PEDIATRIC LIFE SUPPORT 2021 – AN UPDATE

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17 December 2021

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EUROPEAN RESUSCITATION COUNCIL
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Topics

- Updates on Paeds Resuscitation 2021 & Singapore Resuscitation Guidelines
- ILCOR PLS TF Updates 2021

Review Article

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CME ARTICLE

Singapore Paediatric Resuscitation Guidelines 2021

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PEDIATRIC BASIC LIFE SUPPORT (PBLS)

PEDIATRIC ADVANCED LIFE SUPPORT (PALS)

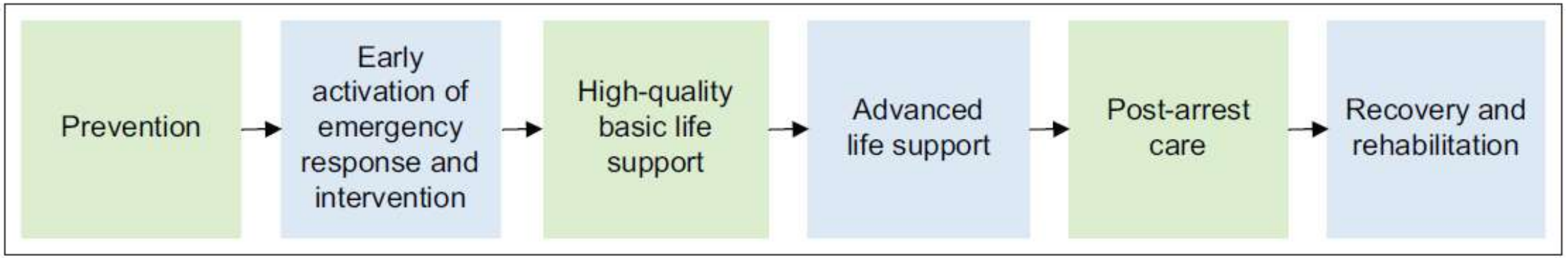

Fig. 1 Diagram shows the paediatric chain of neurologically intact survival.

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PEDIATRIC BASIC LIFE SUPPORT (PBLS)

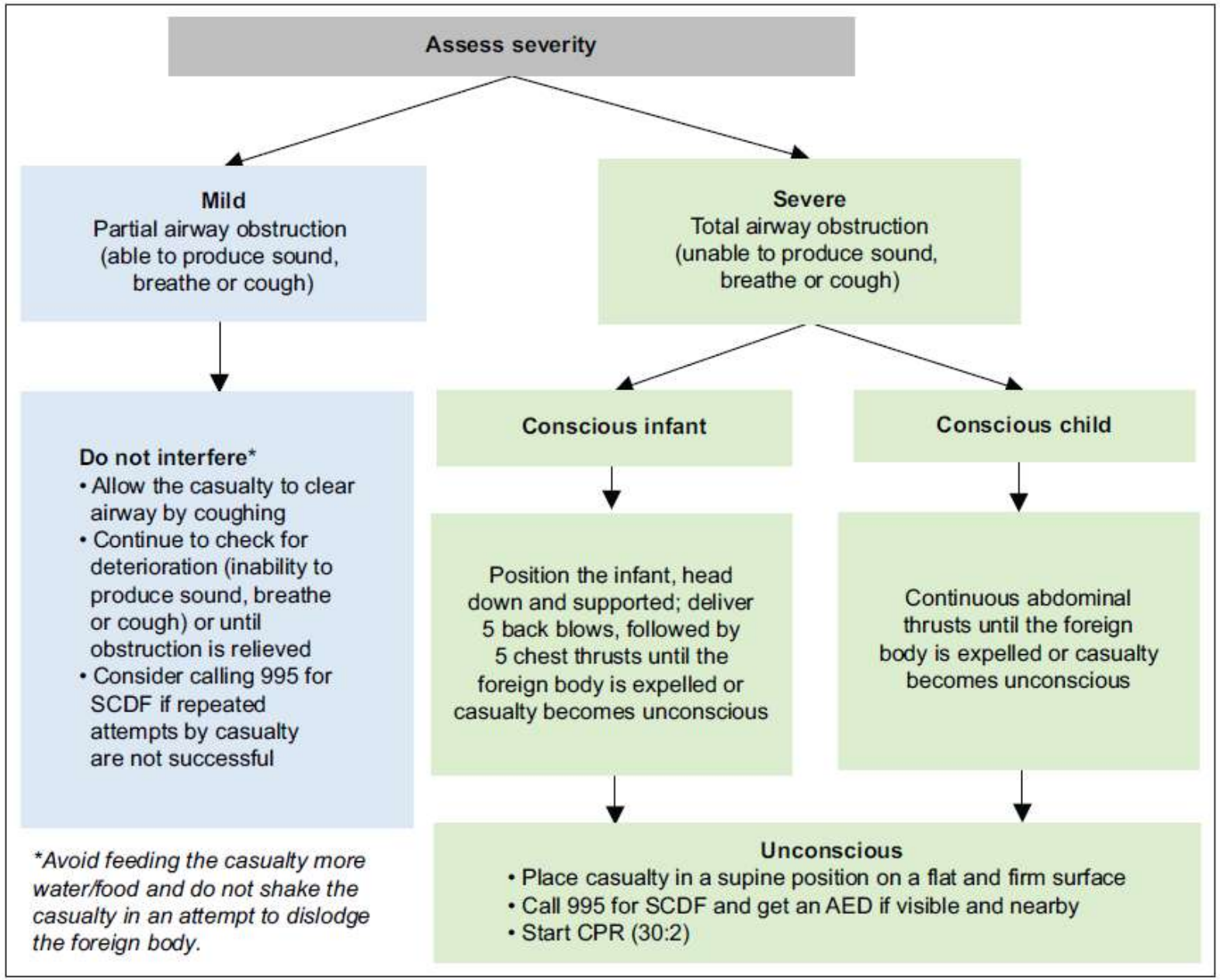

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Fig. 2 Flowchart shows the algorithm for foreign body airway obstruction. AED: automated external defibrillator; CPR: cardiopulmonary resuscitation; SCDF: Singapore Civil Defence Force

PEDIATRIC BASIC LIFE SUPPORT (PBLS)

Box 1. Recommended sequence of action in Paediatric Basic Life Support.

DRSABCD: Dangers, Responsive, Send for help followed by AED/Airway, Breathing, CPR and Defibrillation

Dangers: Make sure the area is safe for you and there is no risk to others.

Responsive: Check if the infant/child responds to touch or voice. Gently squeeze the baby/child's shoulders and speak to them. Do not shake them.

Send for help: Ask someone else to call an ambulance on '995'. Dispatch assistance will be available to help to identify cardiac arrest, provide CPR instructions and activate nearby community first responders. If alone, **do not leave the patient unattended**. Call '995' using a mobile phone. The dispatch service will activate nearby community responders and direct them to the nearest automated external defibrillator (AED) to assist the victim.

AED: Send someone to get an AED.

***Airway** (only for paediatrics): Open airway if able and willing. Optional for community first responders. Healthcare provider(s): Head-tilt, chin-lift or jaw thrust (if trauma suspected)

Breathing: Look and feel to assess for breathing.

– Look: Chest and abdominal for rise and fall

– Feel: Abdomen for rise and fall (place hand over upper abdomen)

– **Breathing normally:** Place the patient in the recovery position and monitor continuously till help arrives

– **No breathing or gasping only:**

Community first responder(s): Proceed with cardiopulmonary resuscitation (CPR) if no breathing, gasping or abdominal movement is noted.

Healthcare provider(s): After opening the airway, proceed to evaluate for breathing as above. Simultaneously, check for carotid pulse (children above 1 year) and brachial pulse (less than 1 year) within 10 seconds. If unsure, or if no definite pulse is felt or pulse rate is less than 60 seconds, proceed with CPR.

Rescue breathing for healthcare provider(s): if no breathing or respiratory effort is inadequate, but pulse is present and is ≥ 60 beats per minute.

Provide rescue breathing/ventilation (age-specific):

– Infants: 30 breaths per minute (1 breath in 2 seconds)

– Child (1–12 years): 20 breaths per minute (1 breath in 3 seconds)

– Adolescents (> 12 years): 12 breaths per minute (1 breath in 5 seconds)

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Chest compressions

– **Patient position:** Lay the baby or child on their back on a flat, firm surface, away from danger.

– **Hand placement:** All ages: lower half of the sternum (Note that for infants, it is 1 finger breadth below the inter-nipple line, which coincides with the lower half of the sternum).

Technique: Infants: 2-finger or 2-thumb encircling method (healthcare providers). Ensure full recoil.

If the infant is too big to allow for this method or community responders have difficulty achieving adequate compressions, consider using the 1-hand method.

Chest compression depth

– All: Push hard, push fast

– Infants (< 1 year): Approximately one-third chest depth or 3–4 cm

– Child (1–12 years): Approximately one-third chest depth or 4–5 cm

– Adolescents (> 12 years): Approximately one-third chest depth or 4–6 cm

PEDIATRIC BASIC LIFE SUPPORT (PBLS)

Chest compression rate: 100–120 per minute

Compression-to-ventilation ratio:

– Community first responders (one or more rescuers) or single-rescuer healthcare provider (for all ages): 30:2

– 2 or more healthcare providers:

  o Adolescents > 12 years: 30:2

  o Infants and Children ≤ 12 years: 15:2

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Minimise interruptions in CPR (minimise proportion of hands-off time of chest compressions during paediatric cardiac arrest, unless to deliver ventilations).

In 2-person rescuer CPR, the first rescuer performs compressions and the second rescuer performs ventilations. The compressor role is rotated every 2 minutes to avoid fatigue. The switch should take less than 5 seconds.

Rescuers who are unable or unwilling to provide mouth-to-mouth ventilation are encouraged to at least perform good-quality chest compressions.

Ventilation

Trained community first aid providers (lifeguard, etc) and healthcare providers with appropriate-sized bag-valve-mask (BVM) devices available can ventilate paediatric cardiac arrest victims using these.

For community first responders (and healthcare providers with no appropriate-sized BVM available), if able, trained and willing, provide 2 breaths by blowing steadily into the child's mouth (or infant's mouth and nose) for about 1 second each, sufficient to make the chest visibly rise.

If the airway is blocked and there is no chest rise when attempting ventilation, reposition the airway and re-attempt ventilation. If foreign body airway obstruction is suspected, remove any visible foreign body after opening the airway. Re-attempt ventilation after re-attempting to open the airway again. If there is no chest rise after 2 attempts, re-start chest compressions.

If community first responders are unable or unwilling to perform ventilations, they are encouraged to at least provide continuous high-quality chest compressions till the arrival of emergency medical services personnel.

PEDIATRIC BASIC LIFE SUPPORT (PBLS)

Defibrillation

Arrival of AED: Apply the defibrillation pads, turn on the AED and follow the instructions.

Energy attenuation systems for younger children: Look for the instructions on the AED; generally, standard (adult) AED pads are recommended if ≥ 8 years or ≥ 25 kg.

For children < 8 years or < 25 kg (unless specified by the AED manufacturers), use child pads or energy attenuated (paediatric) modes, if available. These generally halve the defibrillation energy to 50 J or 75 J. If unavailable, use standard AEDs. Place the pads in the anterior-posterior position if the standard pads are too big or less than 2 cm apart when used on smaller children. For infants (1 month to 1 year), manual defibrillators are preferred, but if not available, use AED with energy attenuation systems (child pads or 'paediatric' modes). If no energy attenuation systems are available, use standard AEDs.

For neonates, AEDs are not advised, as they have not been validated in this population and the incidence of shockable rhythm is extremely rare.

Follow the voice instructions on the AED machine once it is activated. Dispatch CPR instructions and assistance will be provided for out-of-hospital cardiac arrest if '995' is called. Continue CPR with the AED applied till ambulance/emergency medical team arrives or patient wakes up.

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1) Emphasis on ventilation as part of paediatric basic life support

- We suggest that if rescuers are willing and able, ventilations should be provided as part of CPR to paediatric cardiac arrest casualties. However, if the rescuer is unable or unwilling to perform ventilation on paediatric cardiac arrest casualties, it is recommended to at least provide high-quality uninterrupted chest compressions until help arrives. While there is an emphasis on ventilation in paediatric life support, it is important that hyperventilation is avoided.

PEDIATRIC BASIC LIFE SUPPORT (PBLS)

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2) Emphasis on public access defibrillators

- For infants aged one month and older, if manual defibrillators are not immediately available, AEDs with dose attenuation systems (child pads or paediatric modes) are advised. If AEDs with energy attenuating systems are not available, consider the use of standard AEDs (comparative harm of not defibrillating shockable rhythms). There have been reported cases of safe and effective use of AEDs in infants and young children at an energy dose exceeding 4 J/kg.
- We are unable to recommend the use of public access defibrillators for neonates owing to the extremely low incidence of shockable rhythms in the neonatal population and the lack of published validation on the accuracy of AEDs to analyse electrocardiographic algorithms in this age group.

3) Energy dose for first defibrillation

New recommendation

- It is reasonable to use an initial energy dose of 2–4 J/kg of monophasic or biphasic energy for defibrillation. If refractory, it is reasonable to consider using ≥ 4 J/kg energy levels, not exceeding 10 J/kg or the adult maximum dose, with a maximum of 360 J (monophasic) or 200 J (biphasic).

- A small observational study in the intensive care setting provided limited evidence for the initial energy dose for defibrillation to be lower than 4 J/kg
- As there were significant limitations in the external validity of this single study, the evidence is equivocal

Ref : Ohshimo S, Wang CH, Couto TB, et al. Pediatric timing of epinephrine doses: a systematic review. Resuscitation 2021; 160:106-17.

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4) Family presence during paediatric cardiac arrest resuscitation

New recommendation

- It is reasonable to allow the patient's family to be present during resuscitation, if there are dedicated and trained healthcare providers to guide them through the process and if family presence does not interfere with the resuscitation process and infection control measures.

(Ref: Fernandez Castelao E, Russo SG, Riethmüller M, Boos M. Effects of team coordination during cardiopulmonary resuscitation: a systematic review of the literature. J Crit Care 2013; 28:504-21.)

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Resuscitation

journal homepage: www.elsevier.com/locate/resuscitation

Review

Family presence during resuscitation in paediatric and neonatal cardiac arrest: A systematic review

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Context: Parent/family presence at pediatric resuscitations has been slow to become consistent practice in hospital settings and has not been universally implemented. ***A systematic review of the literature on family presence during pediatric and neonatal resuscitation*** has not been previously conducted.
Objective: To conduct a systematic review of the published evidence related to family presence during pediatric and neonatal resuscitation.
Data sources: Six major bibliographic databases was undertaken with defined search terms and including literature up to June 14, 2020.
Study selection: 3200 titles were retrieved in the initial search; 36 ultimately included for review.
Data extraction: Data was double extracted independently by two reviewers and confirmed with the review team. All eligible studies were either survey or interview-based and as such we turned to narrative systematic review methodology.
Results: The authors identified ***two key sets of findings: first, parents/family members want to be offered the option to be present for their child's resuscitation. Secondly, health care provider attitudes varied widely (ranging from 15% to >85%), however, support for family presence increased with previous experience and level of seniority.***
Limitations: English language only; lack of randomized control trials; quality of the publications.
Conclusions: Parents wish to be offered the opportunity to be present but opinions and perspectives on the family presence vary greatly among health care providers. This topic urgently needs high quality, comparative research to measure the actual impact of family presence on patient, family and staff outcomes.

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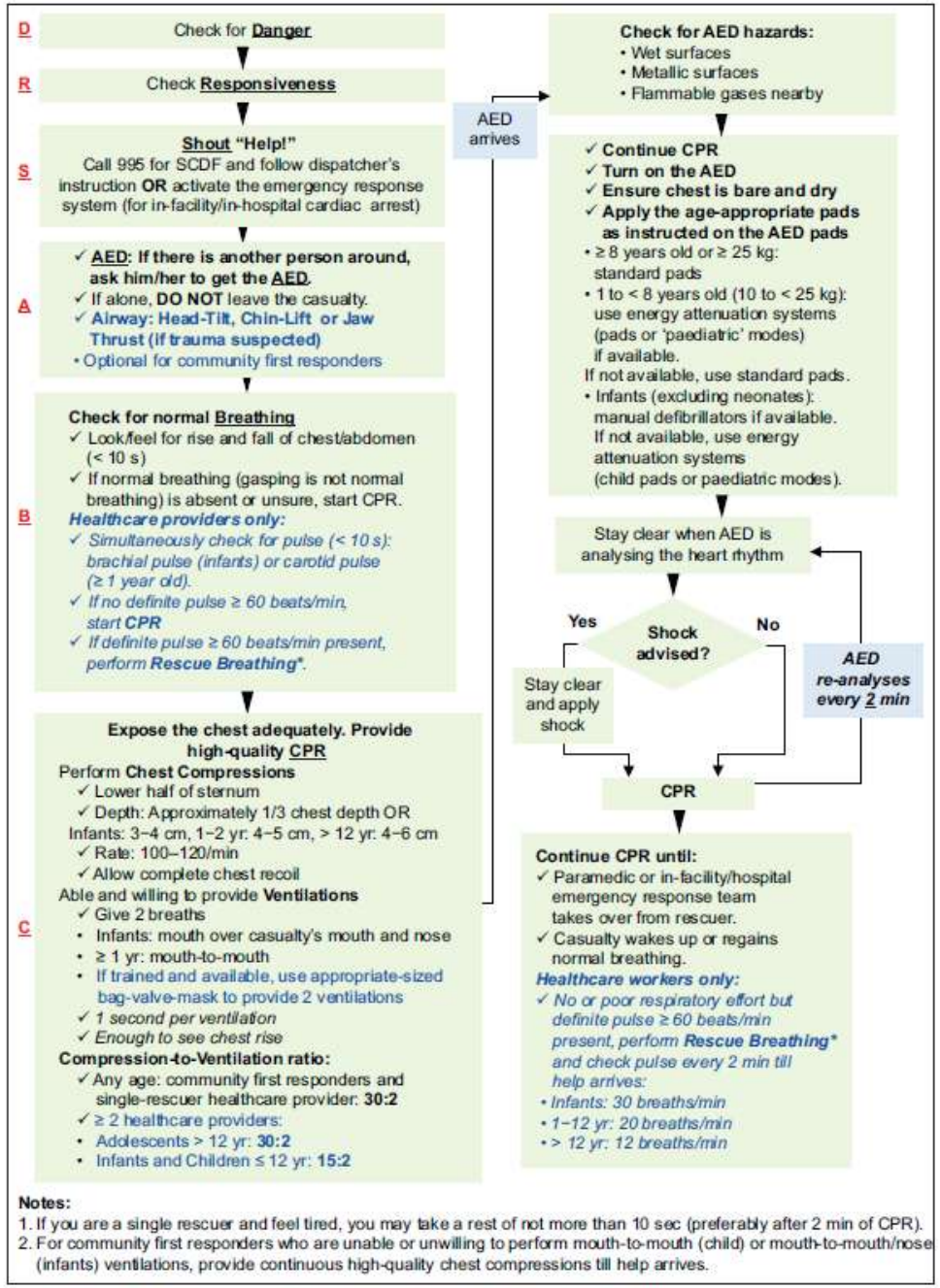

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Fig. 3 Flowchart shows the algorithm for Paediatric Basic Life Support CPR + AED 2021. AED: automated external defibrillator; CPR: cardiopulmonary resuscitation; SCDF: Singapore Civil Defence Force

Table I. Summary for Paediatric Life Support.

CPR summary for paediatric cardiac arrests	Adolescents (> 12 yr)	Child (1–12 yr)	Infant (< 1 yr, excluding newborns)
Establish unresponsiveness; call for help ('995'/code team)	Immediately (community first responders: dispatcher-assistance for CPR will be available on calling '995'. If alone and no handphone is available, perform CPR for 2 minutes before getting help)		
Open airway (optional for community first responders)	Head-tilt, chin-lift; healthcare workers only: jaw-thrust (if trauma suspected)		
Recognition of cardiac arrest	Check for breathing (no breathing, gasping/agonal breathing) Simultaneously, check for definite pulse (≥ 60/min) only by healthcare workers (do not take > 10 s) Adult/child: carotid; infant: brachial		
Compression landmarks	Lower half of sternum		Lower half of sternum (1 finger breadth below inter-nipple line)
Compression method	Heel of 1 hand with other hand on top	Heel of 1 hand, with or without other hand on top	2-thumb encircling method (or 2-finger method for community first responders)
Compression depth (push hard, push fast, full recoil)	Approximately 1/3 chest depth (4–6 cm)	Approximately 1/3 chest depth (4–5 cm)	Approximately 1/3 depth of chest (3–4 cm)
Compression rate	100–120/min; (push hard, push fast, full recoil)		
Compression-ventilation ratio			
Community first responders	30:2 (1 or 2 rescuers)		
Healthcare providers	30:2 (1 or 2 rescuers)	30:2 (1 rescuer); 15:2 (≥ 2 rescuers)	
Unable/unwilling to perform ventilations	Continuous high-quality chest compressions		

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Ventilation during cardiac arrest			
Without advanced airway	2 breaths at 1 second per breath; ventilate enough for chest to rise (pause to ventilate should not take > 6 s)		
With advanced airway	1 ventilation in 5–6 s (10–12/min)	1 ventilation in 3 s (20/min)	1 ventilation in 2 s (30/min)
Rescue breathing (for trained healthcare workers) **Signs of circulation or definite pulse ≥ 60/min present**	1 breath/ventilation per 5 s (12/min)	1 breath/ventilation per 3 s (20/min)	1 breath/ventilation in 2 s (30/min)
AED: 2 min of CPR and shock if indicated	Standard AED pads	≥ 8 yrs or ≥ 25 kg: use standard AED pads < 8 yr or < 25 kg: use energy attenuation systems if available; if unavailable, use standard pads	Neonates: manual defibrillators; use of AED not advised > 1 mth: manual defibrillators preferred; if unavailable, use AEDs with energy attenuation systems; if these are unavailable, consider use of standard AED pads
Foreign body			
Conscious	Abdominal thrust (chest thrust if obese and adult-size or pregnant)	Abdominal thrust	5 back blows, 5 chest thrusts
Unconscious	CPR (with ventilations) and look for foreign body before breaths		

AED: automated external defibrillator; CPR: cardiopulmonary resuscitation

Box 2. Summary for Advanced Paediatric Life Support.

Cardiopulmonary resuscitation (CPR) quality

- Chest compression quality:
  - Push hard (approximately 1/3 of anteroposterior diameter of chest) and fast and allow complete chest recoil; minimise interruptions in chest compressions.
  - If CPR feedback machines are available to target specific chest compression depths:
    - o Infants: 3–4 cm
    - o Child (1–12 years): 4–5 cm
    - o Adolescents (> 12 years): 4–6 cm
- Rotate rescuers may be rotated every 2 minutes to prevent fatigue or earlier if it occurs. The switch should take less than 5 seconds.
- CPR coaching can be used to improve CPR quality in trained team systems.
- Chest compression-to-ventilation ratio via bag-valve-mask (BVM) if no advanced airway
  - 15:2 if < 12 years
  - 30:2 if > 12 years
- In the intensive care setting, for patients with cardiac arrest with pre-existing invasive blood pressure monitoring, diastolic blood pressure can be considered to guide the quality of resuscitation.

Correct reversible/contributing causes (Hs & Ts)

These should be actively and expediently investigated and managed as part of resuscitation in all critically ill and collapsed paediatric patients.

- Hypoxia
- Hypovolaemia
- Hydrogen ion (acidosis)
- Hypoglycaemia
- Hypo-/hyperkalaemia
- Hypothermia
- Tension pneumothorax
- Tamponade, cardiac
- Toxins
- Thrombosis: pulmonary/coronary

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Advanced and definitive airway

- Advanced airway devices include supraglottic airway devices and endotracheal tube (ETT), while definitive airway refers specifically to ETT (where there is better ventilation and less risk of aspiration).
- Waveform capnography or capnometry should be used to confirm and monitor ETT placement with ongoing chest compressions.
- Once advanced airway is in place:
  - Ventilations can be asynchronous with chest compressions (100–120/min):
    - o Infants: 30/min (1 ventilation per 2 seconds)
    - o Children (1–12 years): 20/min (1 ventilation per 3 seconds)
    - o Adolescents (> 12 years): 10-12/min (1 ventilation per 5–6 seconds)

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Energy dose for defibrillation

- Defibrillation dose
  - For first shock: 2–4 J/kg
  - Subsequent shock: 4 J/kg (increase as necessary up to a maximum of 10 J/kg or adult dose (360 J monophasic or 200 J biphasic)

Drug therapy

- Adrenaline intraosseous (IO)/intravenous (IV) dose: 0.01 mg/kg (0.1 mL/kg of 1:10,000 concentration). Repeat every 3–5 minutes.
  - IO/IV adrenaline should be given as soon as access is established (preferred route). Endotrachael administration may be considered if already intubated and IO/IV access is delayed: ETT dose: 0.1 mg/kg (0.1 mL/kg of 1:1000 concentration).
  - Adrenaline should be given as soon as possible in non-shockable rhythms.
- Amiodarone IO/IV dose: 5 mg/kg bolus after the 3rd shock during cardiac arrest. May be given up to a maximum of 3 doses for refractory ventricular fibrillation/pulseless ventricular tachycardia.
- Lignocaine IO/IV dose: initial: 1 mg/kg loading dose. Maintenance: 20–50 mcg/kg per min infusion (repeat bolus dose if infusion initiated > 15 min after initial bolus therapy).
  - Lignocaine can be considered as an alternative drug to amiodarone in shockable rhythms.
- Sodium bicarbonate IO/IV dose: 1–2 mEq/kg of 8.4% or 2–4 mEq/kg of 4.2%.
  - Indicated for the following: (a) hyperkalaemia (especially with concomitant significant metabolic acidosis); (b) sodium channel blockade cardiotoxicity from drug toxicity such as tricyclic antidepressants.

Identification of return of spontaneous circulation

- Definite pulse (≥ 60/min) and blood pressure and/or
- Spontaneous arterial pressure waves with intra-arterial monitoring

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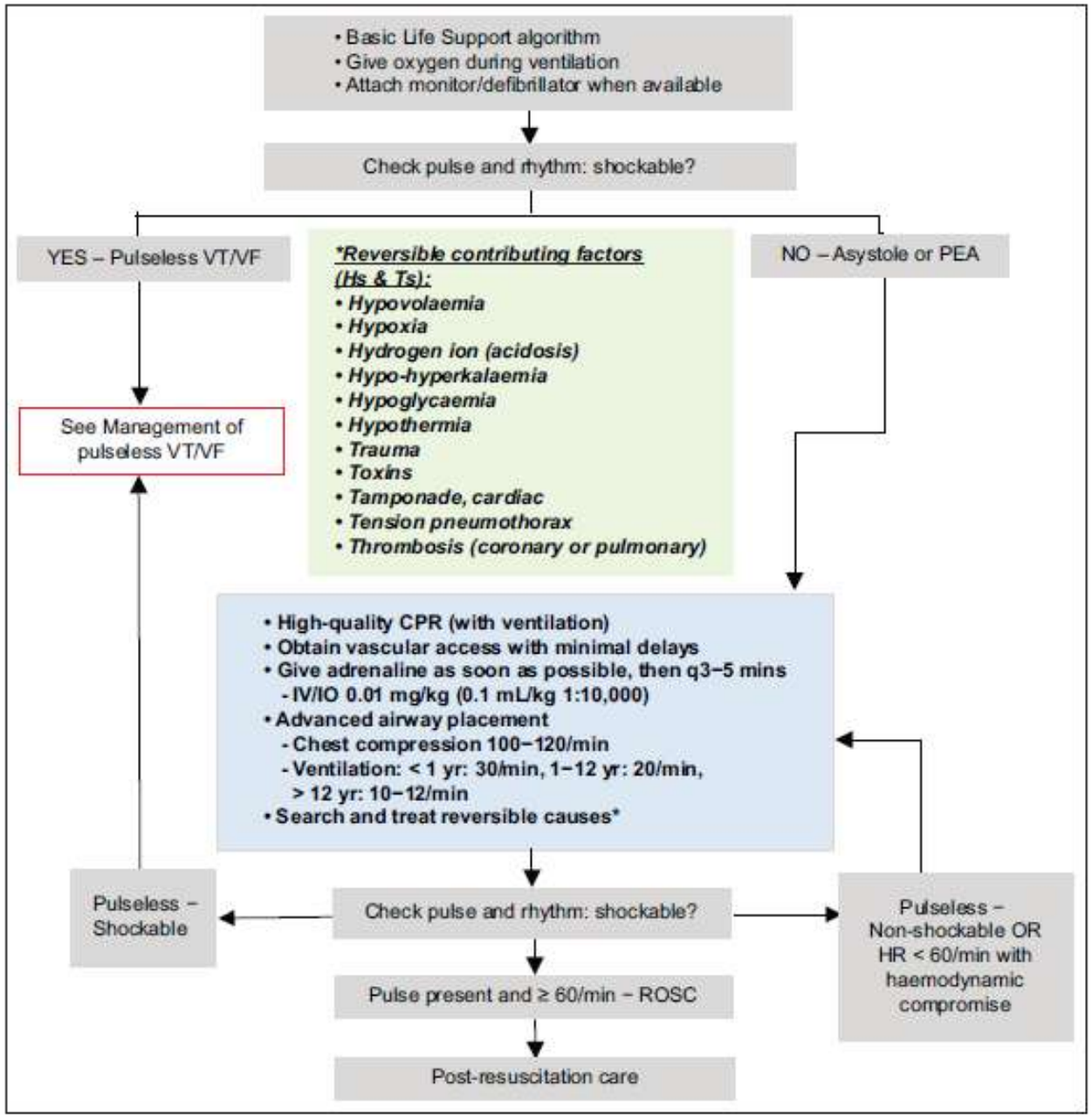

Fig. 4 Flowchart shows the resuscitation algorithm for pulseless arrest. CPR: cardiopulmonary resuscitation; HR: heart rate; IO: intraosseous; IV: intravenous; PEA: pulseless electrical activity; q: every; ROSC: return of spontaneous circulation; VF: ventricular fibrillation; VT: ventricular tachycardia

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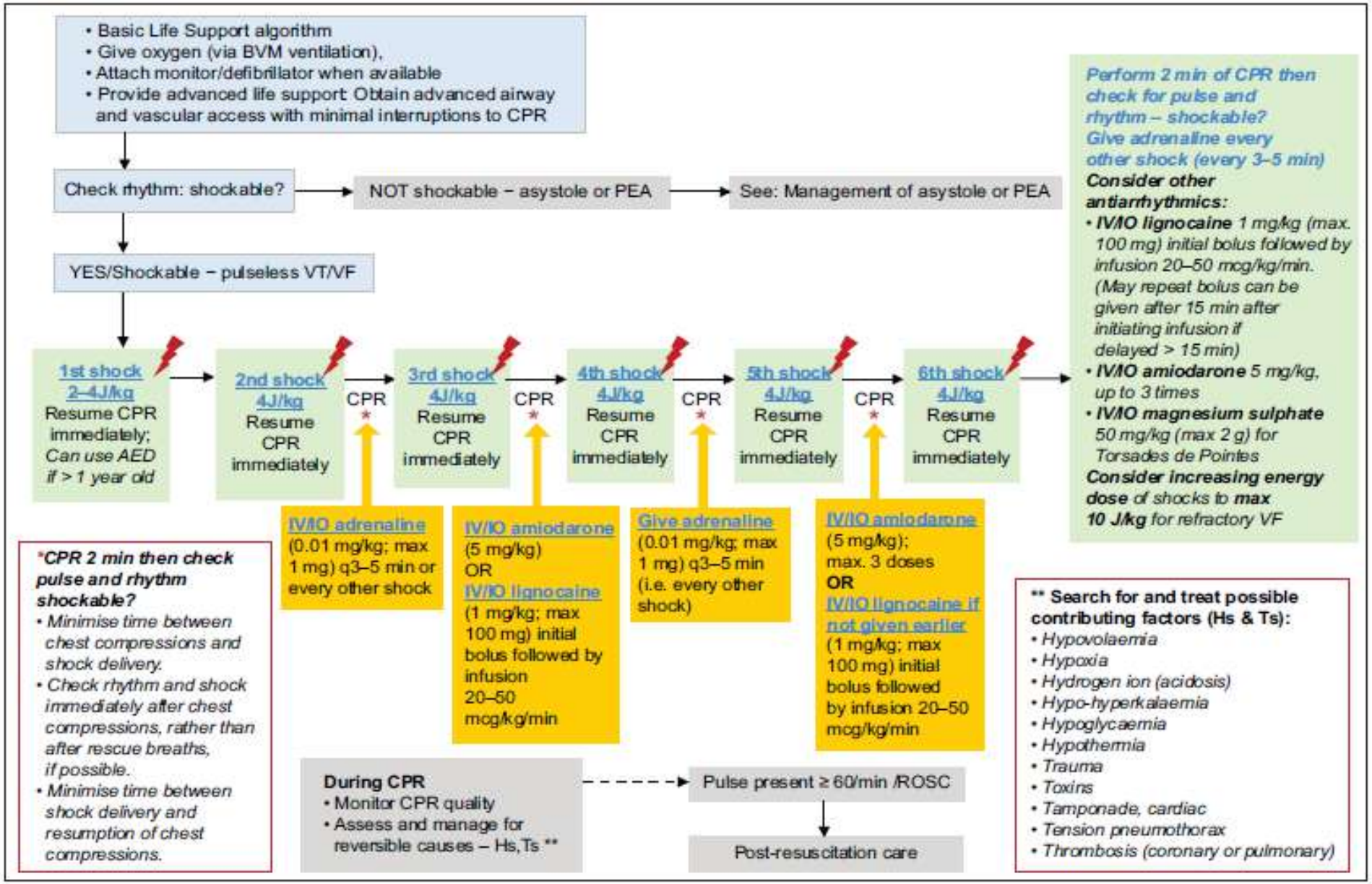

Fig. 5 Flowchart shows the resuscitation algorithm for pulseless arrest with shockable rhythms. AED: automated external defibrillator; BVM: bag-valve-mask; CPR: cardiopulmonary resuscitation; IO: intraosseous; IV: intravenous; PEA: pulseless electrical activity; q: every; ROSC: return of spontaneous circulation; VF: ventricular fibrillation; VT: ventricular tachycardia

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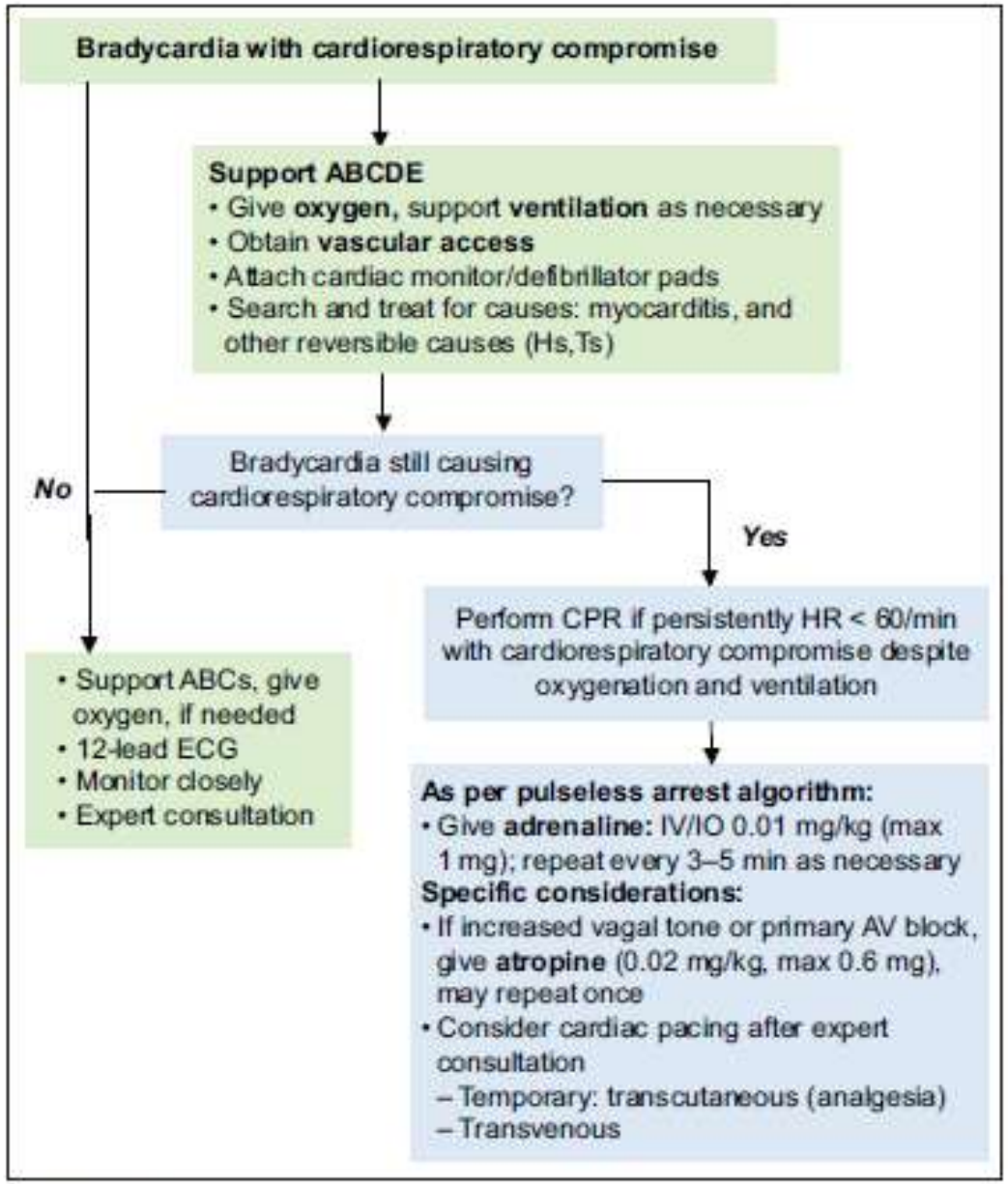

Fig. 6 Flowchart shows the algorithm for bradycardia. AV: atrioventricular; CPR: cardiopulmonary resuscitation; ECG: electrocardiogram; HR: heart rate; IO: intraosseous; IV: intravenous

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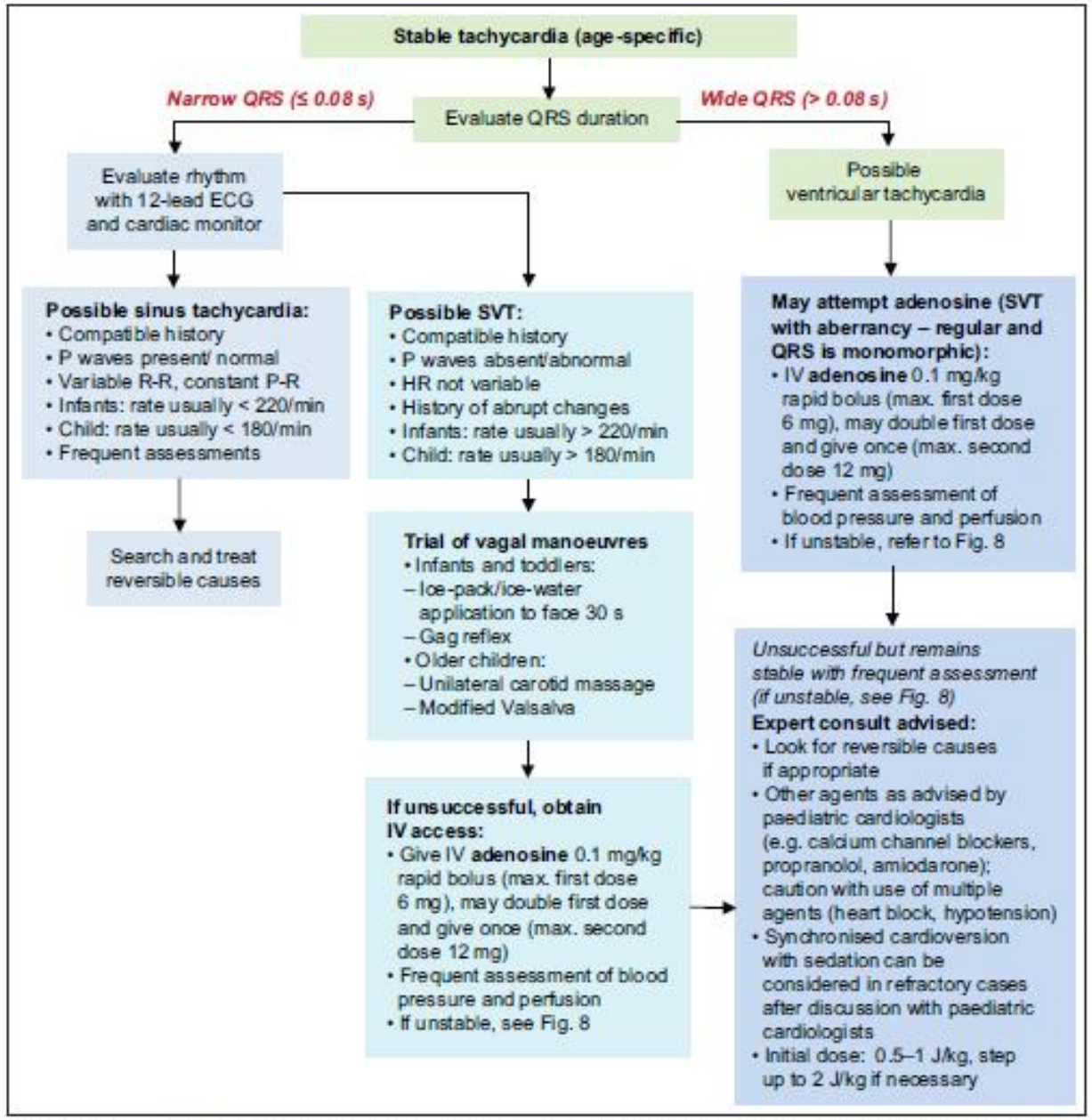

Fig. 7 Flowchart shows the algorithm for stable tachycardia. ECG: electrocardiogram; HR: heart rate; IV: intravenous; SVT: supraventricular tachycardia

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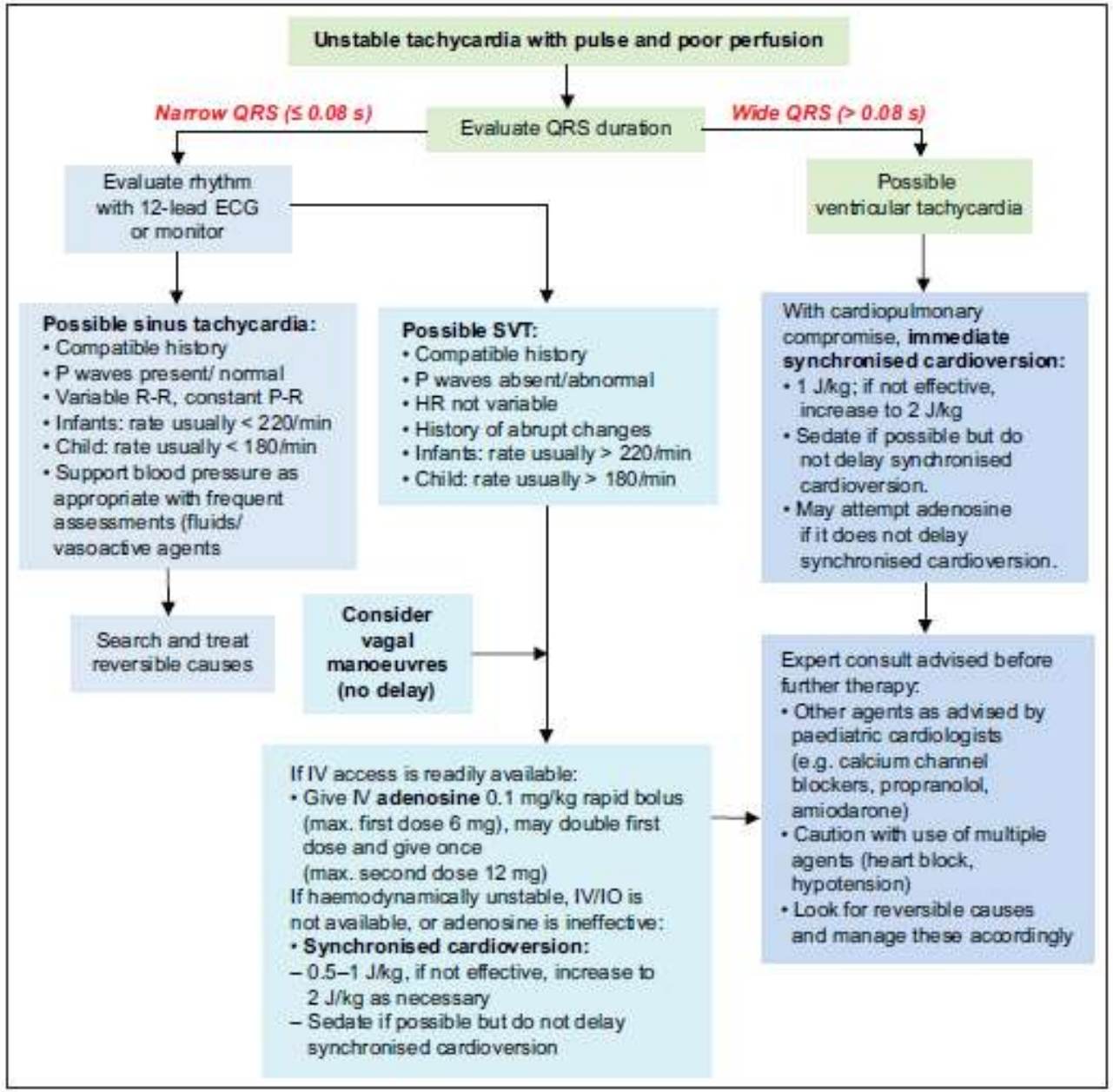

Fig. 8 Flowchart shows the algorithm for tachycardia with poor perfusion. ECG: electrocardiogram; HR: heart rate; IO: intraosseous; IV: intravenous; SVT: supraventricular tachycardia

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Box 3. Post-arrest care checklist:

A&B: oxygenation and ventilation

- O_2: avoid hypoxia and hyperoxaemia – measure oxygenation and target normoxaemia (maintain SpO_2 at 94%–98%).
- CO_2: Measure $PaCO_2$, target a clinically appropriate value and avoid hypocapnia.

Circulation: haemodynamic monitoring

- Set haemodynamic goals after return of spontaneous circulation and monitor blood pressure.
- Use parenteral fluids and/or inotropes or vasopressors to maintain systolic blood pressure greater than the fifth percentile.

Disability: neuromonitoring

- Treat clinical seizures and do not routinely use pharmacologic prophylaxis for seizures.

Environment and exposure: targeted temperature management

- Measure and monitor core temperature; prevent and treat fever.
- Normothermia (36°C–37.5°C) should be maintained in children who remain comatose after out-of-hospital and in-hospital cardiac arrests.

Glucose control and electrolytes

- Measure glucose and avoid hypoglycaemia (keep blood glucose above 3.5 mmol/L).
- Maintain electrolytes within normal ranges to avoid life-threatening arrythmias.

Sedation

- Treat with sedatives and anxiolytics

Prognosis

- Always consider multiple modalities (clinical and others) over any single predictor factor.
- Electroencephalogram may be useful within the first 7 days and somatosensory evoked potentials may be useful after 72 hours.
- Blood biomarkers may be measured repeatedly over 72 hours.
- Neuroimaging (such as computed tomography in the initial hours and magnetic resonance imaging during the first 6 days) may be of value.

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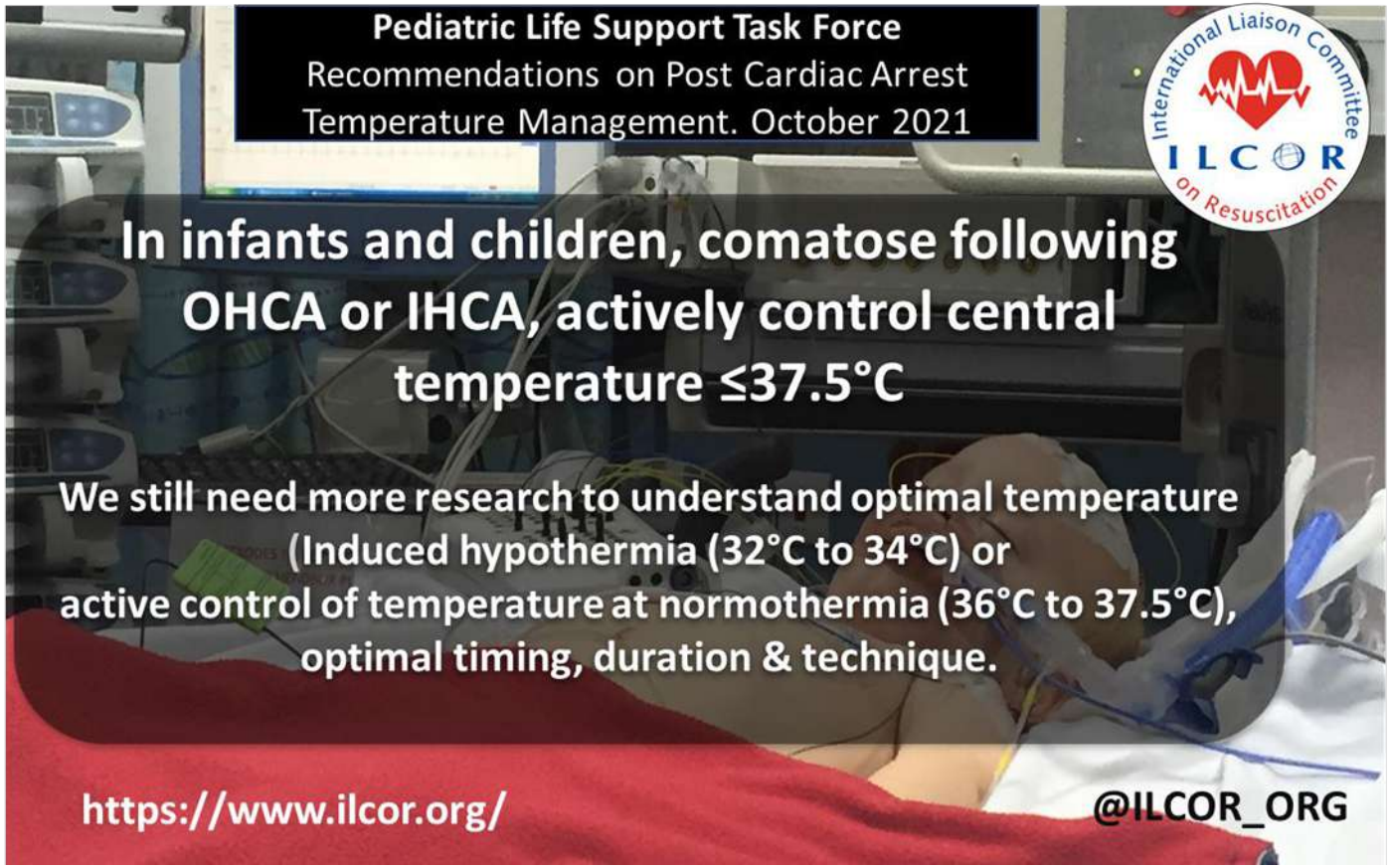
TTM EvUp led to statement and planned Social Media output (on ILCOR.ORG)



Statement on post cardiac arrest temperature management in children. October 2021. ILCOR Pediatric Life Support (PLS) Task Force

Authors

B. R. Scholefield, AM. Guerguerian, J. Tijssen, J. Acworth, R. Aickin, D. Atkins, A. DeCaen, TB. Couto, M. Kleinman, D. Kloeck, G. Nuthall, I. Maconochie, V. Nadkarni, Gene Y. Ong, A. Reis, A. Rodriguez-Nunez, S. Schexnayder, P. Van de Voorde, KC Ng on behalf of the Pediatric Life Support Task Force, ILCOR.

Introduction

The Pediatric Life Support (PLS) task force of ILCOR would like to provide an updated evidence review and commentary on the recommendations for pediatric post-cardiac arrest temperature management. This follows the recently updated consensus on science and treatment recommendations for Temperature Management in Adult Cardiac Arrest by the Advanced Life Support (ALS) task force.

Previous pediatric recommendations in 2020

The PLS task force provided the following treatment recommendations (1) following the ILCOR commissioned systematic review by Buick *et al* (2) which included the two main randomized control trials (RCTs) using similar protocols in the pediatric OHCA and IHCA. (3, 4)

> We suggest that for infants and children who remain comatose following ROSC from OHCA and IHCA, targeted temperature management be used to maintain a central temperature of 37.5 °C or less (weak recommendation, moderate-certainty evidence).
>
> On the basis of 2 randomized trials and 8 retrospective observational cohort studies that provided comparative data on favourable neurological outcome, survival, and in-hospital adverse events, there is inconclusive evidence to support or refute the use of therapeutic hypothermia (32 °C to 34 °C) compared with therapeutic normothermia (36 °C to 37.5 °C) (or an alternative temperature) for children who achieve ROSC but remain comatose after OHCA or IHCA.

In the original CoSTR (5) the PLS task force reported a preference for the use of induced hypothermia 32°C to 34°C as opposed to active control of temperature at normothermia 36°C to 37.5°C for OHCA. There were insufficient data on patients with IHCA to make a preference in that population. The task

Previous pediatric recommendations in 2020

The PLS task force provided the following treatment recommendations (1) following the ILCOR commissioned systematic review by Buick et al (2) which included the two main randomized control trials (RCTs) using similar protocols in the pediatric OHCA and IHCA. (3, 4)

We suggest that for infants and children who remain comatose following ROSC from OHCA and IHCA, targeted temperature management be used to maintain a central temperature of 37.5 °C or less (weak recommendation, moderate-certainty evidence).

On the basis of 2 randomized trials and 8 retrospective observational cohort studies that provided comparative data on favourable neurological outcome, survival, and in-hospital adverse events, there is inconclusive evidence to support or refute the use of therapeutic hypothermia (32 °C to 34 °C) compared with therapeutic normothermia (36 °C to 37.5 °C) (or an alternative temperature) for children who achieve ROSC but remain comatose after OHCA or IHCA.

In the original CoSTR (5) the PLS task force reported a preference for the use of induced hypothermia 32°C to 34°C as opposed to active control of temperature at normothermia 36°C to 37.5°C for OHCA. There were insufficient data on patients with IHCA to make a preference in that population. The task force also noted that fever is potentially harmful and should be avoided

1. Maconochie IK, Aickin R, Hazinski MF, Atkins DL, Bingham R, Couto TB, et al. Pediatric Life Support: 2020 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations. Resuscitation. 2020;156:A120-a55.

2. Buick JE, Wallner C, Aickin R, Meaney PA, de Caen A, Maconochie I, et al. Paediatric targeted temperature management post cardiac arrest: A systematic review and meta-analysis. Resuscitation. 2019;139:65-75.

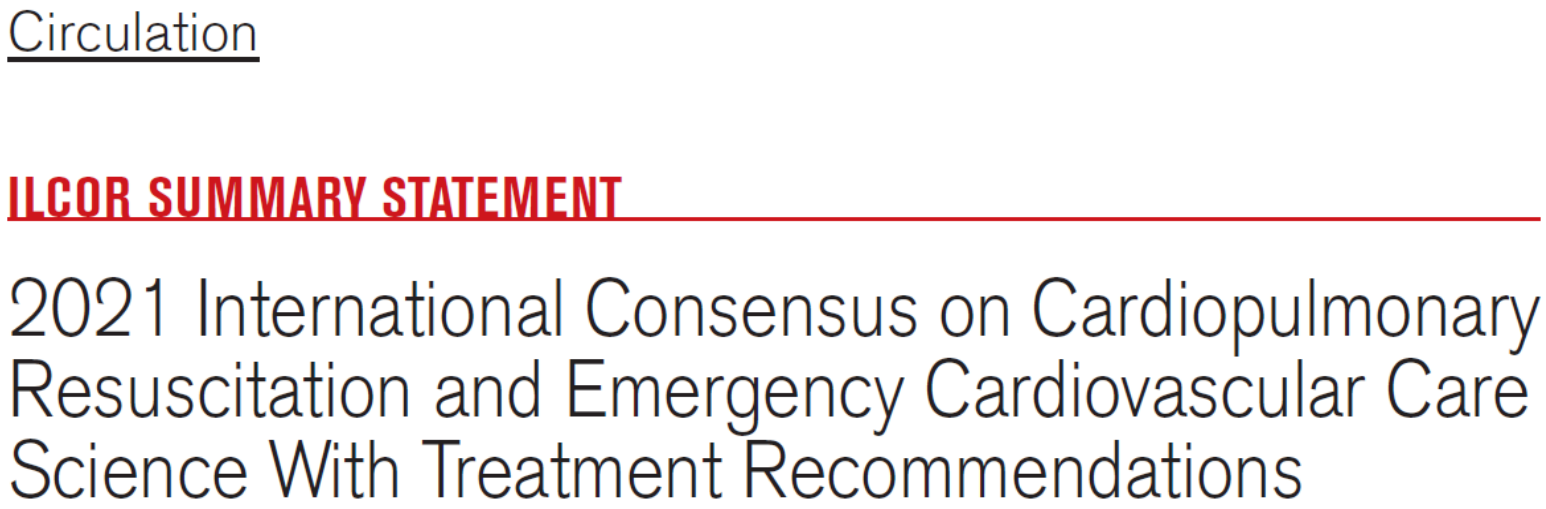
3. Moler FW, Silverstein FS, Holubkov R, Slomine BS, Christensen JR, Nadkarni VM, et al. Therapeutic Hypothermia after In-Hospital Cardiac Arrest in Children. New England Journal of Medicine. 2017;376(4):318-29.

4. Moler FW, Silverstein FS, Holubkov R, Slomine BS, Christensen JR, Nadkarni VM, et al. Therapeutic hypothermia after out-of-hospital cardiac arrest in children. New England Journal of Medicine. 2015;372(20):1898-908.

5. Soar J, Maconochie I, Wyckoff MH, Olasveengen TM, Singletary EM, Greif R, et al. 2019 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations: Summary From the Basic Life Support; Advanced Life Support; Pediatric Life Support; Neonatal Life Support; Education, Implementation, and Teams; and First Aid Task Forces. Circulation. 2019;140(24):e826-e80.

ILCOR PLS TaskForce – Coming Up (I)

2022 INTERNATIONAL CONSENSUS ON CARDIOPULMONARY RESUSCITATION AND EMERGENCY CARDIOVASCULAR CARE SCIENCE WITH TREATMENT RECOMMENDATIONS : SUMMARY FROM THE PEDIATRIC LIFE SUPPORT TASK FORCE



ILCOR – Coming Up (II)

For the **2021 gaps analysis**, ILCOR will be looking at gaps through the 4 perspectives (draft):

1) Basic science (Hypoxia/ischaemia, reperfusion, protecting the brain, mechanisms, susceptibility)

2) Clinical application

3) Education and implementation

4) Impact (eg global priorities, cost-effectiveness, consumer acceptability etc) and role of registries …

Resuscitation Council of Asia

South Korea

Japan

Taiwan

Thailand

Hong Kong

Singapore

Philippines

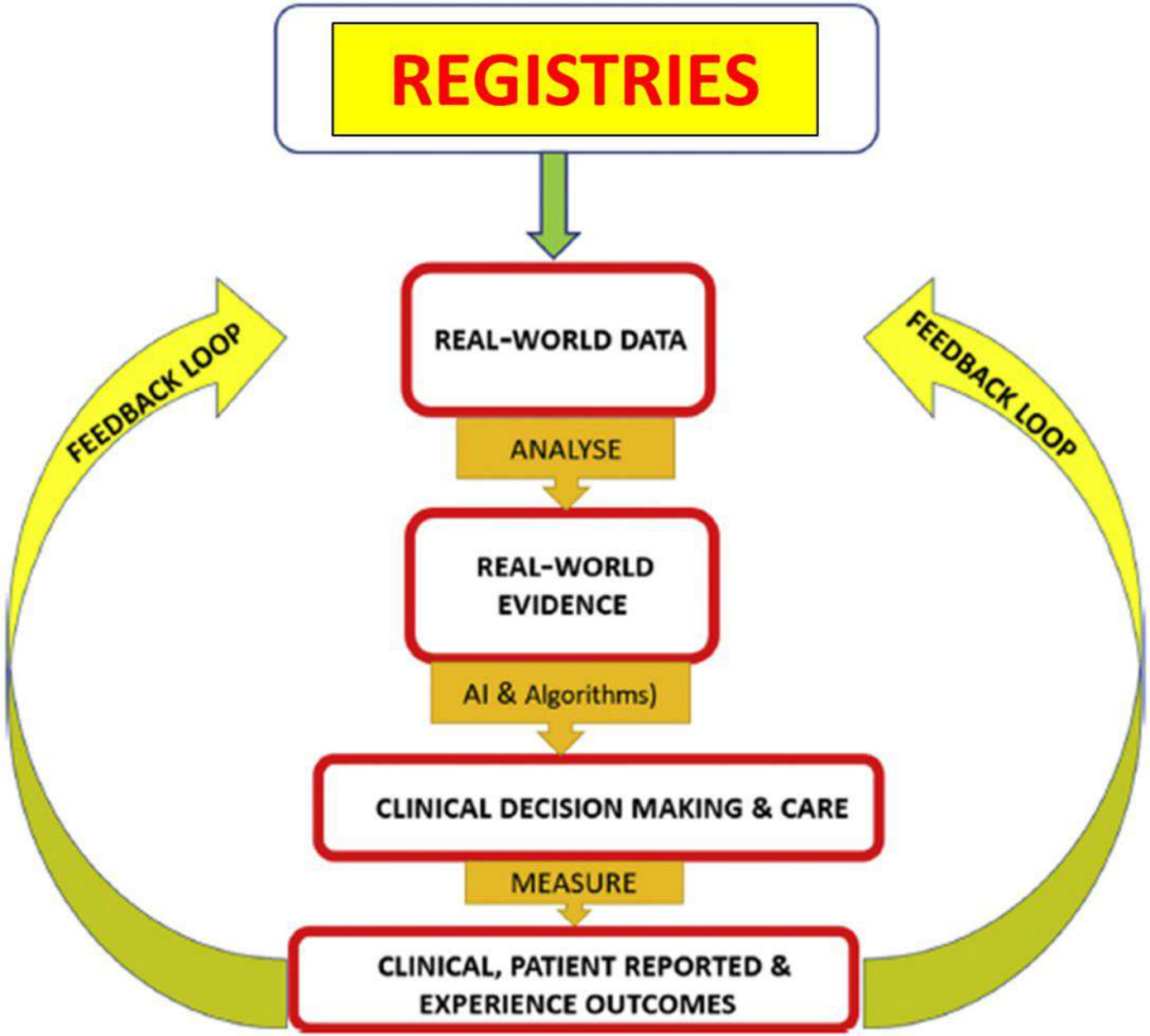


Fig. 7. A continuous learning health ecosystem.

THANK YOU