



Update status and future collaboration of RCA NLS task force

On behalf of RCA Neonatal Life Support TF
Seoul National University College of Medicine
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Background

- ✓ Most member countries of RCA update Neonatal Resuscitation guideline every 5 years. In 2020, the update guidelines based on the Consensus on Science with Treatment Recommendations (CoSTR) suggested by the International Liaison Committee on Resuscitation (ILCOR) were published in RCA member countries.
- ✓ In some countries, studies on neonatal resuscitation have been further reviewed. For some revised items of high clinical importance and requiring further review, evidence was reviewed through adaptation, hybridization, a meta-analysis or scoping review was performed in some member countries.

Today's topic

- To report the recent update status of Neonatal Resuscitation guideline in RCA member countries.
- To share the direction of future collaboration in RCA NLS TF



RCA NLS Task Force



- Han-Suk Kim: Korean Association of CPR
- Shigeharu Hosono: Japan Resuscitation Council
- Bin Huey Quek/Cheo Lian Yeo: National Resuscitation Council Of Singapore
- Ming-Chou Chiang: Taiwan Resuscitation Council
- Christopher J. Grageda: Philippine Heart Association
- Sarayut Supapannachart: Thai Resuscitation Council

- Tetsuya Isayama: ILCOR NLS TF
- Takahiro Sugiura: ILCOR NLS TF

Recording



Ming-Chou Chiang



Tetsuya Isayama



Bin Huey Quek: KKH_dr07221d



Christopher Grageda



Shigeharu Hosono



Han-Suk Kim



A/Prof Yeo Cheo Lian

Summary of Update Status

Country	update year	Guideline	Textbook	Review method
Japan	2020	Own based on ILCOR	Own	Adaptation
Korea	2020	Own based on ILCOR	Own	Adaptation/ Hybrid SR
Philippines	2020	Own base on ILCOR/WHO/UN	Own	Adaptation
Singapore	2021	Own base on ILCOR	Own	Adaptation
Taiwan	2020	AAP/AHA	Translation (AAP/AHA)	-
Thai	2020	AAP/AHA	AAP/AHA	-

Japan Resuscitation Council NLS TF Members



Director in charge/Chair

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Jichi Medical University Saitama Medical Center



Dputy Chair

Chair, Training Site Operational Subcommittee

Satoshi Ibara

Kagoshima City Hospital



Dputy Chair

Yoshimasa Kamei

Saitama Medical University Hospital



Chair, System Reform Promotional Subcommittee

Isao Kusakawa

St.Luke's International Hospital



Chair, ILCOR Subcommittee

Masanori Tamura

Saitama Medical Center



Takahiro Sugiura
ILCOR NLS TF



Tetsuya Isayama
ILCOR NLS TF



一般社団法人

日本蘇生協議会

Japan Resuscitation Council

JRC NLS task force

- The Neonatal Cardio-Pulmonary Resuscitation (NCPR) Project was launched by The Japan Society of Perinatal and Neonatal Medicine (JSPNM) in July 2007. The goal of the NCPR project is to establish a system where all deliveries will be attended by healthcare professionals who have acquired the standard knowledge and skill of neonatal resuscitation.
- The NCPR program is based on the Consensus on Science and Treatment Recommendations (CoSTR) prepared by the International Liaison Committee on Resuscitation (ILCOR).
- The NCPR course utilizes a blended learning approach including e-Learning system and hands-on case-based simulation training with debriefing. By adequately studying and learning the standard NCPR theories and procedures, healthcare professionals attending deliveries are expected to save the lives of neonates and avoid serious disorders all over Japan.

Courses and licenses of NCPR in Japan

Four types of courses provide four types of licenses

1. **Basic Course** (3.5hrs)(for residents, nurses, midwives, perinatal medical staffs etc.)
2. **Advanced Course** (5.0hrs.)(for neonatologists, pediatricians, OB/GYN Doctors, etc.)
3. **Prehospital Course** (3.0hrs.)(for emergency paramedics, ambulance crews etc.)
4. **Instructor Course** (5.5hrs.) (for candidates of NCPR instructor)

(The above licenses are effective for 3 years except that prehospital course license is effective for 5 years.)

The follow-up courses below are to update the above licenses

1. **Instructor Follow Up Course** (for all certificated NCPR instructors)
2. **Skill Training Course** (3.0hrs.)(for all certificated NCPR healthcare Providers)

There is also an **eLearning** (for all certificated NCPR healthcare providers)

Recent update process for NLS guideline

Methodology

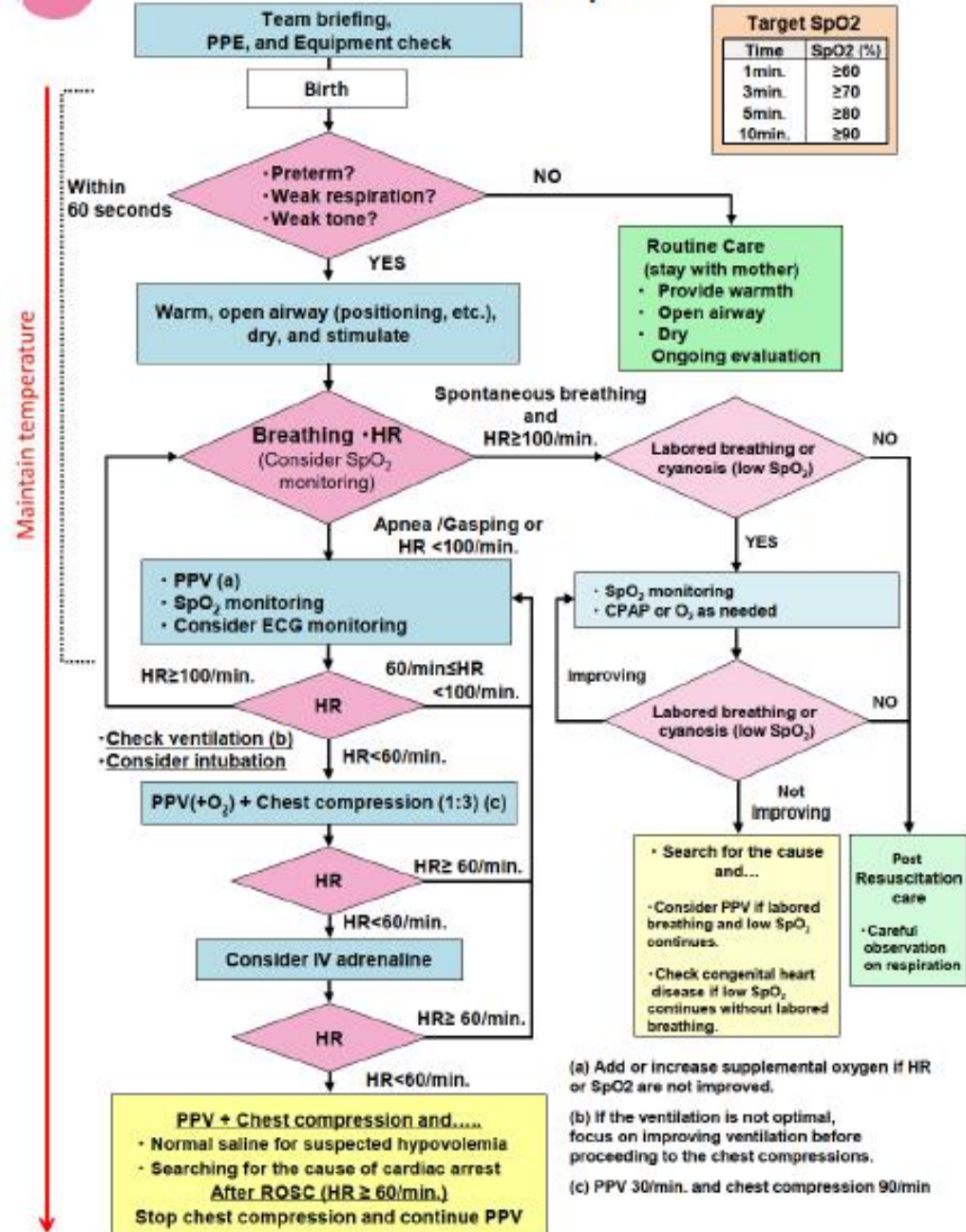
Based on the ILCOR CoSTR 2020, recommendations was developed through a consensus of committee members as well as public comments. (Adaptation)

Modified recommendation by JRC

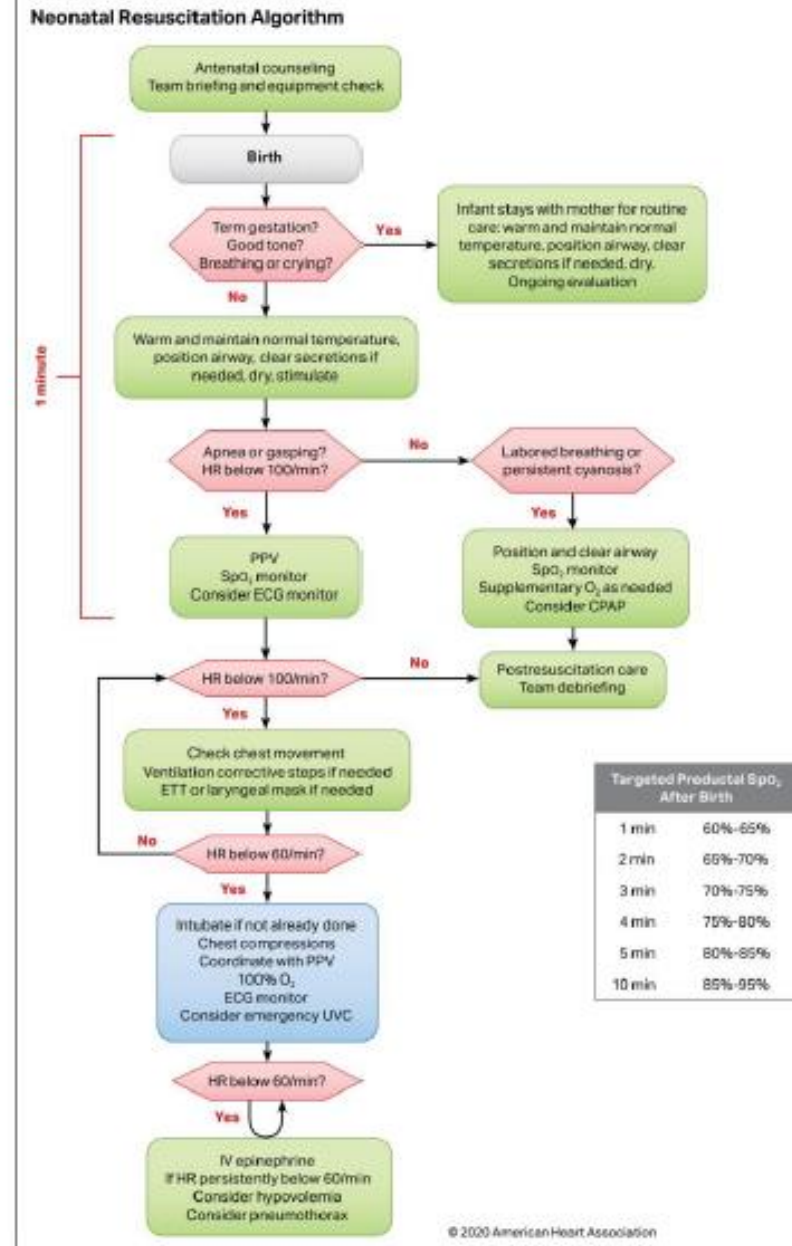
- Japanese NCPR does not recommend DCC for term infants
- Japanese NCPR recommend cut-cord milking for very preterm infants (24-28wkGA)
- Peripheral IV can be alternative to UVC
- ETT with 2.0mm inner diameter is used for extremely small infants

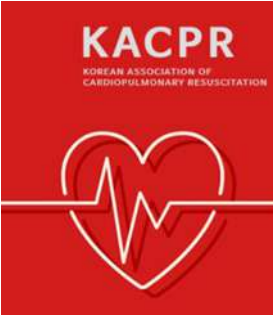


NCPR2020 Algorithm Japan



AHA/AAP algorithm





KACPR (Korean Association of CPR)



Establishment of guidelines for CPR in Korea



Research on CPR



Dissemination and education of CPR guidelines



Cooperation with international organizations on CPR



Korean Guidelines for CPR and ECC

- 2006: 1st Korean guidelines for CPR and ECC
- 2011: 2nd Korean guidelines for CPR and ECC
- 2015: 3rd Korean guidelines for CPR and ECC
- 2020: 4th Korean guidelines for CPR and ECC



Taskforce for Neonatal Resuscitation

Chair

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(Neo)
Ju Sun Heo(Neo)
Su Yeong Kim(Neo)
Hye Won Park(Neo)

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Chan-Wook Park (Ob)
Geum Joon Cho(Ob)
Ah Young Oh (Anesth)
Eun Kyung Jang (Nurse)

2020 한국형 심폐소생술
가이드라인 개발 연구

2020.08.05

NR TFT 전체 연구자 회의



PICO question for Korean guideline

Briefing
Debriefing

Scoping review

Suctioning
Clear AF

Adaptation

Non-
vigorous
meconium
stained NB

Adaptation

Sustained
inflation

Adaptation

T-piece
resuscitator
vs
Self-inflating
bag

Scoping review

Initial O₂
for
full-term

Adaptation

Initial O₂
for
preterm

Hybrid

Epinephrine

Adaptation

IO vs IV

Adaptation

NR
duration

Adaptation

2020 NR Korean CoSTR

KNR No	Title	Korean CoSTR	Level of evidence	Recommendation of class
1	Briefing and debriefing	Improvement in the short-term clinical and performance results of infants and medical staff → suggest to include a briefing/debriefing	C-EO (expert opinion)	Class IIb
2	Suctioning of clear amniotic fluid	Routine oropharyngeal or nasopharyngeal suctioning immediately after delivery is not recommended.	C-LD (limited data)	Class IIb
3	Tracheal intubation and suctioning of non-vigorous meconium stained newborns	The effects of direct laryngoscopy and tracheal suctioning for 'non-vigorous' newborns with MSAF are unclear , and PPV is required to speed up the restoration of breathing.	C-LD (limited data)	Class IIb

2020 NR Korean CoSTR

KNR No	Title	Korean CoSTR	Level of evidence	Recommendation of class
4	Sustained inflation at birth	Sustained inflation of initial breathing should not be performed in preterm newborns with PPV for bradycardia or inadequate breathing effort at birth.	C-LD (limited data)	Class III: harm
5	T-piece resuscitator vs. self-inflating bag	There is insufficient evidence to recommend the use of a T-piece resuscitator or a self-inflating bag in newborns receiving PPV. Nevertheless, a T-piece resuscitator may be considered in facilities equipped with compressed gas.	C-LD (limited data)	Class IIb

2020 NR Korean CoSTR

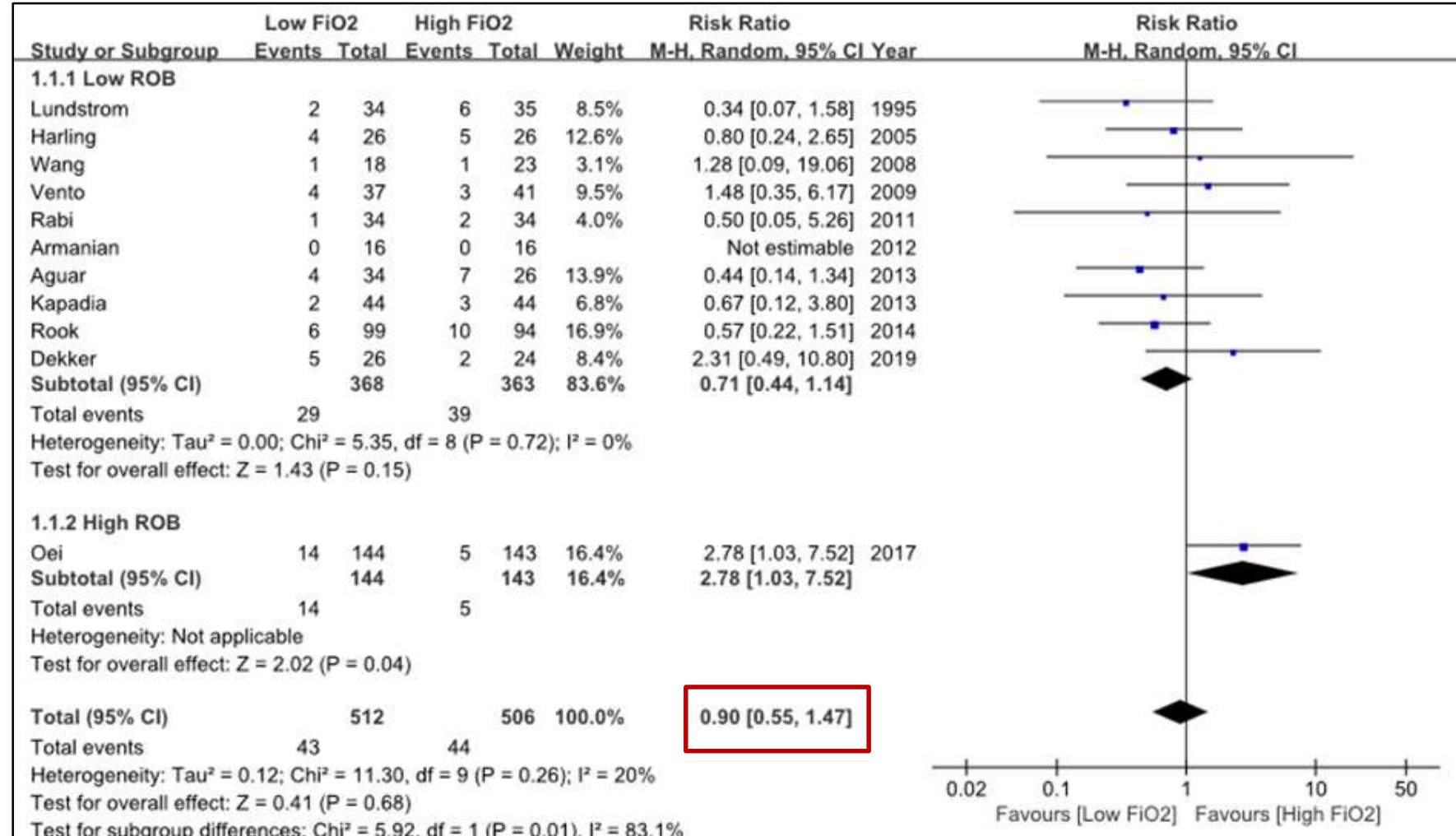
KNR No	Title	Korean CoSTR	Level of evidence	Recommendation of class
6	Initial oxygen concentration for full-term neonates	<ul style="list-style-type: none"> The initial use of 21% oxygen is recommended. 100% oxygen should not be used. 	<ul style="list-style-type: none"> C-LD (limited data) C-LD (limited data) 	<ul style="list-style-type: none"> Class IIb Class III: harm
7	Initial oxygen concentration for preterm neonates	<ul style="list-style-type: none"> Starting with low oxygen concentrations (21%-30%) may be considered instead of high oxygen concentrations (60%-100%). Oxygen blender If) oxygen blender (-) → adjusting oxygen flow using a self-inflating bag with a reservoir 	<ul style="list-style-type: none"> C-LD (limited data) 	<ul style="list-style-type: none"> Class IIb

2020 NR Korean CoSTR

KNR No	Title	Korean CoSTR	Level of evidence	Recommendation of class
8	Epinephrine	<ul style="list-style-type: none"> If) HR<60/min → IV 0.01-0.03 mg/kg of epinephrine (diluted 1:10,000) If) IV (-) → IT 0.05-0.1 mg/kg If) sustain HR<60/min → q 3-5 min 	<ul style="list-style-type: none"> C-LD (limited data) C-LD (limited data) C-LD (limited data) 	<ul style="list-style-type: none"> Class IIa Class Iia Class IIa
9	IV vs. IO	<ul style="list-style-type: none"> It is reasonable to use the umbilical venous route as the primary method of vascular access. If) UV access (-) → IO route can be accessed as an alternative. 	<ul style="list-style-type: none"> C-LD (limited data) C-LD (limited data) 	<ul style="list-style-type: none"> Class Iia Class IIa
10	Duration of NR	<ul style="list-style-type: none"> If) all steps of CPR have been performed and continuous CPR is required, as spontaneous circulation is not restored after excluding reversible causes, discontinuation of CPR may be discussed with the team and family at 10-20 minutes after birth. 	<ul style="list-style-type: none"> C-LD (limited data) 	<ul style="list-style-type: none"> Class IIb

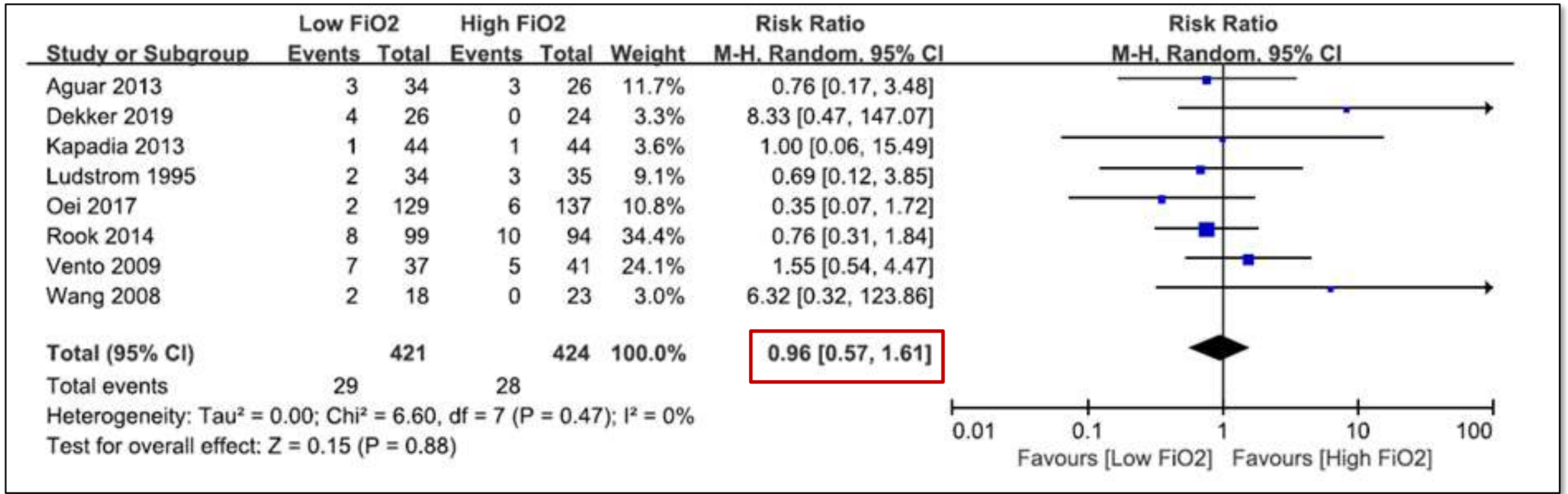
Initial oxygen concentration for preterm neonatal resuscitation – Hybrid SR

- Short-term Mortality



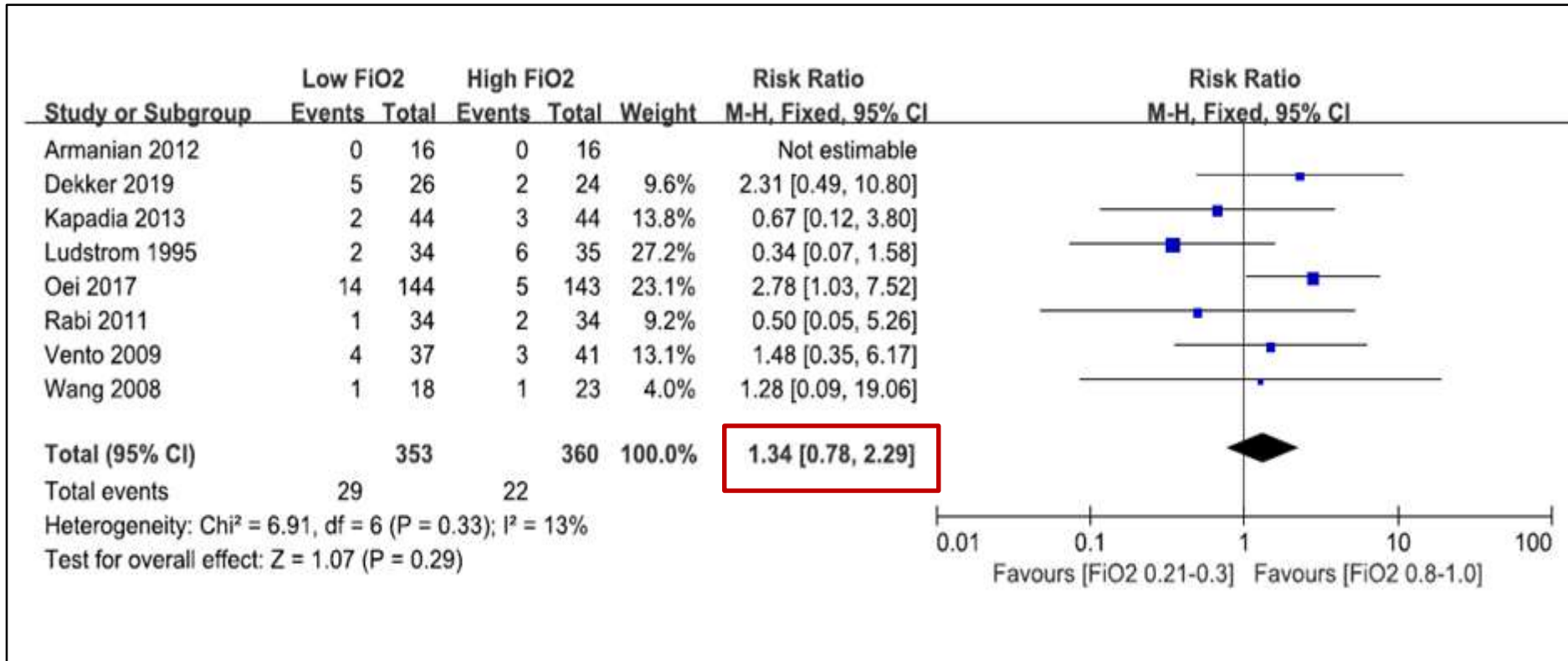
Initial oxygen concentration for preterm neonatal resuscitation - Hybrid

- IVH Grade III-IV

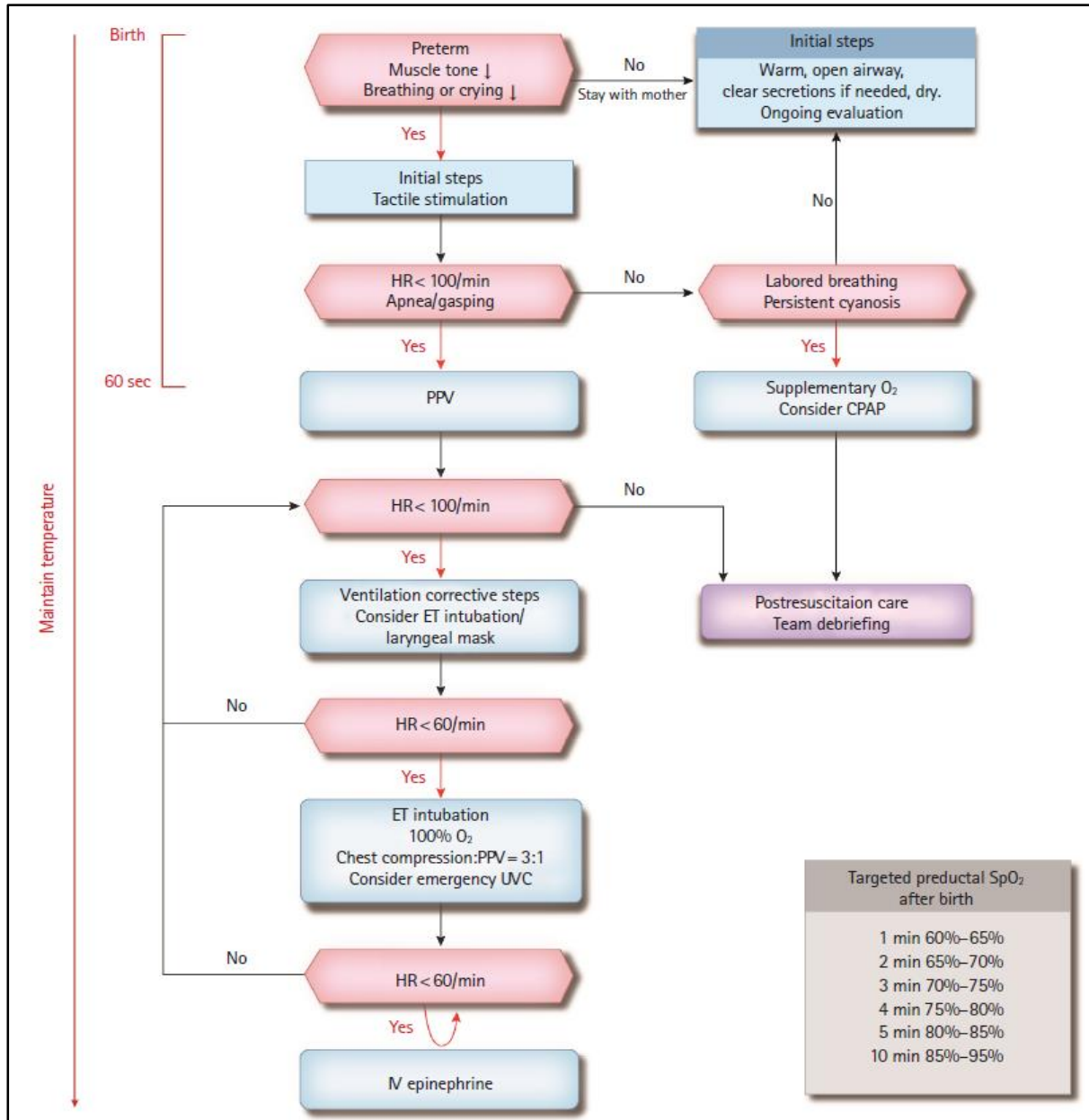


Initial oxygen concentration for preterm neonatal resuscitation - Hybrid

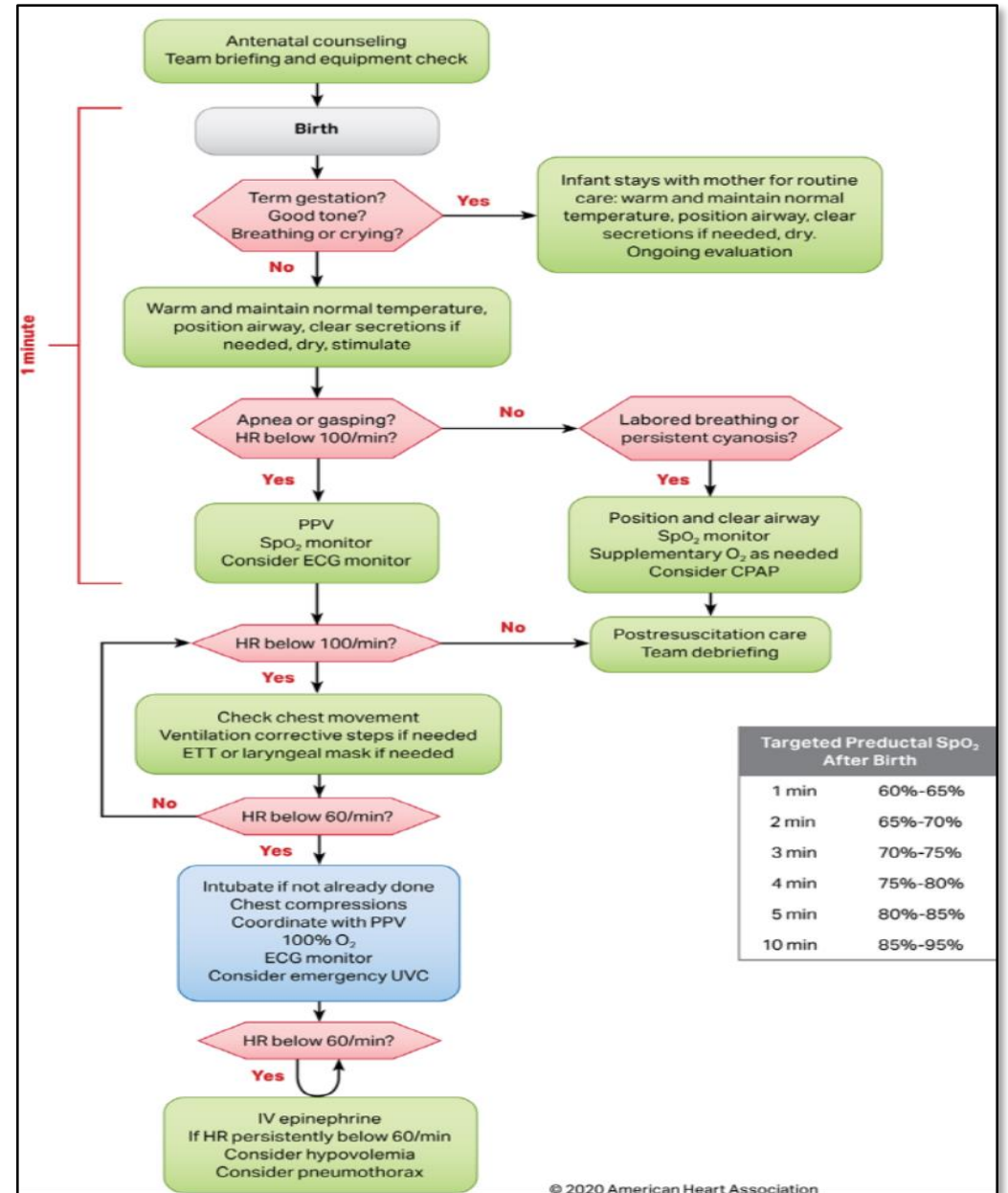
- Subgroup FiO2 0.21-0.3 compared to FiO2 0.8-1.0
- Short-term Mortality



Korean NR Algorithm



AHA NR Algorithm





2020 Korean Guidelines for Cardiopulmonary Resuscitation. Part 8. Neonatal resuscitation

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Chan-Wook Park⁵, Geum Joon Cho⁶, Ah Young Oh⁷, Eun Kyung Jang⁸,
Han-Suk Kim⁹, Ai-Rhan Ellen Kim¹⁰, Sung Oh Hwang¹¹; on behalf of
the Steering Committee of 2020 Korean Guidelines for
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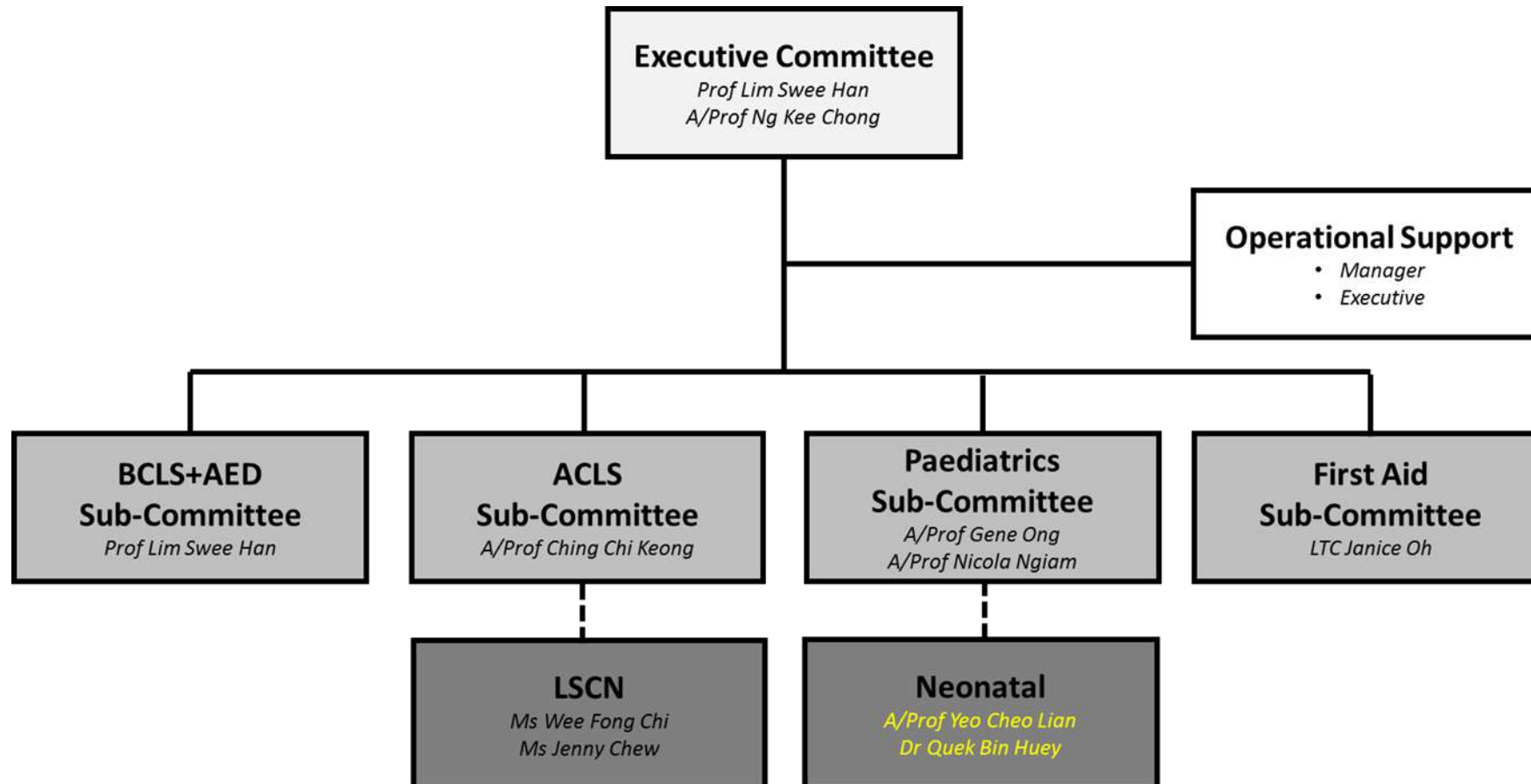
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equally to this work as first authors.

Singapore Resuscitation Council Organization



Singapore National Resuscitation Guidelines

- First published in 2001
- BCLS and Adult ACLS
- 1st Neonatal and Paediatric Resuscitation guidelines 2011
 - *Singapore National Resuscitation Council's Neonatal and Paediatric Resuscitation Workgroup, Chong NK. Newborn and paediatric resuscitation 2011 guidelines. Singapore Med J 2011; 52:560-72*
- Neonatal Resuscitation Guidelines 2016
 - *Singapore Neonatal Resuscitation Guidelines. Review Article. Yeo CL, Biswas A, Ee T T, et al. Singapore Med J 2017; 58:391-403*

Taskforce for Singapore Neonatal Resuscitation Guidelines 2021

- Combined from all 3 major hospitals, plus a representation member from private hospitals
- NUH - **Dr Agnihotri Biswas**, Khadijah Binti Abdul Kader, Amutha Chinnadurai
- SGH – Dr Yeo Cheo Lian, **Dr Selina Ho**, Dr Vijayendra Ranjan Baral
- KKH – **Dr Wai Yan Yip**, Dr Juin Yee Kong, Dr Quek Bin Huey
- Private – Dr Kenny Teong Tai Ee

(names highlighted in red are co-1st authors)

Evidence review process

PICOST questions

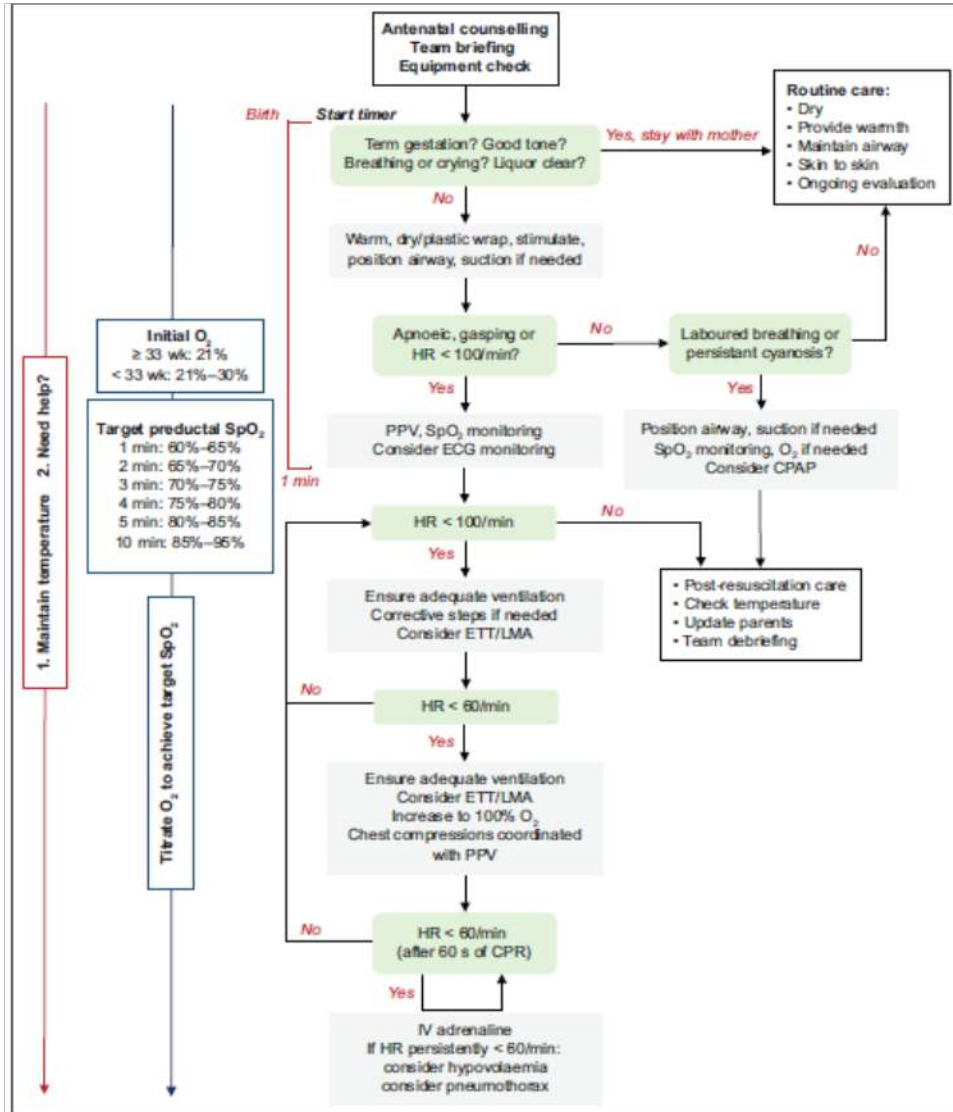
- Review of ILCOR 2020 CoSTR summary of recommendations
- Literature search
- Grading of evidence
- Adaptation to local guidelines and crafting of our own recommendations
- Consensus
- Presentation at SRFAC TownHall (3rd Townhall meeting on 31/7/2021)
- Publication of Guidelines

Reviewed PICO questions

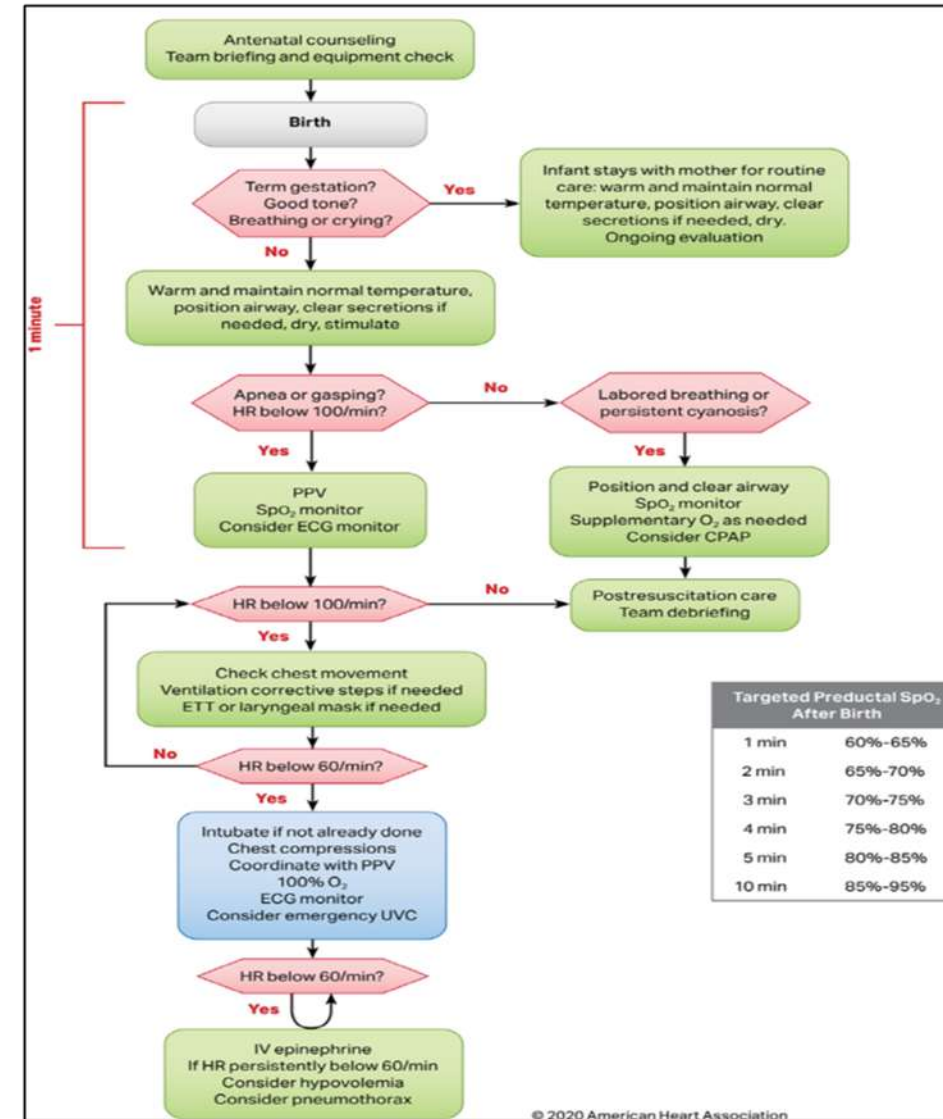
Reason for using gestation of <33 weeks compared to 35 weeks is because we use polyethylene wraps for <33 weeks – and it's easier to remember one gestational age for different measures

1. Anticipation, preparation and having trained providers working as a team are essential for newborn resuscitation.
2. In newborns not requiring resuscitation at birth, delayed cord clamping for at least 30 seconds is recommended.
3. Maintain temperature of non-asphyxiated newborns between 36.5°C and 37.5°C.
4. In newborns requiring resuscitation, the 'golden minute' after birth is allocated for the provision of initial steps, re-evaluation and the initiation of PPV.
5. Perform ventilation corrective steps, if required, to achieve effective PPV, the most important step for successful newborn resuscitation.
6. An increase in HR is the most important indicator of effective resuscitation. Use auscultation for the initial assessment of HR and consider using ECG for advanced resuscitation.
7. Commence PPV with 21% oxygen for newborns \geq 33 weeks and 21%-30% oxygen for newborns < 33 weeks. Use pulse oximetry to titrate oxygen to saturation targets.
8. Initiate chest compressions coordinated with PPV using 100% oxygen if HR < 60/min after at least 30 seconds of effective PPV.
9. Administer adrenaline if HR < 60/min after at least 60 seconds of coordinated chest compressions and ventilation. Administer volume early in infants with suspected blood loss who are not responding to resuscitation.
10. Resuscitation may be discontinued if there is no HR after 20 minutes of optimum resuscitation and correction of reversible causes.

Singapore Neonatal Resuscitation Algorithm 2021



AHA NR Algorithm



Singapore Neonatal Resuscitation Guidelines 2021

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ABSTRACT Neonatal resuscitation is a coordinated, team-based series of timed sequential steps that focuses on a transitional physiology to improve perinatal and neonatal outcomes. The practice of neonatal resuscitation has evolved over time and continues to be shaped by emerging evidence as well as key opinions. We present the revised Neonatal Resuscitation Guidelines for Singapore 2021. The recommendations from the International Liaison Committee on Resuscitation Neonatal Task Force Consensus on Science and Treatment Recommendations (2020) and guidelines from the American Heart Association and European Resuscitation Council were compared with existing guidelines. The recommendations of the Neonatal Subgroup of the Singapore Resuscitation and First Aid Council were derived after the work group discussed and appraised the current available evidence and their applicability to local clinical practice.

Keywords: neonatal resuscitation, newborn resuscitation, Singapore Resuscitation and First Aid Council (SRFAC) guidelines for resuscitation 2021

Organization of NLS task force (Taiwan)



Chinese Version Neonatal Resuscitation Program

President of Taiwan Society of Neonatology: Hung-Chih Lin

Editor-in-Chief: Ming-Chou Chiang

Executive editors: Ren-Huei Fu 、 Chien-Yi Chen

Editors:

Hung-Yang Chang 、 Chung-Min Shen 、 Pei-Chen Tsao 、

Hsiang-Yu Lin 、 Yi-Ling Chen 、 Hsiao-Yu Chiu 、

Chien-Yi Chen 、 Yu-Hsun Chang 、 Chien-Chou Hsiao 、

Yung-Ning Yang 、 Wai-Tim Jim 、 Ren-Huei Fu 、

Mei-Yin Lai 、 Hsin-Chung Huang



President: HC Lin



Chairman: MC Chiang

Taiwan National NLS guideline(1)

History

- **1996** Ronald Stoddard came to Taiwan to help setting NRP Instructor Course
23 Neonatologist certified
- **1998** Ronald Stoddard came to Taiwan to help setting NRP Provider Course
the first edition of Chinese version NRP
NRP certification is needed for Hospital Accreditation
- **2012** Figures in Textbook of NRP edited by AHA/AAP
can be used legally for Chinese version NRP

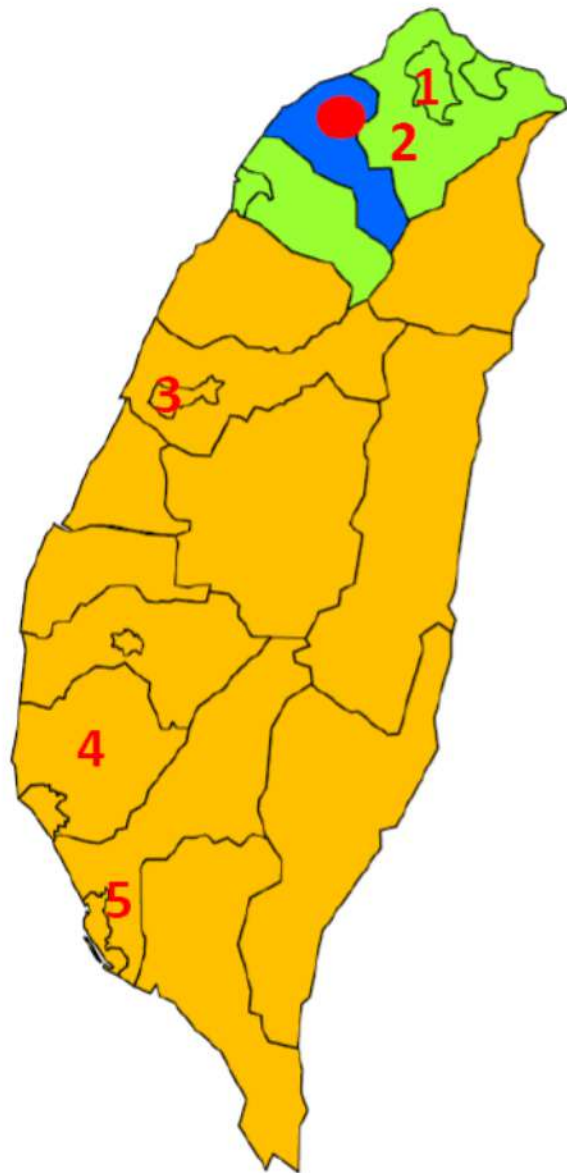


Taiwan National NLS guideline (2)

- As shown in the history, we use AHA/AAP Textbook of Neonatal Resuscitation Program (NRP) as our National NLS guideline. Based on the textbook of NRP, we will revise and publish the latest edition of Chinese version NRP when the new edition of AHA/AAP Textbook of NRP comes out.
- Either NRP instructors or providers are certified by Taiwan Society of Neonatology (TSN). Candidates for NRP instructors are licensed neonatologists. Candidates for providers include licensed physicians, nurses and respiratory therapists.

Taiwan National NLS guideline (3)

- Certificate for NRP providers is valid for 3 years.
- Certificate for the new (first time) NRP instructors is valid for 2 years and can be extended for another 2 years. After that, NRP instructors must attend the renew course held by TSN.
- Certificate for NRP instructors who passed the renew course is valid for 3 years and can be extended for another 4 years.
- An NRP instructor in good standing remains an instructor as long as the maintenance requirements are met.



● **Chang Gung Memorial Hospital**

Neonatologists: 402

Taipei City: 109 (27%)

New Taipei City: 39 (10%)

Taichung City: 60 (15%)

Tainan City: 27 (7%)

Kaohsiung City: 64 (16%)

Population:

Taiwan: 23,350,000

Area:

Taiwan: 36,192 km²

Physicians, nurses, respiratory therapists are eligible for NRP certification.

Participants

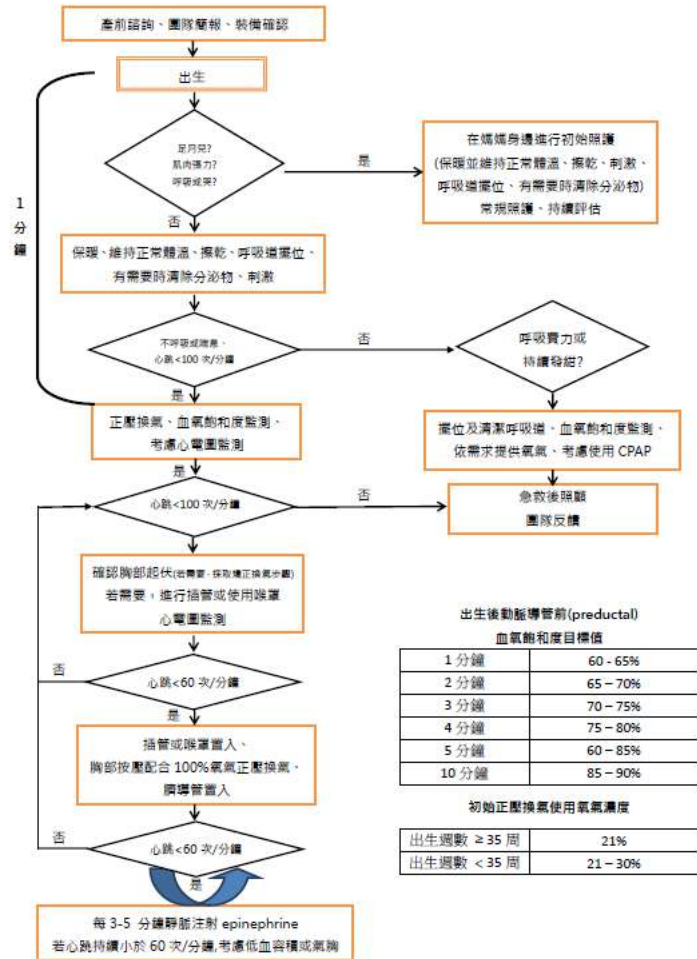
2017: 4830

2018: 5382

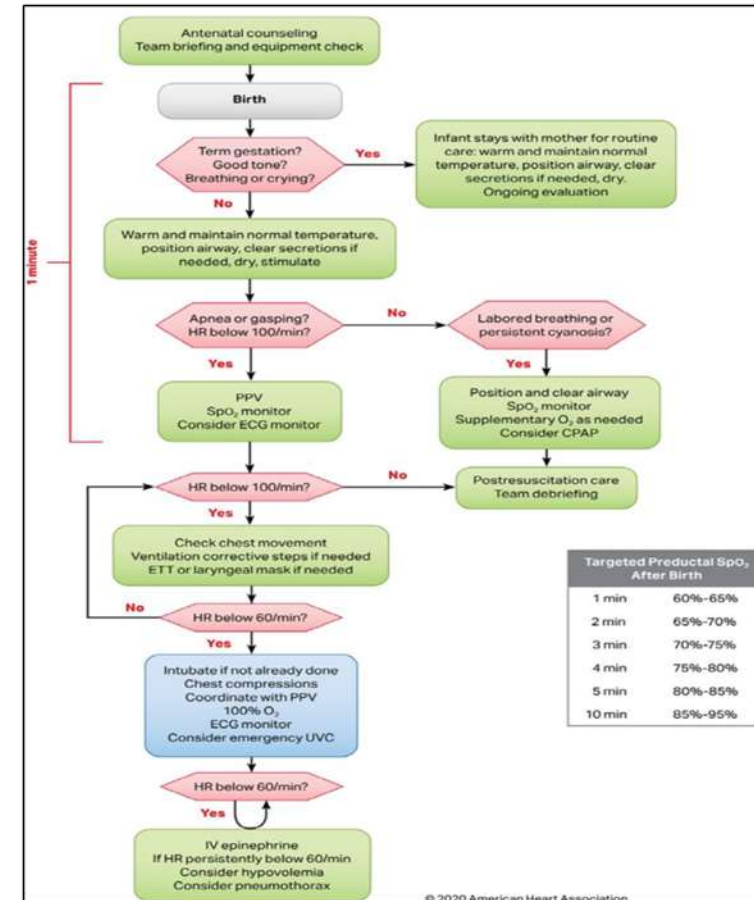
2019: 5132

NR Algorithm you are using currently

Taiwan NR Algorithm



AHA NR Algorithm



Future suggestion of collaboration

- To develop a common NLS guideline in RCA
- To develop a common NLS training program in Asia
- To collaborate for clinical research in NLS area in Asia

To develop a common NLS guideline in RCA

Pros

- Adaptation of ILCOR guideline to Asian situation
- Genetic commonality
- As educational materials to promote standard neonatal care to non-RCA member countries in Asia

Cons

- Diversities in culture, socio-economic background
- Funding problems
- Language problems
- Insufficient consensus for necessity

To develop a common RCA NLS training program

-To develop on-line or e-learning program for NLS

For example;

Japan-Indonesia NLS collaboration provided by JCR

To development for clinical research of NLS in Asia

- Combined with Asian Neonatal Network Collaboration
 - Indonesia, Japan, Malaysia, Philippines, Singapore, Korea, and Thailand
 - International surveys on NICU systems and practice
 - VLBW registries

Thank you for your attentions!