THE MINISTRY OF HEALTH OF UKRAINE

BOGOMOLETS NATIONAL MEDICAL UNIVERSITY

GUIDELINES
to practical classes for students

Educational discipline	Propedeutics of pediatrics, including nursing practice, basic medical skills in the pediatric department
Field of training	22 "Health care", II (master's) educational and qualification level
Specialty	222 "Medicine"
Department	Pediatrics No. 2
Content module	Nursing practice, basic medical skills in the pediatric department
Topic:	**Participation of a nurse in ensuring the treatment process**
Course	3

Approved at the meeting of the Department of Pediatrics № 1 dated: August 28, 2023, protocol № 1.

Considered and approved: CMC for pediatric disciplines from August 28, 2023, protocol № 1.

Revised and re-approved: No.____from_____20__year

No.____from_____20__ year

No.____from_____20__ year

1. Aim of the class: acquisition by the student of knowledge, abilities, skills and professional competences of the professional activity of a nurse of a children's hospital (department), namely:

the student's acquisition of knowledge about

- forms of medicines and methods of their introduction into the body, structure of syringes, methods of internal (enteral) and parenteral administration of medicines and features of their administration in children; rules for disinfection of syringes and needles after use, possible complications of parenteral administration of drugs;
- types and structure of inhalers according to the mechanism of action, advantages and disadvantages of inhalation therapy in children, methods of inhalation therapy;
- clinical signs in the presence of which oxygen therapy is indicated, structures of devices for oxygen therapy; methods of giving oxygen to children using nasopharyngeal masks (with and without an oxygen tank), nasal cannulas, nasopharyngeal catheters, oxygen tents/tents;
- mastering the skills and ability to administer medicines to children orally, rectally, by subcutaneous, intradermal, intramuscular and intravenous injections, via inhalation and oxygen therapy; making appropriate entries in the medical documentation.

2. Competencies

The student should be able to:

- Demonstrate the technique of enteral administration of drugs through the mouth internally, sublingually, transbuccally
- Demonstrate the technique of rectal administration of medicines
- Demonstrate the preparation of the procedure room for procedures carrying out
- Demonstrate the provision of information to the patient regarding the course of the procedure
- Demonstrate the technique of performing subcutaneous injections
- Demonstrate the technique of performing intradermal injections
- Demonstrate the technique of performing intramuscular injections
- Demonstrate the technique of performing intravenous injections
- Demonstrate the technique of assembling systems for intravenous infusions
- Demonstrate the technique of intravenous infusions
- Demonstrate the technique of decontamination of syringes and needles after use
- Monitor the child's condition during injections, inhalations, and after giving medicines in any way
- Demonstrate oxygen therapy to children using a nasal mask and nasal cannulas
- Fill out the patient's medical documentation after performing the above-mentioned methods of administering medicines.

Equipment: forms of medicines for different methods of administration, packaging with syringes, intravenous catheters and systems for intravenous infusions, tourniquets, a bottle with alcohol, cotton swabs, needle removers and containers with a disinfectant solution for disinfecting needles and syringes after use; measuring spoons, medical documentation for recording the procedure; devices and means for inhalation and oxygen therapy (nasal masks, spacers, traffic lights, nasal cannulas, nasopharyngeal catheters).

3. Plan and organizational structure of the lesson

The name of the stage	Description of the stage	Learning levels *	Time (min)
Preparatory stage	Organizational measures Setting educational goals, student motivation		10
The main stage	Test control on the topics of the lesson, checking and announcing the results. On the issues of enteral administration of medicines in children: - theoretical survey (regarding forms of drugs for enteral administration and methods of their administration; - familiarization of students with various methods of enteral administration of medicines; - the work of students on acquiring the skills of a nurse in the enteral administration of medicines. On issues of parenteral administration of drugs: - a theoretical survey regarding the forms of medicinal products for parenteral administration, methods and techniques of their introduction into the body, the structure of syringes; rules for decontamination of syringes and needles after use, possible complications; - familiarization of students with methods of parenteral administration of medicines; - students' work on acquiring skills and abilities in carrying out the above-mentioned procedures. On issues of inhalation and oxygen therapy - theoretical survey (regarding the types and structure of inhalers according to the mechanism of action, advantages and disadvantages of inhalation therapy in children, methods of inhalation therapy; indications for oxygen therapy, structure of means for providing oxygen; - students' work on acquiring the skills of conducting the above-mentioned methods of therapy; make appropriate entries in the medical documentation. Solving problems on all lesson topics	** *, **, *** *, **, *** *, **, *** ****	30 40 100 5 30
Final stage	Analysis and evaluation of the results of clinical work of students.		10

	Announcement of the topic of the next lesson, an indicative map for independent work with literature.		
	Total 6 academic hours		270

* Introductory, **reproducible, *** reconstructive, **** creative (levels of learning).

4. Content of educational material

The choice of the way to use the medicine depends on the severity of the disease, the damage to a certain system, the need to minimize the side effects of the drug, the age of the child, damage to the skin, etc. Internal or enteral is the introduction of drugs through the digestive tract: through the mouth (per os) or the rectum (per rectum).

With parenteral administration, the digestive tract is bypassed; drugs are administered subcutaneously, intramuscularly, intravenously, into lymphatic vessels, into the pleural cavity, pericardium, joints, retrobulbar, intraosseously, into the spinal canal. Medicines can be administered through the skin: by manual application, electrophoresis, aerosol, introduction of drugs into the external auditory canal; through mucous membranes: in the respiratory tract, conjunctiva and urogenital tract.

Different forms of medicines are used for oral administration, but according to modern international recommendations, liquid forms should be preferred for children under the age of 12. Medicines for children are often supplied with devices that ensure the convenience of taking them: measuring spoons, measuring syringes, mounted in the lids of pipettes. With their help, the drug is dosed and given to the child in the mouth. The nurse dispenses medication in accordance with the prescription sheet, paying particular attention to compliance with the specified doses, frequency of medication intake, and the order of medication intake in accordance with food intake. Medicines are dispensed either at the nurse's station or in the ward. Taking medicine by a patient of the children's department in the presence of a nurse is a mandatory condition.

Administration of drugs into the rectum is most often carried out using suppositories (suppositories). There are rectal suppositories for children with an age-appropriate dose of the drug. Medicinal substances are absorbed through the mucous membrane of the intestine, enter the blood through hemorrhoidal veins and quickly affect the entire body (general action).

Syringes are used for parenteral administration of drugs. The syringe consists of a cylinder (body); on one side, a piston is inserted into the hole, on the other side (the cylinder is sharply narrowed in the form of a cannula) - a needle is attached. The volume of the cylinders, the length of the needles, the thickness of their wall and the cutting angle of the sharp end are different (depending on the purpose).

Asepsis is a system of preventive measures aimed at preventing the ingress of microorganisms into the patient's tissues during medical and diagnostic manipulations

The average medical staff must know the rules and master the technique of injections (subcutaneous, intradermal, intramuscular, intravenous). A mandatory condition for injections is strict adherence to the rules of asepsis and compliance with the requirements of

the instructions for use of the drug. These measures include: pre-injection disinfection of hands and use of latex gloves by medical workers, use of sterile instruments (preferably disposable), introduction of sterile injection solutions, sterilization of the injection field.

Disposable plastic systems are used for intravenous infusions. They are produced in sterile hermetic packaging, where the series, date of sterilization, expiration date are marked. The disposable sterile system consists of a long tube with a dropper and an air guide needle. There are needles at both ends of the tube: one for puncturing the vein, the other for penetrating the medicine vial (through the vial stopper). A clamp is placed on the tube, with the help of which the speed of liquid introduction is regulated. A dropper is installed in the tube, which has a filter mesh to prevent cork particles or other particles from entering the bloodstream. The needles are covered with caps. During the introduction of the solution, it is necessary to monitor the operation of the entire system (whether the flow of liquid has not stopped due to the bending of the tubes of the system or blockage of the vein), to monitor whether an infiltrate has formed in the infusion area. Also, the nurse monitors the patient's general condition, pulse, breathing rate, pays attention to his complaints. In case of the slightest worsening of the child's condition, she should immediately call a doctor.

If it is necessary to carry out long-term (several days) infusion therapy or repeated intravenous injections of drugs, peripheral catheters are used. The catheter is inserted into a peripheral vein with the help of a guide needle, its outer part is fixed on the patient's skin with a patch. Disposable sterile systems are connected to the catheter for infusions. On the outer part of the catheter, there is often an additional entrance for a syringe (covered with a cap), through which you can enter a certain drug without disconnecting the system from the catheter, or perform an independent injection. A peripheral catheter can be in the vein for 72 hours.

Single-use injection syringes after use are considered hazardous (class B) or extremely hazardous (class C) waste due to their contamination with potentially infected or infected biological fluids; they are subject to disinfection and disposal. The current orders of the Ministry of Health of Ukraine establish the State sanitary and anti-epidemic rules and norms for handling medical waste. The rules apply to all health insurance companies, regardless of ownership and organizational legal form. The sequence of actions for decontamination of used single-use injection syringes by a chemical method depends on the presence or absence of devices for removing, cutting off or destroying needles (needle extractors, needle cutters, needle destructors) in the medical institution.

In diseases of the respiratory organs, the administration of drugs by inhalation is widely used. The following types of inhalation are distinguished: steam, thermal, oil (used, mainly, for the therapy of the upper respiratory tract), aerosol (for the introduction of drugs into the lower respiratory tract). Special devices - inhalers - are used for the procedure. According to the mechanism of action, they are divided into steam inhalers, metered liquid, metered powder and nebulizers. A nurse must perfectly master the technique of conducting inhalation therapy using various inhalers.

During inhalation therapy, the nurse must follow the following rules:

• inhalations are given to the child 1-1.5 hours after eating or physical activity; patients take inhalations in a calm state;

• during inhalation, the position of the child's body should be vertical, clothing should not impede breathing;

• in the treatment of diseases of the nose and nasopharynx, inhalation and exhalation is done through the nose (nasal inhalation), for this, special nasal nozzles for the nebulizer are used;

• in the treatment of diseases of the pharynx, larynx, trachea and bronchi, it is recommended to inhale through the mouth during the procedure;

• do not take expectorants before the procedure;

• the volume of therapeutic liquid is, as a rule, 2-3 ml; if the medicinal product must be diluted, only sterile isotonic sodium chloride solution is added to it;

• aerosols for nebulizers are not heated, others are heated to body temperature (to achieve stability of solutions);

• after inhalation for the treatment of the lower respiratory tract, it is necessary to rinse the oropharynx to prevent the systemic effect of the drugs, especially in the case of the use of inhaled glucocorticoids;

• after inhalation, you need to pour out the remains of the drug, turn on the empty nebulizer for a few seconds, treat it with a special detergent (according to the instructions).

Oxygen therapy is used to treat such pathological conditions as hypoxia and hypoxemia, which can develop due to various reasons, most often diseases of the respiratory organs, heart and blood vessels; with anemia, etc. A decrease in the content of oxygen in the blood is accompanied by the appearance of such signs as shortness of breath, palpitations, paleness or cyanosis of the skin, general weakness, heart pain, and a feeling of anxiety. The main conditions for carrying out oxygen therapy are: continuity of oxygen supply, its hydration, constant maintenance of a certain concentration of oxygen in the mixture that the child breathes. With moderate hypoxemia, a 30-40% mixture of oxygen in air is used, with a severe degree of respiratory failure - above 70%. In childhood, the content of inhaled oxygen is determined by the volume of gas intake, the diameter of the nose and body weight. Oxygen flow should be carefully monitored, clinical signs are not always reliable indicators of hypoxemia. To control satisfactory oxygen therapy, a pulse oximeter is used in all areas of medical care: from the pre-hospital stage to the intensive care unit. Target indicators of hemoglobin saturation of arterial blood under the condition of oxygen therapy (with non-invasive determination) depend on the age and severity of the child's condition, are > 92% - 95%.

Inhalation methods of oxygen administration include: inhalation using nasopharyngeal masks (with and without an oxygen tank), nasal cannulae, nasopharyngeal catheters, oxygen tents, cuvezes (in somatic pediatric departments for children of various ages), in intensive care units, devices are additionally used artificial lung ventilation, high-flow oxygenation systems.

5. Questions for student's self-preparation for practical classes

1. What will affect your choice of the route of the medical substance administration?
2. List the ways of administering medicines.
3. List the forms of drugs for enteral administration.
4. List the methods of enteral administration of medicines.

5. Explain the method of administration of drugs through the mouth internally, sublingually, transbuccally.

6. Why are medicines taken before, during and after meals?

7. Explain the method of rectal administration of medicines (suppositories).

8. State the advantages and disadvantages of the parenteral route of drug administration.

9. List the forms of drugs for parenteral administration.

10. Tell about the structure and purpose of syringes and needles, catheters and systems for intravenous infusions.

11. Specify the places of subcutaneous, intramuscular and intravenous injections.

12. List measures to ensure asepsis during injections.

13. Explain the method of administration of medicines by subcutaneous and intradermal injections.

14. Explain the method of administration of drugs by intramuscular injections.

15. Explain the method of administration of drugs by intravenous injections.

16. Technique of preparing the system for intravenous infusions.

17. Types and methods of placing intravenous peripheral catheters.

18. Advantages of using peripheral catheters if long-term (2-3 days) infusion therapy or repeated intravenous injection of drugs is necessary. How long can the catheter be in the vein?

19. Explain the rules for disinfecting syringes and needles after use.

20. Explain about the possible complications of parenteral administration of medicines.

21. To which category of medical waste are single-use injection syringes?

22. Explain the general rules for collecting medical waste (categories B, B).

23. The sequence of actions for decontamination of used single-use injection syringes by a chemical method in the presence of devices for removing, cutting off or destroying needles in a medical institution.

24. The sequence of actions for decontamination of used single-use injection syringes by a chemical method in the absence of devices for removing, cutting off or destroying needles in a medical institution.

25. Talk about the types of inhalers according to the mechanism of action.

26. State the advantages and disadvantages of inhalation therapy in children.

27. What inhalers are called nebulizers and what do they provide?

28. What rules should a nurse follow when administering inhalation therapy to children?

29. Method of inhalation therapy using a nebulizer through a nasal mask.

30. The technique of inhalation therapy through a traffic police station with a mouthpiece, with a spacer.

31. For the treatment of which pathological conditions is oxygen therapy used?

32. What clinical signs indicate a decrease in oxygen content in the blood? What are the methods of objective research of oxygen content in blood?

33. What devices are used to provide oxygen therapy to children in the somatic pediatric department?

6. Recommended literature

1. Kryuchko T.O., Kushnereva T.V., Kolenko I.O., TkachenkoO.Ya., Nesina I.M., Poda O.A./ Practical skills in pediatrics. Electronic study guide/ Poltava -2019, pp. 15-23, 119-128.

2. Practical skills in pediatrics: a study guide (University I-III years) / N.O. Kurdyumova, T.G. Polishchuk, O.O. Pashko et al. Electronic study guide "Medicine" 2018

296 c.

3. Order of the Ministry of Health of Ukraine "On the approval of State sanitary norms and rules "Disinfection, pre-sterilization cleaning and sterilization of medical devices in health care institutions" No. 552 dated August 11, 2014

4. Order of the Ministry of Health of Ukraine "On the approval of the State sanitary and anti-epidemic rules and regulations regarding the treatment of medical waste" No. 325 dated 06/08/2015.