

SWESEMs utbiingsutskott

Rubrik

Initialt omhändertagande av det nyfödda barnet

2018-04-09

Introduktion

Specialister i akutsjukvård bör kunna initiera omhändertagandet av patienter i alla åldersgrupper, inklusive nyfödda. Det initiala omhändertagandet av nyfödda barn är en färdighet som även omfattar neonatal hjärt-lungräddning. Algoritmen som presenteras här följer i stort strukturen av Initialt omhändertagande [1], och är förenlig med Svenska Neonatalföreningens arbetsgrupp för HLR och initialt omhändertagande 2016 [2] och riktlinjerna från European Resuscitation Council [3].

Akutläkaren ska tidigt tillkalla relevant kompetens och arrangera transport av patienten till den relevanta vårdinrättningen.

I specialisttentamen

I specialisttentamen bedöms kompetens vid initialt omhändertagande av det nyfödda barnet tillsammans med kompetens vid akut förlossning. Förberedelse av utrustningen ingår i färdigheten Förlossning (www.swesem.org). Observera att moment vid initialt omhändertagande av det nyfödda barnet måste enligt algoritmen genomföras inom specificerade tidsramar.

Överblick

Säkerhetsbedömning-handskar.

Torka/stimulera barnet¹, motverka hypotermi², och översiktlig bedömning av andning/tonus.

Om barnet inte svarar adekvat fortsätter man längs algoritmen nedan. Starkt önskvärt att man då startar en timer för att kunna genomföra åtgärderna inom specificerade tidsramar.

BEDÖMNINGAR

ÅTGÄRDER

Airway & C-spine

<input type="checkbox"/> Skriker barnet? Om ej:	<ul style="list-style-type: none">• Lagg på rygg med huvudet i neutralt läge³• Inspektera munhålan. Sug om mekonium OCH livlöst⁴
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Breathing

<input type="checkbox"/> Tillräcklig egenandning ⁵ ? Om ej:	<ul style="list-style-type: none">• Ventilera 60/min med mask⁶ senast inom 60 sek efter förlossningen. Om ventilation inte är effektiv, justera grepp. Säkerställ effektiv ventilation innan du fortsätter till Circulation⁷
<input type="checkbox"/> Koppla pulsoximeter höger hand	<ul style="list-style-type: none">• Tillför extra O₂ om SpO₂ < 50% efter 3 min⁸

Circulation

<input type="checkbox"/> Hjärtfrekvens ⁹ < 60/min trots > 60 sek med effektiv ventilation? Om ej:	<ul style="list-style-type: none">• Bröstkompressioner¹⁰• 3:1 kompressioner:ventilationer, 90:30/min
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Drugs

<input type="checkbox"/> Hjärtfrekvens < 60/min trots effektiv ventilation med thoraxkompression	<ul style="list-style-type: none">• Adrenalin 10 µg/kg (Adrenalin 0,1 mg/ml x 0,3 ml)¹¹ via navelvenskateter¹² eller IO nål¹³• Överväg kristalloid/blod 10 ml/kg bolus IV¹⁴• Överväg naloxon 0,1 mg/kg IV eller IM
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End

<input type="checkbox"/> Hjärtfrekvens > 60/min?	<ul style="list-style-type: none">• Avbryt thoraxkompression
<input type="checkbox"/> Tillräcklig egenandning?	<ul style="list-style-type: none">• Avbryt ventilation
<input type="checkbox"/> Puls < 60/min efter 15 min?	<ul style="list-style-type: none">• Överväg att avbryta återupplivningsförsök¹⁵

1-Torka barnet

"Drying the baby usually produces enough stimulation to induce effective breathing. Avoid more vigorous methods of stimulation. If the baby fails to establish spontaneous and effective breaths following a brief period of stimulation, further support will be required." [3]

2-Förebygga hypotermi

"Naked, wet, newborn babies cannot maintain their body temperature in a room that feels comfortably warm for adults. Compromised babies are particularly vulnerable.²⁷ Exposure of the newborn to cold stress will lower arterial oxygen tension²⁸ and increase metabolic acidosis.²⁹ The association between hypothermia and mortality has been known for more than a century,³⁰ and the admission temperature of newborn non-asphyxiated infants is a strong predictor of mortality at all gestations and in all settings." [3]

3-Nyfödd på ryggen, huvudet i neutralt läge

"Place the baby on his or her back with the head in a neutral position (Fig. 7.2). A 2 cm thickness of the blanket or towel placed under the baby's shoulder may be helpful in maintaining proper head position. In floppy babies application of jaw thrust or the use of an appropriately sized oropharyngeal airway may be essential in opening the airway." [3]

4-Sug

"The presence of thick, viscous meconium in a non-vigorous baby is the only indication for initially considering visualising the oropharynx and suctioning material, which might obstruct the airway." [3]

5-Otillräcklig andning

"After initial steps at birth, if breathing efforts are absent or inadequate, lung aeration is the priority and must not be delayed." [3]

6-Ventilation med mask

"For the first five positive pressure inflations maintain the initial inflation pressure for 2–3 s. This will usually help lung expansion." [3]

"Efficacy of the intervention can be estimated by a prompt increase in heart rate or observing the chest rise. If this is not obtained it is likely that repositioning of the airway or mask will be required and, rarely, higher inspiratory pressures may be needed. Most babies needing respiratory support at birth will respond with a rapid increase in heart rate within 30 s of lung inflation. If the heart rate increases but the baby is not breathing adequately, ventilate at a rate of about 30 breaths min⁻¹ allowing approximately 1 s for each inflation, until there is adequate spontaneous breathing." [3]

De svenska riktlinjerna rekommenderar en ventilationsfrekvens av 60/min [2].

7-Säkerställ ventilation innan hjärtkompressioner övervägs

"Adequate passive ventilation is usually indicated by either a rapidly increasing heart rate or a heart rate that is maintained faster than 100 beats min⁻¹. If the baby does not respond in this way the most likely cause is inadequate airway control or inadequate ventilation. Look for passive chest movement in time with inflation efforts; if these are present then lung aeration has been achieved. If these are absent then airway control and lung aeration has not been confirmed. Mask leak,

inappropriate airway position and airway obstruction, are all possible reasons, which may need correction.¹⁴⁵⁻¹⁴⁹In this case, consider repositioning the mask to correct for leakage and/or reposition the baby's head to correct for airway obstruction.¹⁴⁵Alternatively using a two per-person approach to mask ventilation reduces mask leak in term and preterm infants.^{146,147}Without adequate lung aeration, chest compressions will be ineffective; therefore, confirm lung aeration and ventilation before progressing to circulatory support." [3]

8-Överväg tillägg av extra syrgas

"In term infants receiving respiratory support at birth with positive pressure ventilation (PPV), it is best to begin with air (21%) as opposed to 100% oxygen. If, despite effective ventilation, there is no increase in heart rate or oxygenation (guided by oximetry wherever possible) remains unacceptable, use a higher concentration of oxygen to achieve an adequate preductal oxygen saturation." [3]

De svenska riktlinjerna rekommenderar syrgas för att tillgodose att SpO₂ är > 50% 3 min efter förlösning, > 70% 5 min efter förlösning och > 90% 10 min efter förlösning [2].

9-Hjärtfrekvens

"Heart rate is initially most rapidly and accurately assessed by listening to the apex beat with a stethoscope¹⁰⁸or by using an electrocardiograph.¹⁰⁹⁻¹¹²Feeling the pulse in the base of the umbilical cord is often effective but can be misleading because cord pulsation is only reliable if found to be more than 100 beats per minute (bpm)¹⁰⁸and clinical assessment may underestimate the heart rate.^{108,109,113}For babies requiring resuscitation and/or continued respiratory support, a modern pulse oximeter can give an accurate heart rate.¹¹¹Several studies have demonstrated that ECG is faster than pulse oximetry and more reliable, especially in the first 2 min after birth;¹¹⁰⁻¹¹⁵however, the use of ECG does not replace the need to use pulse oximetry to assess the newborn baby's oxygenation." [3]

10-Bröstkompressioner

"Circulatory support with chest compressions is effective only if the lungs have first been successfully inflated. Give chest compressions if the heart rate is less than 60 beats min⁻¹ despite adequate ventilation. As ventilation is the most effective and important intervention in newborn resuscitation, and may be compromised by compressions, it is vital to ensure that effective ventilation is occurring before commencing chest compressions. The most effective technique for providing chest compressions is with two thumbs over the lower third of the sternum with the fingers encircling the torso and supporting the back." [3]

"The sternum is compressed to a depth of approximately one-third of the anterior-posterior diameter of the chest allowing the chest wall to return to its relaxed position between compressions. Use a 3:1 compression to ventilation ratio, aiming to achieve approximately 120 events per minute, i.e. approximately 90 compressions and 30 ventilations." [3]

11-Adrenalin

"Despite the lack of human data it is reasonable to use adrenaline when adequate ventilation and chest compressions have failed to increase the heart rate above 60 beats min⁻¹." [3]

"If adrenaline is used, an initial dose 10 micrograms kg⁻¹(0.1 ml kg⁻¹of 1:10,000 adrenaline) should be administered intravenously as soon as possible." [3]

12-Navelven

"The major indication for umbilical vein catheterization is the need to access the vascular system for emergency resuscitation and stabilization of neonates. It may also be used for exchange transfusions and short-term central venous access in newborns. The umbilical vein may remain patent for up to 2 weeks after birth.⁵⁰ In neonates who require emergency access in the ED, a peripheral vein would be preferable, but attempting to cannulate one of the umbilical vessels could be lifesaving. Moreover, umbilical vein catheterization is technically easier than umbilical artery cannulation." [4]

13-Intraosseös nål

En studie talar för att intraosseös nål är ett alternativ till navelvenkateter [5].

14-Vätska

"If there has been suspected blood loss or the infant appears to be in shock (pale, poor perfusion, weak pulse) and has not responded adequately to other resuscitative measures then consider giving fluid.²⁶⁶ This is a rare event. In the absence of suitable blood (i.e. irradiated and leucocyte-depleted group O Rh-negative blood), isotonic crystalloid rather than albumin is the solution of choice for restoring intravascular volume. Give a bolus of 10 ml kg⁻¹ initially. If successful it may need to be repeated to maintain an improvement. When resuscitating preterm infants volume is rarely needed and has been associated with intraventricular and pulmonary haemorrhages when large volumes are infused rapidly." [3]

15-Överväg att avbryta återupplivningsförsök

"If the heart rate of a newly born baby is not detectable and remains undetectable for 10 min, it may be appropriate to consider stopping resuscitation." [3]

"In cases where the heart rate is less than 60 min⁻¹ at birth and does not improve after 10 or 15 min of continuous and apparently adequate resuscitative efforts, the choice is much less clear. In this situation there is insufficient evidence about outcome to enable firm guidance on whether to withhold or to continue resuscitation." [3]

Referenser

1. SWESEMs utbildningsutskott *Initialt omhändertagande*. 2012.
2. Svenska Neonatalföreningens arbetsgrupp för HLR och initialt omhändertagande *Neonatal HLR*. 2016.
3. Wyllie, J., et al., *European Resuscitation Council Guidelines for Resuscitation 2015: Section 7. Resuscitation and support of transition of babies at birth*. Resuscitation, 2015. **95**: p. 249-63.
4. Santillanes, G. and I. Claudius, *Pediatric vascular access and blood sampling techniques*, in *Clinical Procedures in Emergency Medicine*, J. Roberts and J. Hedges, Editors. 2013, WB Saunders: Philadelphia, PA.
5. Abe, K.K., G.T. Blum, and L.G. Yamamoto, *Intraosseous is faster and easier than umbilical venous catheterization in newborn emergency vascular access models*. Am J Emerg Med, 2000. **18**(2): p. 126-9.