

Ministry of health of Ukraine
National Pirogov Memorial Medical University

Instructions for station number 2

CARDIOPULMONARY RESUSCITATION OF NEWBORNS

1. Tasks:

- Be able to identify neonatal adaptation disorders and the need for resuscitation.
- Carry out measures for initial stabilization of newborns.
- Perform a complex of cardiopulmonary resuscitation in newborns.

2. Equipment of the station:

- Newborn baby simulator.
- Scenario of the clinical situation.
- Resuscitation surface (radiant warmer), second hand clock (timer), bulb syringe or suction catheter, Ambu bag-and-mask ventilation for newborns, disposable gloves, diapers (4 pcs.), shoulder roller, neonatal stethoscope, medication (epinephrine, normal saline solution).

3. Instruction for students.

1) Initial care (stabilization), position and clearing the airways:

- determine the need for initial help, put the newborn to the radiant warmer, take the position opposite the head of the newborn, dry with a diaper, put a roller under the shoulders and provide a position with the slightly extended neck;
- carry out suction from the mouth and the nose with a suction catheter.
- assess the condition of the child (adequate respiration, heart rate).

2) In case of absence adequate spontaneous breathing or heart rate <100 bpm Bag-and-mask ventilation:

- check the correct position of the newborn; stimulate (slapping/flicking the soles of the feet);
- put a mask on the face tightly, ensuring its tight fit;
- perform bag-and-mask ventilation with a frequency of 30 breaths per minute for 30 seconds;
- assess the newborn's condition after 30 seconds (adequate respiration, heart rate).

3) Chest compressions at heart rate <60 bpm after 30 seconds despite adequate ventilation:

- determine the compression site on the lower third of the sternum (above the xyphoid apophysis); set on it the tips of thumbs, the rest of the fingers fix the newborn's back (ventilation continues the assistant);
- initiate pushing on the sternum with a frequency of 90 per minute with a compression depth of $1/3$ of the anterior-posterior chest diameter, the compressions should be implement perpendicularly to the surface of the chest;
- coordinate the heart compressions with ventilation in the ratio of 3: 1, avoiding the simultaneous execution of both procedures;
- assess the child's condition after 30 seconds (adequate respiration, heart rate).

4) The use of medications.

Determine indications for the administration of medications.

Indications for the introduction of epinephrine: the heart rate remains < 60 bpm after 30 seconds despite adequate ventilation with 100% oxygen.

Indications for administration of 0.9% sodium chloride (normal saline solution): there is no response to previous resuscitation steps in the presence of signs of shock (pallor, bradycardia, weak pulse, positive symptom of "white spot" or there is evidence fetus's blood loss (bleeding, abruptio placentae)

- heart rate <60 bpm 0.1-0.3 ml/kg 0,01% epinephrine solution should be administered intravenously through umbilical vein;

- hypovolemia and signs of shock (for volume expansion) 10 ml/kg 0.9% sodium chloride should be slowly administered.

4. List of scenarios.

Scenario # 1

A newborn with gestational age 38 weeks after birth has no respiration, a child is depressed.

Start the primary resuscitation.

Child's condition after 30 seconds of initial resuscitation: self-breathing is not restored, heart rate <100 bpm.

Determine indications for the next step and continue the resuscitation.

Child's condition after 30 seconds: self-breathing is absent, heart rate 58 bpm.

Determine indications for the next step and continue the resuscitation.

On the background of CPR heart rate remains <60 bpm, signs of hypovolemia.

Continue the resuscitation, determine the indications for the use of medications.

Scenario # 2

A newborn boy from the II pregnancy, II childbirth with gestational age 40 weeks, complicated by a tightly wrapping of umbilical cord around the neck. Breathing is absent, reflex irritability and muscle tone are absent.

Start the primary resuscitation.

Child's condition after 30 seconds of the initial resuscitation: adequate respiration is not restored, heart rate <100 bpm.

Determine indications for the next step and continue the resuscitation.

Condition of the child after 30 seconds: self-breathing is absent, heart rate 40 bpm.

Determine indications for the next step and continue the resuscitation.

On the background of CPR heart rate remains <60 beats/minute, signs of hypovolemia.

Continue the resuscitation, determine the indications for the use of medications.

Scenario # 3

A newborn from III pregnancy, II delivery at gestational age 41 weeks, complicated by umbilical cord prolapse, acute fetal distress. The child without respiration and move activity.

Start the primary resuscitation.

Child's condition after 30 seconds of the initial resuscitation: self-breathing is not restored, heart rate <100 beats/minute.

Determine indications for the next step and continue the resuscitation.

Child's condition after 30 seconds: self-breathing is absent, heart rate <60 beats/minute.

Determine indications for the next step and continue the resuscitation.

On the background of CPR heart rate remains <60 beats/minute, signs of hypovolemia.

Continue the resuscitation, determine the indications for the use of medications.

Scenario # 4

A newborn from I pregnancy, I childbirth with gestation age 38 weeks, complicated by prolonged labor (childbirth stimulation was performed). Self-breathing is superficial (gaspings-type), muscle tone is absent.

Start the primary resuscitation.

Child's condition after 30 seconds of the initial resuscitation: adequate respiration is not restored, heart rate <100 bpm.

Determine indications for the next step and continue the resuscitation.

Child's condition after 30 seconds: self-breathing is absent, heart rate 46 bpm.

Determine indications for the next step and continue the resuscitation.

The heart rate <60 bpm, a positive symptom of the "white spot" (poor capillary refill) despite adequate CPR.

Continue the resuscitation, determine the indications for the use of medications.

Scenario # 5

A term baby from II pregnancy, II childbirth, complicated by a tightly wrapping umbilical cord around the neck and trunk, acute fetal distress. There is no self-breathing and muscle tone.

Start the primary resuscitation.

Child's condition after 30 seconds of the initial resuscitation: adequate respiration is not restored, heart rate <100 bpm.

Determine indications for the next step and continue the resuscitation.

Child's condition after 30 seconds: self-breathing is absent, heart rate 46 bpm.

Determine indications for the next step and continue the resuscitation.

Despite adequate CPR during auscultation single heart contractions, a positive symptom of "white spot".

Continue the resuscitation, determine the indications for the use of medications.

Scenario # 6

A newborns from II childbirth, complicated by preterm abruption placenta and bleeding with gestational age 37 weeks. Newborn is depressed, without breathing.

Start the primary resuscitation.

Child's condition after 30 seconds of the initial resuscitation: adequate respiration is not restored, heart rate <100 beats/minute.

Determine indications for the next step and continue the resuscitation.

Child's condition after 30 seconds: self-breathing is absent, heart rate <60 bpm.

Determine indications for the next step and continue the resuscitation.

Despite adequate CPR heart rate <60 bpm, positive symptom of a "white spot", sharply weakened heart tones.

Continue the resuscitation, determine the indications for the use of medications.

Scenario # 7

A newborn from III pregnancy, I childbirth with gestational age 39 weeks. During labor there are acute fetal distress, maternal bleeding. Newborn is depressed, without breathing.

Start the primary resuscitation.

Child's condition after 30 seconds of the initial resuscitation: adequate respiration is not restored, heart rate <100 bpm.

Determine indications for the next step and continue the resuscitation.

Child's condition after 30 seconds: self-breathing is absent, heart rate 44 bpm.

Determine indications for the next step and continue the resuscitation.

Despite adequate CPR heart rate <60 bpm, positive symptom of a "white spot", sharply weakened heart tones.

Continue the resuscitation, determine the indications for the use of medications.

Scenario # 8

A newborn baby from III pregnancy, II childbirth with gestational age 39 weeks, complicated by the prolapse umbilical cord loops, acute fetal distress. Newborn is depressed, without breathing.

Start the primary resuscitation.

Child's condition after 30 seconds of the initial resuscitation: adequate respiration is not restored, heart rate <100 bpm.

Determine indications for the next step and continue the resuscitation.

Child's condition after 30 seconds: self-breathing is absent, heart rate <60 bpm.

Determine indications for the next step and continue the resuscitation.

On the background of CPR heart rate remains <60 bpm, signs of hypovolemia.

Continue the resuscitation, determine the indications for the use of medications.

Scenario # 9

A newborn boy from II pregnancy, II childbirth with gestational age 38 weeks, complicated by acute fetal distress. Newborn is depressed, without breathing.

Start the primary resuscitation.

Child's condition after 30 seconds of the initial resuscitation: adequate respiration is not restored, heart rate <100 bpm.

Determine indications for the next step and continue the resuscitation.

Child's condition after 30 seconds: self-breathing is absent, heart rate <60 bpm.

Determine indications for the next step and continue the resuscitation.

On the background of CPR heart rate remains <60 bpm, signs of hypovolemia (pallor, weak heart tones).

Continue the resuscitation, determine the indications for the use of medications.

Scenario # 10

A newborn from II pregnancy, I childbirth with gestation age 39 weeks, complicated by prolonged labor (childbirth stimulation was performed). Child's breathing is gasping-type, muscle tone is absent.

Start the primary resuscitation.

Child's condition after 30 seconds of the initial resuscitation: adequate respiration is not restored, heart rate <100 bpm.

Determine indications for the next step and continue the resuscitation.

Child's condition after 30 seconds: self-breathing is absent, heart rate 46 bpm.

Determine indications for the next step and continue the resuscitation.

The heart rate <60 bpm, a positive symptom of the "white spot" (poor capillary refill) despite adequate CPR.

Continue the resuscitation, determine the indications for the use of medications.