MINISTRY OF HEATH OF UKRAINE

POLTAVA STATE MEDICAL UNIVERSITY

Department of general surgery

METHODICAL INSTRUCTIONS
FOR STUDENT SELF-DIRECTED WORK WHEN PREPARING FOR AND DURING PRACTICAL CLASS

Study discipline	**General surgery**
Module №1	**INTRODUCTION TO SURGERY. SURGICAL EMERGENCY CONDITIONS. FUNDAMENTALS OF ANESTHESIOLOGY AND INTENSIVE CARE**
Content module 3.	**Bases of anesthesiology and resuscitation.**
Lesson theme №12	Reanimatology: terminal states; clinical death; basic cardiopulmonary resuscitation.
Years of study	***III***
Faculty	**International**

Poltava

Content module 3.	**Bases of anesthesiology and resuscitation.**
Lesson theme №12	Reanimatology: terminal states; clinical death; basic cardiopulmonary resuscitation.

1. Relevance of the topic :

Reanimation and intensive care - the main sections of the clinical resuscitation . The decision on the need intensive care, as well as the implementation of its methods is carried out in conditions of extreme shortage of time , the diagnosis must be put over the seconds and immediately begin to provide intensive care . Given this fundamental fact , knowledge of methods of diagnosis and emergency recovery faded vital body functions required for physicians of all specialties .

Terminal states must be accurately diagnosed , because knowledge of the pathogenesis of various processes determine the nature of the problem and resuscitation . Most often decides the fate of the human span of 10-15 minutes. since the disaster . Provision of assistance in this period will save the lives of many victims of the external or internal acute massive bleeding , poisoning , drowning , trauma, after an electric shock or lightning , etc.

2 . Learning Objectives :

1. Analyzed the patient's condition .
2. Explained sequence of resuscitation and intensive care algorithms critical states .
3. Ask algorithm of intensive care measures depending on the patient .
4. Classified terminal conditions .
5. Analyzed degree of damage to the cardiovascular, respiratory and nervous systems.
6. To make plan resuscitation and intensive care procedures .
7. Know principles and algorithms to provide first aid in case of sudden cardiac arrest and breathing.

3. Basic knowledge , skills, habits, necessary for studying the topic (inter-disciplinary integration)

Discipline	*Know*	*Be able to*
anatomy	1. Location for determining arterial pulse and blood pressure 2. Anatomy of the upper respiratory tract, especially placement of language and its effect on airway	1. Determine the pulse of the vessels 2. Ensure the airway
physiology	1 Physiology of respiratory, cardiovascular and other systems, hemodynamic and respiratory rate in	1. Assess whether violations of the respiratory system, blood circulation and other
pathophysiology	Etiology and pathogenesis of pain and the typical pathological	

	processes (inflammation, hypoxia, etc.)	
Propedeutics Internal Medicine	Methods of testing a patient for organs and systems	Conduct a survey of the patient's major organs and systems (respiratory, cardiovascular, gastrointestinal tract, kidney, assessment of consciousness).
pharmacology	Basic pharmacology of inhaled anesthetics and neingalyatsionnyh, a premedication	Assign patient sedation

The student must have an idea :

- classification of terminal states .
- clinical manifestations preagoni , agony, various forms of death .
- about the principles of treatment of terminal states .

The student should know :

1. Classification of terminal states .
2. Clinical manifestations preagoni , agony, various forms of death .
3. Principle of treatment of terminal states .
4. Method of mechanical ventilation "mouth to mouth."
5. Method conducting chest compressions .

The student should be able to:

- master the technique of mechanical ventilation . - master the technique of indirect heart massage .

Student mastery of practical skills :

1. " Triple means " to secure the airway .
2. " Triple agent" for the opening of the mouth .
3. AVL means " mouth-to- mouth ", " mouth to nose ."
4. Chest compressions .
5. Disposal of liquid and solid foreign bodies from the upper respiratory tract.

4. Tasks for self-study in preparation for the lesson .

4.1. The list of basic terms , parameters, characteristics, which the student must learn in preparation for the class:

Term	***definition***
resuscitation	medical science that studies the patterns of extinction of vital functions, methods of active recovery and their continuous support, as well as measures to prevent the development of terminal states.
intensive care	range of therapeutic measures to restore the normal function of the body as a whole
dying	process of extinction of body functions, is an exception to the functions and systems of the body with the ability to restore life
resuscitator	doctor who has practical skills and theoretical foundations of resuscitation resuscitation
reanimation	range of therapeutic measures to restore vital functions during cardiac arrest and breathing

clinical death	The transition state between life and death. It starts with the termination of CNS function, blood circulation and respiration

4.2. Theoretical questions for the class:

1. Terminal states.
2. Forms of death.
3. The concept of death.
4. The purpose and objectives of phase 1 of cardiopulmonary and cerebral resuscitation.
5. Major and minor signs of clinical death.
6. Technique of mechanical ventilation "mouth to mouth."
7. Terms of chest compressions.
8. Signs effectiveness resuscitation.
9. The indication for termination of resuscitation.
10. Complication of resuscitation.

4.3.Prakticall work (task) that are used in class:

1. "Triple means" to secure the airway.
2. "Triple agent" for the opening of the mouth.
3. AVL means "mouth to mouth", "mouth to nose."
4. Chest compressions.
5. Disposal of liquid and solid foreign bodies from the upper respiratory tract.

6. The content of the topic.

TERMINAL STATES

SYNCOPE (FAINT) is a short-time sudden loss of consciousness caused by acute anemia of brain as a result of angiospasm. Complaints of nausea, ringing in ears, darkness before eyes, vertigo. Objectively: consciousness is absent, pupils are dilated, skin is pale, breathing is shallow, pulse is weak.

Treatment is directed to the improvement of brain blood supply: to make a patient lie down, to unbutton a dress, to provide a patient with fresh air. It's necessary to inhale vapor of hartshorn (ammonia spirit) & splash patient's face with cold water, after the return of consciousness to give tea, coffee, wine, valerian drops.

COLLAPSE is acute temporary vascular insufficiency causes by decrease of blood volume or widening skin heart (peripheral vessels & capillaries with the following acute hypoxia of tissues. It's not a disease but a symptom. It may take place in shock, sepsis, bleeding, poisoning, infection diseases. Symptoms: complaints of weakness, dizziness, flashes in eyes. One can observe pale skin, cyanosis of mucous, cold sweat, muscular relaxation, breathing is frequent & shallow, pulse is filiform, BP decreases. Treatment includes: patient's horizontal position, removing a motive of collapse & introduction of drugs stimulating tonus of vessels & heart (hormones, caffeine, analeptics, preparations of camphor, vasopressors -mesaton, ephedrine, dopamine).

Sunstroke, heatstroke. They are manifested with overheating of the organism. Heatstroke is held in workers in hot premises with high air temperature & in men in dress of synthetic fabric. Sunstroke occurs in durable action of direct sunrays on man's head or body. Signs: redness of skin, headache, weakness, nausea, vomiting, tachycardia, increase of body temperature, tachipnoe.

Cause of death - swelling of brain.

Aid: a man is brought to cool premise, undressed, given cool drinks, doused with water, put ice-bags on areas of large vessels (neck, inguinal area). In disorders of respiration oxygen-therapy is indicated. In severe cases accompanied with arrest of heart they perform urgent cardio-pulmonary resuscitation with further transportation to the hospital.

SHOCK (S) is a typical pathological process occurring as a result of disorders of neuro-humoral regulation caused with extreme actions (trauma, burn, etc) & characterized with acute decrease of tissues blood supply, hypoxia & depression of organism's functions. The clinical symptoms of S. are: emotional inhibition, hypodynamia, hyporeflexia, hypothermia, arterial hypotension, tachycardia (rapid pulse), dyspnoe (breathlessness), oliguria, etc (the most important 3 "H" - hypovolemia, hypotension, hypoxia /especially, hypoxia of the brain/).

The base of any S. is a systemic disorder of circulation with decrease of blood volume & worsening capillary blood flow which lead to disturbances of organs' work & death. It's combined with blood loss. In cases of trauma a large amount of pain impulses move to the brain cortex where a stable center of excitement is formed (erectile phase). Then superexcitation appears which is changed with protective inhibition (torpid phase). At that time blood vessels become wider, plasma goes out to the traumatized tissues (so called, third interspace). At first 1-2 hours the centralization of circulation with decrease of blood return takes place. Then it's changed with the relaxation of precapillary sphincters & development of venous stasis (stagnation). In blood thromboplastin is liberated, white & red clots are formed, hypercoagulation appears, then - disseminated intravasal coagulation syndrome (thrombo-hemorrhagic syndrome) & coagulopathy of consumption. Thus, we can speak about the formation of vicious circle in S. in which all the disorders may produce & deepen each other.

Classification of Shok.

1. According to the cause: traumatic, operative, anaphylactic, hemolytic & bum.

2. According to time of appearance: primary (developing at the moment of injury or just after it) & secondary (developing in 5-24 hours after injury, usually - postoperative).

3. According to phases (after Pirogov): erectile & torpid.

4. According to severity of course:

I degree - systolic pressure above 90 mm.m.c., pulse to 100 per min, consciousness is present, skin is pale, breathing is frequent, pupil gives a reaction to light;

II degree - pressure from 70 till 90 mm.m.c., pulse from 100 till 120, consciousness is inhibited, skin is cold & pale, breathing is frequent & weak, reflexes are inhibited;

III degree - pressure from 50 till 70 mm.m.c., pulse from 120 till 140-150, consciousness is confused, skin is cyanotic, breathing is weak or Cheyne-Stock (tidal) respiration, pupil don't give a reaction to light;

IV degree - pressure less than 50 mm.m.c., pulse - filiform (can't be counted & it's peculiarities can't be described), consciousness is absent, skin is pale or cyanotic, covered with clammy sweat, Kussmaul or Biot's respiration, pupil does not give a reaction to light (it's a state of preagony).

For assessment of severity of S. **Allgover's index** is used: it's ratio of pulse frequency to systolic blood pressure.

Normal ratio is about 0.5 - 0.6,

in I degree - about 0,7 – 1,0;

in II degree -1.1 - 1.5;

in III degree - about 1.5 – 1,8,

in IV degree - more than 1,8.

Taking into account the character of dismetabolism one consideres

important creatinine index: $\frac{creatine + creatinine}{creatinine}$ It s normal rate - 1.0, in shock of I-II degree - to 1.5, in shock of III-IV degree - to 2.0. The symptoms of erectile phase: it lasts 1-3 hours & is characterized with psychomotor & speech excitation, absence of critical assessment of own condition & surroundings, normal temperature, pale skin, distinct consciousness, increase of BP, pupil dilation, adrenaline production, narrowing of peripheral vessels & dilation of brain vessels. The patient suffers of pain. By the end of this phase brain hypoxia appears & protective inhibition takes place.

The treatment of shock should be pathogenic & complex.

a. On the place of trauma it's necessary:

1. To stop action of traumatic agent
2. To arrest bleeding with a rope.
3. To heat the patient with a blanket, tea or coffee.
4. To perform an improvised immobilization.
5. In indications to carry out an artificial breathing
6. To begin infusion therapy

b. The doctor of the ambulance can perform the following measures:

1. Temporary arrest of bleeding (with a rope or a pressing bandage)
2. Anesthesia (introduction of analgetics, Novocain blockades of a fracture's place or any else, narcosis with nitrous oxide)
3. Immobilization with any splint
4. Intramuscular & intravenous introduction of circulation & breathing stimulators, & anti-histamine drugs as well.
5. In indications to carry out "mouth to mouth" artificial respiration or with the help of simplex portable respiratory apparatus

6. oxygen therapy
7. intravenous introduction of blood substitutes
8. putting aseptic dressings on the wound, occlusive dressing in open pneumothorax
9. cardiac massage
10. in vital indications - orotracheal intubation or tracheostomy.
11. To deliver the patient to the hospital

c. In the hospital one renders the aid at the resuscitation department. The main principals of contemporary therapy of shock:

1. the normalization of nervous system function
2. the normalization of circulation
3. the normalization of gas exchange
4. the normalization of metabolism
5. the normalization of endocrine system functions

The treatment of shock

1. Complete rest (horizontal position, in BP less 100 mm.m.c. - Trandelenburg's position). The struggle against pain is carried out with Novocain blockades (vagosympathetic, paranephric by Wishnevsky, intercostal, paravertebral, intrapelvic by Shkolnikov-Selivanov, in the place of trauma) & analgetics (narcotic & non-narcotic; morphine - no!). One can use intravenous drop introduction of 0.25% Novocain solution & anti-histamine medicine (diprazin, pipolphen, tavegil, dimedrol, etc; aminazin -no!).

2. The stabilization of hemodynamics in S. is reached with the help of a)infusing-transfusing therapy removing blood deficiency & correcting its rheological properties, b) drugs acting on vascular tonus, c) therapy improving cardiac work.

A) Infusion-transfusion therapy includes intravenous & intraarterial introducing blood, blood components (plasma, albumin) & substitutes (polygiucin, gelatinol, politer, rheopolyglucin, polyvinol).B) Stimulation of vascular tonus is carried out with vasopressors:

noradrenalin, mesaton, ephedrine. They can be used only in cases of full substituted blood loss when blood volume is sufficient. Also hormonal preparations can be used for increase of BP. They have a method of ganglionic block without hypotony when the introduction of ganglioblockers (hexonium, pentamin) is combined with the introduction of vasopressors. Constriction of small vessels is removed by ganglioblockers, peripheral blood flow improves, but hypotony caused by ganglioblockers is easily operated by vasopressors.

NB! Before the use of this method one must check up the ability of vessels to react (respond) to vasopressors (α-adrenomimetics); if the reaction is absent the use of ganglioblockers is contraindicated because it will cause irreversible hypotony & patient's death.

C) It's necessary to use small doses of cardiac glycosides (strophanthin, corglycon) & central analeptics (cordiamin, corasol, bemegrid).

3. The normalization of gas exchange (external breathing) is directed at hypoxia removing. It's achieved by different methods of oxygen therapy (from cushions, through the catheter introduced into the inferior nasal passage, different inhalations & tents. Because of toxic action of pure oxygen on organism someone advice to use air mixture

with the content of oxygen not more than 50% of moistened oxygen. Last time controlled respiration (artificial ventilation of lungs) is used in cases of severe disorders of external respiration & hemodynamic.

4. The normalization of metabolism. The great role in regulation is played by vitamins (especially from B-group – B1, B6, B12, & vitamin C). For the normalization of carbohydrate metabolism infusions of glucose solutions with adequate doses of insulin (1 unit per 3-4 g of glucose) & intravenous introduction vitamins are widely used (C-1000 mg, B1 - 50 mg, B2 - 10 mg, B6 – l0 mg., B12 -0,5 mg per 1000 ml of 5% glucose solution). For removing of acidosis intravenous infusions of 4% sodium bicarbonate solution & alkaline drinking are used In late stages of S the development of intoxication is possible, it is accompanied with urine excretion decrease, decrease of urea amount In that cases we can do exchange blood transfusion (300-400 ml of blood are removed from the vein, & then 400-500 ml of donor's blood are introduced) or hemodialysis.

5. Last time in S the use of adrenal hormones (noradrenalin, glucocorticoids mineralocorticoids) is very successful, especially – glucocorticoids, because they decrease permeability of vessels, strengthen vasopressors action, destroy free histamine, stimulate diuresis.

Earlier one considered no operative intervention could be performed in S. But now due to success of anesthesiology one can make operations in patients with dangerous injuries, trauma of abdomen with the damage of abdominal organs, injury of heart & large vessels, open pneumothorax.

INTENSIVE CARE - medical science that studies the patterns of extinction of vital functions , methods of active recovery and their continuous support , as well as measures to prevent the development of terminal states .

Intensivist - a doctor who has practical habits resuscitation and theoretical foundations of critical care medicine .

Reanimator - the person who conducts the revival .

Resuscitation - a complex of medical measures to restore vital functions during cardiac arrest and breathing.

Intensive care - a complex of medical measures to restore the normal function of the body as a whole. Every adult should own methods of resuscitation at the scene ! Children 10 years of age can help to provide a full grown ! Resuscitation provides the highest effect in cases of sudden death. Resuscitation ineffective in patients whose vitality exhausted previous incurable disease or lesions of vital organs. The time factor - the basis of resuscitation !

Terminal states :

PERIODS OF DEATH

Dying (the process of extinction of bodily functions) is an exception to the functions and systems of the body with the ability to restore life. Life goes out gradually through the following stages of dying : peredagonal state , the agony , the clinical death.

1. Preagony (gradual decrease of BP, inhibition of consciousness & electric activity of brain, tachycardia changed by bradicardia, disorder of trunkul reflexes due to hypoxia) lasts from several seconds to many hours. It depends on character of main

pathologic process & development of compensatory mechanisms. It is characterized by a sharp acceleration of breath , and then suddenly it stops with the rapid extinction of corneal reflexes

Preagoni transit between the terminal and the agony of a pause. Lasts from a few seconds to 2-4 minutes.

2. Terminal pause lasts to 4', breathing & cardiac activity are absent temporarily. At EEG electric activity is absent, corneal reflexes are inhibited, at ECG - ectopic impulses.

3. Agony - disappearance of painful sensitivity, loss of consciousness, mydriasis, inhibition of reflexes. Respiration is characterized with weak rare movements with small amplitude or short-time maximum inhalation & rapidcomplete exhalation with large amplitude & rate 2-6 per minute ("gasping respiration"). Terminal pulmonary edema. Cardiac activity: after terminal pause effectiveness of cardiac contractions is increased, BP is increased to 20-50 mm.m.c., ECG - restoration of sinusal automatism, arrest of ectopic activity, centralization of circulation may cause return of consciousness. By the end of agony cardiac rhythm decreases to 40-20 per minute, BP is decreased to 20-l0mm.m.c. Body temperature is decreased. Muscular rigidity & convulsions. Spontaneous urination & defecation. Sometimes agonic breathing may be observed during 5-10' after arrest of circulation due to the formation ofautonomic "gasping-center". Exception cortex of the brain and the main regulatory functions of the transition to the bulbar and spinal centers leads to the mobilization of all the latest capabilities of the organism . Thus there is a surge of the great arteries , accelerated heart rate. Possible recovery of consciousness. Then comes the stopping of the heart and breathing. Duration of agony, as a rule, small .

4. Clinical death - reversible stage of dying lasting 1-5' (in some cases - to 8-10') after arrest of respiration & cardiac activity

The transition state between life and death. It starts with the termination of CNS function , blood circulation and respiration. Lasts to the development of irreversible damage to vital organs and tissues primarily in the main brain. Duration of clinical death normally 3-4 minutes . Necessary, without wasting time to resuscitate ! It may save the victim !

Signs of clinical death

A. LOSS of CONSCIOUSNESS. Usually comes in 10-15' after stop of circulation.

NB! The preservation of consciousness EXCLUDES a STOP of circulation!

B. ABSENCE of PULSE ON CAROTID ARTERIES shows stop circulation in arteries that causes anemia & hypoxia of brain & decay of its cells.

ALGORITHM of finding carotid artery: index & III fingers are placed on thyroid cartilage, displace fingers in a groove between trachea & stemo-cleido-mastoid muscle.

NB! The determination of a pulsation is performed during 10' (NOT LESS!),

NOT TO MISS expressed bradicardia! Unbent neck facilitates finding a pulsation.

C. ABSENCE of spontaneous BREATHING or presence of agonic breathing. The presence of this sign is established by OUTSIDE survey & in the absolute majority of cases is not a problem. Do not spend time on attempts to reveal a stop of breathing with

the help of looking-glass etc. Agonic breathing is characterized by PERIODIC CONVULSIVE contraction of respiratory muscles.

NB! If at this moment one will NOT BEGIN artificial respiration, agonic breathing in some seconds will proceed in APNOE - a complete stop of breathing!

D. DILATION of PUPILS with LOSS of REACTION TO LIGHT. The obvious dilation of pupils comes in 40-60", maximum - in 90-100", therefore IT'S NOT NECESSARY TO WAIT for COMPLETE MANIFESTATION of this sign.

DO NOT spend time on measuring BP, determination of a pulsation ON peripheral VESSELS, auscultation of cardiac tones in such critical situation.

The following sequence of actions is recommended in suspicion of clinical death:

a) To establish absence of consciousness - cautiously shake or call of the injured;

b) To be convinced of absence of breathing;

c) To place one hand on carotid artery, & By another - to rise upper eyelid, having checked up thus simultaneously state of pupils & presence or absence of pulse.

Social death - partially recycling the state , with the loss of the main function of the cortex of the brain , while maintaining vegetative functions .

With the death of all tissues of the body comes **biologacal death** .

The signs of biological death :

1. Cadaveric spots
2. Rigor numbness
3. Mitigating eyeballs
4. Dryness of the cornea ,
5. Brown spots Lersh .

Biological death - irreversible arrest of physiological processes in cells & tissues when resuscitative measures are successless. Features of biological death: disappearance of pulse on main arteries, absence of cardiac activity on ECG, arrest of respiration, absence of spontaneous movements, reactions to light, sounds & pain, maximum dilation of pupils, absence of corneal reflex, decrease of body temperature less 20°C, presence of livores mortis & rigor mortis, Beloglazov's sign (phenomenon of cat's eye - change of pupil's form after compression of eye-ball), dimming of cornea. First true sign of death is livores mortis (blue-purple spots on cadaver's skin); they develop in 1,5-2 hours after death. Rigor mortis (specific contraction of muscles) achieves its highest development in 6 hours, disappears in 24 hours. Body temperature decrease rate is 1 per hour in room temperature. Common view of the ward of intensive therapy

Heart failure may be primary or secondary .

Primary cardiac arrest occurs when the direct damage to the heart muscle.

The main clinical signs of death :

1. No pulse on the carotid arteries
2. The absence of spontaneous breathing .
3 . Mydriasis (pupil dilate in 40-60 seconds after cardiac arrest) .

The diagnosis of clinical death must be supplied for 2-10 seconds. Resuscitative measures should begin with the presence of two signs of clinical death.

Measures to revive the body (by P.Safaru)

Stage 1 - support life. Emergency oxygen therapy .

Stages :

A - airway management .

B - ventilation and oxygenation .

C - artificial circulatory support .

These measures should begin at the location of the event by any person immediately " triple agent" to ensure the airway :

1. Extension of the head as possible back .
2. Extension of the lower jaw forward (or offset).
3. Opening the mouth .

If the head injury and whiplash head , neck and chest is held in the same plane as not to cause secondary brain injury . At the initial resuscitation is always held two consecutive deep breaths , and then move to the rhythm : one breath after 5 seconds or 12 breaths for 1 min in children - 24-30 . For injuries jaw , face , mouth resuscitation should be performed lungs by blowing air into the victim's nose and closed his mouth with your fingers . To revitalize the newborns and infants artificial ventilation conduct , covering his mouth with his lips and nose perks up by blowing air mouth.

The volume of air required for adequate ventilation way " mouth mouth " and " mouth-to- nose ":

adult - 1,0 - 1,5 l, child - 10 years - 0,5 - 1,0 l; nursing baby - 0,05 - 0,08 l .

The main feature of efficiency of a SHVL : movements of the chest during inspiration and expiration.

Sign of the effectiveness of cardiac massage : the presence of the pulse wave in the great vessels .

If resuscitation started on time and done correctly, you have to show signs of its effectiveness.

Signs of effectiveness resuscitation :

1. Pupillary constriction .

2 . Change the color of the skin and mucous membranes of the animated (discoloration decrease cyanosis) .

3 . Having pulse wave peripheral and central arteries. 4 . Systolic blood pressure of 70-80 mmHg

Signs of recovery affected :

1. The emergence of independent heart rate.
2. Pupillary constriction .
3. Toning the muscles.
4. The appearance of individual breaths .
5. The decrease of cyanosis of skin and mucous membranes.

Possible complications of intensive care :

1. AVL - the regulation of gastric contents into the mouth , and the emptiness of his aspiration into the airways - jawfall - rupture of lung tissue , pneumothorax ;

2 . Chest compressions : - broken ribs and sternum ; - damage to internal organs (lungs, heart, liver , spleen, stomach) ;

3 . Direct cardiac massage : - damage to the internal thoracic artery and bleeding from her when resuming circulation - heart muscle damage during strong squeezing or hemorrhage were with him - turn around the axis of the heart . Need to teach people to measures of cardiopulmonary and cerebral resuscitation at the scene .

6. Materials for self-control.

1.Terminalnye state.
2. Classification of death.
3. Definition of death .

6.1. Tasks for self-control .

1. " Triple means " to secure the airway .
2 . " Triple agent" for the opening of the mouth .
3 . AVL means " mouth mouth ", " mouth to nose ."
4 . Chest compressions .
5 . Removing rare and solid foreign bodies from the upper respiratory tract

question:

1. Purpose and objectives of phase 1 of cardiopulmonary and cerebral resuscitation.
2 . Major and minor signs of clinical death.
3. Technic of mechanical ventilation "mouth to mouth."
4. Rule of indirect heart massage .
5. Signs of effectiveness of resuscitation.
6. Indication to stop resuscitation.
7. Complication of resuscitation

Problem:

Task 1 During the surgery the patient came to light heart failure . Regular cutting it resorted to recover only after 10 minutes. In which organ profound changes have taken place as a result of hypoxia ?

A. at B. in the heart of the spleen to the liver S. D.V kidney cortex E. In the main brain

Task 2 . As a result of blood loss in humans decreased blood volume . How will it affect the amount of blood pressure ?

A decline only diastolic pressure decreased only B. C. Decrease systolic pressure , systolic and diastolic blood pressure D. Reduced systolic blood pressure with an increase in diastolic E. reducing the diastolic pressure with an increase in systolic

Task 3 . call the critical level of reduction in systolic blood pressure :

A 70 mm. Hg. st .. V. 75 mm. Hg. Article
S. 65 mm. Hg. Article D. 80 mm. Hg. E. Article 85 mm. Hg. Article

Task 4 . in which the level of blood pressure is stopped glomerular filtration ?
A. below 70 mm. Hg. st .. B. less than 75 mm . Hg. Art C. of less than 65 mm . Hg. Article D. below 80 mm. Hg. Article E. below 85 mm. Hg. Article

Task 5 . The main indication for tracheostomy is:
A long bronchospasm V. S. Mendelson's syndrome as a consequence of mechanical asphyxia violations of upper respiratory tract it. pulmonary edema E. clinical death

Task 6 . What part of the body weight is water in healthy adults ?
A. 30-40 % B. 50-60 % C. 60-70% D. 70-80 % 80-90 % E.

6.2 . Situational problems .

1. From the operating room to the intensive care unit patient transferred S., 62 years old, who suffered under the combined anesthesia gastrektomiyu , drainage of abdominal cavities . 15 minutes after the intervention ceased spontaneous respiration , cardiac function is preserved. Anesthesiologist derived lower jaw , through the mouth entered the air duct - an independent breath away. Which of the complications developed in this patient ? How to provide assistance to the patient ?

2 . Patient N. , 20 years old , died from a difficult traumatic shock . The section diagnostovanny fracture of the pelvic bones , shock kidney. What changes revealed by histological study of kidney tissue .

3 . Burn shock due to the large loss of fluid is blood clots . On what data we can determine the extent of gemodelyutsii or hemoconcentration ?

4 . The patient rapidly dehydrated due to intestinal obstruction , carried diatomaceous therapy . What is the minimum amount of urine for a time sufficient for the output of slag with normal renal function ?

Test problems in the volume of "Step 1" and "Step 2" .

1.Method of resuscitation in acute asphyxia ?
1 Oxygen Therapy
2 chest compressions
3 SHVL by the " mouth to mouth "
4 SHVL by the " mouth-to- nose"
5 konikotomiya or tracheotomy
6.torakotomiya

2.What is typical for heart failure ?
1 bradycardia
2 tachycardia
3 jerky , arrhythmic breathing
4 absent cardiac activity

5 metabolic disorders
6 pulselessness

3.Resustative mesure the clinical pre-hospital death include:
1 call ambulance
2 defibrillation
3 elementary cardiovascular resuscitation
4 correction KLS
5 intravenous lobeline

4.Provedenie defibrillation is necessary when :
1 acute heart failure
2 bradycardia below 40 min.
3 atrial fibrillation
4 ventricular fibrillation
5 peredagonalnoe state

5.Preconducting indirect heart massage in the palm of an adult should be placed :
1 between the middle and lower third of the sternum
2 in the fifth intercostal space
3 on the upper third of the sternum
4 in the fourth intercostal space
5 in the area of the sternum handle
6 in the lower sternum

6. Efficiency of indirect heart massage testify:
1 occurrence of tendon reflexes
2 mydriasis
3 pupillary
4 no pulse on the carotid arteries
5 appearance rate
6 cyanosis of the skin

6.3 Tests for self-control (basic knowledge)

1.On the basis of what is set definitive diagnosis of heart failure ?
1 lack of consciousness
2, the absence of carotid pulse
3 wide pupils
4 ECG
5 diffuse hypoxia

2.If asphyxia apply artificial respiration :
1 Sylvester

2 image Schuller
3 image Laborde
4 of " mouth to mouth"
5 image Henderson
6 of " mouth to nose "

3.Pri resuscitation ratio ventilation and indirect heart massage should be ?
1 1:5
2 2:15
3 1:7
4 1:3
5 1:2

4. what kind of elements are used for resuscitation of asphyxia ?
1 intra-arterial blood transfusion
2 clearing the airway
3 the use of artificial respiration in the image Laborde
4 the use of artificial respiration in the image of Sylvester
5 application of artificial respiration mouth mouth
6 the use of artificial respiration mouth to nose

Tests and testing task source of knowledge .
1. Your action of resuscitation in electrical accident ?
1 disconnection from the source of power
1 intra-arterial blood transfusion
2 intravenous antibiotics
3 novocaine anesthesia for Lukashevich - Oberst
4 burying the victim to the ground
5 application of artificial respiration and indirect heart massage

2. Indirect cardiac massage performed with a force :
1 approximation of the sternum to spine 5 cm
2 approximation of the sternum to spine 2cm
3 approximation of the sternum to spine 1 cm
4 approximation of the sternum to spine 10 cm
5 approximation of the sternum to spine 7 cm

3 . Patient M. 19 years old, went to the operating room, suddenly pale , covered with cold sweat , complained of nausea, stuffy , suddenly lost consciousness and fell. BP 90/50 , pulse 80 / min. , Weak filling . Diagnose ?

4 . Sick for 2 days received conservative therapy for traumatic shock III level as a result of a closed fracture of the pelvis. The patient discharged from the shock. When

rentgenissledovanii in the lungs revealed multiple small atelectasis . The result is that it is a difficult complication developed ?

5 . Patient T. 20, delivered to the sanitary inspection of the crash after 10 minutes. Closed fracture of both bones of both legs . In this case, a clear conscience , something he is excited, does not feel pain . BP 80/50 , pulse 120 beats per minute, the rhythm , the two legs are deformed , immobilization during transport was not carried out . Which the severity of traumatic shock?

6. Patient N. 70 years underwent surgery for cancer of the bladder. Suddenly at natuzhenii lost consciousness and fell . Pulse is not detected , there is no breathing , no heartbeat . Diagnosed with clinical death . That there should be a patient ?

7. In patient 82 years of age arose heart failure and breathing history - lasting heart failure . At the 5 minute cardio -pulmonary resuscitation, which started on time, cardiopulmonary resuscitation registered. Whether to continue resuscitative measures? What is the weather , with further resuscitation, regarding the recovery of cardiac function ?

8. The child experience a sudden cessation of breathing , bluish skin , loss of momentum in the great vessels and constriction of the pupils . What are the priority actions needed to carry out .

Case studies for the source of knowledge

1. A woman 64 years old with unstable angina while walking suddenly dropped . Doctor on duty during the inspection stated the unconscious , no pulse at a. carotis and heart sounds , narrow pupils and rare shallow breathing . What is the diagnosis ? What is the first medical aid ?

2 . In patients 75 years old you are , who is in the coronary care about myocardial infarction, ventricular fibrillation emerged . Immediate resuscitation effective complex , restored sinus rhythm. Objectively : the conscious, blood pressure 130 /80 mm Hg . , Shortness of breath - 24 in 1 minute, auscultation - on the right side of breath is not detected , percussion - sound box . By X-ray : Lang with collapse , a small amount of liquid. Specify the most reliable source of complications that developed ?

3 . Male 50 years old you were injured as a result of an accident. The unconscious . Since the injury was 3 minutes . Which is the primary symptom for the diagnosis of cardiac arrest ? What further diagnostic tactics ?

4 . A patient in a state of clinical death. Held ventilation method " from mouth to mouth " and chest compressions . The physician noticed that the air does not flow into the patient airway , and its head on the body are located in one plane. What is the reason for the ineffectiveness of artificial respiration in this situation? Further actions of the doctor ?

5 . Flush child 10 years brought ashore after 3 minutes without drowning. Objectively : the pulse of the peripheral arteries is not defined , the pupils moderately dilated , poorly reactive to light . Pale skin with cyanotic hue. In a vacuum mouth sand , mule ; breath sharply depressed . What are the urgent and immediate measures in the provision of assistance to the affected ?

Tests III level of complexity

1. Artificial ventilation method " mouth to mouth ", " mouth-to- nose " is held at :
1 asphyxia and obstruction of the nasal passages
2 asphyxia and obstruction of the larynx
3 asphyxia and obstruction of the bronchial
4 central apnea
5 respiratory arrest

2.Method direct cardiac massage include:
1 press on the lower third of the sternum with the rhythm of 60-80 min
2 position of the patient on a hard surface
3 snuggling heart to the sternum through the diaphragm
4 fingers to squeeze the heart
5 Press the plug on epigastral site
6 intrathoracic cardiac stimulation

2. Indirect cardiac massage is indicated for :
1 acute respiratory failure
2 acute cardiac contractions
3 cardiac tamponade
4 dysrhythmia heart rate
5 of ventricular fibrillation
6 –death

7. References:

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8. The distribution points are awarded to students:

At mastering topic number 12 to content module 3 for training activities for students rated a 4-point scale (traditional) scale, which is then converted into points as follows:

rating	Points
5 (excellent)	5
4 (good)	4
3 (satisfactory)	3
2 (poor)	0

Guidelines prepared
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