Ministry of Education and Science of Ukraine
V. N. Karazin Kharkiv National University

EMERGENCIES IN CHILDREN WITH RESPIRATORY SYSTEM DISEASES: DIAGNOSIS AND TREATMENT

Methodical recommendations
for students of higher education in the 4th and 6th years of study
in the discipline "Pediatrics"

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LIST OF ABBREVIATIONS

ABC – Airway-Breathing-Circulation / Consciousness
ARDS – Acute respiratory distress syndrome
ARI – Acute respiratory infections
ARF – Acute respiratory failure
CNS – Central nervous system
CPAP – Continous Positive Airway Pressure
ETAT – Emergency Triage Assessmentand Treatment
Hib – Haemophilus Influenzae B
PALS – Pediatric Advanced Life Support
PEEP – Positive End Expiratory Pressure
RSV – Respiratory-syncytial virus
WHO – World Health Organization

INTRODUCTION

Urgent states - a set of symptoms (clinical signs) requiring first aid, urgent medical care or hospitalization of the patient.

Mortality in hospitals is most often noted in the first 24 hours after receipt. Many of these deaths could be prevented if children in a very difficult condition were sorted immediately after their delivery to the medical institution and immediately started treatment. Thus, it is necessary to introduce a fast sorting process for all children that come to determine whether they have urgent states or priority features. The process of sorting with medical staff takes only 15-20 seconds immediately after the child enters, and does not require any special equipment. If there are signs of an urgent state need to provide timely treatment to stabilize the child's condition.

WHO has developed guidelines for urgent evaluation and treatment (Emergency Tridge Assessmentand Treatment or abbreviated Etat). They are adapted to the principles of "expanded life support for Pediatrics" (Pediatric Advanced Life Support, or abbreviated PALS) that are used in Western countries. With these principles, children with urgent life threatening, and which are most commonly found in countries with a limited resource. Such features include, for example, obstruction of respiratory tract and other breathing problems caused by infections, shock, a pronounced violation of the function of the central nervous system (comma or seizures) and strong dehydration.

SORTING

Sorting is a process of dividing patients with groups of priority to obtaining benefits that they require at the time of review (the order of assistance). All children must pass the sorting stage.

Concept ABC. Patient sorting includes a search for signs of serious illness or injury. The assessment for the presence of urgent features should take place in accordance with this scheme: airway pass (Airway) - breathing (BREATHING) – Circulatory / Consciousness (Consciousness) and easily remembered as "ABC" in the English abbreviation. Each letter denotes ***an urgent feature*** that, if it is positive, should warn you that the patient is seriously ill and requires immediate evaluation and treatment:

A – respiratory tract

B – breathing

C – blood circulation, comma, convulsions (cramps)

Priority signs. In addition to the urgent features mentioned above, there are also priority features that should alert you to a child who urgently needs assistance. Priority features are*:*

– age of baby to two months;

– breathing disorder;

– temperature: baby is very hot;

– injury or other urgent surgical condition;

– the child entered an urgent direction from another medical institution;

– food violations: visible signs of heavy depletion;

– pallor (expressed);

– pain (strong);

– the child is restless, painfully irritated or, on the contrary, inhibited;

– poisoning;

– burns (significant);

– edema of both feet;

– diarrhea (severe dehydration).

The frequency with which children exhibit some of these priority features in the receiving department depends on local conditions. Signs need to be adapted accordingly, for example, including some of them to the list of urgent.

Sorting process. Sorting doesn't take a long time. For children who do not have urgent signs, it takes an average of 20 seconds. The medical worker must evaluate several features at the same time. A child who smiles or cries does not have severe respiratory failure, shock or coma. A medical worker, inspecting a child and watching a chest movement during breathing, notes immediately and some priority signs such as severe exhaustion, or hear the unusual sounds (such as stretor or cracking breathing).

There are several methods to facilitate the sorting process. One example is the use of color marking for differentiating these three groups, giving a red color on urgent cases, yellow on priority and green on non-thermic cases, respectively.

Mechanism of sorting. Getting to the patient's sorting, it is necessary to keep in memory the concept of ABC in memory: an assessment of the passage of the respiratory tract, the state of breathing, blood circulation, the presence of a comma.

I. *To evaluate the passage of the respiratory tract (A) and the state of breathing (B),* the doctor should find out:

1) Does the child breathe?

2) Is obstruction (obstacle) of respiratory tract?

3) Is there a central cyanosis in a child? See, listen and feel air movement. The difficulty respiration may be associated with the population of the tongue, alien body, edema of the upper respiratory tract (tipping abscess) or heavy cereal, which can be manifested by abnormal sounds such as stridder.

4) Does the child have severe respiratory failure? Is there a child problem with breathing, through which he hardly speaks, eats or sucking breasts? He breathes very often and tired, he has a pronounced involvement of a chest or breathing involving auxiliary respiratory muscles?

II. *To evaluate the presence of blood circulation problems (C),* a doctor needs to know:

1) Are the hands cold in a child?

2) If so, then the time of capillary blood flow more than 3 seconds?

3) Is the pulse weak and frequent? In the older children, the pulse can be palpated on the radi artery, but in infants the pulse must be determined on a shoulder or femoral artery.

III. *For evaluation of the presence of a coma* (Cm), an express assessment of the level of consciousness is used by assigning a patient to one of the categories of AVPU :

A – active wakefulness

V – acts on a voice

P – reacts only to pain

U – no consciousness and reaction.

A child who is not active when does not sleep, but responds to the voice - is a lethargic. If the score shows that the child does not respond to the voice and responds only to pain (purposeful or purposefully moving), or does not answer at all, has a category "b" or "o". Then we believe that this child is in a coma and a child needs to be treated accordingly. When an ABC score will be completed, and there will be no urgent signs, it is necessary to continue the estimation of priority features.

Short resume

The main stages of sorting are:

1) search for urgent features;
2) treatment of any found urgent features;
3) search for any priority features;
4) moving patients with priority features at the beginning of the queue;
5) go to the next patient.

Table 1

Signs of threatening states

Airway (respiratory tract)	Full or heavy obstruction of the respiratory tract
Breathing (breathing)	apnea, expressed breathing work, bradypnoe
Circulation (blood circulation)	Lack of pulse, bad perfusion, hypotension, bradycardia
Disability (neurological examination)	Lack of reaction, suppression of consciousness
Exposure (full review of an undressed patient)	expressed hypothermia, severe bleeding, petechy / purple in combination with septic shock, bloating in combination with acute abdomen

PEDIATRIC ACUTE RESPIRATORY DISTRESS SYNDROM (PARDS)

Pediatric acute respiratory distress syndrome (PARDS) is a clinical syndrome caused by disruption of the alveolar epithelial–endothelial permeability barrier unrelated to cardiogenic pulmonary edema. Injury may occur directly to the alveolar epithelium (pneumonia, inhaled toxins, etc.) or indirectly to the capillary endothelium secondary to systemic inflammation as seen in conditions such as sepsis or pancreatitis.

The main pathogenetic links in the development of ARDS.

1. Under the influence of various factors in pulmonary capillaries and interstitial lung tissue accumulates a large number of activated leukocytes and platelets that distinguishes many biologically active substances (proteinases, prostaglandins, lipid peroxidation products, leukotrienes, etc.) that damage the alveolar epithelium and vascular epithelium are changed. tone and vascular reactivity. From circulating blood into the zone of inflammatory process in the lungs, leukocytes receive, which leads to infiltration of the parenchyma of the lungs.

2. Biologically active substances dramatically increase the vascular permeability, there is a pronounced penetration of plasma and red blood cells in the alveoli and interstitial tissue with the development of pulmonary edema and atelectasis.

3. There is a hypoventilation of the alveola against the background of a significant deficiency of the surfactant. The elasticity of the wall of the alveol decreases, which leads to discoid atelectasis, the shunting of venous blood into an arterial channel, a violation of the relationship between ventilation and perfusion, a disorder of the diffusion of oxygen and carbon dioxide with the development of hypoxia, hypercaponia.

4. Increasing pressure in the pulmonary artery is a characteristic feature of the disease in the absence of pathology of blood circulation organs.

Criteria of acute respiratory distress syndrome (ARDS) (according to Berlin Definition, 2012):

1) a manifestation - within a week from the beginning of the disease, or the emergence or enhancement of subjective symptoms from the respiratory system;

2) pathological changes in the visualization examinations of the lungs (X-ray or CT) are bilateral eclipses that can not be explained by the presence of a liquid in pleural cavities, atelectasis or the presence of nodular changes;

3) causes of pulmonary edema - respiratory failure can not be fully explained by cardiac insufficiency and hyperhydration; If there are no risk factors for ARDS, an objective evaluation (e.g. echocardiographic) is required to exclude hydrostatic edema;

4) Oxygenation of arterial blood, which is estimated based on the ratio of PAO2 to the oxygen content in the respiratory mixture, which can be represented as a decimal (FiO2) (in a healthy person who breathes atmospheric air: PAO2 = 97 mm Hg. Art.; FiO2 = 0.21; PAO2 / FIO2 = 470 mm Hg) with mechanical ventilation of lungs.

Classification of ARDS by severity of oxygenation compromise:

a) **mild** – 200 mm Hg. Art. $<PAO_2 / FIO_2 \leq 300$ mm Hg. Art. with positive pressure at the end of the exhalation (Positive End Expiratory Pressure – PEEP) or constant positive pressure in the respiratory tract (Continous Positive AIRway Pressure – CPAP) ≥5 cm H_2O (mechanical ventilation with light grd gds may be non-invasive);

b) **moderate severity** – 100 mm Hg. Art. $<PAO_2 / FIO_2 \leq 200$ mm Hg. Art., in PEEP ≥5 cm H_2O;

c) **severe** – $PAO_2 / FIO_2 \leq 100$ mm Hg. Art., in PEEP ≥5 cm H_2O.

Treatment. Features of ABCDE-review characteristic of difficulty breathing.

Breathing tract. The passage of the respiratory tract is the first thing that is necessary. If the respiratory tract is not passable, you should use the maneuver opening the respiratory tract. Then it is necessary to protect the respiratory tract using the pharynx or intubation respiratory tract.

All children with difficult breathing should receive oxygen with a high flow rate through the front mask. Use a stream of 10–15 l/min through a face mask and a tank bag to provide a patient nearly 100% oxygen. If lower streams

support adequate SPO_2 (94–98 %), then you can use nasal cannula or nasopharyngeal catheters for speed <2 l/min.

If the child is hypoventilated with a low respiratory rate or weak effort, respiration should be maintained by oxygen through a device bag-valve mask. The consumption of fluid can be reduced, especially in infants with difficult breathing. Consider the introduction of a bolus of liquid (20 ml/kg of 0.9 % physiological solution) in the presence of signs of blood circulation insufficiency, especially in intubation and positive pressure, ventilation is initiated.

Secondary evaluation and search of key characteristics. While the primary examination and resuscitation are conducted, a more detailed history of health and activity of the child ends, preliminary 24 hours of life must be restored and any sign that preceded the disease. All children with difficult breathing will have respiratory distress and coughing of varying degrees, so they are not useful diagnostic criteria. Certain key features that will be identified clinically in the above-mentioned assessment and based on target anamnesis may indicate the most probable working diagnosis for emergency assistance.

Inhalation noises, such as stridor, indicate obstruction of the upper respiratory tract. Noises on exhalation, such as wheezing, indicating the obstruction of the lower respiratory tract. Fever without stridder involves pneumonia. Signs of heart failure indicate a congenital or acquired heart defect. Short-term anamnesis, contact with allergen and urticaria indicate anaphylaxis. Suspicion of reception inward and the lack of cardiopratory pathology indicates poisoning.

Re-evaluation of respiratory tract. The respiratory tract is partially locked or narrowed, and what probable cause? Pay attention to noise while inhalation. If sensitive "chabassing" sounds, this means that the respiratory tract is full of allocations that require cleaning, and this suggests that the child is very weak, tired or in a state of suppression of consciousness and can not clear the allocation with its own cough. If heartbreaking respiratory noises are heard, consider the possibility of partial burning of the respiratory tract due to inhibition of respiration, reducing the level of consciousness. In the presence of a sharp stridor associated with the barking cough, it should be suspected of obstruction of the upper respiratory tract through the cereals. If the sick child without cough appears a quiet stride, think about the epilotite. If the stringer arose suddenly, without prodromal symptoms or in anamnesis, which allows you to assume that a foreign body.

Overestimate breathing. What effort is necessary for breathing, what is its effectiveness and effect? The pulse oximeter must be installed and the oxygen saturation is marked both in the breath of air and at high oxygen stream.

The immediate audit of the respiratory tract. Partial obstruction through secretion or inhibition of consciousness.

– Use suction to clear the respiratory tract partially blocked by releases, provided the lack of stridder.

– Support the respiratory tract using maneuvering the chin or pushing the jaw in a child with difficult breathing due to suppression of consciousness or at extreme fatigue.

– Further maintenance of respiratory tract may be performed using orgonal or nasopharynic devices or intubation.

– During the call of assistance to patients with consciousness inhibition, it is possible to maintain a permanent positive pressure in the respiratory tract using a face mask, an oxygen supply and a respiratory contour, for example an anesthetic respiratory circuit (Ayr's tee) using such schemes.

CROUP IN CHILDREN

Croup is an acute laryngotracheitis of predominantly viral etiology, accompanied by stenosis of the larynx, hoarse voice, barking cough and stridor.

Ethiology. Croup is caused by a viral infection of the respiratory tract that causes edema and inflammation of the upper airway, and laryngeal mucosa resulting in narrowing in the subglottic region of the airway. In mostly cases its human parainfluenza virus (types 1 and 3), but also can be influenza A and B viruses, adenovirus, respiratory rhinovirus, syncytial virus, coronavirus, human metapneumovirus.

Clinical picture. Croup is characterized by frequently preceded by 24–72 hours of fever, rhinorrhea, nonspecific cough with abrupt onset of barky cough, hoarse voice and, often, inspiratory stridor during the night. Croup symptoms are most often worse at night and can depend on the emotional condition of the child (he is calm or agitated). Usually symptoms are short-lived, with resolution of the barky cough by 48 hours and just 2 % of children are having symptoms persisting for longer than 5 nights.

Level of severity of croup and clinical features

1) Mild
- Barky cough: occasional
- Stridor: none to limited at rest
- Indrawing (suprasternal and/or intercostal): none to mild

2) Moderate
- Barky cough: frequent
- Stridor: easily audible at rest
- Indrawing (suprasternal and/or intercostal): visible at rest
- Distress or agitation: none to limited

3) Severe
- Barky cough: frequent
- Stridor: prominent inspiratory and occasionally expiratory
- Indrawing (suprasternal and/or intercostal): marked or severe

- Distress or agitation: substantial
- Lethargy may be present

4) Impending respiratory failure

- Barky cough: often not prominent because of fatigue
- Stridor: audible at rest, but may be quiet or hard to hear
- Indrawing: may not be marked
- Lethargy or decreased level of consciousness
- Dusky or cyanotic without supplemental oxygen

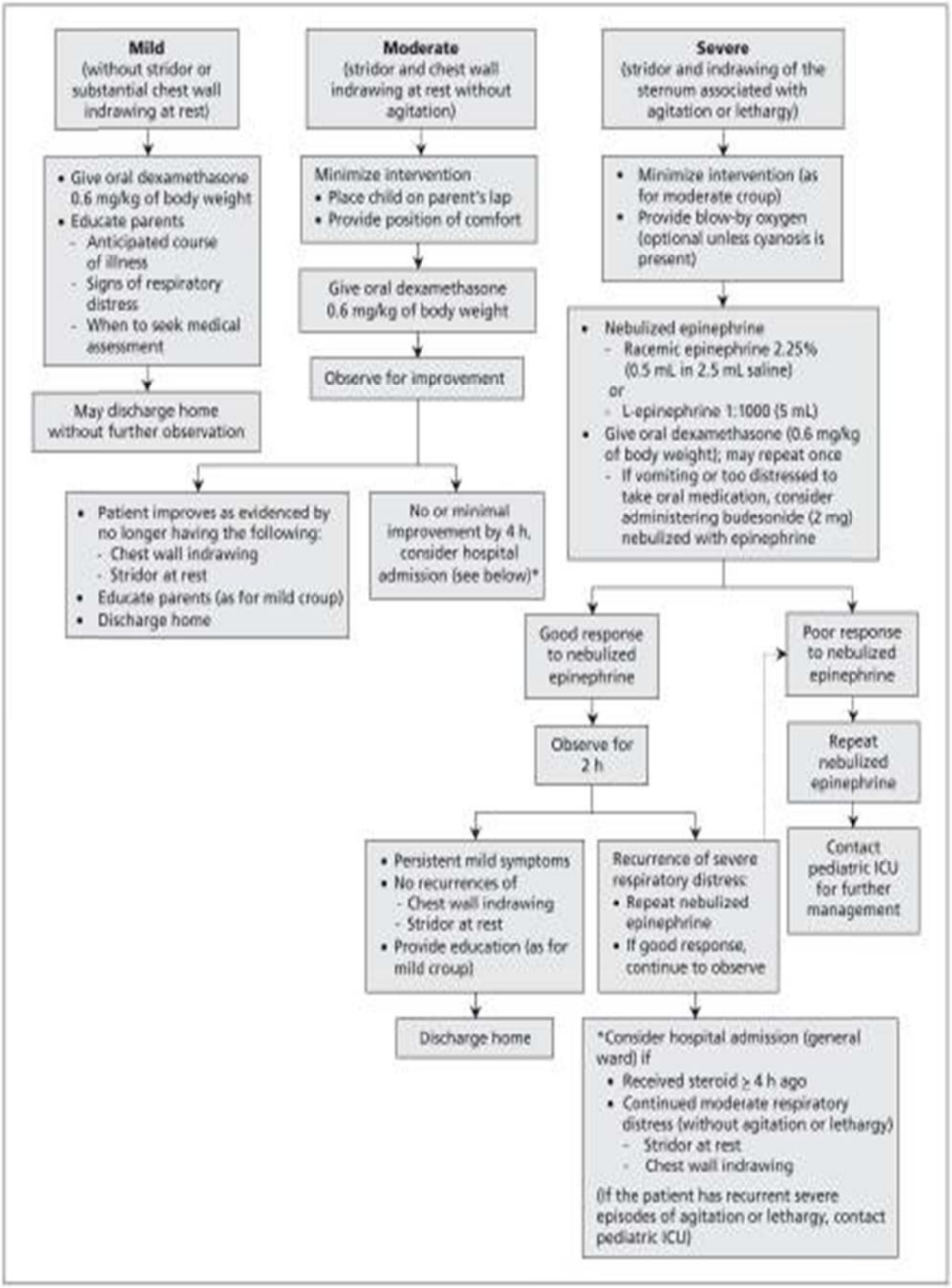
Differential diagnosis of stenosing laryngotracheitis and bacterial epiglottitis. Stenosis of the larynx with *epiglottitis* (bacterial, more often caused by hemophilus influenzae, inflammation of the epiglottis) proceeds with a high temperature, the presence of severe toxicosis and deterioration of the patency of the larynx in the supine position, as well as the absence of a barking cough. In 25 % of cases, pneumonia develops simultaneously. With epiglottitis – an acute onset, with croup – more often gradual; bacterial epiglottitis develops at the age of 5–8 years. Dysphagia is observed with epiglottitis, with croup it is absent; barking cough is not typical for epiglottitis, for croup it is typical. With direct laryngoscopy with epiglottitis – supravascular edema (edema over the vocal cords), edema and hyperemia of the epiglottis, with croup, the epiglottis is not changed, there is a subglottic edema.

Angioedema of the larynx is a component of a generalized anaphylactic reaction and develops as a manifestation of sensitization to drugs and other agents. The diagnosis is established using anamnestic data (tendency, contact with an allergen). Edema of the larynx with anaphylactic reactions develops suddenly, within a few minutes after contact with an allergen (food, insect poison, injection of a vaccine or other drugs, such as penicillin).

The croup should also be differentiated from *congenital stridor* (narrowing of the larynx), which usually occurs due to congenital softness of the epiglottis or cartilage of the larynx, less often with narrowing of the trachea (compression, tracheomalacia). Inhalation difficulty usually appears immediately after birth, but is aggravated by ARVI.

Treatment. A simple treatment algorithm from the Toward Optimized Practice guideline based on assessment of severity of respiratory distress can be used to guide management of croup in children (Figure 1). The algorithm outlines indications for using the 2 standard treatments, corticosteroids and nebulized epinephrine, which have been shown to be beneficial.

Algorithm for the outpatient management of croup in children by level of severity



EPIGLOTITIS

Bacterial epiglotitis – acute bacterial affect of the adder, which quickly leads to a severe obstruction of the respiratory tract.

Acute epiglotitis has some general clinical signs with a cereal, but it occurs much less than croup. If the diagnosis of the epglotite will not be delivered quickly and will not be started by the appropriate treatment, there is a complete obstruction and may occur death. The epiglottitis is most often found in children aged 2-6 years, but may also occur in infants, and in adults.

Etiology. In most cases (about 95 %), the disease causes H.influenzae type B. In number of pathogens can be staphylococcus, streptococcus, pneumococcus. The epilotitis is much less observed in countries where immunization against Hib has been introduced, but still can occur in the case of ineffectiveness of the vaccine and in unvaccinated children.

Pathogenesis. When an infection occurs, the inflammation of the adapter and its supporting-fingercles is very rapidly developing. The adapter becomes swollen and hyperemic. Hiring and deviating back, the pastorant closes the entrance to the larynx, causing a severe obstruct of the respiratory tract. Transferring a child to the position of lying can lead to asphyxiation and stopping of the heart.

Clinic. The disease occurs acutely and rapidly progressing. Beginning of high temperature disease (> 39 °C), throat pain, through which the child refuses to say, swallow saliva and drinks (dysphagia), salivation, soft respiratory stridor and rapid growing breathing difficulty for 3–6 hours. Unlike the cereal, the cough is minimal or absent. Growing tachip and cyanosis. The child is frightened, occupies a forced position in which it is motionless (sits with a slope of the trunk forward and elongated with a neck, anxious to remove the tumor from the vocal gap). The patient looks very sluggish and pale, he has poor peripheral blood circulation. Sometimes when examining the throat (and always when conducting a straight laryngoscopy) can be seen increased in size, swollen, red-colored powdered. It should be noted that the survey of the throat should be carried out with special caution due to the possibility of developing a complete respiratory tract obstruction.

Differential diagnosis. The obstruction of the upper respiratory tract can cause *diphtheria* in children who have not been immunized against illness. Always ask about the vaccination of any child with fever and signs of obstruction of the upper respiratory tract, especially if they have recently been in endemic areas. Specific treatment of diphtheria cereal comprises penicillin, steroids and antitoxin.

A significant edema of tonsils in *infectious mononucleosis* or *acute tonsillitis* can sometimes violate the work of the upper respiratory tract. The passage of a nasopharynic probe can give instant relief, and often help steroids.

Pharyngeal abscess or peritonsillar abscess are rare, but both may manifest the fever and peculiarities of obstruction of the upper respiratory tract along with difficulties in feeding.

Treatment. A child with a diagnosis of epiglotite should be urgently hospitalized in a resuscitation compartment. After protecting (ensuring the passage) of the respiratory tract, the blood should be sent to sowing and:

1) Start treatment with antibiotics intravenously (ceftriaxon in a single dose of 40–50 mg / kg or amoxiclav – 20–30 mg / kg).

2) The method of selection at acute respiratory failure III degree should be continued by orotraheal or nazotracheal intubation. With a deep anesthesia, the child can be placed on the back for laryngoscopy and intubation. Intubation of the trachea can be difficult due to severe edema and inflammation of the epiglottis ("cherry-red epiglottis"). A smaller size tube is required than, which is usually needed by the age of a child. Surgeon capable of performing tracheotomy must be present.

In a child with affected, but functioning respiratory tract in all cases it is important to avoid worsening of the situation. Do not expose the respiratory tract unpleasant or terrible interventions. Interventions, such as side radiography of neck and venepunction, as they are bothering the child. Crying and anxiety can quickly turn partially occluding respiratory tract in fully blocked with fatal consequences. Do not lay your child if he is better off sitting.

Introduction of oxygen, scattered adrenaline or radiograph execution may be difficult. Aerosols of medicines, such as adrenaline or steroids, do not have an obvious benefit, and if they use them, then they must facilitate the condition of the child.

3) There is also:

– Installation of peripheral venous access (flex catheter),

– conducting detoxification infusion therapy with solutions of crystalloids;

– one-time administration of corticosteroid preparations (prednisolone) at a dose of 3–5 mg / kg;

– it is imperative to inhale hydrated oxygen;

– in order to sedate to introduce 70–100 mg / kg or 0.5 % sibazon in a dose of 0.3–0.5 mg / kg.

With appropriate treatment, most children can be extended in 24–36 hours, and they fully recover within 3–5 days.

Complications such as hypoxic lesions of the brain, pulmonary edema and other serious infections caused by Haemophilus are rare. In countries where Hib vaccination is used, it is necessary to investigate the inefficiency of the vaccine.

BACTERIAL TRACHEITIS

Bacterial tracheitis – rare, but dangerous to live the form of infection of the upper respiratory tract.

Etiology. Infection of the Staphyloccocus Aureus, streptococci or Haemophilus Influenzae B (Hib) leads to abundant, purulent secretions and necrosis of mucous membranes. Diphtheria croup (true croup) in our time is extremely rare due to effective immunization.

Clinic. The child looks sluggish, with a high temperature and signs of progression of deterioration of the upper respiratory tract. The croup cough, the absence of salivation and a longer anamnesis help to distinguish this state from the epiglotite. Diphtheria croup usually develops with symptoms of an upper respiratory tract infection over several days. The symptoms of intoxication are always not expressed. When examining the pharynx, areas of gray-white plaque are revealed, tightly welded to the surrounding tissues.

Treatment. More than 80% of children with this disease require intubation and artificial ventilation of lungs to maintain respiratory tract, as well as intravenous antibiotics (cefotaxime or ceftriaxone plus flucloxacillin). Specific treatment of diphtheria cereal comprises penicillin, steroids and antitoxin.

BRONCHIOLITIS

Bronchiolitis is the most common serious respiratory disease of childhood. Bronchiolit is affected by 10 % babies, and 2–3 % of them come to the hospital in the first year of life. 90 % of patients with bronchiolitte - children aged 1 to 9 months. This disease is very detected in children over the 1st year of life. Every year there is a winter epidemic.

Etiopathogenesis. The respiratory-syncytial virus (RSV) is a pathogen in 60–70 % of cases, the rest is caused by other respiratory viruses, such as parainfluenzae, influenzae, adenovirus.

Clinical picture. The disease begins with catarrhal phenomena – rinitis, an increase of body temperature, later join dry coughs and symptoms of respiratory failure: dyspnea of mixed character with the participation of auxiliary muscle (blowing the wings of the nose, the participation of intercostal muscles in the act of breathing), extended exhaling, whistling remote wheezing. In severe form appear acrocyanosis, tachycardia.

Difficulties with feeding, associated with increasing dyspnea, often is a cause of hospitalization. Recurrent apnea – a serious and potentially fatal complication, especially in premature infants. Babies with concomitant diseases, including premature birth, immunodeficiency, left-handed shunting, congenital heart disease or interstitial diseases of the lungs are more prone to development of severe diseases.

Table 2

Bronchiolitis: characteristic features when viewed

Signs	Value
Tahipnoe	50 breaths / min
Retraction	Hebers and intercostal intervals
Cough	Sharp, dry
Excessive increased ease of lungs	Pronounced breasts, reducing liver
Tachycardia	> 140 beats / min
Crepitation	Slim Konets of Sparkle
Wheeze	High exhales> threads
Color	Cyanosis or pallor
The nature of breathing	Irregular breathing / recurrent apnea

Factors of risk of bronchiolite gravity: age to 6 weeks; premature birth; chronic pulmonary disease; congenital heart failure; immunodeficiency.

Differential diagnostics. Most often acute bronchiolitis is believed for pneumonia. Clinical symptoms: catarrhal manifestations, respiratory failure, auscultative picture in the lungs (the presence of fine-shaped wet wheezing) makes these diseases similar. However, for acute bronchiolit characteristic of percussion, a box shade of pulmonary sound, and for pneumonia - shortening or dulling of the pulmonary sound, the weakening of breathing. Finally, the diagnosis helps X-ray examination. Babies with bronchiolite rarely require a chest X-ray. If the radiography is performed, then it usually shows the enhancement of transparency and often indicates atelectasis or pneumothorax, especially in the upper lung fates. RSV and other viruses can be identified from nasopharynx. The analysis of blood gases, which is required only in the hardest cases, shows reduced oxygen and an elevated level of CO_2. Although many reasons for difficult breathing are associated with infection, high temperature, usually associated with pneumonia, eploglottite and bacterial tracheitis. Although many cases of asthma provoked by infections of upper respiratory tract, a child with asthma rarely fever, and a subfebrile temperature is characterized for bronchiolitis. Therefore, in the absence of a striddle and wheezing of breathing, combined with a significant fever, is likely to be associated with pneumonia. Bronchiolitis can cause heart failure in infants with previously diagnosed heart lesions. Differential features are listed in table 3.

Table 3

Signs that help distinguish heart failure from bronchiolitis

Heart	Failure bronchiolite
Problems with feeding when delayed	-
Anxiety, sweating	-
Tachycardia and tachypnea	Runny nose and sharp cough
Pallor, sweating and cool peripherals	-
A great heart with a shifted apex	Normal or explicitly small heart
Increase liver	Liver is reduced
Halop rhythm	-
Noise in the heart	No noise
X-ray chest clutch shows stagnation in the lungs and a large heart	Strengthening transparency on chest X-ray

Emergency treatment of bronchiolitis. Treatment primarily aims to support the patency of the upper respiratory tract, cautious suction of discharge from the nose, positioning lying on the abdomen (if in the hospital), oxygen therapy and respiratory support if necessary.

1) Rate the ABC;

2) Make sure that the respiratory tract is passable and free: the use of an aspiration catheter of Yankauer, attached to the nose, can help guarantee that the nose and nasopharynx purifies that can significantly affect the respiratory distress syndrome in the infant;

3) Give the oxygen of high concentration through a reservoir mask. Follow SPO_2 and hold it at 94–98 %. In some difficult cases, oxygen can be used through nasal cannula at a speed of < 2 l/min;

4) Consider the use of wet, sloping and moistened systems with a high flow (streams 1–2 l/kg/min);

5) Support hydration and nutrition. In infants with a significant respiratory distress syndrome, maintain hydration by feeding through a nasogastric probe or intravenously through two thirds of the usual supporting regime. Remember that the nasogastric probe can partially overlap the respiratory tract. Breastfeeding can be too stressful, and in this case, breast milk should be mediated and giving through the gastric probe;

6) Monitoring apnea / hypoventilation in children younger than 2 months:

– SPO_2,

– Breath frequency monitor / apnea and

– PCO_2 – percutaneously, capillary or at the end of exhalation;

7) Therapy using heated, moistened, high-preceded nasal cannula and constant positive pressure in respiratory tract (CPAP) – these two variants are believed to improve the work of breathing, preventing the dynamic airway collapse during exhalation, there by reducing the capture air and improvement of

gas exchange. CPAP leads to a decrease in respiratory frequency and PCO_2, as well as practice shows that CPAP reduces the need for mechanical ventilation of lungs with the greatest advantage if it is assigned an early stage. Indications for CPAP include heavy respiratory distress, need for $FiO_2 > 0.5$ or infants from apnea;

8) Mechanical ventilation of the lungs is required in 2 % of newborns coming to the hospital.

9) In severe cases, infants with the following diseases require intubation and artificial ventilation of the lungs:

– recurrent apnea,

– exhaustion or

– severe hypercapment and hypoxia.

All intake infants should be continuous monitoring SPO_2 and CO_2. And a sprayed 3 % physiological solution, and sprayed adrenalines with corticosteroids were tested, but not proven significant benefits. Bronchodilators, steroids, antibiotics and physiotherapy are useless.

ACUTE ASTHMA

To evaluate the severity of an asthma exacerbation can be difficult. Clinical signs are badly correlated with the severity of the obstruction of the respiratory tract. Some children with a acute severe form of asthma do not look depressed, and small children with severe asthma is particularly difficult to assess the state.

Anamnestic features associated with more serious or life-threatening obstructing respiratory tract:

– long-term symptoms of regular night awakening;

– a bad response to treatment already carried out in this episode;

– a severe course of preliminary attacks using intravenous therapy, as well as the need for hospitalization to a department of intensive care.

Clinic. Allocate two degrees of severity: (1) severe, (2) Life-threatening asthma.

Table 4

Symptoms of severe and life-threatening asthma

Severe asthma	Life-threatening asthma
too breathless to eat or talk	Exhaustion
breathing frequency > 30 / min (> 5 years) > 50 / min (2–5 years)	Poor breathing efforts
	"Silent Lung"
	Hypotension
Pulsion frequency: > 120 beats / min (> 5 years)	The level of consciousness-suppression / excitation
	May be seen as anaphylaxis

Treatment in acute asthma.

More intensive treatment is likely to be required for children with SPO_2 <92 % in the air after initial treatment with bronchodilators. Unfavorable signs of severity include the degree of wheezing, respiratory frequency and paradox pulse. A chest x-ray is only indicated if there is severe dyspnea, uncertainty about the diagnosis, chest asymmetry, or signs of severe infection.

Emergency assistance in asthma:

1) Rate ABC.

2) Give oxygen with a high stream through a facial mask with a reservoir.

3) Attach the pulse oximeter and strive to save SPO_2 at 94–98 %.

4) Give β_2-agonist, for example, salbutamol:

– For those with mild to moderate asthma and SpO_2> 92 % in air, use a 1000 microgram aerosol through a valve mask. Children with mild or pacified asthma are less likely to have tachycardia and hypoxia if β2-agonists are given via a pressurized aerosol. Children under the age of 3 years will probably require a personal mask connected to the mouthpiece for successful drug delivery.

– For those with severe or life-threatening asthma, or when oxygen is needed, use nebulized salbutamol 2.5 mg (<5 years) or 5 mg (> 5 years) (with ipratropium bromide) with oxygen at a flow of 6–8 l / min to ensure a small particle size. Higher streams can be used, but more non-smoked preparation can be lost from face mask. This procedure can be repeated every 20–30 minutes.

5) Give oral prednisolone 1 mg / kg or, if vomiting, IV hydrocortisone 4 mg / kg.

6) When receiving non-belted salbutamol, a mixture of iPratropium Bromide 250 micrograms (<2 years: 125 micrograms) with oxygen. This can be given every 20–30 minutes from the beginning, reducing the dose when improving. In severe asthma, nonbalazers can be continuous, since interruptions between them can lead to a return of symptoms.

7) If an infant or child is clearly in respiratory failure with poor respiratory efforts, suppressed level of consciousness and low saturation, despite maximum oxygen therapy, urgent intubation is needed. Give a bronchodilator, such as Infusion of Salbutamol (for example, Bolus 15 micrograms / kg; <2 years: 5 micrograms / kg).

Revaluate ABC and carefully monitor the response to treatment. The evaluation is based on physical characteristics and saturation with oxygen. Measurements are performed directly after 15–30 minutes after inhalation of medicines. This should be accompanied by improving the results of measurement of peak stream.

If the patient does not respond to treatment or worsening of the condition:

1) For severe or life-threatening asthma, intravenous bronchodilators are effective: consider aminophyllin, magnesium sulfate or salbutamol. There is no clear evidence that one intravenous therapy exceeds another.

2) Give magnesium sulfate 40 mg / kg for more than 20 minutes.

3) Give Salbutamol 15 mcgrams / kg for 10 minutes in patients aged 2 years and older (<2 years: 5 micrograms / kg). The latter may be accompanied by infusion of 1–5 micrograms / kg / min, EKG and serum potassium monitoring regularly so that can be detected and treated hypocalium.

Note. The dose load is equivalent to 1.5 micrograms / kg / min.

4) Consider intubation for mechanical ventilation: or a rapid induction sequence with ketamine or inhalation anesthesia, which may aid bronchodilation.

5) If the child is not on oral theophylline or other methylsanthins, give a loading dose of aminophylline 5 mg / kg in 20 minutes, monitoring of ECG in arrhythmias, and then intravenously slowly 1 mg / kg / kg / h.

6) If respiratory efforts deteriorate, or the level of consciousness is depressed, or SPO_2 is low and falls, despite maximum oxygen therapy, **urgent intubation** is required.

Induction to intubation:

1. Increases exhaustion;
2. Progressive deterioration in:

– Clinical condition

– SPO_2

– reduction and / or oxygen needs increases

– PCO_2 – increase.

Mechanical ventilation is rarely needed. There are no absolute criteria, since the intubation decision is usually based on the clinical condition of the child and responding to preliminary treatment. In cases of acute severe asthma, which responds to treatment, it is usually necessary to obtain a slight value from the routine blood gas measurement. However, in those who have blood gas with increased CO_2, it is necessary to accelerate the decision to conduct intubation. Children with acute asthma, which require mechanical ventilation, should be transferred to emergency department.

All intub children should have a continuous CO_2 monitoring.

Medical assistance in improving the child's condition:

– If in the air is improving (SPO_2> 92 % in the air, the minimum recession, PEF> 50 % of the normal value), it is possible to consider the termination of intravenous treatment.

– when oxygen is no longer needed, a change from non-bounced bronchodilator to use aerosol sprays β_2-agonist inhaler, giving one sprayer while inhalation through a mouthpiece or mask

– Reduce the frequency of aerosol therapy from 1 time in 30 minutes to 1 time in 4 hours, since there is an improvement. Treatment of a child should be considered and changed if inadequately. Make sure the child has a relevant medical supervision.

Other measures:

– Monitor EKG and SPO_2

– Make sure that there is an opportunity to avoid any identified trigger

– Intravenous liquids: limit two thirds of normal requirements

– Antibiotics: do not let you regularly, since most Asthma attacks are launched by viral infections.

After resuscitation and to the transition to a specific treatment of acute asthma, in all conditions it is important to estimate the exact severity of the child. The following clinical signs should be recorded regularly, for example: every 30–60 minutes or before and after receiving each dose of the bronchodilator:

– pulse rate;

– respiratory frequency and degree of recession;

– use of auxiliary breathing muscles;

- degree of excitation and conscious level;

– SPO_2;

– Peak flux speed (if possible, in children over 6-7 years old).

Saturation of arterial oxygen with pulse oximeter (SPO_2) is useful in assessing the severity, monitoring progress and forecasting.

Treatment of severe acute asthma. Medicines used to treat severe acute asthma are given in table 5.

Table 5

Treatment of severe acute asthma

Oxygen therapy	High flow
Non-built β_2-bronchodilator	Salbutamol 2,5–5 mg as needed in accordance with the severity and reaction Terbutaline 2.5–10 mg
Unbalanced IPratropium bromide	250 mkg (<2 years 125 mkg) every 20–30 minutes
Prednisolone	1 mg/kg/day for 3 days (max dose/day 40 mg) or intravenous hydrocortisone succinate: loading dose of 4 mg/kg. Continuous infusion 1 mg/kg /h.
Intravenous load of salbutamol	dose of 15 mkg / kg in children over 2 years of age Continuous infusion 1–5 mkg / kg / min
Magnesium sulfate	40 mg / kg through 20 minutes
Dose of load Aminophyllin	Dose of loading 5 mg / kg for more than 20 minutes * Continuous infusion 1 mg / kg / h

* If the child received oral theophyllin in the previous 12 hours.

Corticosteroids accelerate recovery after acute asthma. Although one dose of oral prednisolone is effective, many pediatricians use a 3–5-day course.

Intravenous aminophiline also has a role for a child. The load dose is given to 20 minutes, and then continuous infusion. convulsions, severe vomiting and

fatal cardiac arrhythmias can be at rapid infusion. Consequently, the continuous monitoring of ECG must be made during the loading dose infusion. If the child received a slow theophyllin in the previous 12 hours, the load dose is not used.

Intravenous magnesium sulfate is a safe treatment for acute asthma. Doses of 40 mg / kg / day (maximum 2 g) slow infusion.

It was proven that intravenous solution of salbutamol has a greater advantage before inhalation. Although aerosol preparations are originally given, because they are available and more acceptable to the child, intravenous salbutamol occurs in severe release episodes that do not respond quickly to aerosol therapy. Important side effects include sinus tachycardia and hypokalemia: potassium levels of serum should be checked every 12 hours.

Non-inflated magnesium sulfate (150 mg, added to non-belted salbutamol and tipratropia) can be useful with heavy asthma with SPO_2 <92 % in the air. There is no proof of the support of regular use of inhalation of steroids to treat acute asthma in childhood.

ASPIRATION BY A FOREIGN BODY

Aspiration by a foreign body is most often observed in children. An alien body usually enters the bronchus (more often in the right) and can cast a collapse or sealing part of the lungs to the periphery from the place of the blockade. Frequent priority manifestations - symptoms of a sudden obstruction of the respiratory tract. It should be suspected of aspiration of a foreign body with any obvious episodes of choking.

The diagnosis of aspiration with a foreign body *should be suspected of a child with the following features:*

– sudden emergence of signs of respiratory tract (the child was submitted), coughing or astmoid respiration, or

– segmentary or dive pneumonia, which does not respond to antibiotic therapy.

Need to examine the child for the subject:

– one-sided astomoid breathing;

– areas of weakened respiration, which determines percutaneously dullness, or enhancing percussion sound;

– displacement of trachea or apical impetus.

It is necessary to conduct X-ray of the OGP with full species to determine the area of the rotten expansion or collapse, displacement of the mediastinum, or the presence of a foreign body, if it is contrasting.

Although the anamnesis of inhalation can be obtained from parents, aspiration of a foreign body can not be excluded by any conventional physical examination, nor with an X-ray of the chest. Laryngo-bronchoscopy is needed to all children with anamnesis, which involves aspiration of a foreign body.

Treatment. *Emergency granting a child with a sudden mechanical obstruction of the respiratory tract (the child was submitted).* You need to try to shift and remove an alien body. The nature of interventions depends on age.

For newborns:

1) put a child on hand or thigh, lowering her head down to the bottom;

2) strike 5 times on the back of the child with the base of the palm;

3) if the obstacle remains, turn the child over and press down 5 times; by moving two fingers on the chest of the child along the midline, at a point a finger's width below the level of the nipples;

4) if the obstacle remains, check or does not have a foreign body in the oral cavity;

5) if necessary, repeat the entire procedure successively, starting with hanging on the back.

For older children:

1) impact the child on the back with the basis of the hand 5 times in the position of a child sitting, on his knees or lying;

2) if the obstacle remains, stand behind the child and grab her torso, squeeze one hand into a fist just below the child's sternum, put the other hand on the fist and press sharply on the stomach in an oblique upward direction, repeat the procedure 5 times;

3) If the obstacle remains, check or does not have an foreign body in the oral cavity;

4) if necessary, repeat the entire procedure, starting with hanging on the back.

After performing these measures it is important ***to evaluate the passage of the respiratory tract,*** for which it is necessary:

– visually evaluate the movement of the chest;

– to determine the presence of respiratory noises in auscultation of the lungs;

– tactively feel the movement of air at present and specifying the child.

In extreme cases, the threat of life is immediate direct laryngoscopy using the Magills forceps to remove the visible third-party body.

ANAPHYLAXIS

Anaphylaxis is a severe, acute and potentially dangerous disease caused by systemic release of mediators from stem cells and basophils, often in response to the allergen.

The frequency of patients with anaphylaxis in an emergency department is approximately 0.1 % – 0.4 %.

Only in one third of these cases, the anti-anaphylactic reaction trigger will end up becoming known. Food is the most frequent trigger, also bite of intercourse

(bees / axes) and medicine. When food is defined as a trigger, peanuts, wood nuts, fish, milk, eggs and mollusks (for example, shrimp, lobsters, crabs, combs and oysters) are products that are most often causing a fatal or almost fatal reaction. Although clinical symptoms and signs can cover several systems and organs, skin manifestations such as urticaria, itching, angioneurotic edema and blood flow, as a rule, arise in most children (80–90 %) with anaphylaxis. Of the more serious symptoms, obviously, the damage to the respiratory lesions suffering from 60 % to 70 % of children with anaphylactic syndrome. The damage to the cardiovascular system occurs less often: in 10–30 % of children with anaphylactic syndrome develop signs of cardiovascular insufficiency, including dizziness, hypotension and fainting.

Table 6

Signs and symptoms of anaphylaxis

System	Signs and symptoms
General / CNS	Fuss, irritability, drowsiness, lethargy, decrease in consciousness, drowsiness
Skin	Urticaria, itching skin, angioneurotic edema, tides
Upper respiratory tracts	Stridor, hoarseness, swelling of the oropharynx or larynx, supreme edema, swollen lips / tongue, sneezing, rhinorrhea, obstruction of the upper respiratory tract
Lower respiratory tracts	Cough, shortness of breath, bronchospasm, tachipnoe, stop breathing
Cardiovascular	Tachycardia, hypotension, dizziness, fainting, arrhythmia, sweating, pallor, cyanosis, heart stop
Gastrointestinal tract	Nausea, vomiting, diarrhea, abdominal pain

Clinical criteria for analyzing anaphylaxis

Anaphylaxis is high if any of the following 3 criteria is present:

1. Acute onset of the disease (from a few minutes to several hours) with skin lesions, mucous membranes, or other (for example, generalized urticaria, itching or reddening, swollen lips, tongue, tongue) and at least one of the following actions:

a. Breathing disturbance (eg shortness of breath, bronchospasm whirgle, stridor, reduction of PEF or hypoxemia)

b. Reducing blood pressure or related symptoms of target dysfunction (for example, hypotension [collapse], fainting or urinary incontinence)

2. Two or more of these cases that occur quickly after contact with a probable allergen for a given patient (from a few minutes to several hours):

a. Defeat of skin-mucous tissue (for example, generalized urticaria, redness of skin or swollen lips, tongue and tongue)

b. Breathing violations (eg shortness of breath, bronchospasm whirgle, stridor, reduction of PRP or hypoxemia)

c. Reducing blood pressure or related symptoms of target dysfunction (for example, hypotension [collapse], fainting or urinary incontinence)

d. Stable gastrointestinal symptoms (eg spastic abdominal pain or vomiting)

3. Reducing blood pressure after exposure to a well-known allergen for a given patient (from minutes to hours). Babies and children: low systolic blood pressure (depending on age) or decreased systolic blood pressure more than 30 % (Depending on the age, low systolic blood pressure for children is defined as less than 70 mm Hg. Art. For children aged 1 Miss- 1 year, less than 70 mm Hg. Art. + [2 × age]) for children aged 1- 10 years and less than 90 mm Hg. – aged 17).

Treatment.

1. Fore allergen (if still present)

2. Out of: Don't let the child stand or walk. If the child suddenly rises or sit down, death may occur within a few seconds. Treat the child in a position lying on the back or in a position on the left side when vomiting (or sitting straight if breathing is difficult, but watch hypotonia).

3. Adrenalin intramuscularly 10 mkg / kg or 0.01 ml / kg 1: 1000 (a maximum of 0.5 ml), in the lateral part of the thigh, which should be repeated after 5 minutes if the condition of the child does not improve. Do not use subcutaneously adrenaline, since absorption is less reliable than when intramuscular administration. Do not use bolus adrenaline intravenously if the heart stop is not inevitable. Use Auto Injector Adrenalin if you can not calculate the exact dose or to avoid delays, including for children under 1 year.

4. If the child's condition does not improve after repeated doses of adrenaline intramuscularly (> 2 doses), consider the possibility of adrenaline infusion (0.05–5 μg / kg / min). By setting intravenous access, continue to enter intramuscular adrenaline every 5 minutes.

Peripheral intravenous administration of adrenaline should be carried out not more than 1–2 hours (to avoid overloading the liquid):

– Mix 1 ml of adrenaline 1: 1000 in 1000 ml of physiological solution.

– Start infusion at a rate of 5 ml / kg / h (~ 0.1 μg / kg / min)

– titrate dose according to the relevant

– Permanent monitoring

5. If possible, if necessary, enter a second dropper for bolus. In hypotension to resuscitate liquid; For shock treatment, repeated boluses are 20 ml / kg 0.9 % physiological solution may be required.

6. Adrenaline in the nebulizer is not recommended as a first line therapy, but it may be a useful addition to adrenaline in / m in the presence of obstruction of the upper respiratory tract or bronchospasm (usually used in children).

7. If the swelling of the respiratory tract does not respond to parenteral and sprayed adrenaline, an early intubation is shown.

8. Other treatment methods that should be taken into account:

a) Salbutamol in a nebulizer or MDI is recommended if a child is respiratory insufficiency with wheezing and he takes other anti-arid preparations.

b) To facilitate the symptoms of itching, antihistamines can be prescribed. The second generation antihistamines should be preferred. The immediate effect of corticosteroids, antihistamines and leukotriene antagonists are not proved, so they are not the preparations of the first row.

Observation. All children with anaphylaxia should be at least 4 hours under supervision to treat the state deterioration.

QUESTIONS FOR SELF-CONTROL

1. Determination of the term "sorting" and its mechanism.
2. Concept ABC.
3. Express evaluation of the level of consciousness with the AGBO scale.
4. Determination of the term "respiratory insufficiency" and criteria and degrees of GDN.
5. Ethiology, pathogenesis and clinical manifestations of acute stenosing laryngotracheitis (cereal) in children.
6. Differential diagnostics and emergency assistance with cereals.
7. Etiology, pathogenesis and clinical manifestations of bacterial eplotite. Emergency aid.
8. Etiology, pathogenesis and clinic of bronchial asthma. Treatment of this state. 9.Etiopathogenesis, clinic, differential diagnostics and treatment of acute bronchiolitis.
10. Etiology, classification, clinic and treatment of acute bronchiolitis.
11. Decause signs of aspiration of a foreign body.
12. Extrophorn measures with aspiration of a foreign body, depending on the age of the child.
13. Afilaxia signs, clinical criteria and treatment.

Tests

1.What are a stringer?

A. During the inhalation

B. During the exhalation

C. During the delay of breathing

D. When you stop breathing

2. Baby 2 years ill on a sharp stenosing laryngotracheitis. IV degree of disease is determined. Which emergency method is expedient in this case?

A. Tracheotomy

B. Feeding Moisturized Oxygen
C. Distracting therapy
D. Antihistamines
E. Steam Inhalations

3. If the initial inspection does not respond to any stimuli:
A. Make first step (a) - Provision of respiratory tract (Airway)
B. Make the first step (a) - estimates the availability of respiratory movements (Airway)
C. Make first step (a) – different number of respiratory movements (Airway)
D. Make the first step (a) – the definition, whether the right breath (Airway)
E. Make the first step (a) – check if there was a respiratory trauma (Airway)
4. In the primary review after maintaining the respiratory tract:
A. Make the second step (B) – Breath Frequency (Breathing) for 10 sec
B. Make the second step (B) – Breath Frequency (Breathing) for 20 sec
C. Make the second step (B) – Make 2 Infusion to check the respiratory tract
D. Make the second step (B) – Check the availability of breathing or 10 sec
E. Make the second step (B) – Check the availability of breathing
5. What criteria for proper breathing in the primary review :
A. Availability of 5–8 respiratory movements in 30 seconds
B. Having at least one breath for 10 sec
C. Availability of 2–4 respiratory movements for 30 seconds
D. Availability of 2–4 respiratory movements in 10 sec
E. Availability of 12–14 respiratory movements for 60 sec
6. At the primary review after verification, or the correct breathing :
A. Circulatory check – the presence of pulsation on any peripheral artery
B. Circulation check – the presence of pulsation on the ray artery
C. Check blood circulation – availability of apical shock
D. Check circulation – the presence of pulsation on any central and peripheral artery
E. Check blood circulation – the presence of pulsation on the carotid artery.
7. Preserved inspection of ABS: A (Airway) – Providing the passage of respiratory tract optimal execution deadline –
A. 10 seconds
B. 25 seconds
C. 20 seconds
D. 12 seconds
E. 5 seconds
8. You spend a cardiopulmonary reanimation of a child for 12 years. What indicator will indicate the effectiveness of resuscitation activities?
A. The appearance of pulsation at the carotid arter
B. Pallor of skin cover

C. Tremor of the limbs

D. Lack of pulsation on the main vessels

E. Skinning Skill

9. Baby 2 years ill for acute stenosing laryngotracheitis. IV degree of disease is determined. Which emergency method is expedient in this case?

A. Tracheotomy

B. Feeding of moist oxygen

C. Distracting therapy

D. Antihistamines

E. Steam inhalatio n

10. In a child, with a surfactant breathing with a sharply difficult exhalation, cyanosis, acrocyanosis increases. There is no effect from using salbutamol and eufillin. What needs to be assigned?

A. 2 % Suprastin 1–2 mg / kg

B. 3 % Prednisolone 2–3 mg / kg

C. 5 % solution of ascorbic acid 0, 2 ml / kg

D. 1 % Dimedrol–1 mg / kg

E. 50 % Analgin-0.1 ml / year of life

C***orrect answer***: 1–A, 2–A, 3–A, 4–A, 5–D, 6–E, 7–A, 8–A, 9–A, 10–B.

Tasks

Situational task № 1. In a child of 8 years, which is located in a stationary treatment, there was an attack of choking with the difficulty of exhalation, frequent dry cough; Breathing is noisy, at a distance of whistling wheezing.

1. Determine the patient's condition.

2. Make a medical worker's action algorithm.

Correct answer: 1. Assault bronchial asthma. 2. Algorithm of the actions of a medical worker: a) Provide a child half-matters; b) provide access to fresh air;

c) for the appointment of a doctor, apply broncho-expansion drugs in the form of inhalation or inside: β-adrenomimeters (salbutamol – 1 dose of 0.1 mg or phenoterol), m-cholinolytics (berodual, dietec); d) In the absence of the effect of the above measures, introduce 0.1 % solution of adrenaline 0.7 ml subcutaneously.

Situational task № 2. In the school dining room in the classroom of 6 class during a hurry and conversation, a convulsive cough, difficulty breathing. It is bothering pain in the area of the larynx. The patient is confused, says hard, feels fear. The face is cyanotic. Skipping voice. Periodically repeats the attacks of convulsive cough and loud respiration with the difficulty of inhalation.

1. Identify an urgent patient's condition.

2. Make an algorithm for providing pre-medication.

Correct answer: 1. Diagnosis: An alien body of the upper respiratory tract. 2. Emergency assistance algorithm: a) with the help of a third person to cause a brigade of "ambulance"; b) in the ineffectiveness of removing a foreign body using a cough to apply gemlich or provide an affected drainage position using a vibration massage of the chest; c) conicotomy; d) urgent hospitalization to Lor-Branch.

Situational task № 3. Masha, 10 months, entered the clinic with a diagnosis: ARVI with obstructive syndrome. *Complaints:* cough attacks for two weeks.

In anamnesis: two weeks ago there was an increase in temperature to 37.2 ° C. For two days, the nasal congestion, coughing. Surveyed by a pediatrician, a diagnosis of acute acute respiratory infections, treatment. A week after the onset of the disease, the nasal breathing and the temperature normalized, but the cough intensified. Three days before the clinic, a spasmic cough appeared in the clinic, in the form of 27 obsessive coughing shocks. During a coughing of a child, a stop of breathing and redness of the face were marked. Attacks up to 25 times a day, three times during coughing occurred vomiting.

When arriving – the condition is heavy, the child is sluggish, the posite, irritating. Objectively marked by the fake of the person, swelling of the eyelids, hemorrhages on the conjunctiva of the eyes, the skin are pale, cyanotic. Visible mucous pale, wet. Above light: percussion – box sound, auscultative – respiration Puerin, heard dry leading wheezing. On the part of the cardiovascular system without pathology. During the cough attack, apnea, cyanosis of a nasopallic triangle, reddening of super-equilibrium arcs, melkrasmashed tremor of hands.

Data of laboratory research: in general blood test: erythrocytes – 4,5x1012 / l, hemoglobin – 120 g / l, KP – 1,0, leukocytes – 28x109 / l, neutrophils – 23 %, lymphocytes – 75 %, monocytes – 2 % , the rate of red blood cells – 8 mm / h.

In general analysis of urine: color – light yellow, transparent, specific weight – 1010, protein – negative ,Glucose – negative, Erythrocytes – 1–2 in sight, leukocytes – 1–2 in sight, renal epithelium – negative ,ketone bodies – negative.

1. Place a deployed clinical diagnosis.

2. Appoint treatment.

Correct answer*:* 1. Diagnosis: Whooping cough typical, moderate severity, period of a spasmodic, uncomplicated course. 2. Antibiotic therapy – "New" macrolides (Summed, Rollide) or cephalosporins II-IV generation, antiseptic drugs, mucolytics.

REFERENCES

The main sourses of information

1. Emergency Medical Assistance: Hospital Stage. New Clinical Protocol 2019. Order of the Ministry of Health of Ukraine No. 1269 dated 05.06.2019

2. Unified clinical protocol of primary, secondary (specialized) medical care "bronchial asthma in children". – Order of the Ministry of Health of Ukraine No. 868 dated 08.10.2013.

3. Bronchial asthma "Adapted Clinical Guideline based on evidence", 2012, Kyiv, Project of the Ministry of Health of Ukraine.

4. Advanced Pediatric Life Support. A Practical Approach to emergencies. (Sixth Edition) .This Edition First Published 2016 © 2016 By John Wiley & Sons, Ltd Bmj Books Is An Imprint of BMJ Publishing Group Limited, USED UNDER LICENCE by JOHN WILEY & SONS. REGISTERED OFFICE: John Wiley & Sons, Ltd, The Atrium, Southern Gate, Chichester, West Sussex, PO19 8SQ, UK Editorial Offices: 9600 Garsington Road, Oxford, Ox4 2DQ, UK The Atrium, Southern Gate, Chichester, West Sussex, PO19 8SQ, UK 111 River Street, Hoboken, NJ 07030-5774, USA. P.-387.

5. NELSON ESSENTIALS OF PEDIATRICS, EIGHTH EDITION INTERNATIONAL EDITION. Copyright © 2019 BY ELSEVIER, INC. P.-840.

6. Cheyytor VM Fast and urgent medical assistance to children / VM Sytor. – Moscow: Geotar Media, 2017 – 416 p. – Text: Electronic // Electronic Library System "Consultant of the Doctor".

7. Section of updated American Heart Association recommendations on CPR and emergency assistance in cardiovascular diseases from 2020 g. – 38 p.

8. Modern emergency assistance and intensive therapy in children in children Author: Korsunov VA – Kharkiv Medical Academy of Postgraduate Education Magazine "Medicine of urgent states" 2 (65) 2015

9.Diagnostics and treatment of urgent states in children Authors: B.M. Goldovsky, VP Medvedev, Ye.V. Side – DZ "Zaporizhzhya Medical Academy of Postgraduate Education of the Ministry of Health of Ukraine". Gave "News of Medicines and Pharmacy" 15 (425) 2012

The additional sourses of information

1. Urgent states in pediatrics: tutorial / R. I. POTOKULO, L. S. Lesky, R. I. Nikolayevskaya [et al.]; ed. R. I. Junction. – 5th view, recycled and supplemented. – K.: Medicine, 2013. – 191 p.

2. Notification "On Approval and Implementation of Medical and Technical Documents for the Standardization of Integrated Baby Diseases". – Order of the Ministry of Health №438 dated 12.05.2016.

3. Illustrated TextBook of Paediatrics. – 4th Edition. – Lissauer & Clayden. – 2012. – P. 552.

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