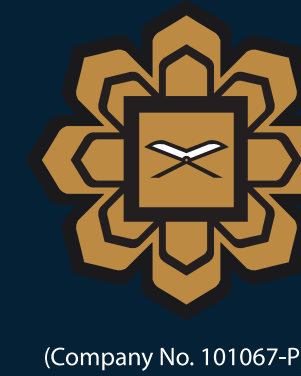
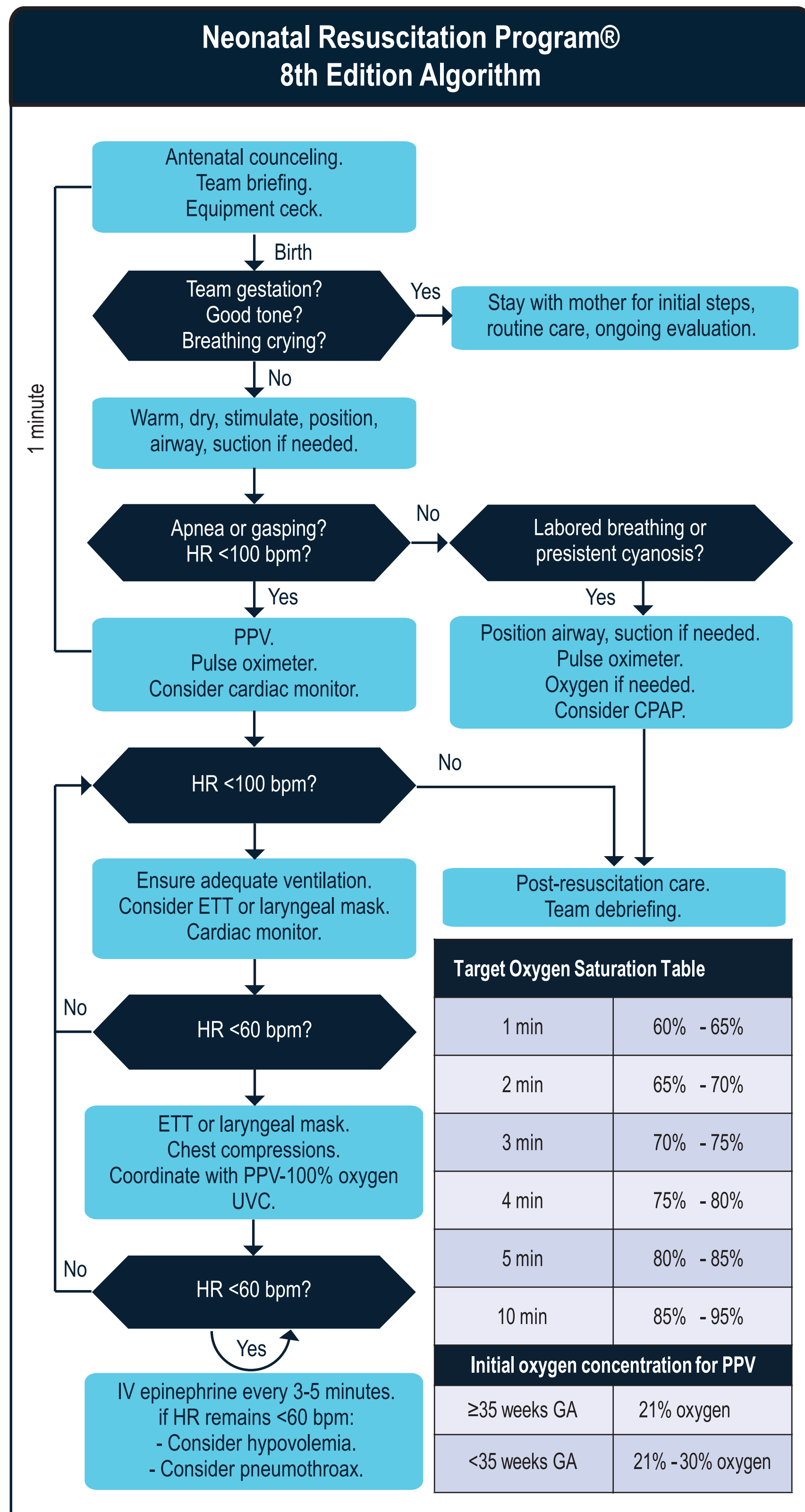


# Memorex in the Neonatal Resuscitation Program (NRP). Valuable recommendation from NRP 8th edition 2021



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### Abstract

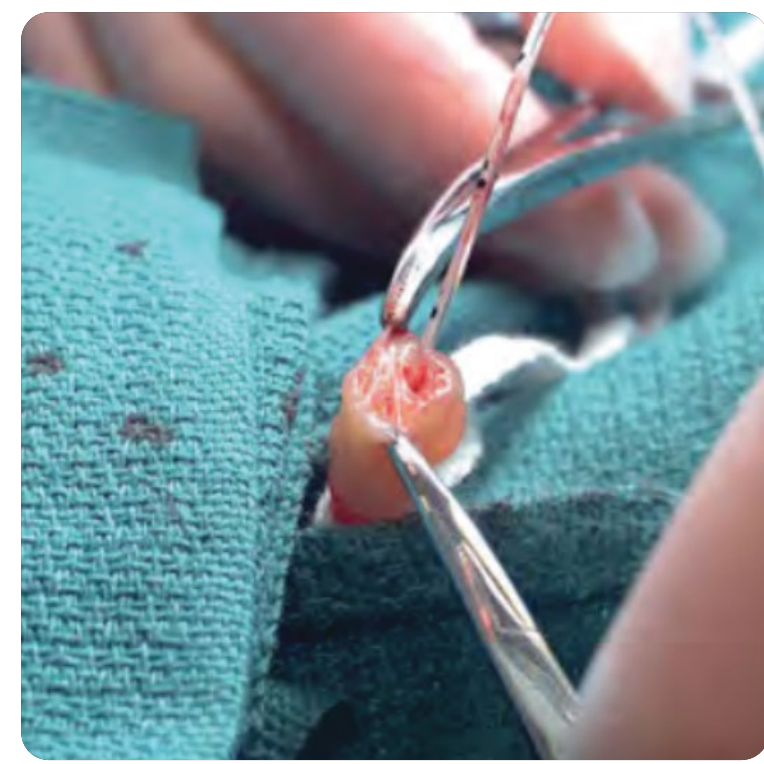
**Background:** Optimal neonatal resuscitation in the first few minutes of life (the Golden minutes) can save critically ill neonates.

**Presentation:** Additional new steps include Resuscitation Quality Improvement Program (RQI) focusing on the skill of positive pressure ventilation. The four pre-birth questions are Gestational age, clear Amniotic fluid, Additional risk factors, and Umbilical cord management plan. Initial steps fulfill Warm, dry, stimulate, position airway and, suction if needed. When an alternative airway becomes necessary, a cardiac monitor is essential. The initial IV or IO dose of epinephrine is 0.02 mg/kg (equal to 0.2 mL/kg). The endotracheal epinephrine dose equal to 0.1 mg/kg (1 mL/kg). Flush IV/IO epinephrine with 3 mL normal saline for all babies. Support skin-to-skin care for bonding, breastfeeding and normothermia. If the confirmed absence of HR after all appropriate steps performed, consider cessation of resuscitation efforts around 20 minutes after birth (Initiate discussion with the family). Unchanging steps, a qualified person or resuscitation team should attend every delivery. Establish briefing, delegate workload, and check equipment. Key behavioural skills, including the call for help. Upon delivery, a rapid assessment is the baby term, muscle tone and breathing or crying, then commencing the initial steps. Use plastic wrap for less than 32 weeks. Lung Ventilation and Ventilation Corrective Steps (MRSOPA) is the critical steps. Adjust suction pressure from 60-100 and the flowmeter to 10 L/min, oxygen with 21%, increased judiciously guided by preductal saturation. If the heart rate is less than 60 despite adequate 30-second ventilation intubate, start chest compression for 60 seconds by two thumbs technique. If still bradycardic, give the medications. Delayed cord clamping of stable babies and avoid cord milking in preterm.

**Conclusion:** NRP regulations changed according to evidence-based medicine. The latest NRP edition will help all institutions.



PPV and ventilation corrective steps MR. SOPA



Positioning during chest compression planning for UVC



Pneumothorax drainage



The insertion of intraosseous line

### Anticipation of resuscitation need. Class of Recommendation (COR) and Level of Evidence (LOE) in Patient (Updated May 2019)

COR	LOE	RECOMMENDATIONS
1	B-NR	1. Every birth should be attended by at least 1 person who can perform the initial steps of newborn resuscitation and initiate PPV, and whose only responsibility is the care of the newborn. 1-4
1	B-NR	2. Before every birth, a standardized risk factors assessment tool should be used to assess perinatal risk and assemble a qualified team on the basis of that risk. 5-7
1	C-LD	3. Before every birth, a standardized equipment checklist should be used to ensure the presence and function of supplies and equipment necessary for a complete resuscitation. 8-9
1	C-LD	4. When anticipating a high-risk birth, a preresuscitation team briefing should be completed to identify potential interventions and assign roles and responsibilities. 8, 10-12

### The 6 Ventilation Corrective Steps: MR. SOPA

Corrective Steps	Actions
M Mask adjustment.	Reapply the mask. Consider the 2-hand technique.
R Reposition airway.	Place head neutral or slightly extended.
Try PPV and reassess chest movement.	
S Suction mouth and nose.	Use a blub syringe or suction catheter.
O Open mouth.	Open the mouth and lift the jaw forward.
Try PPV and reassess chest movement.	
P Pressure increase.	Increase pressure in 5 to 10 cm H <sub>2</sub> O increments, maximum 40 cm H <sub>2</sub> O
Try PPV and reassess chest movement.	
A Alternative Airway.	Place an endotracheal tube or laryngeal mask.
Try PPV and assess chest movement and breath sounds.	

### Overview of NRP 8th Edition Practice Changes

Change	NRP 7th Edition	NRP 8th Edition
Umbilical cord management plan added to 4 pre-birth questions, replacing "How many babies?"	The 4 pre-birth questions: (1) Gestational age? (2) Amniotic fluid clear? (3) How many babies? (4) Additional risk factors?	The 4 pre-birth question: (1) Gestational age? (2) Amniotic fluid clear? (3) Additional risk factors? (4) Umbilical cord management plan?
Initial steps reordered to better reflect common practice.	Initial steps: Warm and maintain normal temperature, position airway, clear secretions if needed, dry, stimulate.	Initial steps: Warm, dry, stimulate, position airway, suction if needed.
An electronic cardiac monitor is recommended earlier in the algorithm.	An electronic cardiac monitor is the preferred method for assessing heart rate during cardiac compressions.	When an alternative airway becomes necessary, a cardiac monitor is recommended for the most accurate assessment if the baby's heart rate.
Epinephrine intravenous / intraosseous (IV/IO) flush volume increased.	Flush IV/IO epinephrine with 0.5 to 1mL normal saline.	Flush IV/IO epinephrine with 3 mL normal saline (applies to all weights and gestational ages)
Epinephrine IV/IO an endotracheal doses have been simplified for educational efficiency. The dosage range is unchanged. The simplified doses (IV/IO and ET) do not represent and endorsement of any particular dose within the recommended dosage range. Additional research is needed.	Range for IV or IO dose = 0.01 - 0.03 mg/kg (equal to 0.1 - 0.3 mL/kg) Range for endotracheal dose = 0.05 - 0.1 mg/kg (equal to 0.5 - 1 mL/kg)	The suggested initial IV or IO dose = 0.02 mg/kg (equal to 0.2 mL/kg) The suggested endotracheal dose (while establishing vascular access) = 0.1 mg/kg (equal to 1 mL/kg)
Expanded timeframe for cessation of resuscitative efforts.	If there is a confirmed absence of heart rate after 10 minutes of resuscitation, it is reasonable to stop resuscitation efforts; however, the decision to continue or discontinue should be individualized.	If confirmed absence of HR after all appropriate steps performed, consider cessation of resuscitation efforts around 20 minutes after birth (decision individualized on patient and contextual factors)

IV = intravenous IO = intraosseous ET = endotracheal HR = heart rate

### Cord Management

After an uncomplicated term or late preterm birth, it is reasonable to delay cord clamping until the baby is placed on the mother, dried and assessed. In preterm labour, there are also potential advantages from delaying cord clamping.

### Applying Class of Recommendation and Level of Evidence to Clinical Strategies, Interventions, Treatments, or Diagnostic Testing in Patient Care (update May 2019)\*

CLASS (STRENGTH) OF RECOMMENDATION	LEVEL (QUALITY) OF EVIDENCE†
<b>CLASS 1 (STRONG) Benefit &gt;&gt;&gt; Risk</b>	<b>LEVEL A</b>
<b>Suggested phrases for writing recommendations:</b>	<ul style="list-style-type: none"> <li>High-quality evidence† from more than 1 RCT</li> <li>Meta-analyses of high-quality RCTs</li> <li>One or more RCTs corroborated by high-quality registry studies</li> </ul>
<ul style="list-style-type: none"> <li>Is recommended</li> <li>Is indicated / useful / effective / beneficial</li> <li>Should be performed / administered / other</li> <li>Comparative-Effectiveness Phrases†:                             <ul style="list-style-type: none"> <li>Treatment / strategy A is recommended / indicated in preference to treatment B</li> <li>Treatment A should be chosen over treatment B</li> </ul> </li> </ul>	<b>LEVEL B-R (Randomized)</b>
	<ul style="list-style-type: none"> <li>Moderate-quality evidence† from 1 or more RCT</li> <li>Meta-analyses of moderate-quality RCTs</li> </ul>
<b>CLASS 2 (MODERATE) Benefit &gt;&gt; Risk</b>	<b>LEVEL B-NR (Nonrandomized)</b>
<b>Suggested phrases for writing recommendations:</b>	<ul style="list-style-type: none"> <li>Moderate-quality evidence† from 1 or more well-designed, well-executed nonrandomized studies, observational studies, or registry studies</li> <li>Meta-analyses of such studies</li> </ul>
<ul style="list-style-type: none"> <li>Is reasonable</li> <li>Can be useful / effective / beneficial</li> <li>Comparative-Effectiveness Phrases†:                             <ul style="list-style-type: none"> <li>Treatment / strategy A is probably recommended / indicated in preference to treatment B</li> <li>It is reasonable to choose treatment A over treatment B</li> </ul> </li> </ul>	<b>LEVEL C-LD (Limited Data)</b>
	<ul style="list-style-type: none"> <li>Randomized or nonrandomized observational or registry studies with limitations of design or execution</li> <li>Meta-analyses of such studies</li> <li>Physiological or mechanistic studies in human subjects</li> </ul>
<b>CLASS 2b (WEAK) Benefit ≥ Risk</b>	<b>LEVEL C-EO (Expert Opinion)</b>
<b>Suggested phrases for writing recommendations:</b>	<ul style="list-style-type: none"> <li>Consensus of expert opinion based on clinical experience</li> </ul>
<ul style="list-style-type: none"> <li>May / might be reasonable</li> <li>May / might be considered</li> <li>Usefulness / effectiveness is unknown / unclear / uncertain or not well-established</li> </ul>	<p>COR and LOE are determined independently (any COR may be paired with any LOE).</p> <p>A recommendation with LOE C does not imply that the recommendation is weak. Many important clinical questions addressed in guidelines do not lend themselves to clinical trials. Although RCT are unavailable, there may be very clear clinical consensus that a particular test or therapy is useful or effective.</p> <p>* The outcome or result of the intervention should be specified (an improved clinical outcome or increased diagnostic accuracy or incremental prognostic information).</p> <p>† For comparative-effectiveness recommendations (COR 1 and 2a; LOE A and B only), studies that support the use of comparator verbs should involve direct comparisons of the treatments or strategies being evaluated.</p> <p>‡ The method of assessing quality is evolving, including the application of standardized, widely-used, and preferably validated evidence grading tools; and for systematic reviews, the incorporation of an Evidence Review Committee.</p> <p>COR indicates Class of Recommendation; EO, expert opinion; LD, limited data; LOE, Level of Evidence; NR, nonrandomized; R, randomized; and RCT, randomized controlled trial.</p>
<b>CLASS 3: No Benefit Benefit = Risk (WEAK) (Generally, LOE A or B use only)</b>	
<b>Suggested phrases for writing recommendations:</b>	<ul style="list-style-type: none"> <li>Is not recommended</li> <li>Is not indicated / useful / effective / beneficial</li> <li>Should not be performed / administered / other</li> </ul>
<b>CLASS 3: Harm Risk &gt; Benefit (STRONG)</b>	
<b>Suggested phrases for writing recommendations:</b>	<ul style="list-style-type: none"> <li>Potentially harmful</li> <li>Causes harm</li> <li>Associated with excess morbidity / mortality</li> <li>Should not be performed / administered / other</li> </ul>

REFERENCES:  
1-Khalid A, Chair H, C. Lee, et al. Part 5: Neonatal Resuscitation American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Pediatrics. 10.1542/peds.2020-038505E  
2-Gary M, Jeanette Z and, John K. Textbook of Neonatal Resuscitation, 7th Edition  
3- NRP 8th Edition Busy People Update 1 December PDF Free. docplayer.net / 200288718-Nrp-8th-edition-busy-people.