IRC 2021

CONGRESSO NAZIONALE

16•17•18 DICEMBRE

NUOVE LINEE GUIDA 2021: RIANIMAZIONE CARDIOPOLMONARE POST-LOCKDOWN

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Rimini
NUOVE LINEE GUIDA 2021:
RIANIMAZIONE CARDIOPOLMONARE
POST-LOCKDOWN

IRC 2021
CONGRESSO
NAZIONALE

Algoritmi RCP pediatrica 2021

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Non conflitti di interesse da dichiarare

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EUROPEAN RESUSCITATION COUNCIL

European Resuscitation Council Guidelines 2021: Paediatric Life Support

RESUSCITATION 161 (2021) 327 –387

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Outline

- Algoritmo PBLS-D
  - Compressions-Only or Rescue Breathing-CPR?
- Algoritmo Disostruzione da corpo estraneo
  - I dispositivi anti-soffocamento funzionano?
- Algoritmo PALS
  - Nel bambino intubato quante ventilazioni asincrone?

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PAEDIATRIC BASIC LIFE SUPPORT

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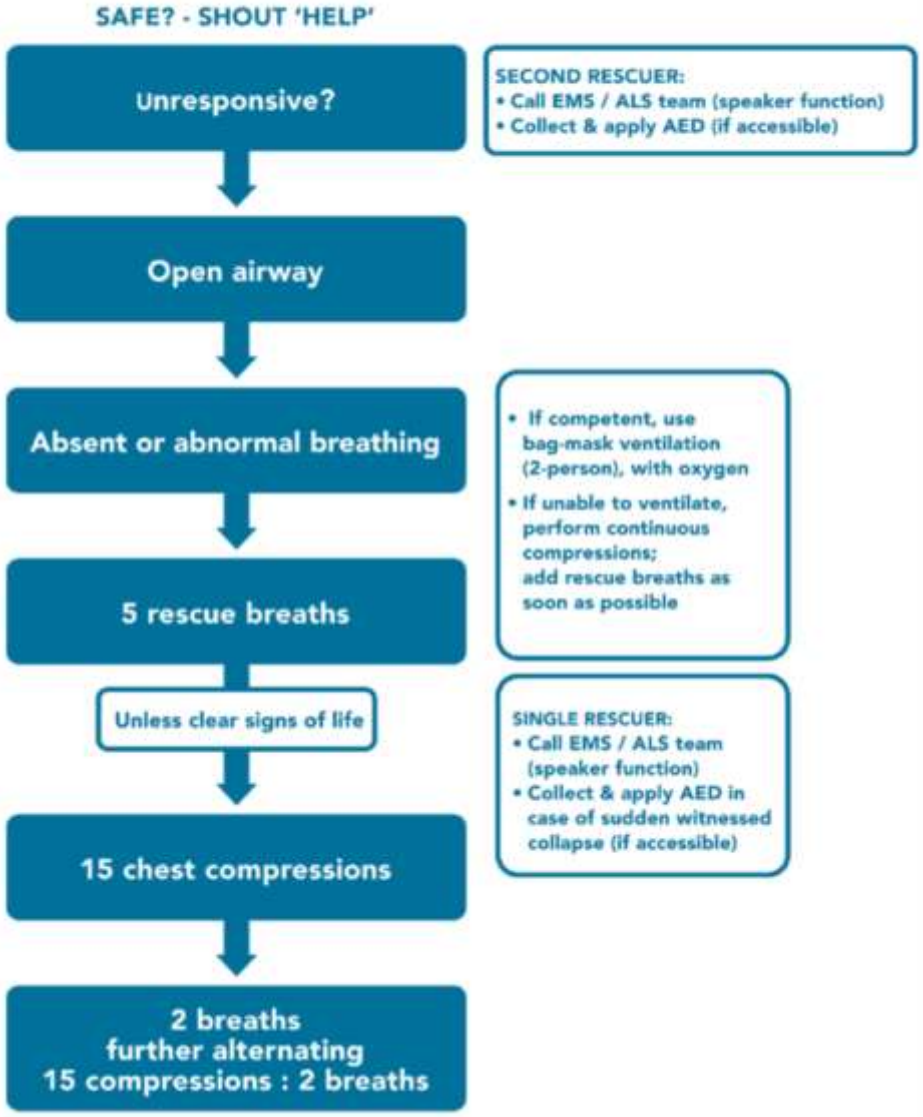

Fig. 2 – Paediatric basic life support.

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PAEDIATRIC BASIC LIFE SUPPORT

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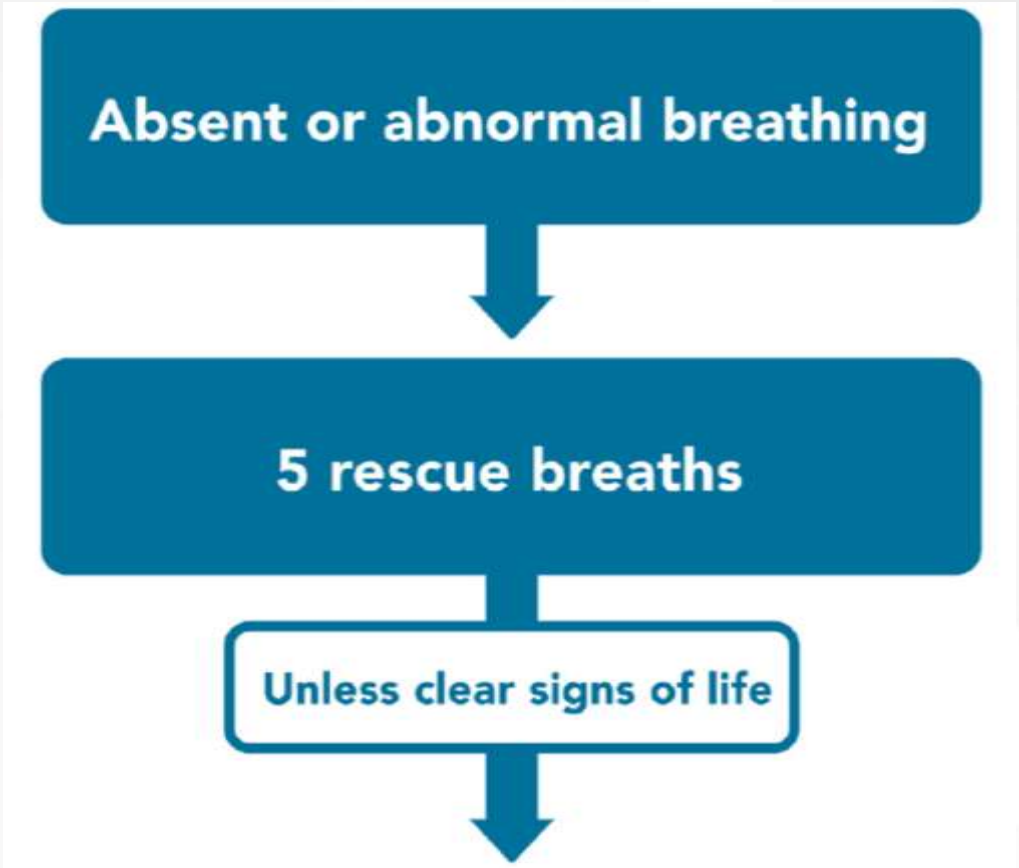
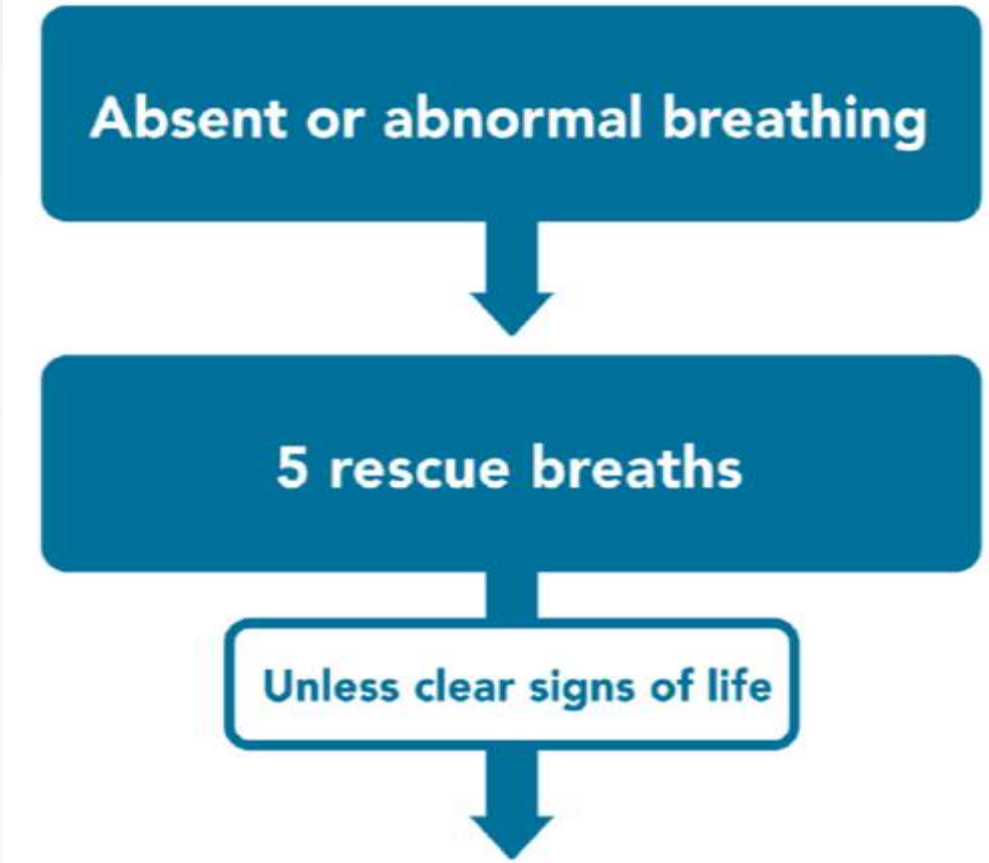


PAEDIATRIC BASIC LIFE SUPPORT



- If competent, use bag-mask ventilation (2-person), with oxygen
- If unable to ventilate, perform continuous compressions; add rescue breaths as soon as possible

PAEDIATRIC BASIC LIFE SUPPORT

PAEDIATRIC BASIC LIFE SUPPORT

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Unless clear signs of life

↓

15 chest compressions

↓

2 breaths
further alternating
15 compressions : 2 breaths

SINGLE RESCUER:
- **Call EMS / ALS team (speaker function)**
- **Collect & apply AED in case of sudden witnessed collapse (if accessible)**

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Compression-Only Versus Rescue-Breathing Cardiopulmonary Resuscitation After Pediatric Out-of-Hospital Cardiac Arrest

Naim, M.Y. et al. J Am Coll Cardiol. 2021;78(10):1042–1052.

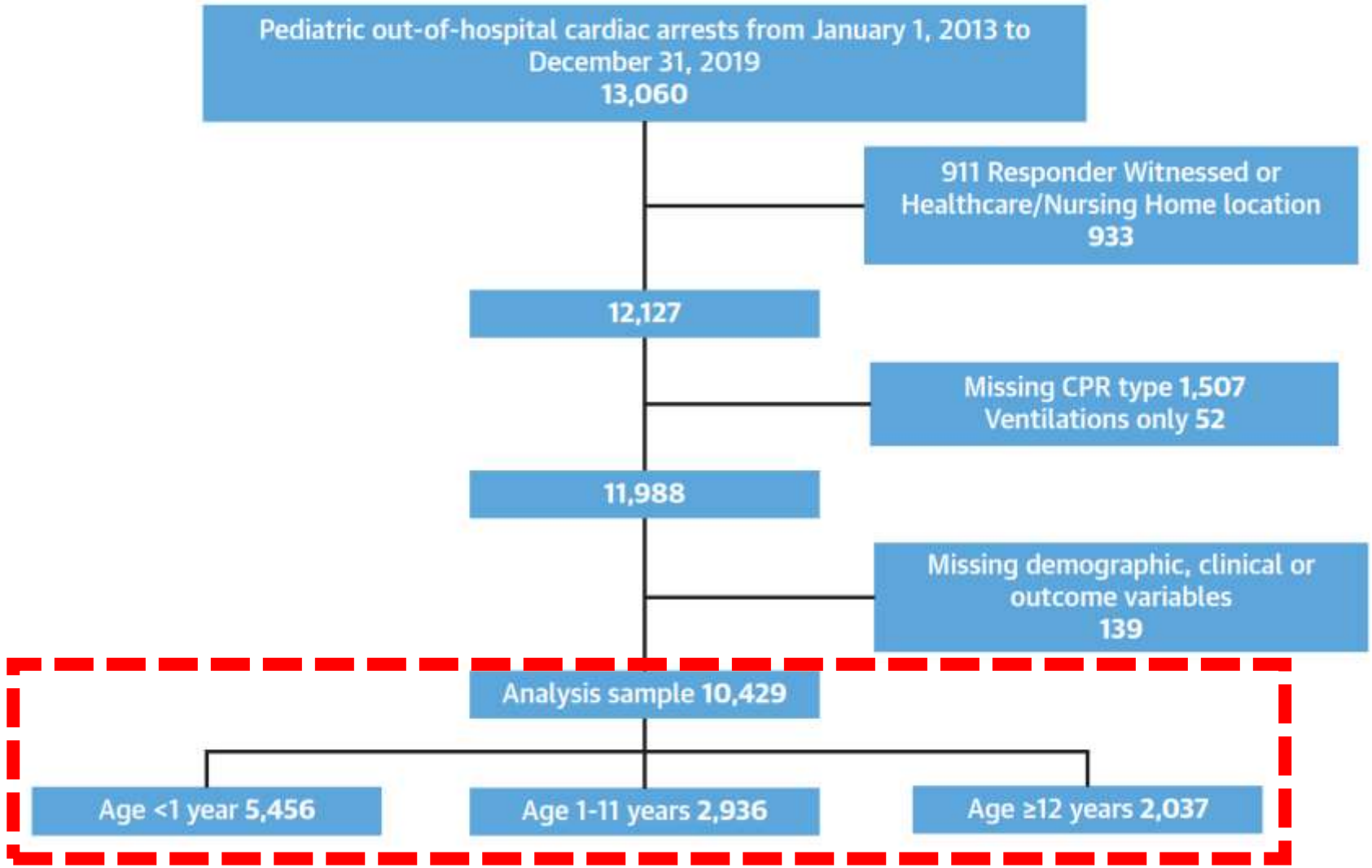
Compression-Only Versus Rescue-Breathing Cardiopulmonary Resuscitation After Pediatric Out-of-Hospital Cardiac Arrest

Naim, M.Y. et al. J Am Coll Cardiol. 2021;78(10):1042-1052.

OBJECTIVES

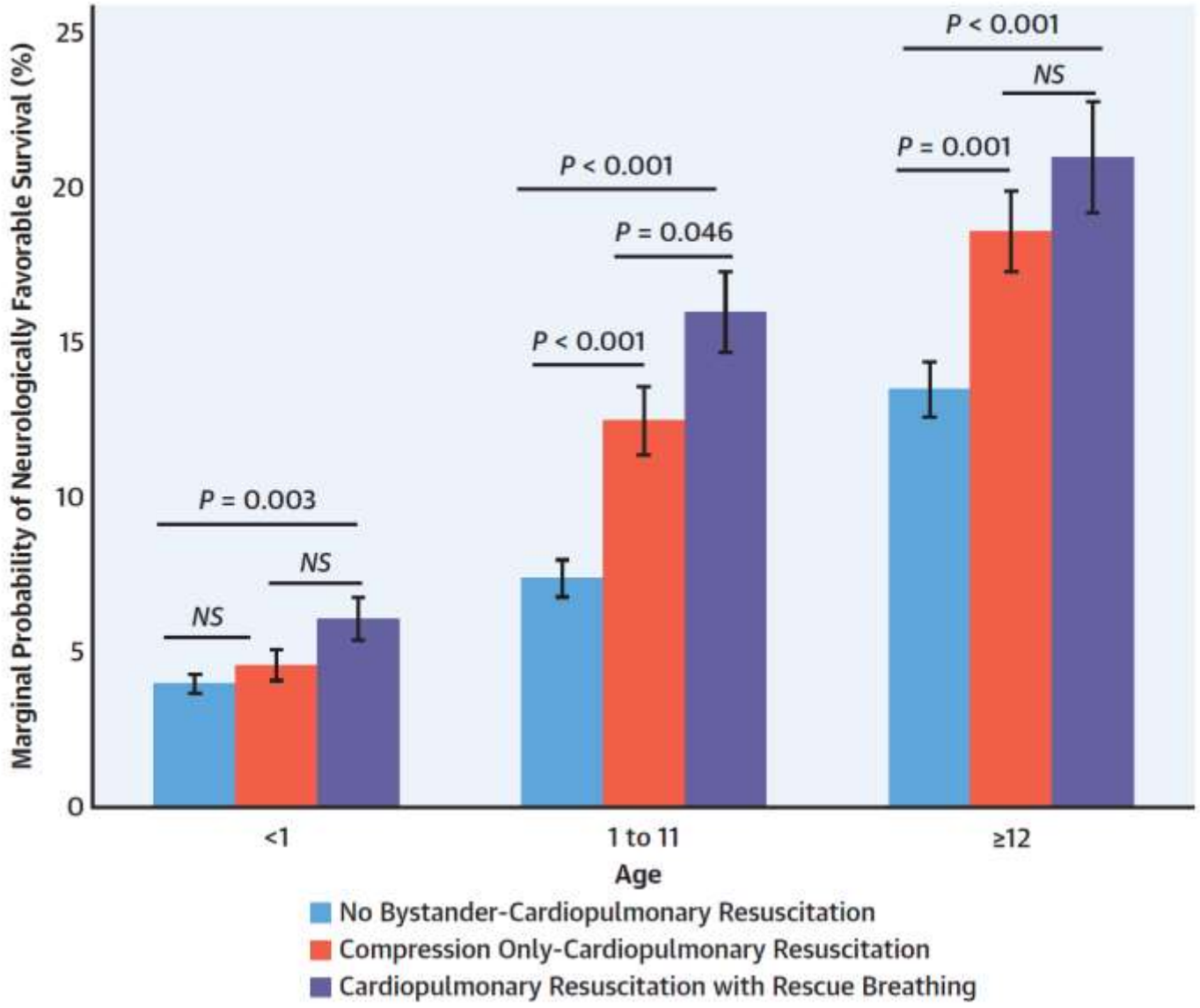
This study sought to test the hypothesis that RB-CPR is associated with improved neurologically favorable survival compared with CO-CPR following pediatric OHCA, and to characterize age-stratified outcomes with CPR type compared with no bystander CPR (NO-CPR).

FIGURE 1 Flow Diagram With Inclusion and Exclusion Criteria



Naim, M.Y. et al. J Am Coll Cardiol. 2021;78(10):1042-1052.

CENTRAL ILLUSTRATION Neurologically Favorable Survival and Cardiopulmonary Resuscitation Type in Infant, Children, and Adolescents



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Compression-Only Versus Rescue-Breathing Cardiopulmonary Resuscitation After Pediatric Out-of-Hospital Cardiac Arrest

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CONCLUSIONS CO-CPR was the most common type of bystander CPR in pediatric OHCA. RB-CPR was associated with better outcomes compared with CO-CPR. These results support present guidelines for RB-CPR as the preferred CPR modality for pediatric OHCA.

PAEDIATRIC FOREIGN BODY AIRWAY OBSTRUCTION

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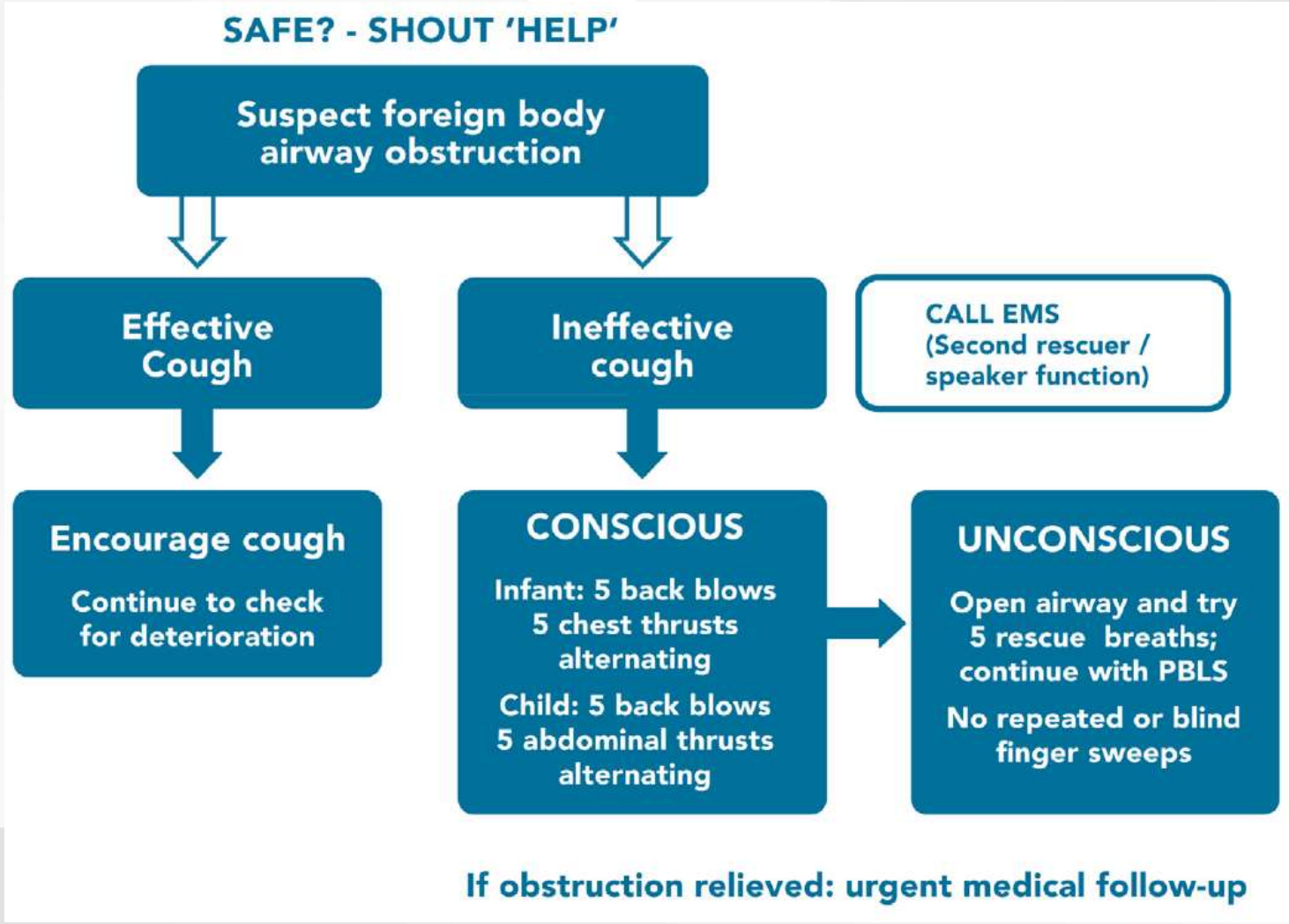

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A systematic review on the effectiveness of anti-choking suction devices and identification of research gaps

RESUSCITATION 153 (2020) 219 –226

Italian Resuscitation Council

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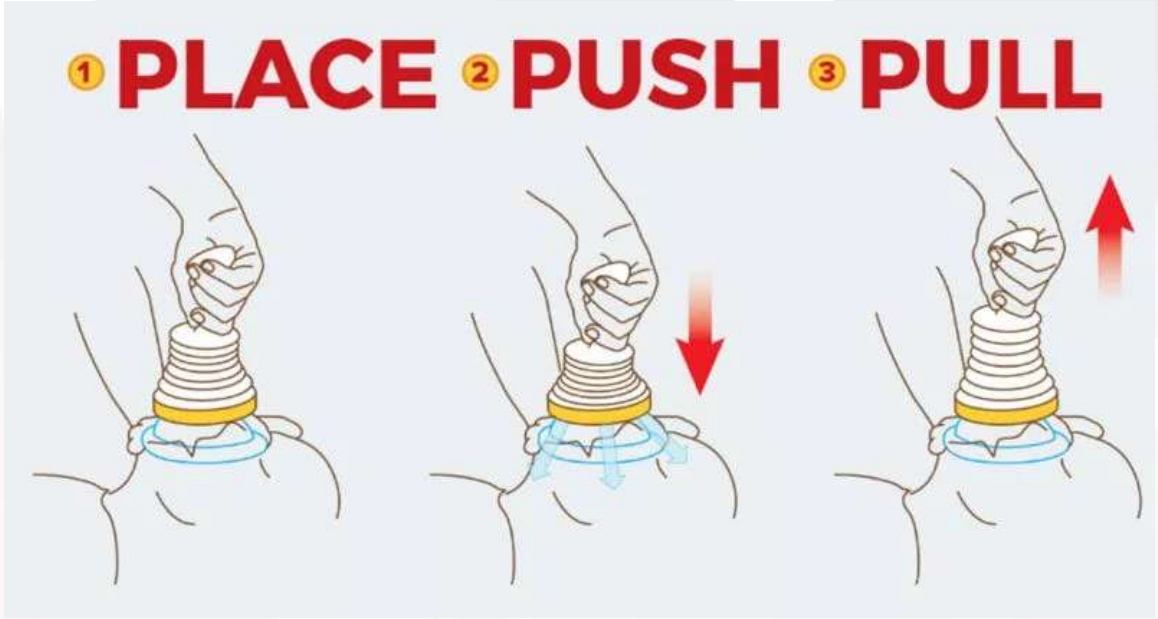

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RESUSCITATION 153 (2020) 219 –226

Conclusions

- There are many weaknesses in the available data and few unbiased trials that test the effectiveness of anti-choking suction devices resulting in insufficient evidence to support or discourage their use.
- Practitioners should continue to adhere to guidelines authored by local resuscitation authorities which align with ILCOR recommendations.

PAEDIATRIC ADVANCED LIFE SUPPORT

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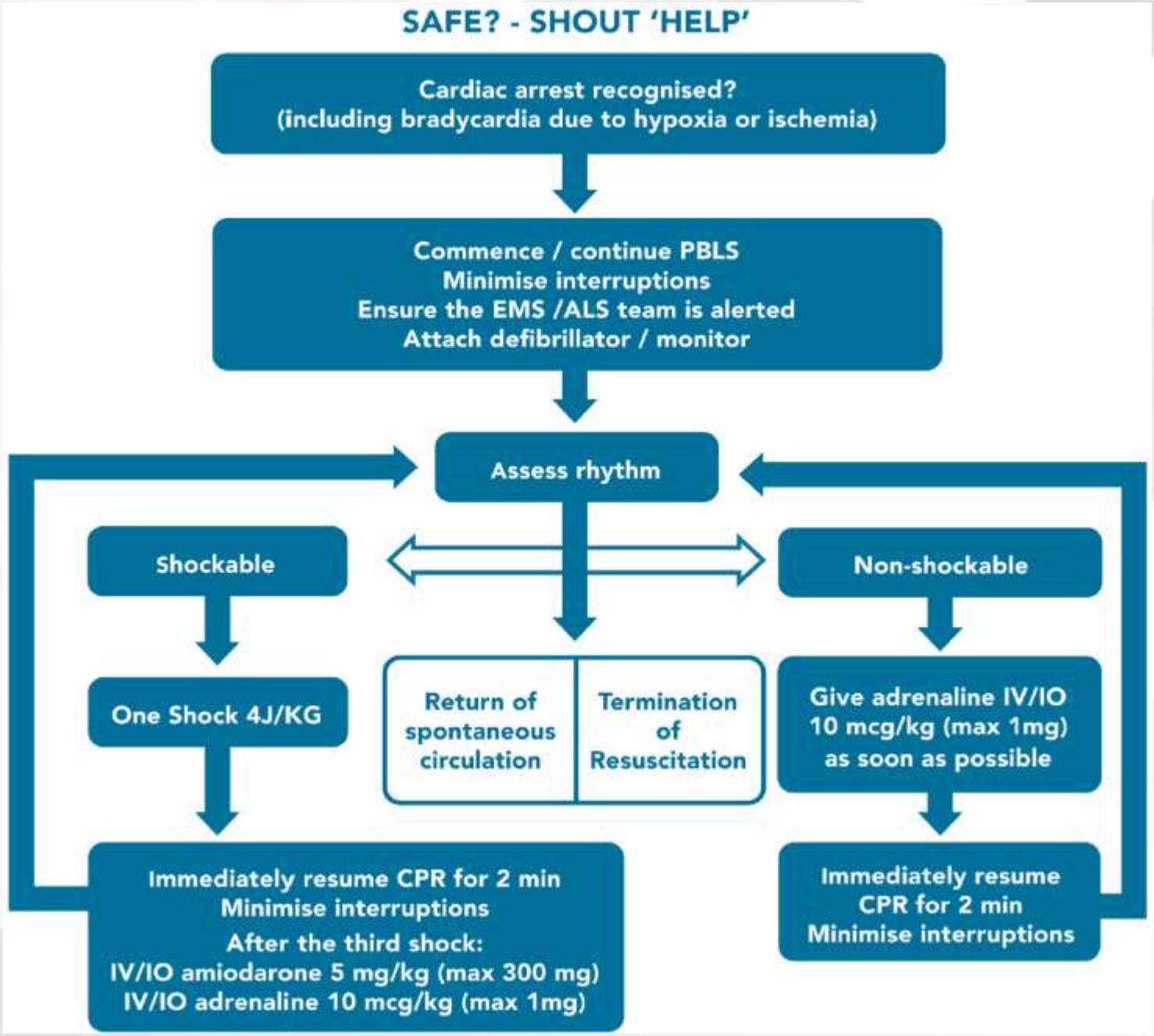

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PAEDIATRIC ADVANCED LIFE SUPPORT

SAFE? - SHOUT 'HELP'

Cardiac arrest recognised?
(including bradycardia due to hypoxia or ischemia)

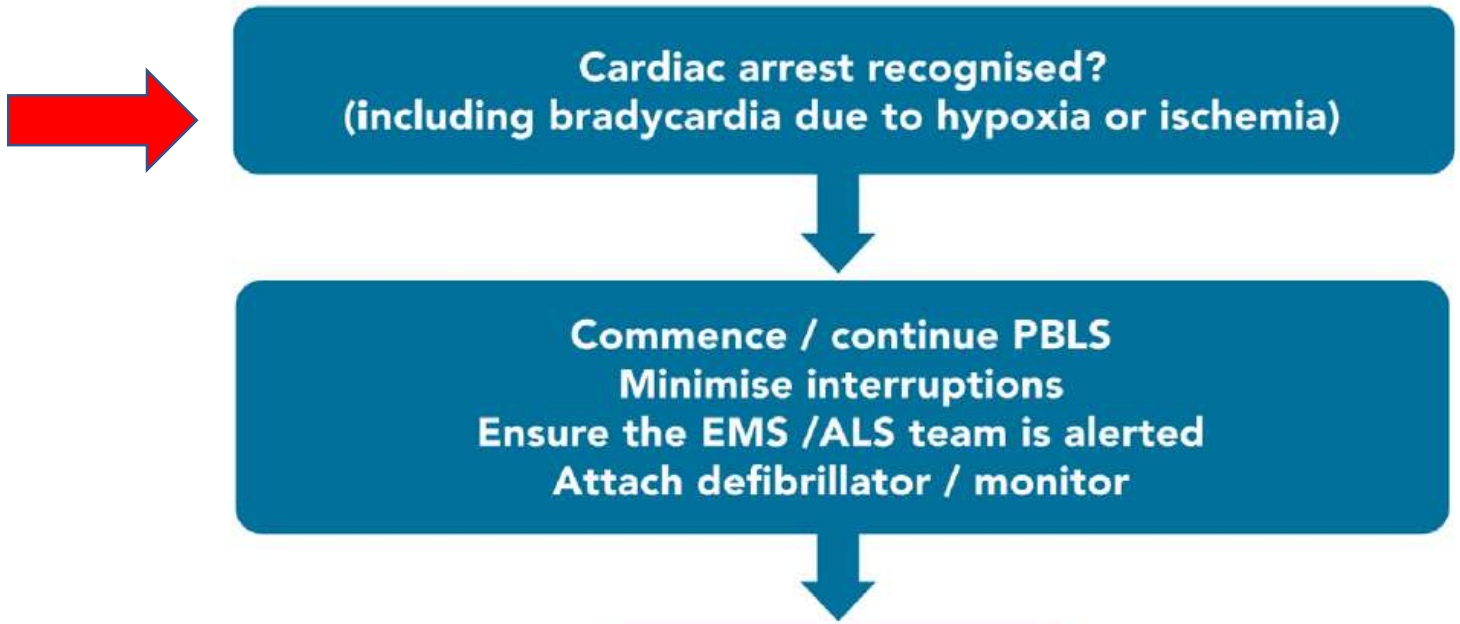
↓

Commence / continue PBLS
Minimise interruptions
Ensure the EMS /ALS team is alerted
Attach defibrillator / monitor

↓

PAEDIATRIC ADVANCED LIFE SUPPORT

SAFE? - SHOUT 'HELP'



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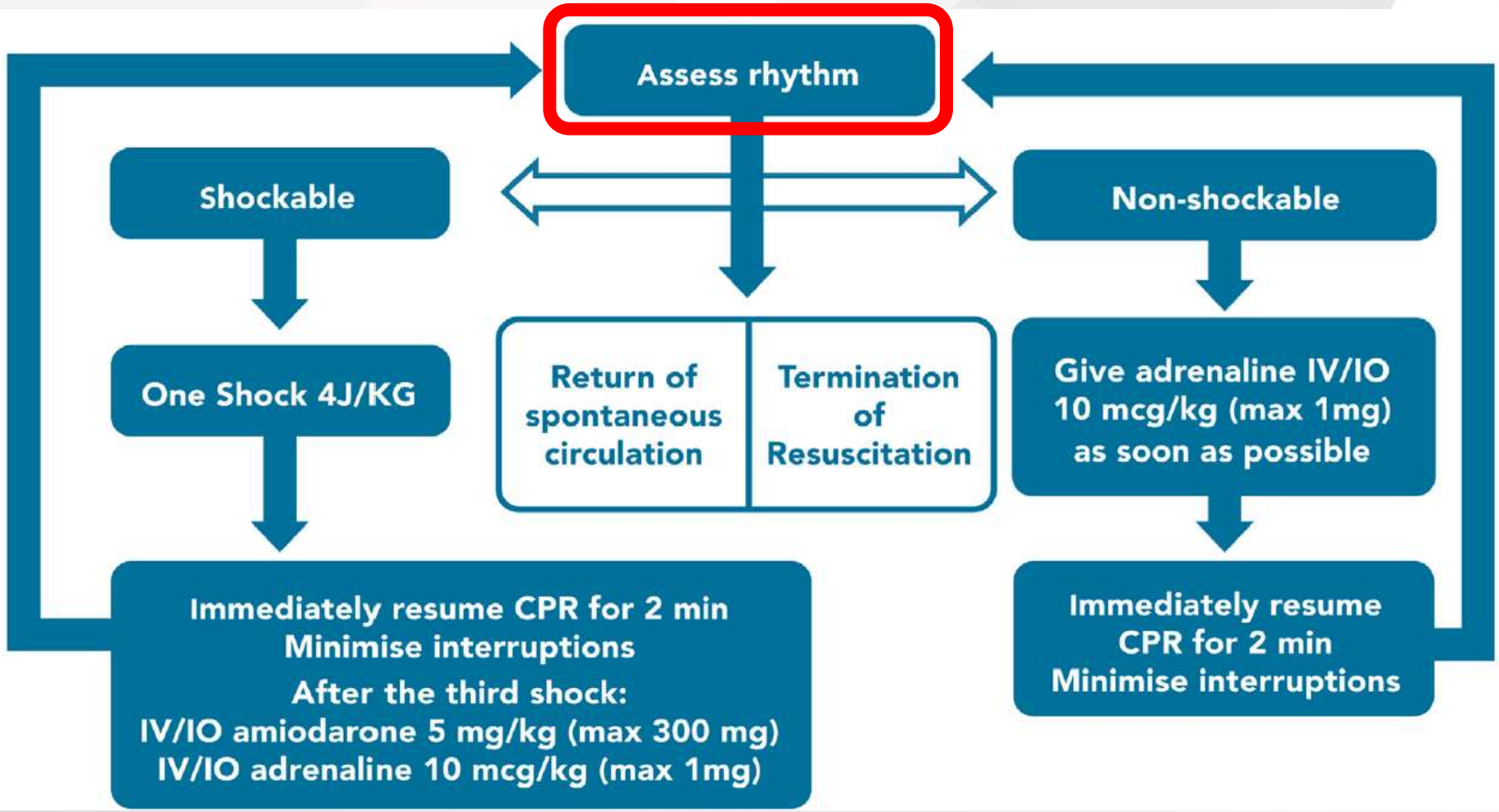

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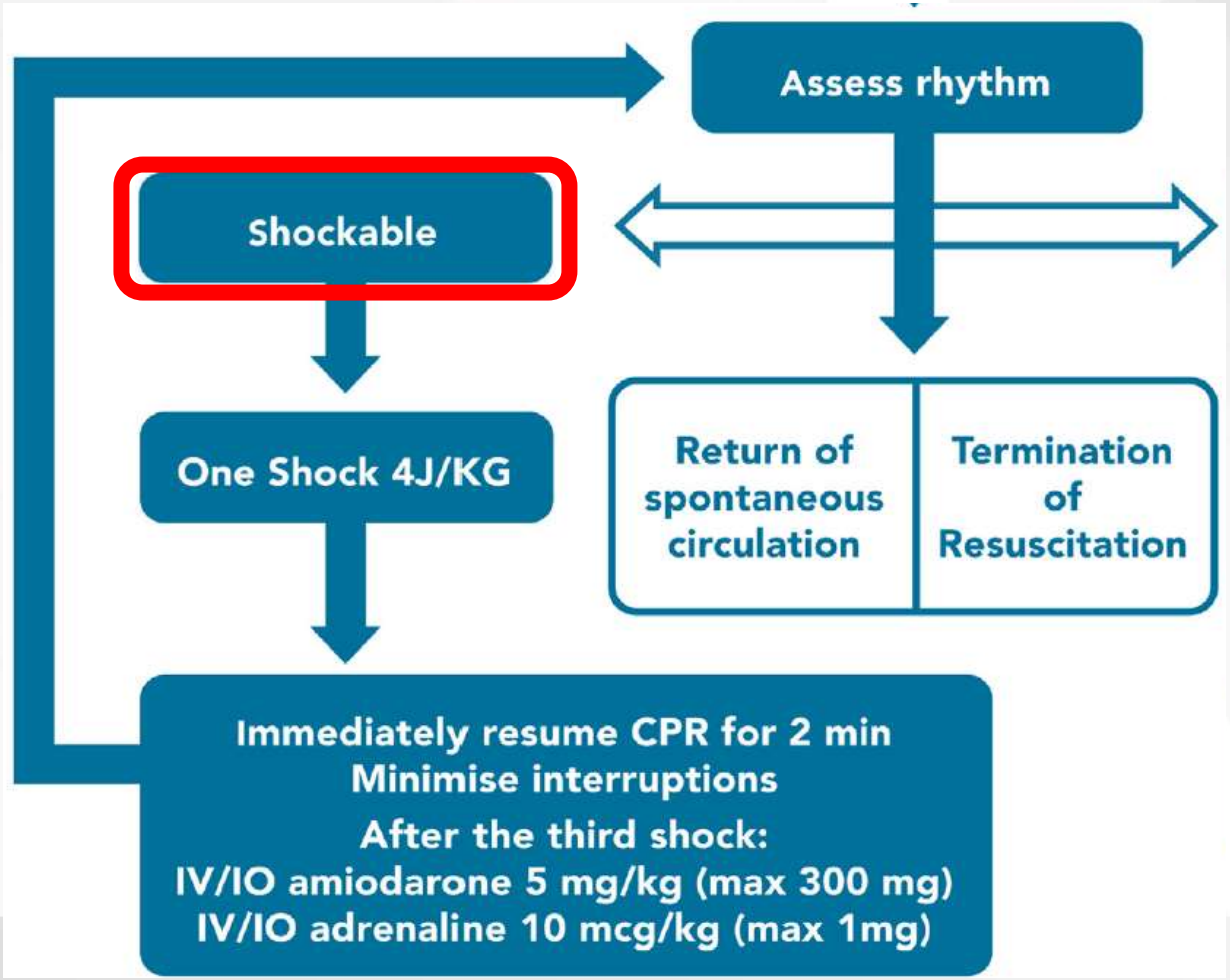

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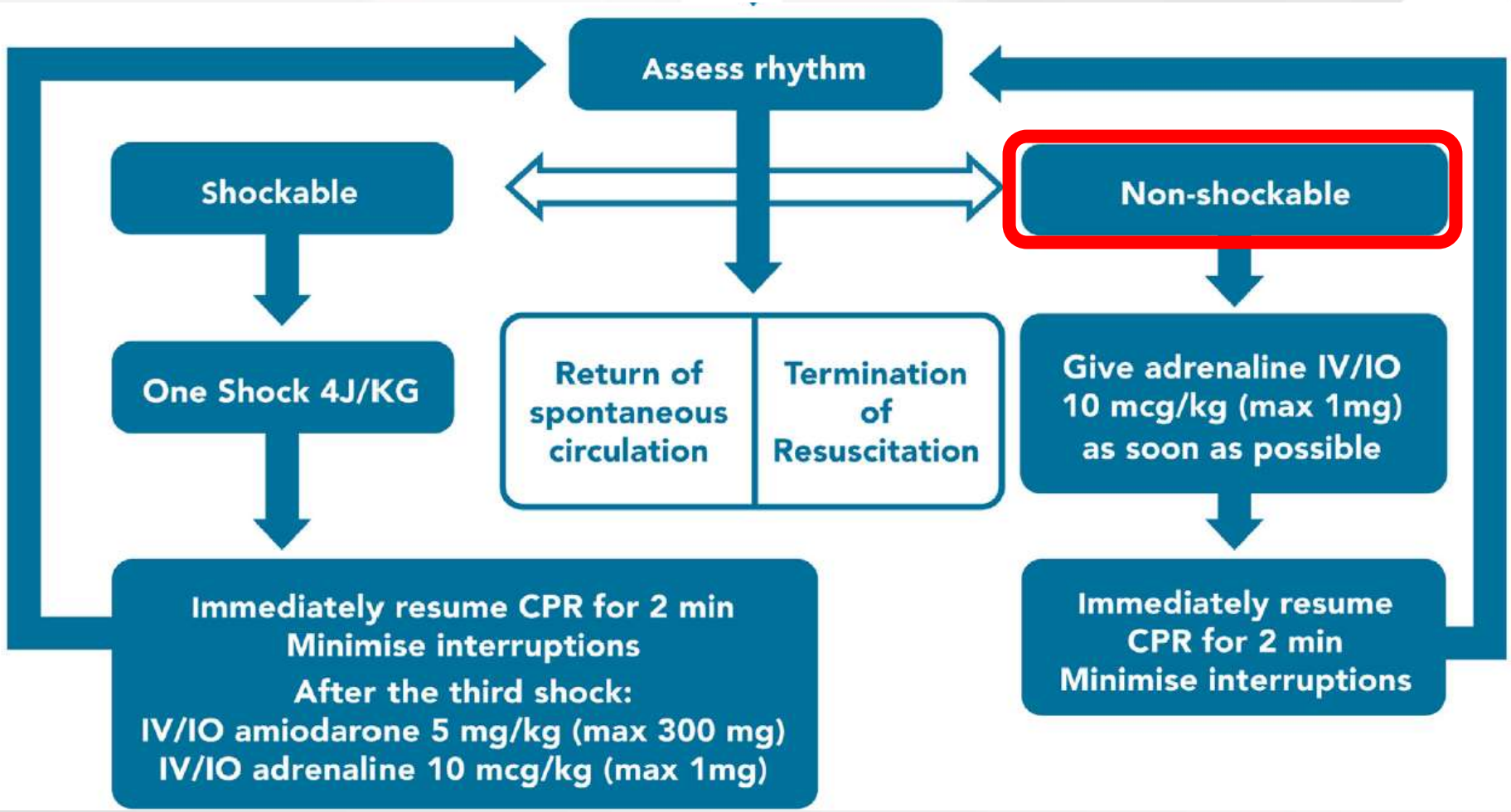

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PAEDIATRIC ADVANCED LIFE SUPPORT

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GUIDELINES 2021

DURING CPR

- Ensure high-quality CPR: rate, depth, recoil
- Provide bag-mask ventilation with 100% oxygen (2-person approach)
- Avoid hyperventilation
- Vascular access (intravenous, intraosseous)
- Once started, give adrenaline every 3-5 min
- Flush after each drug
- Repeat amiodarone 5 mg/kg (max 150mg) after the 5th shock

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PAEDIATRIC ADVANCED LIFE SUPPORT

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- Repeat amiodarone 5 mg/kg (max 150mg) after the 5th shock
- Consider an advanced airway and capnography (if competent)
- Provide continuous compressions when a tracheal tube is in place. Ventilate at a rate of 25 (infants) – 20 (1-8y) – 15 (8-12y) or 10 (>12y) per minute
- Consider stepwise escalating shock dose (max 8J/kg – max 360J) for refractory VF/pVT (≥6 shocks)

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PAEDIATRIC ADVANCED LIFE SUPPORT

CORRECT REVERSIBLE CAUSES

- Hypoxia
- Hypovolaemia
- Hyper/hypokalaemia, -calcaemia, -magnesemia; Hypoglycaemia
- Hypothermia - hyperthermia
- Toxic agents
- Tension pneumothorax
- Tamponade (cardiac)
- Thrombosis (coronary or pulmonary)

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ADJUST ALGORITHM IN SPECIFIC SETTINGS (E.G. TRAUMA, E-CPR)

PAEDIATRIC ADVANCED LIFE SUPPORT

IMMEDIATE POST ROSC

- ABCDE approach
- Controlled oxygenation (SpO_2 94-98%) & ventilation (normocapnia)
- Avoid hypotension
- Treat precipitating causes

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Ventilation Rates and Pediatric In-Hospital Cardiac Arrest Survival Outcomes*

Sutton et al

Crit Care Med 2019; 47:1627–1636

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TABLE 1. Prearrest Characteristics by Survival to Hospital Discharge

Prearrest Characteristic	Overall ($n = 47$)	Survival to Hospital Discharge		p
		Yes ($n = 18$)	No ($n = 29$)	
Age, yr, *n* (%)				0.135[a]
< 1	30 (64)	14 (78)	16 (55)	
≥ 1	17 (36)	4 (22)	13 (45)	

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TABLE 2. Event Characteristics by Survival to Hospital Discharge

Event Characteristic	Overall (*n* = 47)	Survival to Hospital Discharge		*p*
		Yes (*n* = 18)	No (*n* = 29)	
Location of CPR event, *n* (%)				0.006[b]
PICU	20 (43)	3 (17)	17 (59)	
Cardiac ICU	27 (57)	15 (83)	12 (41)	

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TABLE 3. Odds Ratio Estimates for High Ventilation Rate With Outcomes

Model[a]	Return of Spontaneous Circulation, OR (95% CI)	*p*	Survival to Hospital Discharge, OR (95% CI)	*p*	Survival With Favorable Neurologic Outcome, OR (95% CI)	*p*

OR = odds ratio.

[a]All models estimate the odds of the outcome for ventilation rate ≥ 30 breaths/min for infants < 1 yr and ≥ 25 breaths/min for children ≥ 1 yr. Estimates are from logistic regression models with Firth penalized likelihood.

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Model[a]	Return of Spontaneous Circulation, OR (95% CI)	*p*	Survival to Hospital Discharge, OR (95% CI)	*p*	Survival With Favorable Neurologic Outcome, OR (95% CI)	*p*
Unadjusted	4.64 (1.32–16.27)	0.017	4.73 (1.17–19.13)	0.029	4.73 (1.17–19.13)	0.029
Adjusted for cardiac ICU vs PICU	4.45 (1.27–15.60)	0.020	5.97 (1.29–27.67)	0.022	5.97 (1.29–27.67)	0.022
Adjusted for initial rhythm	4.09 (1.14–14.63)	0.030	3.87 (0.91–16.40)	0.066	3.87 (0.91–16.40)	0.066
Adjusted for weekday vs weeknight/weekend	5.17 (1.38–19.36)	0.015	4.12 (1.00–16.88)	0.049	4.12 (1.00–16.88)	0.049

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Ventilation Rates and Pediatric In-Hospital Cardiac Arrest Survival Outcomes*

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Conclusions

- In this multicenter cohort, ventilation rates exceeding guidelines were common.
- Among the range of rates delivered, higher rates were associated with improved survival to hospital discharge.

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