anatomy of the vascular system.
2. Normal physiology	Physiological bases of respiratory system functioning.

Basic knowledge, skills, abilities necessary for studying the topic (interdisciplinary integration):

Tasks for independent work in preparation for class and in class:

1. Technique of ensuring airway patency (throwing the head; removal of the mandible; introduction of the nasopharyngeal and oropharyngeal airways).
2. Features of removal of a foreign body from the respiratory tract of a pregnant woman, obese person, baby.
3. Devices for artificial lung ventilation.
4. Technique of artificial lung ventilation (mouth to mouth, mouth to nose, mouth to face mask, AMBU bag).
5. Transfer of the wounded (injured) to a stable position.

The list of the basic terms, parameters, characteristics which the student should master at preparation for employment:

Term	Definition

1. Breathing	the physiological process of a constant exchange of gases between an organism and external environment is necessary.
2. Respiratory system	an open system of the body, which provides gas exchange, the formation of homeostasis in the tracheobronchial tract, purification of inhaled air from foreign particles and microorganisms, as well as the analysis of odorous substances in the atmosphere.
3. Laryngotracheal obstruction	the foreign body is localized above the bifurcation of the trachea. It is characterized by a high risk of total obstruction. the foreign body is in the main or partial bronchi, often in the right main bronchus.
4. Bronchial obstruction	accumulation of air in the pleural cavity and increased pressure in it.
5. Pneumothorax	in this case, a small amount of gas enters the pleural cavity, which does not increase. There is no connection with the external environment. It is considered the easiest type of pneumothorax, because the air can potentially gradually be absorbed from the pleural cavity, while the lung straightens.
6. Closed pneumothorax	with open pneumothorax, the pleural cavity connects with the external environment, so it creates a pressure equal to atmospheric. At the same time the lung collapses as the most important condition for straightening of a lung is negative pressure in a pleural cavity. This lung is switched off from breathing, there is no gas exchange, the blood is not enriched with oxygen. May be accompanied by hemothorax.
7. Open pneumothorax	this type of pneumothorax occurs in the case of the formation of a valve structure that allows air in one direction, from the lungs or from the environment into the pleural cavity.

Theoretical questions for the lesson:

1. Anatomical and physiological features of the respiratory tract.
2. Causes of airway obstruction. Signs of complete and partial airway obstruction.
3. Technique of ensuring airway patency (throwing the head; removal of the mandible; introduction of nasopharyngeal and oropharyngeal airways). 4. Technique of ensuring airway patency in case of foreign body obstruction.
5. Features of removal of a foreign body from the respiratory tract of a pregnant woman, obese person, baby.
6 Devices for artificial ventilation. Technique of artificial lung ventilation (mouth to mouth, mouth to nose, mouth to face mask, AMBU bag).

7. Acute respiratory disorders in combat. Pneumothorax: types, symptoms, home care.
8. Transfer of the wounded (injured) to a stable position.

Practical work (tasks) performed in class:

1. Assessment of airway patency.
2. Heimlich's reception:
3. In a vertical position
4. In a horizontal position
5. Features
6. Triple reception of Safar.
7. Ensuring patency: introduction of nasopharyngeal and oropharyngeal airways (technique of choosing the correct size of the naso and oropharyngeal tube to the victim, technique of installing airways)
8. Carrying out artificial ventilation: mouth to mouth, mouth to nose, mouth to face mask, AMBU bag.
9. Transfer of the victim to a stable position.

Topic content:

Respiratory system and respiration.

The human respiratory system is a collection of organs that provide respiration (gas exchange between inhaled atmospheric air and blood). All cells in the body must receive oxygen to convert and regenerate food nutrients carried by the blood.

Functions of the respiratory system

1. The most important function is gas exchange - the supply of oxygen to the body and the excretion of carbon dioxide or carbon dioxide, which is the end product of metabolism. Human respiration includes external respiration and cellular (internal).
2. Barrier - mechanical and immune protection of the body from harmful components of inhaled air. Air containing various impurities in the form of inorganic and organic particles of animal and vegetable origin, gaseous substances and aerosols, and also infectious agents: viruses, bacteria, etc. arrives in lungs from environment. Purification of inhaled air from impurities is carried out by means of the following mechanisms:

a) mechanical purification of air (filtration of air in the nasal cavity, deposition on the mucous membrane of the respiratory tract and excretion by secretion; sneezing and coughing);

b) the action of cellular (phagocytosis) and humoral (lysozyme, interferon, lactoferrin, immunoglobulins) factors of nonspecific protection. Interferon reduces the number of viruses that colonize cells, lactoferrin binds iron needed for bacterial activity and thus has a bacteriostatic effect. Lysozyme breaks down the glycosaminoglycans of the microbial cell membrane, after which they become non-viable.

3. Thermoregulation of the body.
4. Voice formation.
5. Smell.

Lung tissue also plays an important role in processes such as hormone synthesis, water-salt and lipid metabolism. In the developed vascular system of lungs there is a blood deposit.

The airways are divided into two sections: the upper airways (airways) and the lower airways (airways). The upper respiratory tract includes the nasal cavity, the nasal part of the pharynx and the oral part of the pharynx. The lower respiratory tract includes the larynx, trachea, and bronchial tree.

The nasal cavity, formed by the bones of the frontal part of the skull and cartilage, is lined with a mucous membrane formed by numerous hairs and cells covering the nasal cavity. The hairs retain dust particles from the air, and the mucus prevents the penetration of microbes. Thanks to the blood vessels that penetrate the mucous membrane, the air passing through the nasal cavity is cleaned, moisturized and warmed. The mucous membrane of the nasal cavity performs a protective function because it contains immunoglobulins and immune defense cells. On the upper surface of the nasal cavity, in the mucous membrane, are olfactory receptors. The nasal cavity connects to the nasopharynx through the nasal passages.

The oral cavity is the second way air enters the human respiratory system. The oral cavity has two sections: posterior and anterior.

The pharynx is a tube that originates in the nasal cavity. Digestive and respiratory tracts intersect in the pharynx. The pharynx can be called the link between the nasal cavity and the oral cavity, and the pharynx connects the larynx and esophagus. There is a pharynx between the base of the skull and 5-7 vertebrae of the neck. It concentrates a large amount of lymphoid tissue. The largest lymphoid formations are called tonsils. Tonsils and lymphoid tissue play a protective role in the body, forming a lymphoid ring (palatine, tubular, pharyngeal, lingual tonsils). The pharyngeal lymphoid ring protects the body from bacteria, viruses and performs other important functions. In the nasopharynx open such important formations as Eustachian tubes, connecting the middle ear (eardrum) with the pharynx. Infection of the ear occurs in the process of swallowing, sneezing or just from the common cold. Prolonged otitis media is associated with inflammation of the Eustachian tubes. The paranasal sinuses are limited air spaces of the facial skull, additional air reservoirs.

The larynx is the respiratory organ that connects the trachea and pharynx. In the larynx is the vocal apparatus. The larynx is located in the area of 4-6 vertebrae of the neck and is connected to the hyoid bone by ligaments. The beginning of the larynx in the pharynx, and the end - bifurcation into two tracheas. Thyroid, annular and epiglottis cartilages make up the larynx. These are large unpaired cartilages. It is also formed by small paired cartilages: carob, wedge-shaped, scoop-shaped. Joints are provided by ligaments and joints. Between the cartilages are membranes that also act as a junction. In the larynx are the vocal folds, which are responsible for the function of the voice. In the larynx before inhalation into the trachea is the epiglottis.

It closes the lumen of the trachea during the act of swallowing and advancing food or fluid into the esophagus. During inhalation and exhalation to move the respiratory mixture in the right direction, the epiglottis opens the trachea and closes the esophagus. Immediately below the epiglottis is the entrance to the trachea and vocal cords. This is one of the narrowest places in the upper respiratory tract.

Trachea. Then the air enters the trachea, which has the shape of a tube 10-14 cm long. The trachea is strengthened by cartilaginous formations - 14-16 cartilaginous half-rings, which serve as a framework for this tube, which does not allow air to be delayed by any movements of the neck.

Bronchi. From the trachea depart two large bronchi, through which air enters the right and left lungs. The bronchi are a whole system of air ducts that form the bronchial tree. The system of branching of the bronchial tree is complex, it has 21 orders of bronchi - from the widest, called "Main bronchi", to the smallest of their branches, called bronchioles. Bronchial branches are entangled in blood and lymphatic vessels. Each previous branch of the bronchial tree is wider than the next, so the whole bronchial system resembles an upside-down tree.

The lungs consist of lobes. The right lung consists of three lobes: upper, middle and lower. In the left lung there are two lobes: upper and lower. Each destiny, in turn, consists of segments. Each segment of air enters through an independent bronchus, which is called segmental. Inside the segment, the bronchial tree branches, and each of its branches ends in alveoli. Gases are exchanged in the alveoli: carbon dioxide is released from the blood into the lumen of the alveoli, and oxygen enters the bloodstream instead. Gas exchange or gas exchange is possible due to the unique structure of the alveoli. The alveolus is a bubble covered with epithelium on the inside and much encased in a capillary network. The lung tissue has a large number of elastic fibers that provide stretching and sagging of the lung tissue during the act of breathing.
The muscles of the chest and diaphragm are involved in the act of breathing. Unobstructed sliding of the lung in the chest during the act of breathing is provided by pleural leaves that cover the inside of the chest (parietal pleura) and outside the lung (visceral pleura).

The diaphragm is an unpaired broad muscle that separates the thoracic and abdominal cavities and serves to expand the lungs. Conditionally, its boundary can be drawn along the lower edge of the ribs.
Due to the complex structure of the respiratory system, damage to any of the areas (nasal cavity, larynx, trachea, bronchi, etc.) can lead to dysfunction of the human respiratory system as a whole.

The mechanism of respiration.

The movement of air in the airways is due to the work of the respiratory muscles. The main ones are the diaphragm, external and internal intercostal muscles and abdominal muscles, which provide breathing during calm breathing.

Inhalation is caused by an increase in negative pressure in the chest cavity due to an increase in its volume when the diaphragm is lowered, the ribs are raised, and the intercostal spaces are enlarged as a result of the contraction of the diaphragm and external intercostal muscles. Relaxation of these muscles creates the conditions for exhalation, which occurs partly passively (under the influence of elastic traction of the stretched lungs and due to the lowering of the ribs under the weight of the chest wall), partly due to contraction of internal intercostal muscles and abdominal muscles. Auxiliary muscles (neck, as well as almost all muscles of the torso) may be involved in breathing and difficulty breathing.
In the conditions of the basic exchange at healthy adults the respiratory rate makes 12-16 years for 1 min.

Assistance should be provided from the least aggressive procedure to the most aggressive.

Causes of airway obstruction can be: the presence of foreign (solid or liquid) bodies in the trachea or bronchi; mechanical compression of the larynx; swelling of the larynx or pharynx; spasm of the vocal cords (laryngospasm) or damage to them; depression of the tongue, tongue, soft palate; tumors of the larynx and nasopharynx, paresis of the vocal cords. Before the control of airway patency begins, the compressive clothing on the victim is unbuttoned, removable dentures are removed. In the presence of foreign bodies in the mouth and larynx, they are removed. Solid foreign bodies are removed with your fingers, wrapping them in a handkerchief, gauze, towel. Fluids (aspirated blood, gastric contents, water) are removed by creating a drainage position. The victim's body is placed face down so that the head is below the chest (small children can be lifted by the legs upside down). You can try to remove foreign bodies from the larynx: by tapping on the back with the base of the palm in the interscapular area; vigorous compression of the chest, embracing it with both hands at the level of the lower third of the sternum; compression of the upper abdomen below the xiphoid process with both hands (this technique can not be used in pregnant women and children). However, even in the absence of foreign bodies, the anatomical structures of the oropharynx (tongue, soft palate, epiglottis) become an obstacle to the passage of air into the trachea, because the relaxed muscles of the tongue and neck can not hold the root of the tongue over the posterior pharyngeal wall. To raise the tongue to the correct position, use the so-called "triple technique", which aims to ensure airway patency - bend the victim's head as far back as possible, push (shift) the lower jaw forward, open his mouth. Additionally, you can put a clothes roller under your shoulders. If a fracture or dislocation in the cervical spine is suspected (when diving in shallow water, road cases), the neck should not be stretched in the atlanto-occipital joint. In such cases, the release of the airways is achieved by pushing forward the lower jaw with the fingers of both hands of the

resuscitator. The neck and chest are kept in the same plane so as not to cause additional spinal cord injury. In case of obstruction of the upper respiratory tract at the level of the larynx or upper third of the trachea (due to the presence of a foreign body, spasm of the vocal cords, significant laryngeal edema of various origins, significant rotal trauma, fracture of the annular cartilage) cricothyroid ligament. (B) - performance of artificial ventilation (IVL) Having made sure that the airways are free, the resuscitator takes a deep breath, then presses his lips tightly to the open mouth of the victim (or embracing his nose, and in infants - both nose and mouth) and blows air (500-600 ml for an adult) into his lungs, covering the nose with his fingers. Artificial ventilation of the lungs through the nose is performed in cases where it is difficult to achieve sealing when breathing from mouth to mouth, as well as injuries to the lips, mouth, lower jaw. At the beginning of resuscitation, 3-5 deep breaths are always performed in a row, and then they switch to a rhythm: 1 breath in 5 seconds (ie 12 breaths in 1 minute), in children - up to 24-30 breaths in 1 minute. Inhalation should not be forced too much, because when the airways are partially blocked, the stomach swells, which can lead to regurgitation (passive flow of stomach contents into the mouth) and aspiration of gastric contents into the lungs. Chest movements in the stroke of the injection (controlled visually) are a sign of proper application of the method. With this method of breathing, air can enter the stomach, which is manifested by bloating of the epigastric region. The air is removed by gently pressing the palm under the xiphoid process of the sternum. To prevent regurgitation, you can use the technique of Sellik - to press on the trachea at the location of the annular cartilage in the direction of the spine (while blocking the opening of the esophagus). At regurgitation the patient is turned to the side, the finger frees a mouth and a throat from gastric contents and resuscitation is continued. The main sign of the effectiveness of ventilation is the movement of the chest on inhalation and exhalation. (C) - support of artificial circulation The resuscitator stands on the side of the victim and puts the brush of one hand on the lower third of the sternum, and the brush of the other - on top, across the first. The correct choice of the point of pressure prevents the occurrence of dangerous complications (fracture of the sternum, ribs, damage to the pleura, lungs, pericardium, heart). Rhythmic shocks of the proximal part of the hand, without bending the arms at the elbows, press on the sternum in order to shift it towards the spine by about 4-5 cm in adults (3-4 cm in children). During heart massage in adults, it is advisable to use not only the strength of the hands, but also the weight of the torso. After pressing on the sternum, the hands are not detached from the chest, but do not press on it to allow it to return to its original state. The duration of the periods of compression and relaxation are equal, the number of chest compressions should be in the range of 60-80 per 1 minute. In children under 10 years of age, heart massage is performed with one hand with a frequency of 80 presses per minute, in newborns - with two (II and III) fingers with a frequency of 120 compressions per 1 minute. Precordial stroke - used in the elderly if the resuscitator directly observed on the monitor the onset of ventricular fibrillation or ventricular tachycardia without a pulse, although this measure is meaningful only in the first 10 seconds of circulatory arrest. There are two variants of this stage of SLCR. At the first - resuscitation is carried out by one person and after each 2-3

blows of air makes 10-15 compressions of a thorax. In the second option, resuscitation is performed by two resuscitators, one of which performs mechanical ventilation, and the other - a closed heart massage (after air injection, 5 chest compressions are performed). The correctness of the massage is controlled by the resuscitator, who performs mechanical ventilation (in the presence of pulse shocks, synchronous with the pressure on the chest). Every 2 minutes, the SLCR is stopped for a few seconds to check for pulse in the main arteries. If resuscitation is started in time and performed correctly, there should be signs of its effectiveness - narrowing of the pupils, restoration of eyelid tone (eyelid closure), discoloration of the skin and mucous membranes, pulse wave in the peripheral and central arteries, spontaneous respiratory movements. It is important to remember that only the victim's breath is a sign of spontaneous ventilation, and the presence of a pulse in large vessels - adequate blood circulation. Heart massage and mechanical ventilation should be continued.

WARNING!
Do not attempt to restore airway patency if
the wounded man is conscious and breathing well on his own.
Allow the wounded to adopt the most comfortable position, which best ensures the patency of his airways - half-sitting.
In order for a health instructor to learn how to properly provide extended home medical care, he must know the technique of restoring breathing in the wounded in combat (shelter sector) and non-combat conditions.
Checking the reaction of the wounded to stimuli.
If the wounded person appears unconscious, check his reaction to stimuli. Ask him out loud but softly, "Are you okay?" Also gently shake or pat him on the shoulder. If the wounded person does not respond, you need to lay him on his back and open his airways.
Placement of the wounded
If the wounded person is not lying on his back, lay him on his back. This position will allow you to better assess the condition of the wounded and airway patency.
NOTE: This method of turning the wounded is used to minimize possible further damage to the spine if the head, neck or back is injured.

1. Get on your knees next to the wounded so that your knees are near his shoulders. There should be enough space between you and the wounded person so that you can roll him over to you.
2. Raise the wounded man's hand, which is closer to you, and place it behind his head.
3. Correct the wounded man's legs so that they lie side by side and straight (or almost straight).
4. Put one hand under the head and neck of the wounded. With this hand you will support his head until you turn him over.
5. With your free hand, pull the wounded man through the back and grab the clothes in the area of his axilla.

6. Calmly and evenly pull the wounded man by his clothes. Keep the wounded man's head and neck level with his torso and turn him over.
7. Turn the wounded completely, keeping his head and neck at the same level.
8. After the wounded man is turned on his back, put his hands along his torso.

NOTE: Do not leave a wounded person lying on his back if you need to leave him to help other wounded. If you need to leave the wounded, place him in a safe position on his side so that the airway remains open.

Opening the airway of the wounded (by throwing his head and lifting his chin).
When the wounded person faints, all his muscles relax. This relaxation can cause the root of the injured person's tongue to sink into the throat and block the airway. If you pull out your tongue and remove the obstacle, the wounded person's breathing can resume on its own. The following is a standard method of opening the airway - throwing the head and lifting the chin.

NOTE: Even if the wounded person is breathing, tilting the head and lifting the chin will help keep the airway open and make breathing easier.

According to the algorithm for restoring airway patency, the sanitary instructor must (Fig. 54):
1). Get on your knees at shoulder level of the wounded.
2). Put one hand on his forehead and press firmly with your palm, throwing his head back, placing the other hand under his neck. At the same time there is a partial opening of a mouth, and sometimes and a sagging of a chin.
3). Then grab the lower jaw by the corners of the jaw with both hands, open your mouth a little more and bring the lower jaw forward.
4). Move your chin forward until your upper and lower teeth almost collide. The mouth should not be closed as this may interfere with breathing if the nasal airways are blocked or damaged. If necessary, you can lightly press the lower lip of the wounded with your thumb to keep his mouth open.

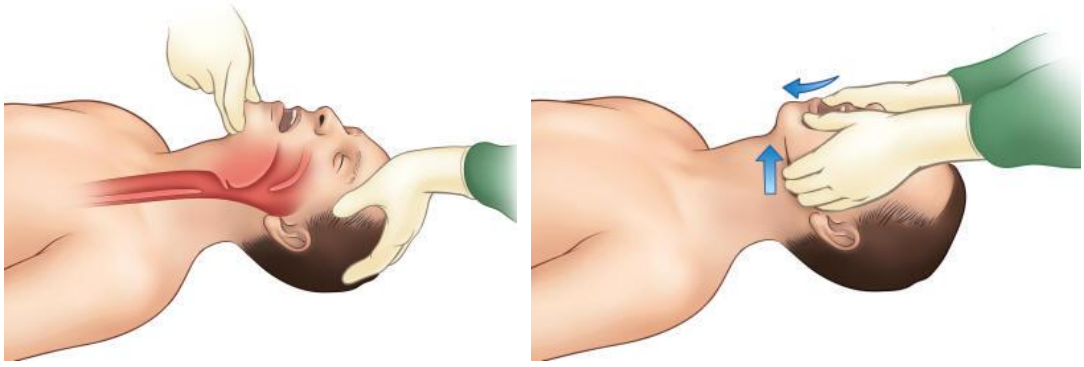


Fig. 1. The method of throwing the head and lifting the chin

WARNING:

Do not lift the lower jaw with your thumb. Do not apply too much pressure on the soft tissues under the chin, as this may block the airways. Do not cover the mouth of the wounded completely.

5). If foreign objects (broken teeth, dentures, fragments of facial bones or vomit) are found in the mouth of the wounded person, which may block the airways, they should be removed with fingers wrapped in cloth (bandage) as soon as possible.

Checking the presence of respiration in the wounded.
Keeping the wounded in a position with his head down and his chin raised, the health instructor should lean his ear to his nose and mouth, and his eyes watch the movement of the chest and abdomen. At the same time, keep your head tilted back and your chin raised. So, checking the presence of respiration in the wounded:
See if the chest is moving.
Listen for air exhalation.
Feel the flow of air on your cheek.

IDENTIFY THE ACTION NEEDED
If the victim is conscious and breathing independently, count the number of inhales / exhales in 15 seconds. If the respiratory rate is less than two respiratory cycles in 15 seconds (one respiratory cycle is one breath and one exhalation), the nasopharyngeal airway rises and puts the wounded in a sideways position.
If the wounded person is conscious and breathing on his own, but makes snoring or gurgling sounds, the nasopharyngeal airway rises and the wounded man is placed in a sideways position.
If the wounded person is unconscious, the nasopharyngeal airway stands up and puts him in a sideways position.
If the wounded person is not breathing and has no penetrating chest injuries, check the pulse in the carotid artery.
If there is no pulse in the carotid artery, check the reaction of the pupils to light. In case the pupils react to light - narrow, start doing artificial respiration and indirect heart massage. When the pupils do not respond to light - wide, stop trying to save.
If the wounded person is not breathing, he has a penetrating (open) chest injury, and he is not trying to breathe, artificial respiration should not be done.

Procedure for checking the pulse on the carotid artery.
Continue to keep the airway of the wounded open, pressing his forehead with one hand;
find the carotid artery on the side of the wounded man's neck that is closer to you. One carotid artery is located in the recess to the left of the respiratory throat (trachea), the second - in the same recess on the right;
with the index and middle fingers of the free hand find the artery in the fossa near the cadix;
after you find the artery, gently press it with your index and middle fingers and listen to the pulse for 5-10 seconds.

CAUTION: Do not use your thumb to measure your heart rate. If you use your thumb, you can be wrong to take the pulse of the injured pulse in your own thumb.

If the wounded person began to breathe independently, the nasopharyngeal airway got up if necessary. The nasopharyngeal airway is used if the wounded person is unconscious, if his breathing rate is less than twice in 15 seconds, or if the injured person makes snoring or gurgling sounds.
Continue to give artificial respiration until the wounded person begins to breathe on their own, or until the pulse stops listening, or until the head of your unit or a senior physician tells you to stop.

Introduction of a nasopharyngeal airway.
The nasopharyngeal airway is used if the wounded person is unconscious or may lose consciousness, if his breathing rate is less than twice in 15 seconds, or if the wounded person makes snoring or gurgling sounds.

REMEMBER!
The nasopharyngeal airway should not be used if the injured person has a damaged palate or a deep nasal injury.
Use the nasopharyngeal airway with caution if clear fluid flows from the nose or ears and there are bruises behind the ears. This may be cerebrospinal fluid, indicating a possible fracture of the skull base.

Before inserting the air duct, make sure that the wounded person is lying on his back face up.
Determine the size of the tube (Fig. 55). To select the desired size of the nasopharyngeal airway, it is necessary to determine the distance from the tip of the nose to the earlobe.
Lubricate the air duct with sterile gel (lubricant) or water.

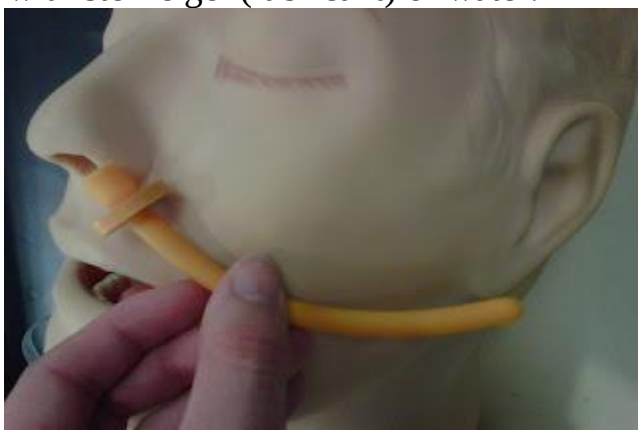


Fig. 2. Determining the size of the tube

Technique of introduction of a nasopharyngeal airway (fig. 56):
1) open the nose of the wounded, forming a "pig's piglet";
2) usually for the first attempt use the right nostril;

3) the tip of the air duct in the nostril is cut at an angle to the nasal septum (the septum in the nose that separates the nostrils), respectively, the bevel (pointed end) will be adjacent to the nostril;
4) set the axis of the duct perpendicular to the face, then insert the duct into the nose with the concave side to the hard palate;
5) carefully guide the air duct under the lower nasal cavity, parallel to the palate on the posterior pharynx with light (10-30 degrees) rotational movements until the flange end is pressed against the patient's nostril;
6) make sure that the airway is inserted correctly, feeling the air exhaled through the outer opening of the airway, as well as check that you see the distal end of the airway behind the palatine tongue of the patient;
7) fix the air duct with adhesive tape or bandage;
8) puts the wounded in a stable position.

REMEMBER! *If there is no damage to the right nostril, start to put a nasopharyngeal airway in it. You can only make 2 attempts. If it does not work, make 2 more attempts in the left nostril. If it is impossible to install a nasopharyngeal airway, attempts to stop.*

WARNING! Never force the air duct into the wounded person's nose. If you feel resistance, pull out the duct and try to insert it into another nostril. If it is not possible to enter the air duct into any nostril, place the wounded in a sideways position (stable position).

Transfer of the wounded to a stable position.

Stable position on the side (Fig. 32) allows blood, mucus and vomit to flow out of the mouth of the wounded without blocking the airways. It also prevents the tongue from accumulating and blocking air access. To place the wounded in a stable position, the wounded should be turned to the side.

Technique of transferring the wounded to a stable position:

Place the upper arm of the wounded palm on the opposite shoulder (on which the body will roll over).

Place the lower arm of the wounded (on the side on which the body will turn), up next to the head, lifting it up along the body.

Bend the wounded leg of the wounded (if it is not damaged) to balance his position.

Hold a stable position of the lower arm (in clothing) with your own foot, press the elbow of the wounded to his head.

With one hand, take the wounded man by the shoulder, and with the other hand by the knee of the upper leg - pull jerkily on yourself. Turn the wounded to the side.

REMEMBER!

If there are signs of neck injury, hold the neck and shoulder with your fingers at the same time.

If there are signs of injury to the upper leg, do not bend the leg of the injured in the knee, it should be laid flat across the lower leg.

If there are signs of a spinal or pelvic injury, hold the injured person's neck and shoulder with one hand at the same time, and with the other hand, take your back as far as possible behind your trouser belt and turn your body over.

After the coup, check the position of the wounded man's head - it should lie on the lower arm, the back of the palm of the upper hand under the cheek, the elbow of the upper arm and the knee of the upper leg should rest on the ground.

WARNING! After turning to a stable position, check whether the airways are open!

Artificial ventilation - mechanical ventilation (CMV) - a method by which the damaged lung function is restored and maintained - ventilation and gas exchange.

The essence of artificial lung ventilation (artificial respiration) is the forced introduction of air into the lungs. It is used in cases of respiratory arrest, as well as in the presence of irregular or almost imperceptible breathing. Artificial lung ventilation is designed to solve the problem that is normally performed by the respiratory muscles. This task includes providing oxygenation and ventilation (removal of carbon dioxide) of the patient's lungs. With a working heart, effective artificial respiration quickly improves the patient's condition. The skin becomes a natural color, a pulse appears, blood pressure begins to appear.

The most effective artificial respiration, or mechanical ventilation, is performed with the help of special devices for artificial respiration. In the absence of such devices, artificial lung ventilation is carried out by the method of "mouth to mouth". In this case, the victim's lungs get about 1.5 liters of air, equal to the volume of one deep breath.

Indications for mechanical ventilation

Ventilation is indicated in cases where there are acute respiratory disorders leading to hypoxemia and (or) hypercapnia and respiratory acidosis. Analysis of the gas composition of arterial blood is the most accurate method of assessing lung function, but, unfortunately, is not always possible, especially in emergencies. In these cases, the indications for mechanical ventilation are clinical signs of acute respiratory disorders: severe shortness of breath, accompanied by cyanosis (bruising of the skin and mucous membranes due to high levels of reduced hemoglobin in the blood); sharp tachypnea (temporary cessation of respiratory movements) or bradypnea (pathological decrease in respiratory rate, which develops with a decrease in the excitability of the respiratory center); participation of the auxiliary respiratory muscles of the chest and anterior abdominal wall in the act of breathing; pathological respiratory rhythms. Transfer of the patient to mechanical ventilation is necessary at the respiratory insufficiency which is followed by disturbances; in coma; earthy skin; increased sweating or changes in the size of the pupils.

Thus, artificial lung ventilation is carried out:

• in all cases of severe shock, hemodynamic instability, progressive pulmonary edema and respiratory failure caused by bronchopulmonary infection;

• with traumatic brain injury with signs of respiratory and / or unconsciousness (due to the need to treat cerebral edema with hyperventilation and adequate oxygen supply);

• with severe trauma to the chest and lungs, which leads to respiratory failure and hypoxia;

• in case of drug overdose and sedation poisoning (immediately, because even minor hypoxia and hypoventilation worsen the prognosis);

• in case of ineffectiveness of conservative ODN therapy caused by asthmatic status or exacerbation of COPD.

There are two main types of ventilation: negative pressure ventilation and positive pressure ventilation.

The first ventilators copied the mechanism of human respiration. They worked on the principle of ventilation with negative pressure.

Ventilation with negative pressure is carried out by external action on the walls of the thoracic cavity (chest or diaphragm).

External ventilation devices work on the gravitational or pneumatic principle.

Gravitational include a "rocking bed" (the patient is placed on his back on a bed that swings relative to its transverse horizontal axis. i bed diaphragm is lowered, allowing air to enter the lungs).

Pneumatic include:

- Devices such as "iron lungs". The shell of the respirator embraces the torso below the neck, and the negative pressure created under the shell leads to a pressure gradient and gas flow from the upper respiratory tract into the lungs. Inhalation occurs by creating a vacuum around the chest, and exhalation occurs passively.

- Devices with a cuirass. Implementation of mechanical ventilation by creating cyclic changes in air pressure around the chest and upper abdomen of the patient. The principle of their operation is the same as that of the "iron lungs", but the ventilation effect is smaller.

- Devices with pneumatic chest straps. Ventilation is performed by creating cyclic changes in air pressure in the belts, which are applied to the chest or upper abdomen of the patient. Ventilation is carried out by active exhalation (injection of air into the belt) and passive inhalation (suction of air from the belt).

This mode makes it difficult to access the patient's body and is unacceptable during surgery. Not currently used.

Another way to ensure gas exchange is electrical stimulation of respiration, which is used infrequently (the principle of action depends on the control of ventilation by periodic irritation of the diaphragmatic nerves or diaphragm by electrical impulses).

Positive pressure ventilation can be invasive or non-invasive.

Ventilation with tracheal intubation is called invasive methods.

Non-invasive methods of ventilation.

In the late 80's of XX century for long-term ventilation of the lungs was proposed a new method of respiratory support - non-invasive, or auxiliary, ventilation with nasal and facial masks (NSVL).

To fully understand the methods of non-invasive ventilation by positive pressure, it is necessary to consider the process of respiration.

During spontaneous inspiration, the contraction of the respiratory muscles decreases the intrathoracic pressure and becomes lower than atmospheric, which promotes the flow of air into the lungs. The amount of gas entering the lungs with each breath is determined by the magnitude of the negative pressure in the airways and depends on the strength of the respiratory muscles and the pliability of the lungs and chest. During spontaneous exhalation, the airway pressure becomes weakly positive. Thus, inhalation during spontaneous (independent) breathing occurs at negative pressure, and exhalation - at positive pressure in the airways. The so-called average intrathoracic pressure in spontaneous breathing, calculated by the area above and below the zero line of atmospheric pressure, will be equal to zero during the entire respiratory cycle.

Any mechanical breath can be described based on the answers to three questions: how it begins, how it is carried out and how it ends. The beginning of inspiration is called triggering. Pressure triggering is the beginning of mechanical inspiration when the airway pressure drops below a set level, called the trigger sensitivity. Flow triggering is performed when signs of air flow created by the patient's respiratory attempt appear in the respiratory circuit. The third type of triggering is time. In this case, the respirator begins mechanical inspiration without taking into account the patient's respiratory attempts - at the end of the period set by the doctor, the time elapsed since the last previous breath.

Ventilation by positive pressure can be divided into two main types:

• ventilation with intermittent positive pressure (VPPD; intermittent positiv pressure ventilation - IPPV of English authors), ie with active inhalation and passive exhalation,

• ventilation with intermittent positive-negative pressure (VPPOD; intermittent positive-negative pressure ventilation - IPNPV, NEEP of English authors), ie with active inhalation and active exhalation.

Ventilation with intermittent positive pressure has two types:

a) ventilation with intermittent positive-zero pressure (Zero end-expiratory pressure - ZEEP English authors), in which passive exhalation occurs freely, without delay, and the patient's lungs fall on exhalation to the size of the functional residual capacity,

b) ventilation with intermittent positive-positive pressure (Positive end-expiratory pressure - PEEvY of English authors), in which due to resistance to passive exhalation (or back pressure) the patient's lungs during exhalation are not emptied to functional residual capacity. At the same time there are constant on a sign, but various on size pressures at the end of an inhalation and an exhalation.

The most widespread methods of mechanical ventilation, in which a gas mixture with a given volume or with a given pressure is injected into the patient's airways with the help of a respirator. At the same time in respiratory tracts and lungs

positive pressure is created. At the end of artificial respiration, the supply of gas mixture to the lungs is stopped and exhalation occurs, during which the pressure decreases. These methods are called Intermittent positive divssure ventilation (IPPV). With mechanical ventilation with intermittent positive pressure, the average intrathoracic pressure will be positive, because both phases of the respiratory cycle - inhalation and exhalation - are carried out with positive pressure.

High-frequency mechanical ventilation

Despite the widespread use of HF ventilation, they are mainly used as adjunctive methods in respiratory therapy. As an independent type of HF ventilation to support gas exchange is impractical. Partial use of sessions of this method lasting 40 minutes can be recommended to all patients who undergo mechanical ventilation for more than 24 hours. The combination of HF ventilation with traditional ventilation - intermittent HF ventilation - is a promising method of maintaining adequate gas exchange and prevention of pulmonary complications in the postoperative period. The essence of the method is that the mode of HF ventilation is paused to reduce the pressure in the airways to the desired value. These pauses correspond to an exhalation phase at traditional IVL. Pauses are created by turning off the electromagnetic transducer of the HF ventilator for 2-3 of 6-10 times per minute under the control of blood gas levels.

High-frequency ventilation is considered to be mechanical ventilation with a respiratory cycle frequency of more than 60 per minute. This value is chosen because at the specified frequency of switching the phases of the respiratory cycles is the main property of HF ventilation - constant positive pressure (PPT) in the airways. Naturally, the frequency limits from which this property is manifested are quite wide and depend on the conditions, the extensibility of the lungs and chest, the speed and method of injection of the respiratory mixture and other reasons. However, in the vast majority of cases it is at the frequency of respiratory cycles of 60 per minute in the airways of the patient creates PPT.

Classification of respirators

There is currently no unified and generally accepted classification of ventilators. It usually involves dividing them into groups of a number of characteristics: the type of energy used during the operation of the fan, the method of switching the phases of the respiratory cycle, the principle of the alarm system and so on. On the other hand, ventilators are divided by purpose (stationary, transport), by design (mobile, transported, portable), by the way the mechanism moves (centralized source of compressed gas, internal or external compressor, bellows, etc.) and so on.

The basis of the proposed classification of ventilators - the place and purpose of their use. Depending on this, all respirators can be divided into several classes:

1. devices for respiratory support at home and hospices (non-resuscitation models), as well as transport respirators;

2. apparatuses for standard respiratory support in non-specialized intensive care units (basic models);

3. devices for respiratory support in patients with severe respiratory disorders in non-specialized intensive care units (models with advanced functions);

4. devices for respiratory support in respiratory centers and specialized intensive care units in patients with severe respiratory disorders, usually in combination with other manifestations of multiple organ failure (higher level models);

5. respiratory equipment for special purposes - devices for high-frequency mechanical ventilation, devices for the supply of nitric oxide, helium-oxygen mixture, extracorporeal oxygenation and removal of carbon dioxide.

Consider in more detail the technical features of respirators of different groups.

Non-resuscitation and transport models

Features of these respirators are:

• the need for only one source of compressed gas - oxygen. The air is sucked in from the outside environment or provided by a low pressure system - a blower;

• simplified system of preparation of oxygen-air mixture. As a result, the oxygen content is approximate and there is no possibility of fine-tuning its concentration;

• small weight and simplicity of management;

• lack of ability to create positive airway pressure - PEEP. If this is possible, it is carried out by means of a mechanical petal valve inhalation-exhalation. The valve device does not allow to maintain high accuracy of the generated PEEP. During long-term ventilation, the valve petals may stick together under the influence of exhaled moisture and cease to function adequately. The presence of a petal valve does not allow you to include in the circuit of the respirator active humidifier. Even short-term use of an active humidifier should be ruled out due to the risk of obstruction of the exhalation valves with the development of hypoxia and hypercapnia. The only way to provide hydration of the respiratory mixture is to use a filter-heat exchanger;

• minimum modes of ventilation and alarms. The number of alarm modes is limited. One of the reasons for the limitations is the lack of a flow sensor in the exhalation knee of the respirator, which does not allow to measure the correspondence of the flow and volume of air entering the lungs set by the doctor. As a rule, in the respirators of the described group there is only a pressure sensor in the respiratory circuit. The specified sensor provides control only over the most necessary parameter: excess pressure in respiratory tracts.

Basic models

Features:

• use of two compressed gas systems - oxygen and compressed air. These two compressed gas systems are necessary to ensure accurate mixing of the oxygen-air mixture in the specified proportions;

• the presence of additional control of the concentration of inhaled oxygen. The control can be carried out mechanically by means of the plate valve or the special oxygen sensor;

• the presence of an exhalation valve located on the respirator distal to the patient. In basic models, the exhalation valve is passive because it opens with exhaled air and closes at the end of exhalation. His device allows you to accurately dose the value of PEEP. The design of the valve provides both use of the heat-and-

moisture exchanger, and, if necessary, and active humidification of respiratory tracts by means of the humidifier built in a respiratory contour;

• the presence of pressure and flow sensors. The use of two types of sensors allows to provide the necessary sound and light alarms in case of inconsistency of the respirator settings and the actual parameters of the patient's ventilation;

• the possibility of mechanical ventilation according to two main algorithms - Assist Control and SIMV. Mandatory breaths in each of these algorithms are provided both in the mode of volume ventilation (Volume Control), and ventilation on pressure (Pressure Control). Assistive breaths using the SIMV algorithm are supported in Pressure Support or CPAP modes. There is a possibility of apnea ventilation, ie mechanical ventilation in the absence of mandatory or auxiliary breaths for a certain period of time;

• the ability to create pauses for inhalation and exhalation. Pauses are created to assess the pressure of the plateau on inspiration and internal PEEP (auto-PEER);

• ensuring the synchronicity of the patient's respiratory attempts and the operation of the ventilator with the help of flow and pressure triggers. In basic models, the trigger response time is usually 300-400 ms.

Models with advanced features

In addition to the options presented in the basic models, the devices of this group must additionally have:

• improved ability to synchronize the patient's respiratory attempts with the work of the respirator. The response time of the trigger to the patient's respiratory attempt should not exceed 100 - 150 ms. At this value of the response time, the patient does not respond to the delay of inspiration. In some models, such a short response time is realized using two sensors: flow - on the inhale and exhale. In other modern respirators, the flow trigger operates without a base flow;

• graphical representation of the curves of volume, flow and pressure in the airways;

• possibility of change of speed and a profile of a stream when carrying out ventilation in the modes on pressure. Regulation of these parameters is required to improve the coincidence of the patient's breathing pattern and the work of the respirator;

• active exhalation valve. Its opening and closing are regulated by the microprocessor of the respirator separately from the inspiratory valve. It allows to carry out IVL with two levels of pressure in respiratory tracts (BIPAP type);

• dual ventilation modes - PRVC and possibly VAPS;

• automatic measurement by the respirator of airway resistance, dynamic compliance, as well as the ability to determine the activity of the patient's respiratory pattern.

Top level models

Large specialized resuscitation departments should be equipped with high-level respirators. However, due to their high cost, the number of higher-level devices in the respiratory park should not exceed 20-30%. The use of such a technique is justified only in the extreme severity of respiratory disorders, as well as in the defeat

of other systems, such as a combination of traumatic brain injury and severe abdominal compartment syndrome.

In addition to the capabilities of models with advanced functions, the following requirements are set for high-end respirators:

• ability to maintain spontaneous breathing of the patient in any phase of the respiratory cycle and in any mode of ventilation (so-called virtual Pressure Support);

• the ability to change exhalation criteria in Pressure Support mode;

• the possibility of multicomponent monitoring of pulmonary mechanics using tracheal and esophageal sensors;

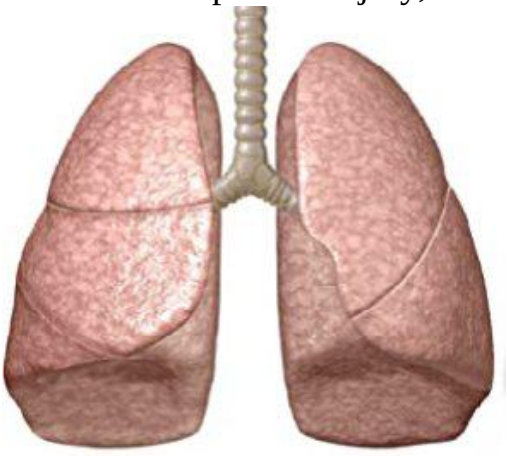
• availability of one or more integrated programs to determine the static pressure-volume curve, lung recruitment, automatic determination of optimal ventilation parameters and weaning the patient from the respirator.

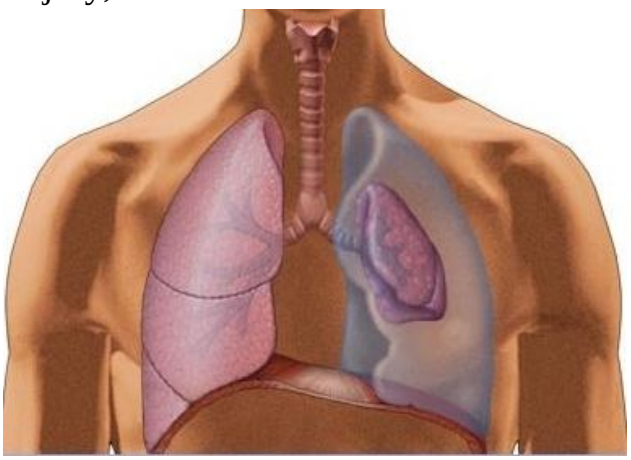
The ventilator consists of the following components:

• control center;
• sources of medical gases;
• oxygen and air mixer;
• devices for moisturizing and cleaning the respiratory mixture;
• respiratory circuit with inhalation and exhalation valves;
• flow and pressure control sensors.

The main problem solved by the respirator can be formulated as follows: the respirator must mix in the specified proportions of air and oxygen, clean and humidify them, and then apply under positive pressure in the airways of the patient according to a certain algorithm. In this case, the ventilator must monitor the safety of all actions performed by it.

Pneumothorax - accumulation of air in the pleural cavity and increased pressure in it. Air can enter the pleural cavity with injuries that penetrate the chest and with a closed explosive injury, bruise injury, rib fractures.





There are open, closed and tense (valve) pneumothorax.

A patient with a penetrating chest injury or a closed injury (blast wave, shock) who has difficulty breathing with forced exhalation is considered to be in a state of intense pneumothorax until proven otherwise.

At an open pneumothorax the pleural cavity communicates with the external environment therefore in it the pressure equal to atmospheric is created. That is, during inspiration the air additionally enters the pleural cavity, and during exhalation it leaves in the same amount. At an open pneumothorax there is no accumulation of air in a pleural cavity. However, the lung falls, because the most important condition for the straightening of the lung is the negative pressure in the pleural cavity. The sleeping lung is switched off from breathing, there is no gas exchange, the blood is not enriched with oxygen. May be accompanied by hemothorax - blood in the pleural cavity.

Following the algorithm "Providing home care for penetrating chest damage", open pneumothorax, in the presence of a hole in the chest wall, should be transferred to closed by applying an occlusive dressing (Figs. 59, 60).

Ask the wounded to take a deep breath. If there is no foreign object in the wound, press your palm to the wound and close the air access to it. If the wound is penetrating, close the inlet and outlet wounds.

Cover the wound with an airtight bandage, for example, you can use a piece of plastic bag or plastic wrap. If this is not at hand, take a piece of cloth or something from clothes and lubricate the surface of the fabric with Vaseline. Secure the bandage with adhesive tape around the perimeter on a deep exhale.

Technique of applying a special occlusive dressing:

Open the package with the occlusive dressing, wipe the skin around the wound with a napkin from the kit or clothing of the wounded, peel off the occlusive film, apply to the wound on exhalation with a sticky side so that the wound was in the center of the film. Repeat the second occlusive dressing for the outlet (if any). If the occlusive dressing has a valve, place the valve in the projection of the wound opening.

In case of deterioration of the wounded after applying an occlusive dressing without a valve, it is necessary to:

peel off the edge of the occlusive dressing and restore the condition of the open wound opening. If this does not help, then the wounded need immediate needle decompression.

Valve pneumothorax differs from open pneumothorax in that during exhalation the connection of the pleural cavity with the external environment is reduced or completely stopped due to tissue displacement ("valve cover"). Therefore, during inhalation, more air enters the pleural cavity than is released during exhalation. Thus, during respiration there is a constant increase in the amount of air in the pleural

cavity. Along with this, with each breath increases the displacement of the mediastinal organs in the opposite (healthy) direction.

Symptoms:

existing chest injury or closed injury (stroke);

increasing difficulty breathing with forced exhalation;

respiratory rate - 30 per minute. or more;

chest asymmetry during respiration, the injured side is dilated and not breathing;

cyanosis (bruising) of the nasolabial triangle;

filling the veins of the neck;

displacement of the trachea in a healthy direction;

forced to sit outside the wounded (if conscious).

Immediate recognition and treatment of severe pneumothorax are important measures to save lives in combat. Chest asymmetry during respiration (injured side dilated and not breathing), filled jugular veins, tracheal displacement, attenuation of respiratory sounds, increased resonance in the affected half of the chest and hypotension are important signs of intense pneumothorax. The wounded man needs immediate needle decompression.

Providing home care:

Decompression of the chest on the side of the injury is performed using a needle / catheter size 14 according to the algorithm of decompression in intense pneumothorax.

Decompression technique:

Determine the location of the decompression needle:

2nd or 3rd intercostal space along the midclavicular line;

5th or 6th intercostal space along the mid-axillary line.

2. Treat the operating field with an alcohol swab.

3. Clearly but carefully insert the needle at an angle of 90 degrees just above the upper edge of the rib, through the skin and pleura until you feel a failure and air outlet or a clear feeling that air is coming out. The air should come out freely (if not, then you are not in the pleural cavity).

REMEMBER! The lower part of the rib should not be affected: there is a high probability of damage to the vascular-nervous bundle.

4. Secure the needle with your hand and guide the catheter along the needle into the chest until it stops at the surface of the body.

5. Remove the needle, holding the catheter in place.

6. Secure the catheter with adhesive tape or other dressings.

7. Check for respiratory noises and constantly monitor the victim.

8. Evacuate the victim lying on the injured side or sitting in the first place.

Complications when using a decompression needle:

lung damage;

pneumothorax;

blood loss caused by damage to the intercostal artery or vein.

Transfer of the wounded to a stable position.

Stable position on the side (Fig. 32) allows blood, mucus and vomit to flow out of the mouth of the wounded without blocking the airways. It also prevents the tongue from accumulating and blocking air access. To place the wounded in a stable position, the wounded should be turned to the side.

Technique of transferring the wounded to a stable position:

Place the upper arm of the wounded palm on the opposite shoulder (on which the body will roll over).

Place the lower arm of the wounded (on the side on which the body will turn), up next to the head, lifting it up along the body.

Bend the wounded leg of the wounded (if it is not damaged) to balance his position.

Hold a stable position of the lower arm (in clothing) with your own foot, press the elbow of the wounded to his head.

With one hand, take the wounded man by the shoulder, and with the other hand by the knee of the upper leg - pull jerkily on yourself. Turn the wounded to the side.

REMEMBER!

If there are signs of neck injury, hold the neck and shoulder with your fingers at the same time.

If there are signs of injury to the upper leg, do not bend the leg of the injured in the knee, it should be laid flat across the lower leg.

If there are signs of a spinal or pelvic injury, hold the injured person's neck and shoulder with one hand at the same time, and with the other hand, take your back as far as possible behind your trouser belt and turn your body over.

After the coup, check the position of the wounded man's head - it should lie on the lower arm, the back of the palm of the upper hand under the cheek, the elbow of the upper arm and the knee of the upper leg should rest on the ground.

WARNING! After turning to a stable position, check whether the airways are open!

In the final part of the lesson, the platoon commander summarizes the lesson, answers questions and checks how the personnel of the unit understood the above material.

Materials for self-control:

TEST QUESTIONS

1.You have started to help the victim at the scene. He is unconscious and lying on his stomach. You turned him on his back. What will be your next action?

A. Ensure patency of the upper respiratory tract

B. Determine if the victim is breathing. *

C. Check the victim's pulse.

D. Check the victim for bleeding.

C. Perform the Heimlich reception *

D. Open your mouth, remove foreign bodies.

E. Move the child to a stable position.

2. What is the peculiarity of performing Heimlich reception to a pregnant woman:

A. Performed in a horizontal position

B. Reception is not performed

C. When performing the reception, the chest is compressed *

D. No features

E. When performing the reception - lean forward more

3. Triple Safari has the following components:

A. Bending the head, bringing the lower jaw forward and opening the mouth *.

B. Bending the head in the atlanto-occipital joint, bringing the lower jaw forward and installing the airway.

C. Removal of the lower jaw, opening the mouth, fixing the tongue with a pin to the cheek.

D. Extension of the head, opening of the mouth, aspiration of the contents of the oral cavity.

E. Opening of the mouth, aspiration of the contents of the oral cavity, installation of the airway.

4. If a cervical spine injury is suspected, the following manipulation cannot be performed to ensure airway patency:

A. Apply a rigid neck collar
B. Bring the lower jaw forward
C. Open your mouth
D. Perform head flexion in the atlanto-occipital joint *
E. Perform any manipulation of the head and neck.

5. At carrying out artificial ventilation of lungs "mouth to mouth" it is not necessary to fulfill the following conditions:

A. Press the palm of the hand on the forehead, fingers cover the nose
B. Bring the lower jaw forward and up, open the mouth with the first finger
C. Clean the mouth of foreign substances
D. Seal the victim's mouth tightly with your lips, inhale
E. All of the above

6. The oropharyngeal tube is selected correctly if its size corresponds to the following size of the victim:

A. From the corner of the mouth to the earlobe
B. From the corner of the mouth to the corner of the lower jaw
C. From the nose to the corner of the lower jaw
D. From the corner of the mouth to the atlanto-occipital joint
E. No correct answer

7. A man received a penetrating chest injury during a road accident. Complains of pain, shortness of breath. Gradually the general condition worsens. What condition did the victim have?

1) Closed pneumothorax.
2) Open pneumothorax.
3) Intense pneumothorax.
4) Hemothorax.
5) Cardiac tamponade.

8. A man received a penetrating chest injury during a road accident. Complains of pain, shortness of breath. Gradually the general condition worsens. Your actions.

A. Close the wound with a normal aseptic bandage.
B. Close the wound with an occlusive dressing.
C. Perform a chest x-ray.
D. Transfer a tense pneumothorax to an open one.
E. There is no correct answer.

Literature

Basic references

1. Medicine of emergency situations: textbook for students of higher medical educational establishment of IV level of accreditation/ V.V. Chaplyk, P.V. Oliynyk, S.T. Omelchuk, V. V. Humenyuk. - Vinnytsia: Nova Khuna, 2012. – 343 p.

Additional references:

1. Accident and emergency medicine: study guide/ O. M. Pronina, V. V. Shevchenko, S. I. Danylchenko; Ministry of Public Health of Ukraine, Central Methodical Office, UMSA. – Poltava: ASMI, 2015. – 145 p.
2. Hospital surgery /Edited by L. Kovalchuk, V. Saenko, G. Knyshov et al. – Ternopil: Ukrmedkniga, 2004. – 472 p.
3. Bullok B. Pathophysiology and Alterations I Function. – Illinois Boston-London: Second EditionGlenviev, 1988. – 521 p.
4. The Washington Manual of Sugery/ Third Edition/ Gerard M. Doherty, M. D., 2002. – 777 p.
5. Short Practice of Surgery/ 24th Edition/ R. C. G. Russel., 2004. – 1552 p.

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