



RCA Guideline for Neonatal Life Support

ILCOR NLS TF (a delegate member from RCA)

KACPR

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Disclosure

- I have no actual or potential financial conflict of interest in relation to this presentation.

PICO in 2015 ILCOR guidelines

- *Initial Assessment and Intervention*

PICO ID	Short title	Treatment Recommendation
NRP 898	ECG/EKG vs Oximetry or Auscultation	In babies requiring resuscitation , ECG can be used to provide a rapid and accurate estimation of HR (weak recommendation, very-low-quality evidence)
NRP 787	Delayed cord clamping in preterm requiring resuscitation	We suggest delayed umbilical cord clamping for preterm infants not requiring immediate resuscitation after birth (weak recommendation, very-low-quality evidence)
NRP 849	Umbilical Cord Milking -intervention	We suggest against the routine use of cord milking for infants born at 28 weeks of gestation or less , because there is insufficient published human evidence of benefit. There is no evidence for improvement in long-term outcomes. (weak recommendation, low-quality evidence).

PICO in 2015 ILCOR guidelines

- Temperature*

PICO ID	Short title	Treatment Recommendation
NRP 589	Temperature maintenance in DR- Prognosis (non-asphyxiated babies)	Admission temperature of newly born non-asphyxiated infants is a strong predictor of mortality and morbidity at all gestations. It should be recorded as a predictor of outcomes as well as a quality indicator (strong recommendation, moderate-quality evidence). We recommend that the temperature of newly born non-asphyxiated infants be maintained between 36.5°C and 37.5°C after birth through admission and stabilization (strong recommendation, very-low-quality evidence).
NRP 599	Maintaining infant temperature during delivery room resuscitation - Intervention (preterm)	Among newly born preterm infants of less than 32 weeks of gestation under radiant warmers in the hospital delivery room, we suggest using a combination of interventions , which may include environmental temperature 23°C to 25°C, warm blankets, plastic wrapping without drying, cap, and thermal mattress to reduce hypothermia (temperature less than 36.0°C) on admission to NICU (weak recommendation, very low-quality evidence). We suggest that hyperthermia (greater than 38.0°C) be avoided due to the potential associated risks (weak recommendation, very-low-quality evidence).

PICO in 2015 ILCOR guidelines

- *Temperature*

PICO ID	Short title	Treatment Recommendation
NRP 858	Warming of hypothermic NB -Intervention	The confidence in effect estimates is so low that a recommendation for either rapid (0.5°C/hour or greater) or slow rewarming (0.5°C/hour or less) of unintentionally hypothermic newborns (T° less than 36°C) at hospital admission would be speculative .
NRP 804	Babies born to mothers who are hypothermic or hyperthermic in labor-Prognosis	Although maternal hyperthermia is associated with adverse neonatal outcomes, there is insufficient evidence to make a recommendation regarding the management of maternal hyperthermia. There is insufficient evidence to make a treatment recommendation about maternal hypothermia.

PICO in 2015 ILCOR guidelines

- *Ventilation*

PICO ID	Short title	Treatment Recommendation
NRP 590	CPAP and IPPV - Intervention	For spontaneously breathing preterm infants with respiratory distress requiring respiratory support in the delivery room, we suggest initial use of CPAP rather than intubation and IPPV (weak recommendation, moderate-quality evidence).
NRP 809	Sustained inflations - Intervention	We suggest against the routine use of initial SI (greater than 5 seconds duration) for preterm infants without spontaneous respirations immediately after birth, but an SI may be considered in individual clinical circumstances or research settings (weak recommendation, low-quality evidence).
NRP 897	Outcomes for PEEP vs no PEEP in DR - Intervention	We suggest using PEEP ventilation for premature newborns during delivery room resuscitation (weak recommendation, low-quality evidence). We cannot make any recommendation for term infants because of insufficient data.
NRP 870	T-piece resuscitator and self-inflating bag	There is insufficient evidence , so the recommendation of one device over another would be purely speculative because the confidence in effect estimates is so low.

PICO in 2015 ILCOR guidelines

- *Ventilation*

PICO ID	Short title	Treatment Recommendation
NRP 865	MSAF, nonvigorous-intubation and tracheal suction vs. no intubation	There is insufficient published human evidence to suggest routine tracheal intubation for suctioning of meconium in nonvigorous infants born through MSAF as opposed to no tracheal intubation for suctioning.
NRP 864	Oxygen concentration for resuscitating premature NB	We recommend against initiating resuscitation of preterm newborns (less than 35 weeks of gestation) with high supplementary oxygen concentrations (65%–100%). We recommend initiating resuscitation with a low oxygen concentration (21%–30%) (strong recommendation, moderate-quality evidence).

PICO in 2015 ILCOR guidelines

- *Circulatory Support*

PICO ID	Short title	Treatment Recommendation
NRP 605	2-Thumb vs 2-Finger techniques for chest compression	We suggest that chest compressions in the newborn should be delivered by the 2-thumb , hands-encircling-the-chest method as the preferred option (weak recommendation, very-low quality evidence). We suggest that chest compressions should be delivered over the lower third of the sternum (weak recommendation, very-low-quality evidence).
NRP 895	Chest compression ratio	We suggest continued use of a 3:1 compression-to-ventilation ratio for neonatal CPR (weak recommendation, very-low-quality evidence).
NRP 738	Oxygen delivery during CPR	There are no human data to inform this question. Despite animal evidence showing no advantage to the use of 100% oxygen, by the time resuscitation of a newborn baby has reached the stage of chest compressions, the steps of trying to achieve ROSC using effective ventilation with low-concentration oxygen should have been attempted . Thus, it would seem prudent to try increasing the supplementary oxygen concentration (Good Practice Guidance). If used, supplementary oxygen should be weaned as soon as the heart rate has recovered (weak recommendation, very-low-quality evidence).

PICO in 2015 ILCOR guidelines

- Assist Ventilation Devices and CPR Feedback Devices*

PICO ID	Short title	Treatment Recommendation
NRP 618	Laryngeal mask airway	We suggest the laryngeal mask may be used as an alternative to tracheal intubation during resuscitation of the late-preterm and term newborn (more than 34 weeks) if ventilation via the face mask is unsuccessful (weak recommendation, low-quality evidence). In the unusual situation where intubation is not feasible after failed PPV, the laryngeal mask is recommended for resuscitation of the late-preterm and term newborn (more than 34 weeks) (strong recommendation, good clinical practice).
NRP 806	NB who receive PPV -> use of a device to assess respiratory function	Although a feasible technique, we suggest against the routine use of flow and volume monitoring for babies who receive PPV at birth, until more evidence becomes available (weak recommendation, low-quality evidence). Although a feasible technique, we suggest against the routine use of capnography for babies who receive PPV at birth, until more evidence becomes available (weak recommendation, low-quality evidence).
NRP 862	Use of feedback CPR devices for neonatal cardiac arrest	In asystolic/bradycardic neonates, we suggest against the routine reliance on any single feedback device such as ETCO2 monitors or pulse oximeters for detection of ROSC until more evidence becomes available (weak recommendation, very-low-quality evidence).

PICO in 2015 ILCOR guidelines

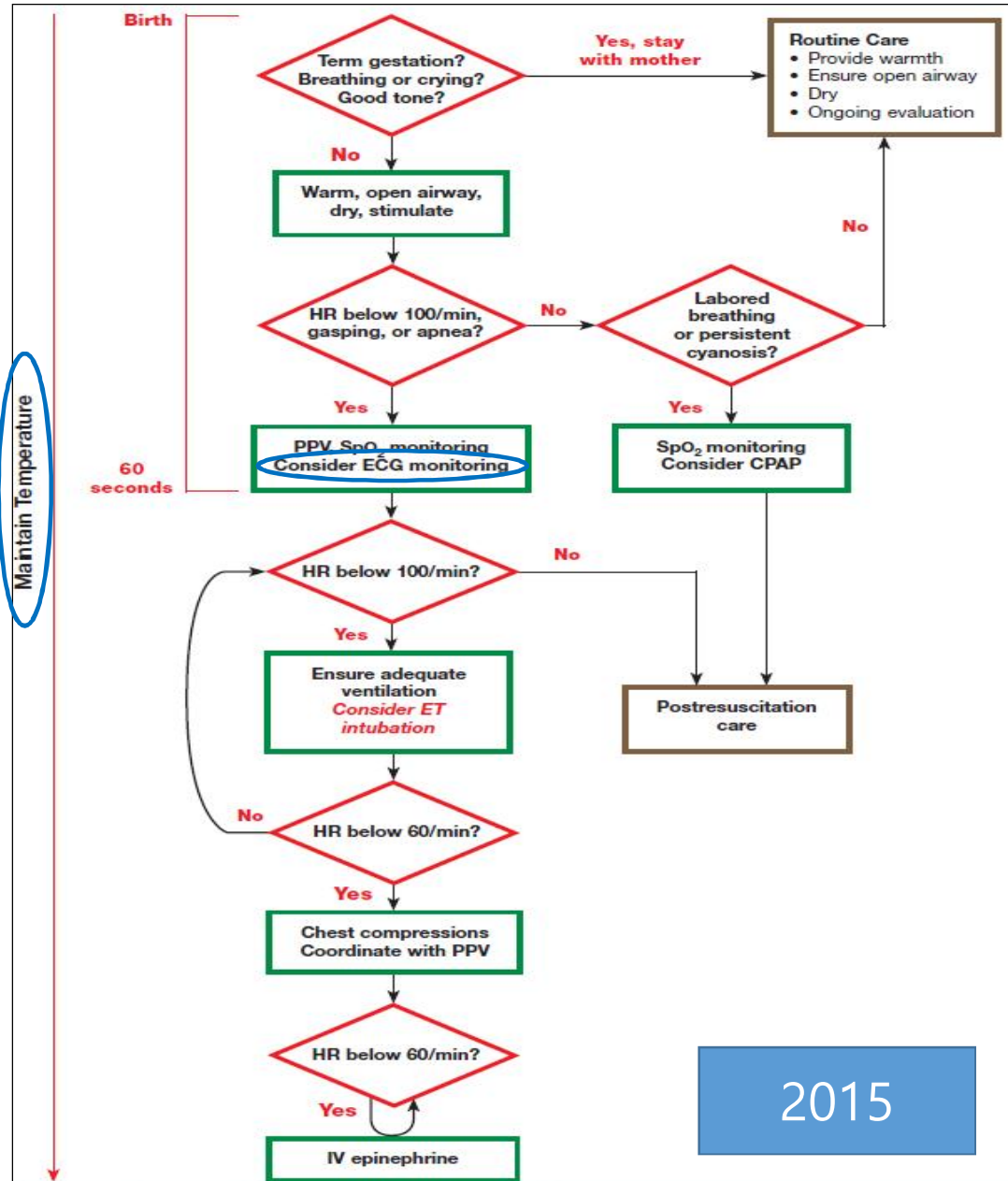
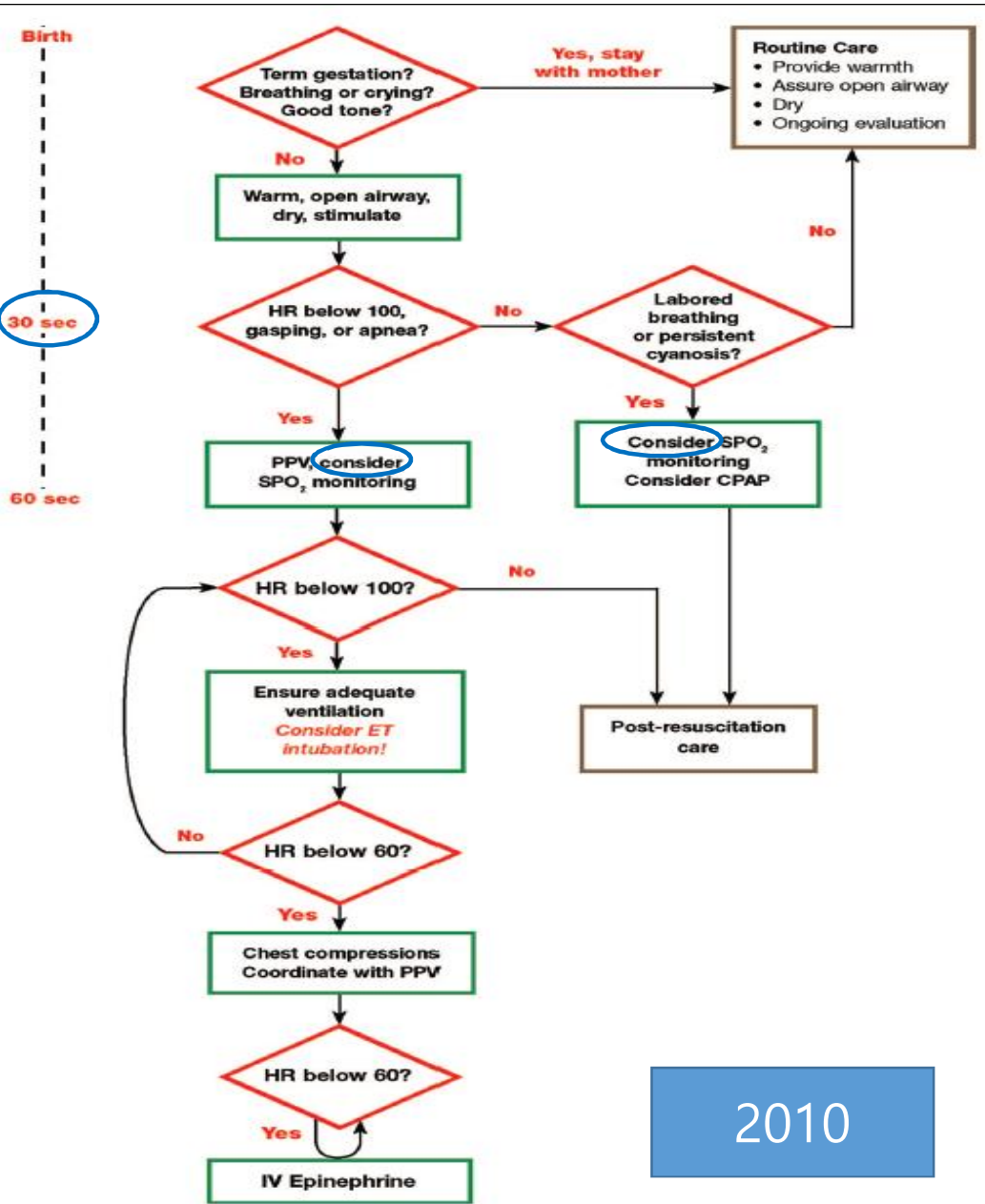
- *Discontinuing Resuscitation*

PICO ID	Short title	Treatment Recommendation
NRP 805	DR assessment <25 weeks and prognostic score	There is insufficient evidence to support the prospective use of any delivery room prognostic score presently described over estimated gestational age assessment alone in preterm infants of less than 25 weeks of gestation. No score has been shown to improve the ability to estimate the likelihood of survival through either 30 days or in the first 18 to 22 months after birth.
NRP 896	AS 0 for 10 min or longer - prognosis	An Apgar score of 0 at 10 minutes is a strong predictor of mortality and morbidity in late-preterm and term infants. We suggest that, in babies with an Apgar score of 0 after 10 minutes of resuscitation, if the heart rate remains undetectable , it may be reasonable to stop resuscitation ; however, the decision to continue or discontinue resuscitative efforts should be individualized . (weak recommendation, very-low-quality evidence).
NRP 860	GA > 34 weeks , predicting death or disability based on Apgar and/or absence of breathing	Absence of spontaneous breathing or an Apgar score of 1 to 3 at 20 minutes of age in babies of greater than 34 weeks of gestation but with a detectable heart rate are strong predictors of mortality or significant morbidity . In settings where resources are limited, we suggest that it may be reasonable to stop assisted ventilation in babies with no spontaneous breathing despite presence of heart rate or Apgar score of 1 to 3 at 20 minutes or more (weak recommendation, very-low-quality evidence).

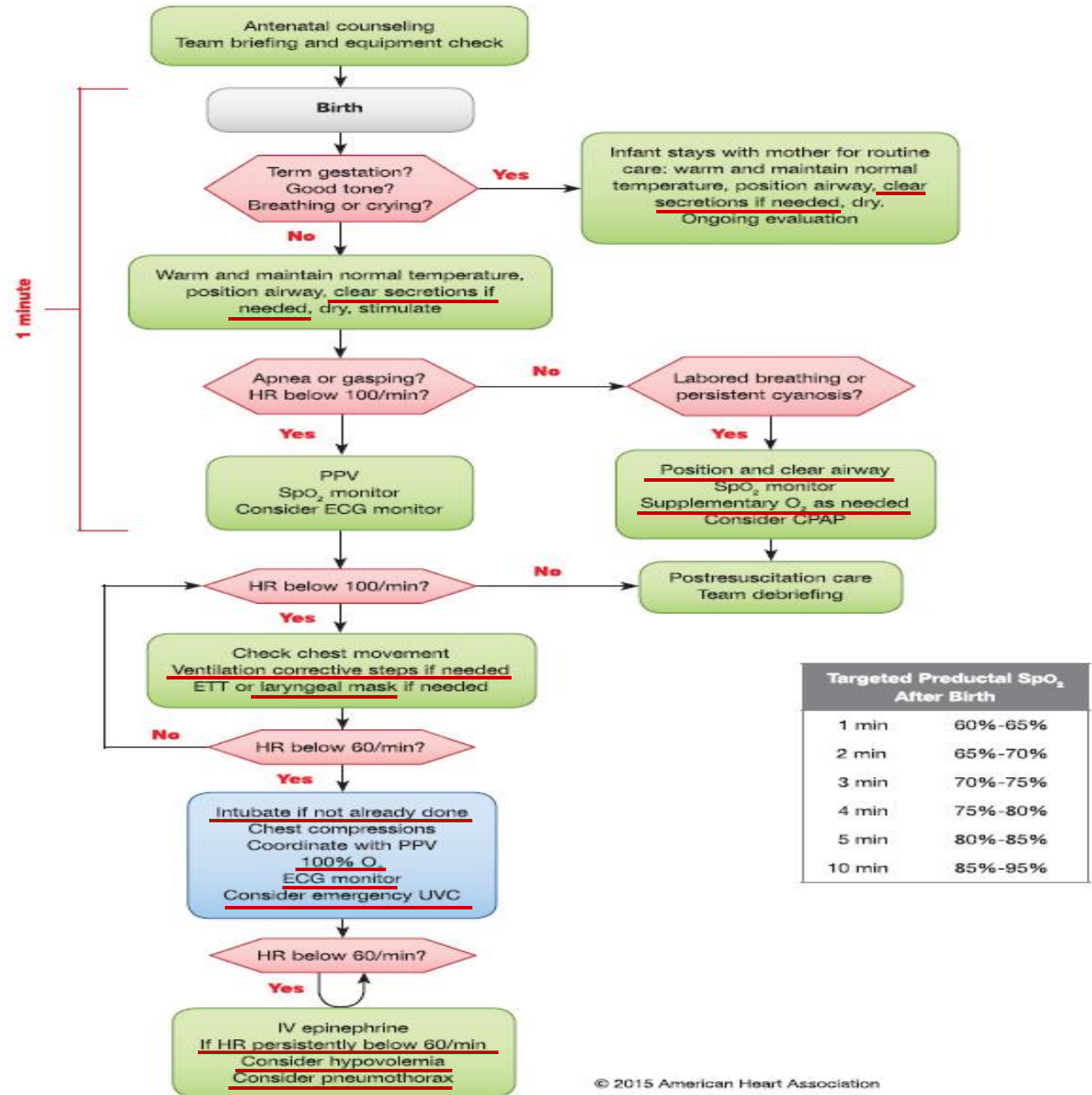
PICO in 2015 ILCOR guidelines

- *Educational Techniques for Teaching, Assessing, and Maintaining Resuscitation Knowledge and Skills*

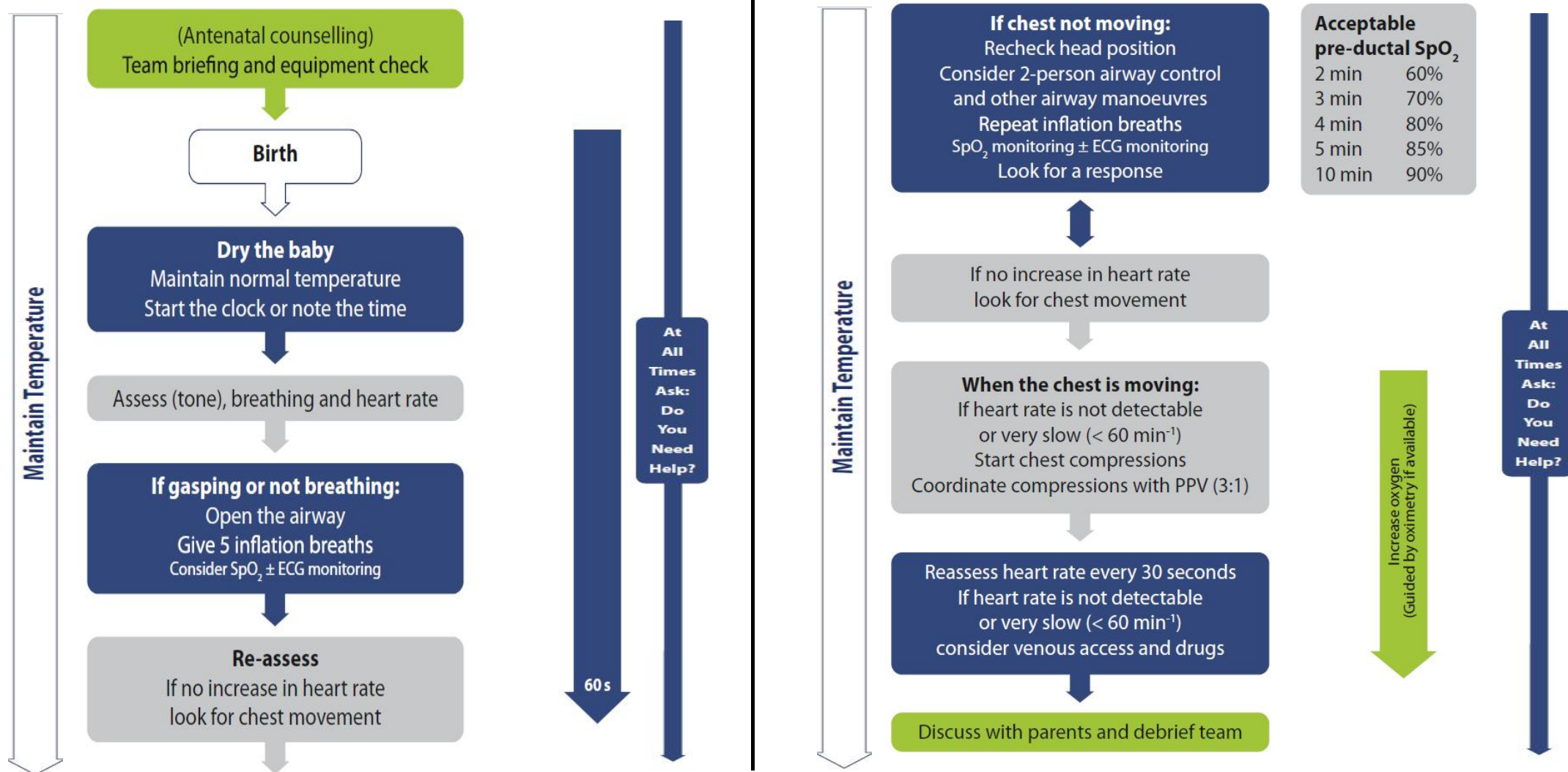
PICO ID	Short title	Treatment Recommendation
NRP 859	Resuscitation training frequency	We suggest that training should be recurrent and considered more frequently than once per year . This retraining may be composed of specific tasks and/or behavioral skills, depending on the needs of the trainees (weak recommendation, very-low-quality evidence).



2015 AHA-AAP guideline



ERC guidelines 2015



2015 AHA vs ERC

Title	Subgroup	ILCOR/AHA	ERC
Preparation	Planned home deliveries		• should not compromise the standard of initial assessment, stabilization or resuscitation at birth • 2 trained professionals should be present at all home deliveries (1 : fully trained and experienced)
	Equipment and environment		• non-designated delivery area : minimum set of equipment (ventilation warm dry towels and blankets, cutting and clamping the umbilical cord, clean gloves)
Timing of clamping the umbilical cord		• DCC : longer than 30s, term or preterm not requiring immediate resuscitation after birth • cord milking ; suggest against the routine use of cord milking for infants < 29wks	• DCC : at least 1 min • cord milking ; not enough evidence available to recommend this as a routine measure
Initial step		maintain normal BT, open airway, clear secretions if needed, dry the infant, stimulation	
Temperature control		- preheated radiant warmer - < 32wks : polyethylene wrapping (w/o drying), combination of further intervention - avoid hyperthermia - resource-limited setting : food-grade plastic bag, swaddle, skin-to-skin contact - avoid hyperthermia	• non-asphyxiated infants : 36.5-37.5°C • Methods for preventing heat loss - protect the baby from draughts - dry term baby (alternatively, skin to skin contact) - DR temperature : 23-25°C (<28wks : >25°C) - preheated radiant warmer - < 32wks : polyethylene wrapping (w/o drying), combination of further intervention - unexpectedly outside : food grade plastic bag-> swaddling, > 30wks : kangaroo care

Title	Subgroup	ILCOR/AHA	ERC
Initial assessment	Breathing	v	• rate, depth, symmetry of breathing, abnormal breathing pattern
	HR	v During resuscitation of term and preterm NB, use of 3-lead ECG for the rapid and accurate measurement of the NB's HR may be reasonable	• stethoscope, ECG, feeling the pulse, pulse oximeter
	Colour		• poor method of judging oxygenation, it should not be ignored, blue colour-> preductal SpO2
	Tone		• very floppy : ventilatory support ↑
	Tactile stimulation		• drying : enough stimulation
	Classification according to initial assessment	• 2 group - apnea or gasping? HR < 100/min ? --> YES or NO	• 3 group - vigorous breathing or crying, good tone, HR ≥ 100 - breathing inadequately or apnoeic, normal or reduced tone, HR < 100 (mask inflation --> ventilation) - breathing inadequately or apnoeic, floppy, low or undetectable HR, Often pale suggesting poor perfusion (immediate airway control, lung inflation, ventilation--> chest compression, drugs) • breathing with good HR, hypoxaemic : CHD, congenital pneumonia pneumothorax, CDH, surfactant deficiency

Title	Subgroup	ILCOR/AHA	ERC
NB life support	Airway		• neutral position (2cm thickness of the blanket or towel), floppy : jaw thrust or oropharyngeal airway • side-lying position: for assessment and routine delivery room management of term NB • suction : only if the airway is obstructed
	Meconium	• vigorous : intrapartum suctioning and routine intubation and suctioning - not recommended • non-vigorous : tracheal intubation - only for suspected tracheal obstruction / ventilation within the 1 min of life	동일
	Initial breaths and assisted ventilation	- apnea or gasping? HR < 100/min ? --> YES (PPV) - corrective step : MRSOPA	• term : start with air • if) HR not improving --> assess chest wall movement • first 5 positive pressure inflations (initial inflation pressure for 2-3 s) - help lung expansion • inflation pressure : term (30cm H₂O), Preterm (20-25cm H₂O) • no effective PPV --> repositioning of airway or mask, rarely higher inspiratory pressure --> tracheal intubation • HR ↑ + not breathing : PPV (30 breaths/min, 1s for each inflation)
	Sustained inflations > 5s	• insufficient data	• inadequate study • only be considered in individual clinical circumstances or in a research setting
	Air/Oxygen	• term : begin with 21% • preterm (<35wks) : 21-30% (acceptable pre-ductal oxygen saturation : interquartile range measured in healthy term after V/D at sea level	• term : begin with 21% • preterm (<35wks) : 21-30% (acceptable pre-ductal oxygen saturation : 25th percentile in healthy term
	Pulse oximetry		• oxygen saturation (percentile) • lower oxygen saturation : C/S, altitude, DCC • Preterm : take longer to reach > 90%
	PEEP	• when PPV is administered to preterm NB, use of ~5cm H₂O PEEP is suggested	• all term and preterm who remain apnoeic despite initial steps : must receive PPV after initial lung inflation, PEEP (5cm H₂O) should be administered to preterm NB receiving PPV

Title	Subgroup	ILCOR/AHA	ERC
	Assisted ventilation devices	• flow-inflating, self-inflating bag, T-piece mechanical device	동 일
	Face mask vs nasal prong		• face mask - mask leak • 2 RCT (preterm): no any difference
	LMA	• term and preterm ≥ 34 wks • alternative to tracheal intubation	• if) facemask ventilation - unsuccessful, tracheal intubation - unsuccessful or not feasible • LMA : alternative to facemask for PPV or tracheal intubation (≥ 2000 g or ≥ 34 wks)
	Tracheal tube replacement	• prompt increase in HR : best indicator • Exhaled CO ₂ detection : most reliable method • clinical assessment: additional indicators	• prompt increase in HR : good indication • Exhaled CO ₂ detection + clinical assessment : most reliable method (neonates with spontaneous circulation)
	CPAP	• Initial respiratory support of all spontaneously breathing preterm infants with RD : may be provided by CPAP	• Initial respiratory support of all spontaneously breathing preterm infants with RD : may be provided by CPAP • few data to guide the appropriate use of CPAP in term infants
	Circulatory support	• HR < 60/min despite adequate ventilation • 2 thumbs-encircling hands techniques over the lower third of sternum > 2-finger • depth : 1/3 of AP diameter • CV ratio 3:1 (cardiac origin --> 15:2)	• HR < 60/min despite adequate ventilation • 2 thumbs over the lower third of sternum with fingers encircling the torso and supporting the back • In a manikin study : overlapping the thumbs - more effective, more likely to cause fatigue • check the HR after about 30s, periodically thereafter

Title	Subgroup	ILCOR/AHA	ERC
	Drugs	Epinephrine : IV (0.01-0.03mg/kg of 1:10000 epinephrine), IT (0.05-0.1mg/kg)	- Adrenaline : indication, dose 동일 Bicarbonate : not recommended during brief CPR. - only after adequate ventilation and circulation is established with CPR (dose : 1-2 mmol/kg)
	Fluids	isotonic crystalloid solution or blood	- Suspected blood loss, infants appears to be in shock, no respond adequately to other resuscitative measures - irradiated and leucocyte-depleted group O Rh- blood --> isotonic crystalloid > albumin
	Communication with the parents		inform the parents of the baby's progress family presence during cardiopulmonary resuscitation
Post-resuscitation care	Glucose	It was not possible to recommend a specific protective target glucose concentration range	Infants who require significant resuscitation should be monitored and treated to maintain glucose in the normal range
	Induced hypothermia	- infants born at more than 36 wks with moderate to severe HIE - TH : within 6h of birth, continue for 72h, re-warm over at least 4h	- term or near-term with moderate to severe HIE - TH : within 6h of birth, continue for 72h, re-warm over at least 4h
	Prognostic tools		- Apgar score : large inter- and intra-observer variations - Combined-Apgar
Structure of educational programs to teach NR	Instructors	NR instructors be trained using timely, objective, structured, and individually targeted verbal and/or written feedback	
	Resuscitation providers	some advantages in psychomotor performance and knowledge and confidence when focused training occurred every 6 months or more frequently	

Part 7. Neonatal resuscitation: 2015 Korean Guidelines for Cardiopulmonary Resuscitation

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The following is a summary of the 2015 Korean Neonatal Resuscitation Guidelines. An extensive review of scientific evidence by experts of Neonatal Resuscitation Committee for the 2015 Korean Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care including neonatologists, nurse, obstetrician, perinatologist, and anesthesiologist was performed to update the 2011 Korean Neonatal Resuscitation Guidelines.

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Supplementary

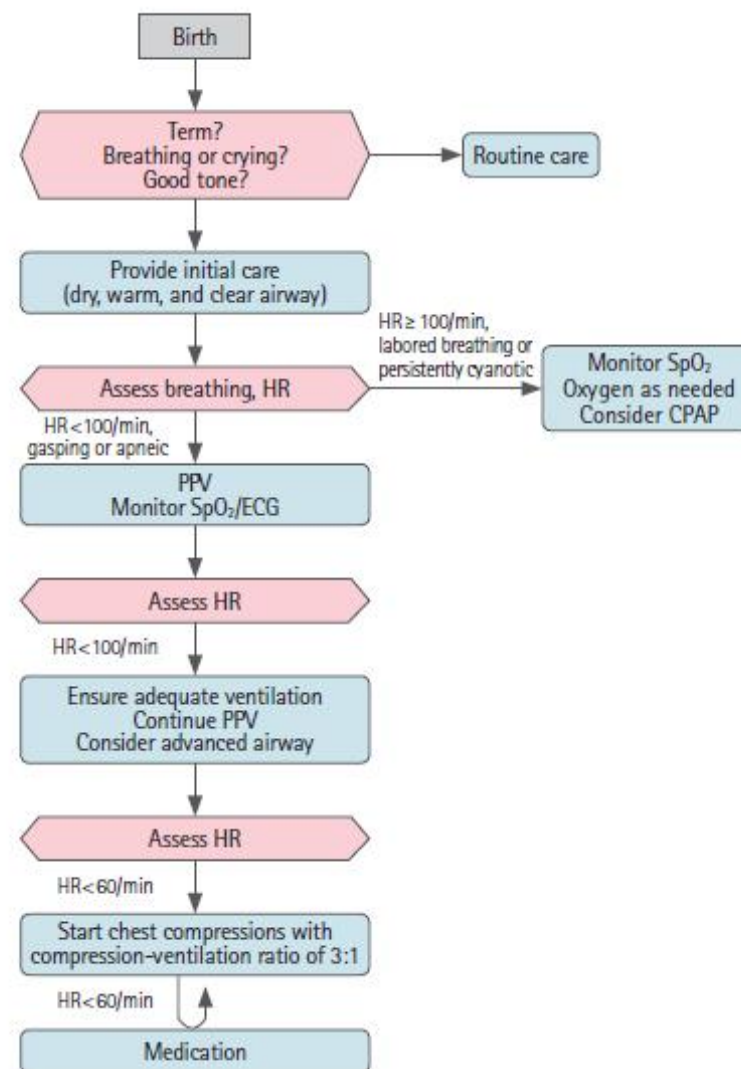


Fig. 1. Neonatal resuscitation algorithm. HR, heart rate; CPAP, continuous positive airway pressure; PPV, positive-pressure ventilation; ECG, electrocardiogram.

Singapore Neonatal Resuscitation Guidelines 2016

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ABSTRACT We present the revised Neonatal Resuscitation Guidelines for Singapore. The 2015 International Liaison Committee on Resuscitation Neonatal Task Force's consensus on science and treatment recommendations (2015), and guidelines from the American Heart Association and European Resuscitation Council were debated and discussed. The final recommendations of the National Resuscitation Council, Singapore, were derived after the task force had carefully reviewed the current available evidence in the literature and addressed their relevance to local clinical practice.

Keywords: National Resuscitation Council guidelines for resuscitation 2016, neonatal resuscitation, newborn resuscitation

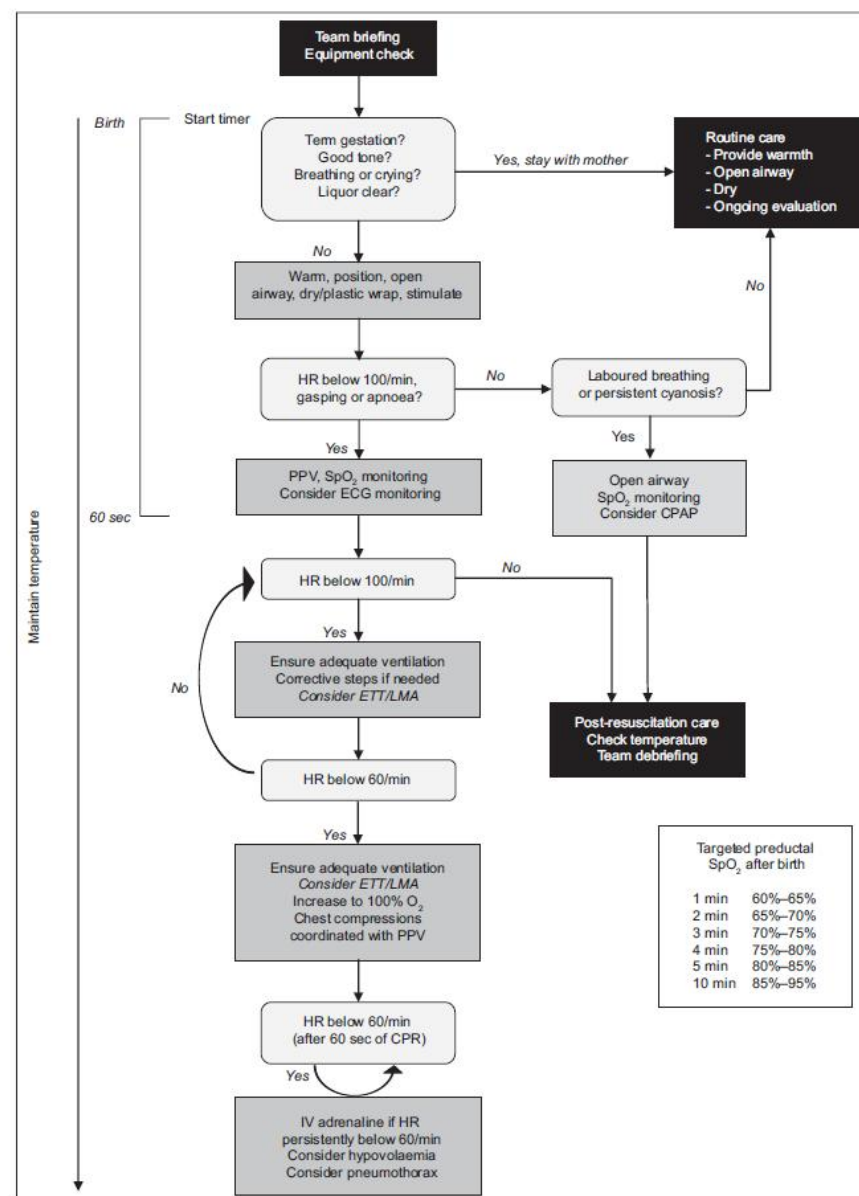
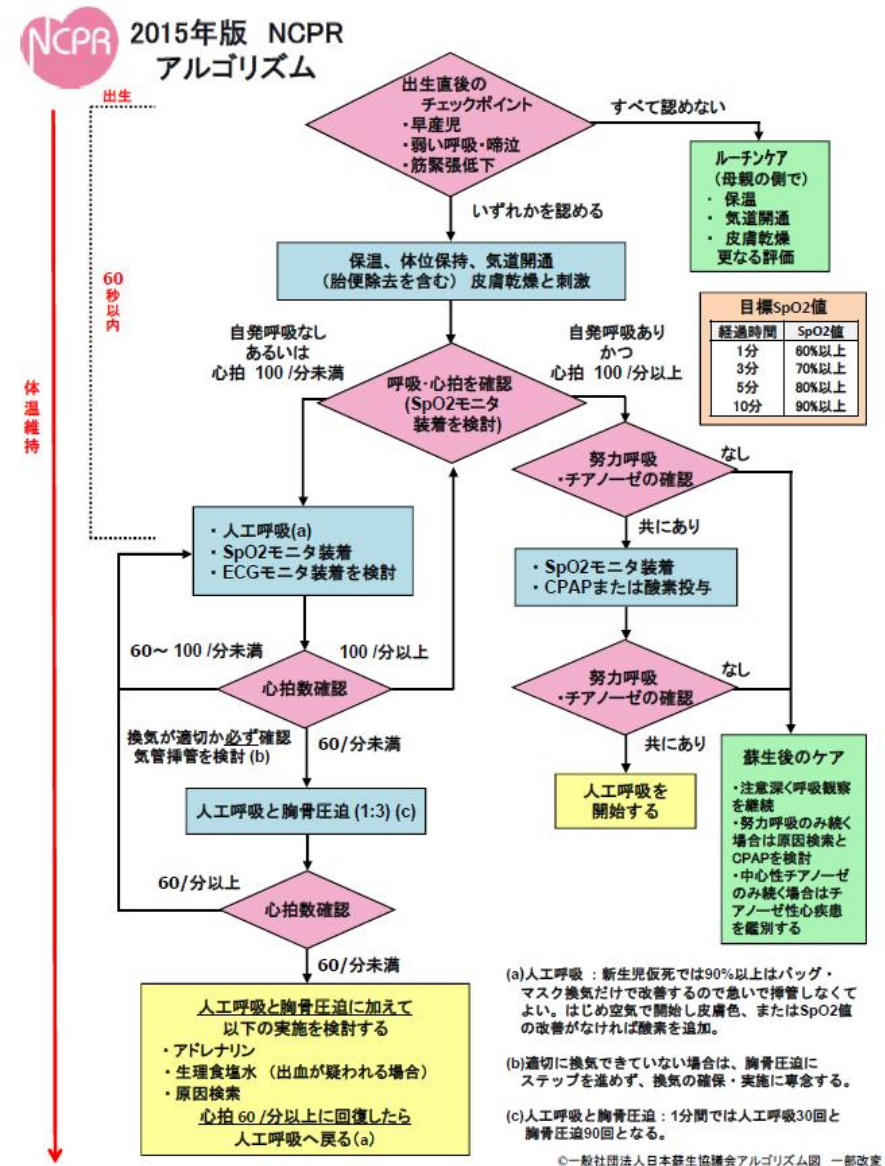


Fig. 1 Newborn resuscitation algorithm. CPAP: continuous positive airway pressure; CPR: cardiopulmonary resuscitation; ECG: electrocardiography; ETT: endotracheal tube; HR: heart rate; IV: intravenous; LMA: laryngeal mask airway; PPV: positive pressure ventilation

JRC Guideline for Neonatal CPR 2015

Considerations for cord management:

- Delayed clamping of umbilical cord or Milking
- Genetic risk for jaundice
- RCT results of Milking in Japan





Original Article

Status of and problems concerning neonatal resuscitation in Japan in 2015

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Abstract *Background:* The International Liaison Committee on Resuscitation (ILCOR) published Consensus 2015 in October 2015. Thereafter, the Japanese version of neonatal cardiopulmonary resuscitation programs was revised. Prior to the revision, we re-conducted questionnaire surveys in three types of medical facilities in January 2015.

Methods: Targeted groups included (i) 277 training hospitals authorized by the Japanese Society of Perinatal/Neonatal Medicine for training of physicians specialized in perinatal care (neonatology) in January 2015 (training hospitals; response rate, 70.8%); (ii) 459 obstetric hospitals/clinics (response rate, 63.6%); and (iii) 453 midwife clinics (response rate, 60.9%). The survey included systems of neonatal resuscitation, medical equipment and practices, and education systems. The results were compared with that of similar surveys conducted in 2005, 2010 and 2013.

Results: Almost all results were generally improved compared with past surveys. In training hospitals, however, the use of oxygen blenders or manometers was not widespread. Only 35% of institutions used continuous positive airway pressure systems frequently, and expert neonatal resuscitation doctors attended all deliveries in only 6% of training centers. In addition, only 71% of training hospitals had brain therapeutic hypothermia facilities. Not all obstetric hospitals/clinics prepared pulse oximeters, and only a few used manometers frequently. Some midwife clinics did not keep warming equipment, and few midwife clinics were equipped with pulse oximeters. In addition, some midwife clinics did not prepare ventilation bags (masks).

Conclusions: The equipment in Japanese delivery rooms is variable. Further efforts need to be made in the distribution of neonatal resuscitation devices and the dissemination of techniques.

"In Japan, approximately half of all infants are born in obstetric hospitals/clinics or midwife clinics without pediatricians or neonatologists, which is different to the situation in other developed countries."

Table 2 Survey content

1	Respondent occupation
2	Attendance of at least one newborn resuscitation-trained individual
3	Existence of facilities providing warmth
4	Equipment (pulse oximeter, oxygen blender, manometer)
5	Resuscitation bag (self-inflating, flow-inflating)
6	Use of CPAP if resuscitation needed
7	Attending lectures on NCPR with practical skill
8	Therapeutic hypothermia facility [†]

[†]Only at training hospitals. Contents have been slightly changed every time. CPAP, continuous positive airway pressure; NCPR, neonatal cardiopulmonary resuscitation program.

Neonatal Resuscitation Guidelines: India-specific Concerns

There has been increasing use of technology in the delivery room as recommended in the past few editions of the newborn resuscitation guidelines [1]. This poses several challenges in implementation in low-resource settings. There is wide economic inequality in India, and putting the technology into practice raises several concerns in actual practice of these guidelines.

Time of birth finds no mention in the guidelines as timing of birth is taken differently (birth of the head,

delivery of shoulders, cutting of cord etc) in practice. When should the timer be started at birth needs to be precisely defined. This has relevance as timely action is precious at birth.

Delayed cord clamping is recommended for atleast 30 seconds for term and preterms not requiring resuscitation. There is no upper limit defined. Putting this step into practice needs clear understanding, communication and defining of roles and responsibilities between the obstetric and neonatal health care providers at delivery. This simple intervention which can be practiced in majority of newborns at birth is under-utilized, and its benefits – not widely recognized.

Summary of changes in 2015 ILCOR guideline

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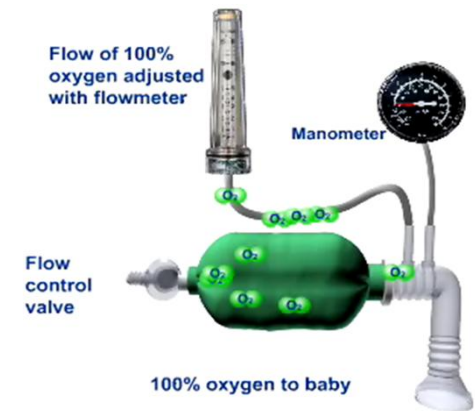
- PPV

UPDATED

✓ Self-inflating bag



✓ Flow-inflating bag)



✓ T-piece resuscitator)



Summary of changes in 2015 ILCOR guideline

• LMA **UPDATED**

- ✓ The laryngeal mask may be used as an alternative to tracheal intubation during resuscitation of the late-preterm and term newborn (more than 34 weeks) if ventilation via the face mask is unsuccessful



• CPAP

- ✓ For **UPDATED** neously breathing preterm infants with respiratory distress requiring respiratory support in the delivery room, we suggest initial use of CPAP rather than intubation and IPPV

Other Devices in ILCOR NR Guideline

O₂ Blender



Monitoring devices



High flow nasal cannula



Precision flow[®] (VapoTherm)



Optiflow system[®] (Fisher & Paykel)



New PICO in 2020 ILCOR guideline

Short title	Original question
Oxygen concentration for resuscitating premature newborns	Among preterm newborns who receive positive pressure ventilation in the delivery room (P), does lower initial oxygen (I), compared with higher initial high oxygen (C), change improve survival (O)?
Timing of cord clamping	In newborns (P) does clamping the cord after the establishment of breathing (I) vs a set time after birth (C) improve short and long term outcomes (O)?
Cord Milking vs DCC	In newborns (P) does cord milking (I) vs delayed cord clamping (C) improve short and long term outcomes (O)
Tracheal intubation for suctioning in non-vigorous infants born through meconium-stained amniotic fluid	For non-vigorous infants at birth born through meconium-stained amniotic fluid (P), does tracheal intubation for suctioning (I), compared with no tracheal intubation (C), reduce morbidities and/or mortality (O)?
LISA/INSURE Versus CPAP	In spontaneously breathing preterm infants with respiratory distress requiring respiratory support in the delivery room or during the stabilization shortly after birth (P), does surfactant administration avoiding prolonged mechanical ventilation via INSURE or LISA (I), compared with CPAP alone (C), change outcome
Adrenaline/ Epinephrine dose	Among neonates who have no detectable cardiac output or have asystole or sustained bradycardia (P), does any other dose or interval of intravenous adrenaline/epinephrine or alternative vasopressor (I), compared with standard dose epinephrine (C), change short or long term outcomes (O)?
HiFlow NC	In spontaneously breathing infants (preterm or term) with respiratory distress requiring respiratory support in the delivery room (P), does the use of HiFlow NC or CPAP (I), compared with intubation and IPPV (C), change outcome (eg overall mortality, Bronchopulmonary dysplasia, air leak, retinopathy of prematurity, necrotizing enterocolitis, brain injury) (O)?

New PICO in 2020 ILCOR guideline

Short title	Original question
Oxygen for resuscitating term newborns	For term newborns receiving resuscitation (P) does increased FiO ₂ as a starting concentration (I) vs air (C) improve outcome (O)?
Hypovolemia (risk factors for newborns)	In newborn babies in need of resuscitation (P) what risk factors predict that volume infusion may improve outcome (O)(increase heart rate, improve survival or morbidity)?
LISA/INSURE Versus Mech Vent with Surfactant	In spontaneously breathing preterm infants with respiratory distress requiring respiratory support in the delivery room or during the stabilization shortly after birth (P), does surfactant administration avoiding prolonged mechanical ventilation via INSURE or LISA (I), compared with mechanical ventilation with traditional surfactant (C), change outcome
Stimulation	Among newborns immediately after birth (P) does no physical stimulation (I) compared with physical stimulation (C) change outcomes (O)?
Clear amniotic fluid	Among neonates who are being born in clear amniotic fluid (P), does suctioning of the mouth and nose (I), compared with no suctioning (C), change outcome(O)?
Apgar score of 0 or 1 for < 10 minutes or ≥ 10 minutes	In infants at birth with an Apgar score of 0 or 1 <10 minutes (P), what subsequent time period or other indicators (ECG/EKG/ CO ₂ detection) (I) compared with 10 minutes (C) predict futility (O)?
Effect of monitoring technology on team function	In babies receiving resuscitation at birth (P) does increasing information using accurate HR monitoring and respiratory function monitoring (I) vs conventional techniques (C) improve team functioning or patient outcome (O)
IO vs IV	Among neonates who are requiring resuscitation in the hospital (P), does intraosseus medication administration (I), compared with central intravenous medication administration (C), change short and long term (O)?

Considerations for RCA Guideline for Neonatal Life Support

- Inter-national and/or intra-national disparity in medical resource availability (human and medical devices etc.)
- Race specific genetic factor
- Consensus making process
- Financial and administrative support for the activity

✓ Put the NR TF team together and Start the discussion!

Resuscitation Council of Asia

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