MINISTRY OF HEALTH OF UKRAINE

ODESA NATIONAL MEDICAL UNIVERSITY

Faculty Medical №1

Department of simulation medical technologies

CONFIRMED by
Vice-rector for scientific and pedagogical work

_____ Eduard BURYACHKIVSKY

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METHODICAL RECOMENDATION FOR ACADEMIC DISCIPLINE

«EMERGENCY CONDITIONS IN MEDICINE»

Faculty, course: International, 5 year

Educational Discipline: Emergency conditions in medicine

Approved:

The methodical recommendation was approved at the meeting of the department of simulation medical technologies

Protocol No. 1 of 28.08.2023

Head of the department _____ Oleksandr ROGACHEVSKYI

(signature)

Authors:
head of the department Oleksandr ROGACHEVSKYI
assistant of professor Olha YEHORENKO
associate professor, PhD Mykhailo PERVAK
associate professor, PhD Vasyl GLADCHUK
associate professor, PhD Yuriy PETROVSKIY
assistant of professor Viacheslav ONYSHCHENKO
assistant of professor Dmytro KARAKONSTANTYN
assistant of professor Svitlana TRISHCHENKO
assistant of professor Hennadii CHEREMNYKH
assistant of professor Andrii DOBROVOLSKYI

PRACTICAL TRAINING

Practical lessons No. 4 — 5

Topic: Modern methods of ensuring airway patency at the pre-hospital stage .

Purpose: To form, master and practice practical skills for ensuring the patency of the respiratory tract at the pre-hospital stage .

To learn the ability to independently use knowledge and skills in the performance of skills and to ensure the patency of the respiratory tract at the pre-hospital stage .

C to form a clear idea of the sequence of actions in the algorithm of performing skills and ensuring the patency of the respiratory tract at the pre-hospital stage .

To form the competence of professional communication in the team when performing skills and ensuring the patency of the respiratory tract at the pre-hospital stage .

Basic concepts: reception of Heimlich, air duct.

Equipment: Mannequin of a person who has suffocated, Ambu bag, plastic or soft-edged air duct (Gwedel type), spatula, electric suction, anesthetic solution, sterile gloves, lubricant , sterile disposable mask in a package.

Plan:

1. Organizational activities (greetings, verification of those present, announcement of the topic, purpose of the lesson, motivation of higher education seekers to study the topic).
1. Control of the reference level of knowledge (frontal survey) :

requirements for the theoretical readiness of students to perform practical classes (concepts , indications, contraindications, technique , algorithm and complications during the performance of skills and ensuring airway patency at the pre-hospital stage);

questions (clinical situations) to check basic knowledge on the subject of the lesson:

Know:

1. Concept.
2. Indication.
3. Contraindication.
4. Conducting technique.
5. Adherence to the algorithm of actions.
6. Complication.

1. Formation of professional skills and abilities:

- mastering skills:

1. Quick recognition of an emergency in a patient.
2. Be able to quickly give and receive commands to medical personnel depending on the critical situation (teamwork).
3. To be able to quickly carry out a differential diagnosis of an emergency.
4. Examination.
5. Determination of the emergency aid scheme based on the theoretical knowledge obtained in previous departments.
6. Help (ensuring airway patency at the pre-hospital stage).
7. Communication skills with staff and relatives in an emergency patient situation.

- task content:

For each topic nosology:

1. Briefing.
2. Conducting a clinical simulation scenario.
3. Debriefing.

- recommendations (instructions) for performing tasks:
  1. It is mandatory to have theoretical knowledge on the topic obtained while attending classes at previous departments.
  2. Acquaintance with the methodical recommendations of the department before the class.
  3. Completion of the elective course of the department of simulation medical technologies "Professional communication skills in extreme situations".

- requirements for work results and control materials for the final stage of the lesson: Passing a clinical scenario with a positive result for a simulated patient.

Abdominal thrusts - the method of ensuring the patency of the respiratory tract, which was popularized by Dr. Henry Heimlich, and later received the name - *the Heimlich reception* .

Indication:

Obstruction of the respiratory tract by a piece of food or aspiration of another foreign body, which is not eliminated by the cough reflex.

Contraindication:

1 Rib fracture.

2 Fracture of sternum.

3 Heart tamponade.

4 Aspiration of liquid (drowning).

5 Suspicion of traumatic damage to the organs of the abdominal cavity.

6 Suspicion of traumatic damage to the organs of the chest cavity.

7 With pronounced edema.

8 The second half of pregnancy.

9 High degree of obesity (more than 30%).

Necessary equipment. No special equipment is required.

ALGORITHM:

I. Removal of a foreign body in adults:

If the victim is in a vertical position:

1 Ask the patient to try to breathe more slowly and deeply.

2 Approach the standing patient from behind and wrap both hands around his body.

3 Lean your body closely to the patient (prevention of shocks during further maneuvers).

4 Place your legs wide in the case of a relatively short height of the patient, place the legs of the patient wide in the case of a relatively short height of the person performing the reception.

5 Put the fist of the left hand with the turned lateral surfaces of the first and second fingers on the front wall of the abdomen between the sword-like process of the sternum and the umbilical ring.

6 Grasp the fist of your left hand with your free right hand.

7 Place your foot between the victim's legs. Tilt your head away from the victim's back. The goal is to prevent the victim from falling after performing the reception and to prevent injury to the rescuer's face.

8 Make one strong thrust with both hands in the direction of the patient inwards and upwards. If the execution is successful, the foreign body is pushed out of the upper respiratory tract.

If the victim is in a horizontal position, then in order to remove a foreign body from the victim's respiratory tract, the victim should be placed on his back, sit on his thighs, and use the bases of both palms (or two fists) to make sharp pressures (thrusts) on the upper part of the abdomen in the direction of lungs

Note: To restore the patency of the respiratory tract in pregnant women and patients with excessive body weight (obesity more than 30%), the fist of the hand should be placed directly under the xiphoid process of the sternum. When performing the Heimlich maneuver, press with a quick push in the direction of the diaphragm, as well as directly on the chest.

If it was not possible to dislodge the foreign body, the cycle must be repeated until it can be pushed out or the victim loses consciousness. In the latter case, it is necessary to carefully place the victim on his back, preventing him from falling after losing consciousness. To do this, you need to put your foot between the legs of the victim, and when he loses consciousness, he will slide on it to the floor. To release the airways, sit on top of the victim's legs and with the bases of both palms (or two fists) sharply press the subdiaphragmatic area in the direction of the diaphragm. Repeat a series of compressions (up to 5 times) until the foreign body is removed.

Note: **Immediately after the foreign body leaves the victim's larynx, a deep breath reflexively follows, in which the foreign body, if left in the mouth, may reenter the larynx, so the foreign body must be removed from the mouth immediately.**

Attention: In case of several repeated negative attempts of Heimlich administration, immediate conicotomy or puncture of the cricothyroid membrane is indicated.

II. Removal of a foreign body in infants (younger than 1 year):

1. Place the child on your forearm with the stomach down, the head should be
be below the body, and strike 5 blows on the back between the shoulder blades with the base of the palm.

2. Turn the child over on his back and perform 5 chest thrusts
cell 1 finger below the internipple line along the longitudinal axis of the sternum.

3. If a foreign body is visible in the oral cavity and there is no danger of pushing it, attempt to remove it. Blind foreign body removal in young children is contraindicated due to the risk of worsening the obstruction.

4. Ensure patency of the respiratory tract by raising the chin and tilting the child's head, perform mechanical ventilation.

5. In case of inefficiency of the ventilator, change the position of the head and retry ventilation.

6. In case of unsuccessful measures, repeat the entire cycle from the beginning.

III. Removal of a foreign body in children aged 1-8 years:

1. Hold the child on your thigh upside down, hit 5 times between the shoulder blades.

2. Turn the child over on his back. Quickly press on the sternum at the level of the internipple line 5 times.

3. Examine the oral cavity, try to remove the foreign body. After removal — ventilator.

4. If the measures are unsuccessful, repeat the entire cycle until the foreign body is removed.

IV. Removal of a foreign body in 8-year-old children:

1. Perform the Heimlich maneuver: stand behind the child who is standing or sitting, wrap your arms around his waist, press on his stomach and perform a sharp thrust up the midline of the abdomen between the navel and the xiphoid process 5 times.

2. If the patient is lying down, use the "horseman's" position: make a sharp push with the proximal part of the lower palm in a cross shape with folded hands between the navel and the xiphoid process, push inward and upward 5 times.

3. If a foreign body appears in the oral cavity, try to remove it and perform ventilation.

4. If the measures are ineffective, make 5 blows between the shoulder blades and 5 blows on the sternum, then ventilator.

5. Continue Heimlich administration until the obstruction is eliminated, alternating with ventilator.

6. Urgent hospitalization in the ENT department.

Notes: with complete obstruction of the respiratory tract by a foreign body you should choose the method that will be the most effective;

WARNING:

- in a conscious child, the above techniques are performed in a standing or sitting position, in an unconscious child — lying on the side;

- in newborns and small children, manipulations are performed in a face-down position on the resuscitator's thigh, pressure on the chest is performed with two fingers, abdominal compression is not used.

In the case of foreign bodies in the respiratory tract, it is necessary to:

• urgently transport the victim to a specialized medical institution for emergency direct laryngoscopy and removal of the foreign body; • carry out oxygen therapy with the help of a face

mask; • if it is impossible to remove the foreign body and there are severe respiratory disorders, perform urgent intubation and resolve the issue of tracheostomy.

Introduction of the air duct

Definition.

Introduction of an airway is a manual method of restoring the patency of the respiratory tract with the help of special tubes (airways).

Types of air ducts:

1. The oropharyngeal (oropharyngeal) airway consists of a bent oropharyngeal part, a limiting plate that prevents the passage of the airway into the mouth, and a reinforced area that protects it from biting.

The shape of the bend of the windpipe repeats the anatomical shape of the oropharyngeal space, in order to protect the tongue and soft pharyngeal structures from sinking.

Structure:

1. Performance;
2. Bite block;
3. Stent;
4. Air channel.

2. Nasopharyngeal — is a soft rubber or plastic tube that ensures the patency of the respiratory tract between the nasal passages and the pharynx.

I. Introduction of the airway through the mouth.

Indication:

1. Support of gas exchange in case of violation of the patency of the respiratory tract due to:
   - taking drugs that suppress the respiratory center;
   - disturbance of consciousness;
   - brain injuries;
   - damage to the respiratory tract.
2. Clenched jaws in unconscious patients.
3. The need for aspiration from the oropharynx.
4. Complete or partial obstruction of the respiratory tract, not related to the aspiration of foreign bodies (swelling of the larynx, sinking of the tongue, etc.).

Contraindication:

1. Fractures of the bones of the facial skull, jaws or teeth.
2. History or acute period of bronchospasm.
3. Presence or suspicion of damage to the cervical spine, in which case this manipulation may worsen the patient's condition.

Necessary equipment:

Plastic or soft-edged duct (Gwedel type), spatula, electric suction, anesthetic solution, sterile gloves, lubricant.

Position: Lying on your back or side.

Conducting technique:

1. Before manipulation in the presence of a poorly fixed denture, the latter should be removed.

2. Open the mouth, press the base of the tongue with a spatula, bring the tongue forward from the pharynx.

3. Insert the air duct into the mouth with the concave side to the chin so that its distal end goes straight, but does not reach the back wall of the oropharynx; the flange of the air duct should protrude by 1-2 cm through the cutters.

4. Bring out the lower jaw, which will ensure that the tongue rises from the wall of the pharynx.

5. Press the air duct and push it 2 cm into the mouth so that its bend rests on the base of the tongue.

6. As an option, the air duct can be inserted with the concave side to the palate. After its end reaches the tongue (in this case, the spatula is not used); turn the air duct 180 ° and further push it out of the tongue. This method is not recommended if the patient has loose teeth or oral trauma, as the rotation of the airway may cause the teeth to shift or increase bleeding.

II. Introduction of the airway through the nose

Indication:

1. Obstruction of the upper respiratory tract in patients with preserved consciousness.

2. Trauma to the teeth or oropharynx.

3. Inadequate opening of the respiratory tract after the introduction of an oral airway.

Contraindication:

1. Occlusion of the nasal cavity.

2. Fractures of the nose and base of the skull.

3. Distortion of the nasal septum.

4. Coagulopathy.

5. Leakage of cerebrospinal fluid from the nose.

6. Transsphenoidal hypophysectomy in history.

7. Formation of a posterior pharyngeal flap to close a craniofacial defect in the anamnesis.

8. Pregnancy (due to vascular congestion in the nasal cavity after the first trimester).

Necessary equipment: cotton swabs, nasal airways of various calibers (usually from 6.0 to 8.0 mm), anesthetic in the form of a gel, electric suction, sterile gloves.

Position: lying on the back, on the side, sitting.

Conducting technique:

1. Visually assess the degree of patency of the nostril (relative size, presence of bleeding or

polyps) or perform the following test: it is necessary for the patient to exhale through the nose onto a small mirror or onto the blade of a laryngoscope - a larger condensation spot indicates a more patency of the nostril.

2. To provide local anesthesia and vasoconstriction in the nasal passages, use a mixture of the following composition: 10 mg of phenylephrine in 10 ml of 2% lidocaine gel.

3. Insert a tampon into the selected nostril and wait for the onset of local anesthesia.

4. Carefully successively insert tampons deeper into the nostril until three tampons are at the same time at the level of the back wall of the nose, without causing significant inconvenience to the patient.

5. After using this method of tamponade, it is usually possible to pass a 7.5 mm air duct through the nasal cavity.

6. If it is impossible to use tampons, the lidocaine-phenylephrine mixture can be injected directly into the nasal cavity with a syringe.

7. Carefully insert the air duct into the nose with the concave side facing the hard palate.

8. Pass the air duct into the nose under the lower concha, parallel to the palate.

9. If there is resistance in the back pharynx, carefully turn the air duct 60-90° and continue inserting it into the pharynx; turning the airway 90° counterclockwise and then returning it to its original position after passing through the throat may also help.

10. If the air duct does not pass with medium effort, use an air duct with a smaller gauge.

11. If the duct does not advance, pull it out 2 cm, pass a small catheter through it for aspiration, then try to introduce the duct using the catheter as a guide.

12. If this does not lead to success, re-process the nasal cavity or try to enter the air duct from the other side after the appropriate treatment.

Artificial ventilation of the lungs with an Ambu bag and with the help of an S-shaped tube

Indications: To provide adequate spontaneous ventilation by performing controlled, assisted, or positive pressure ventilation in patients with respiratory distress, apnea, or unconscious patients.

Contraindication:

1. Vomiting or penetration of a foreign body into the respiratory tract;

2. Increased intragastric pressure due to excessive ventilation

Necessary equipment:

Individual protective equipment, oro- and nasopharyngeal airways (S-shaped tubes), suction device, mask-bag device, stethoscope, oxygen.

Algorithm:

1. Take the necessary steps to protect yourself from the patient's biological material.

2. Stand next to the patient's head and, performing the technique of "throwing the head, lifting the chin", open the airways.

3. If necessary, enter the air duct.

4. Choose a mask of the appropriate size. The mask should be transparent, with an air cushion that fits the patient's face.

5. Place the narrow part of the mask on the back of the nose, and its wide part on the crease between the lower lip and chin.

6. With the thumb and forefinger of one hand, hold the mask around its collar (C - grip), tightly pressing the mask to the patient's face, simultaneously lifting the lower jaw with the little finger, ring finger and middle finger up to the mask. With the other hand, compress the bag, having previously connected it to the mask connector.

7. Carry out artificial ventilation by slowly squeezing the bag for 1 second, and seeing that the patient's chest has risen, release the bag.

8. Make sure that the chest falls and rises accordingly. Observe the patient's respiratory movements as an indicator of proper ventilation. Continue artificial ventilation for 30 seconds before applying oxygen.

9. Prepare the oxygen tank and oxygen regulator. Connect the oxygen tube to the regulator and the bag mask. Start the oxygen supply and adjust the oxygen supply regulator to a maximum of 10 L/min.

10. Allow the bag to fill with oxygen before taking the first breath.

4. Summary:

After completing the lesson on the topic " Modern methods of ensuring the patency of the respiratory tract at the pre-hospital stage ", students should:

Have formed and practiced practical skills for ensuring the patency of the respiratory tract at the pre-hospital stage.

Learn the ability to independently use knowledge and skills when performing skills to ensure the patency of the respiratory tract at the pre-hospital stage.

Have a well -formed and clear idea of the sequence of actions in the algorithm of performing skills to ensure the patency of the respiratory tract at the pre-hospital stage.

To have the formed competence of professional communication in the team when performing the skills of ensuring the patency of the respiratory tract at the pre-hospital stage.

5. List of recommended literature:

Main:

1. Anesthesiology, intensive care and intensive care: a study guide (University I-III of the Republic of Armenia) / A.A. Ilko. - 2nd ed., revised. and add., "Medicine", Kyiv, 2018
2. Anesthesiology, intensive care and emergency conditions: textbook: edited by Prof. Vladyki A.S. Odesa: ONMedU, 2016

Additional:

1. Emergency medical care for the injured at the pre-hospital stage: a study guide / (V.O. Krylyuk, S.O. Guryev, A.A. Gudyma, etc.) - Kyiv, 2017

Electronic information resources:

1. https://www.cprguidelines.eu/ – European Resuscitation Council
2. https://www.c-tecc.org/our-work/guidance - Committee on Tactical Emergency Relief
3. https://zakon.rada.gov.ua/laws/show/z0356-22#n42 - Order of the Ministry of Health of Ukraine No. 441 dated 09.03.2022 "On approval of procedures for providing pre-medical assistance to persons in emergency situations"
4. https://gmka.org/uk/category/dlya-medykiv/nevidkladna-hirugiya/ - Global Alliance for Medical Knowledge