Reanimation und Stabilisierung

Reanimation und Stabilisierung – 4 Phasen

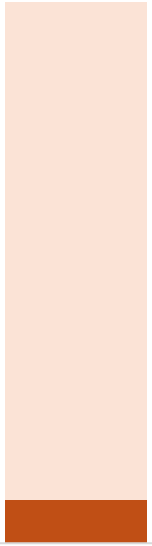
Prä-Arrest

No flow

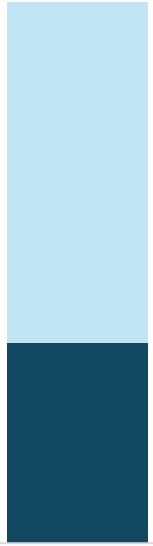
Low flow

Post-Resus

Eckdaten CPR



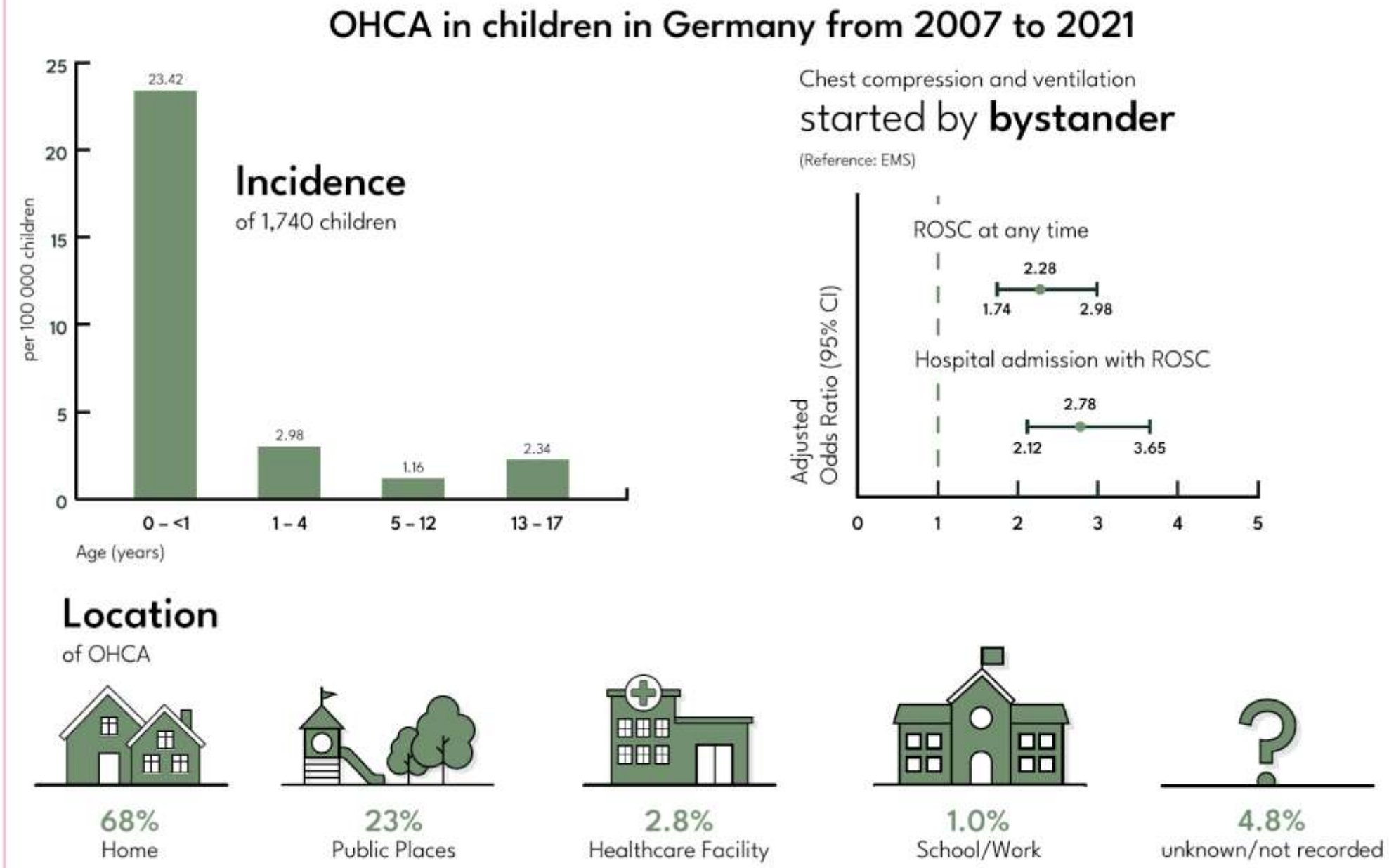
	OHCA
Versterben	92
Überleben	8



	IHCA
Versterben	63
Überleben	37

2-6% aller PICU-Aufnahmen erleiden CPR
75% der Überlebenden haben gutes Neurologisches Outcome
90% Überleben länger als 1 Jahr

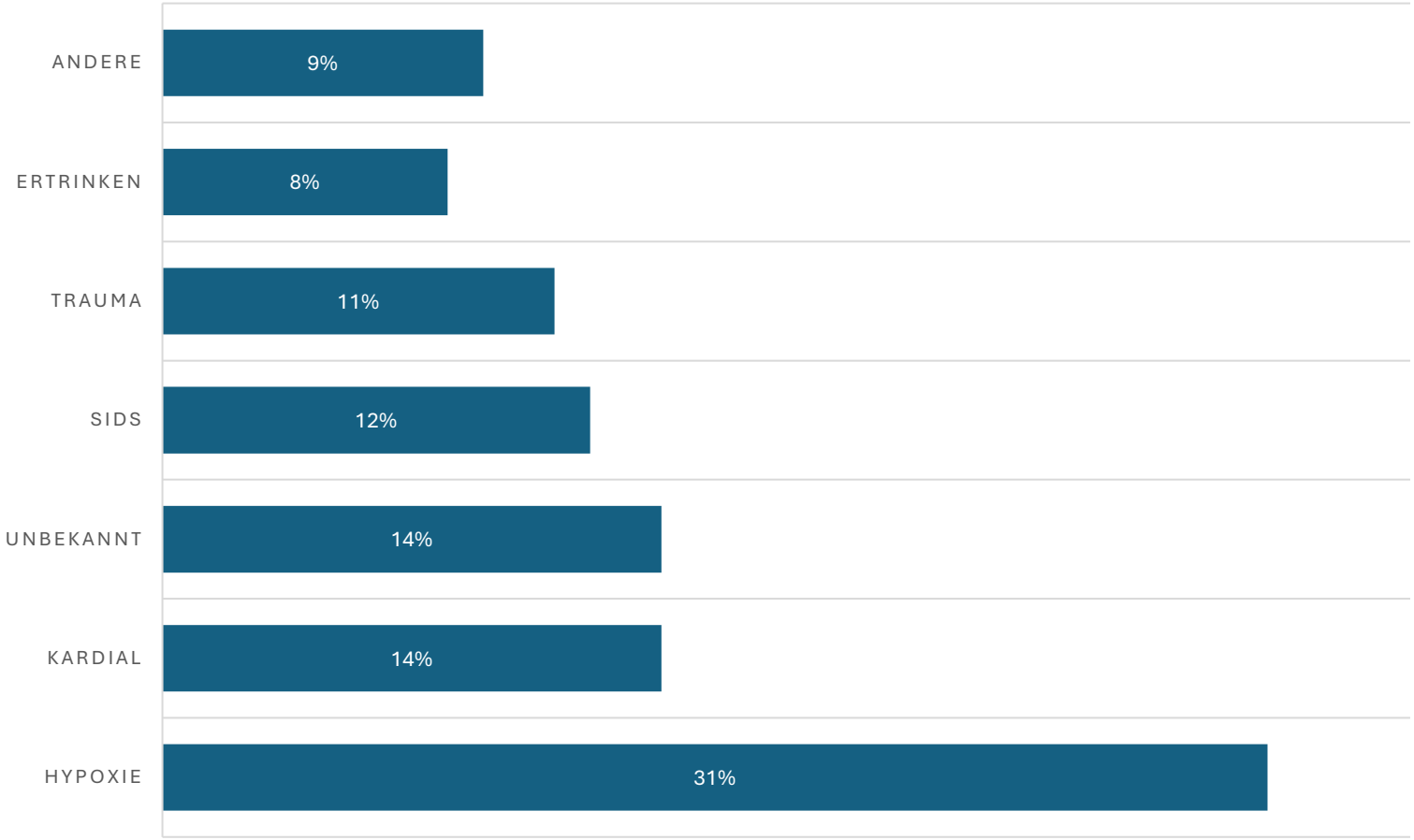
Graphical Abstract



Katzenschlager 2023

Für Herz-Kreislauf-stillstand bei Kindern (OHCA)

Ursachen

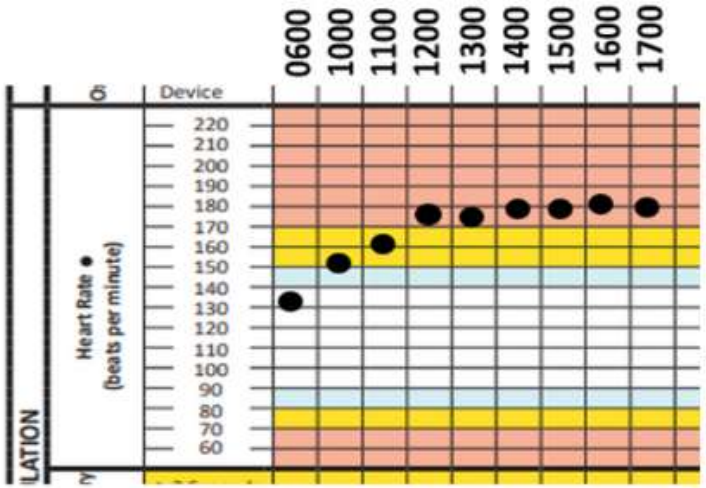


Prä-Arrest

Früherkennung

Early Warning Scores

Notfallteams



No flow

Low flow

- 7-10% schlechteres Überleben für jede Minute bis zum ersten Schock
- Weniger Ventilation notwendig
- Zu lange Pausen (v.a. bei Rhythmuskontrolle) >10 Sekunden

Technik

Thoraxkompressionen

Achte auf Qualität!

High quality CPR

Wechsel alle 2 Minuten

Push hard and fast

Kurze Unterbrechungen

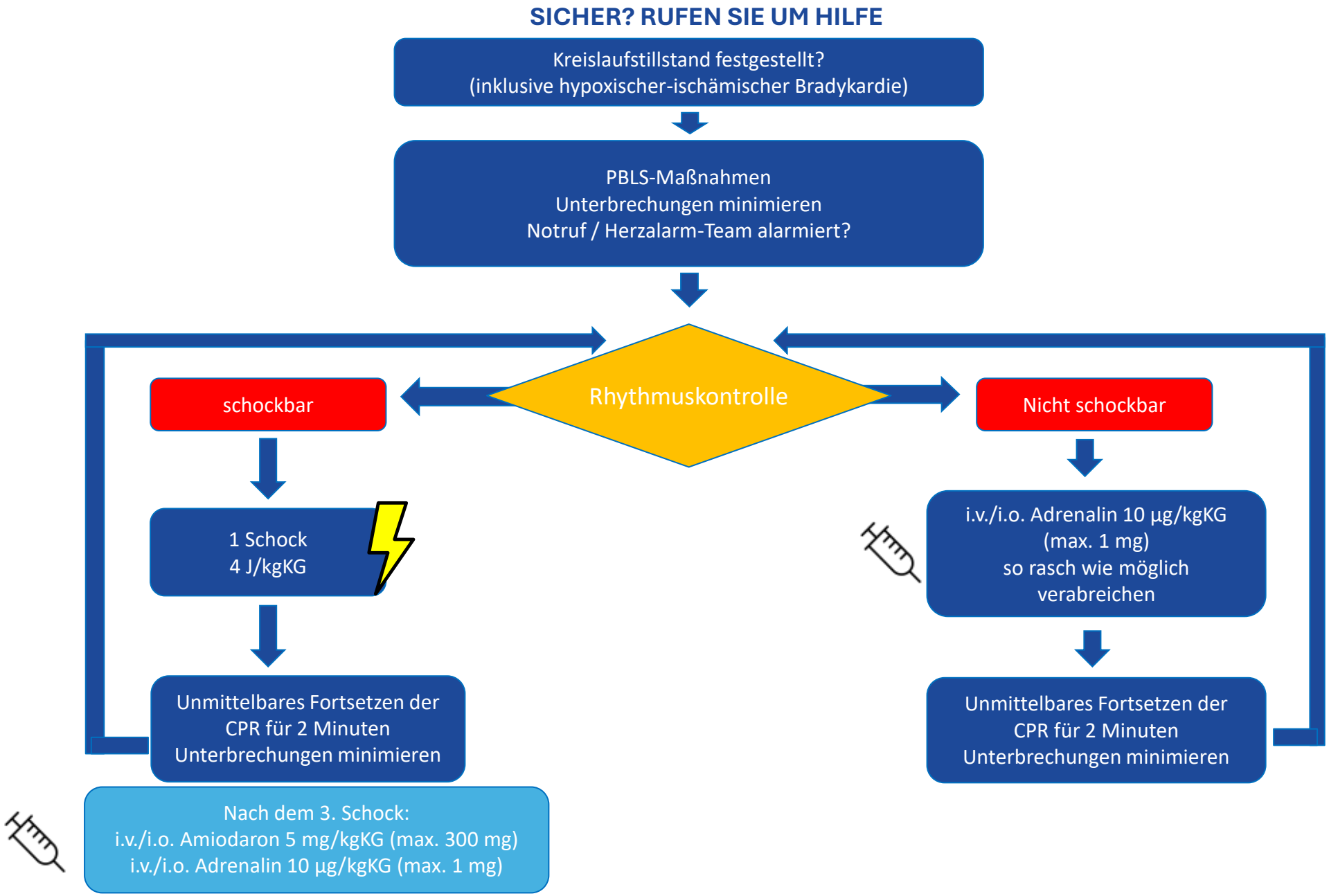
Thorax Entlastung

Adäquate Ventilation

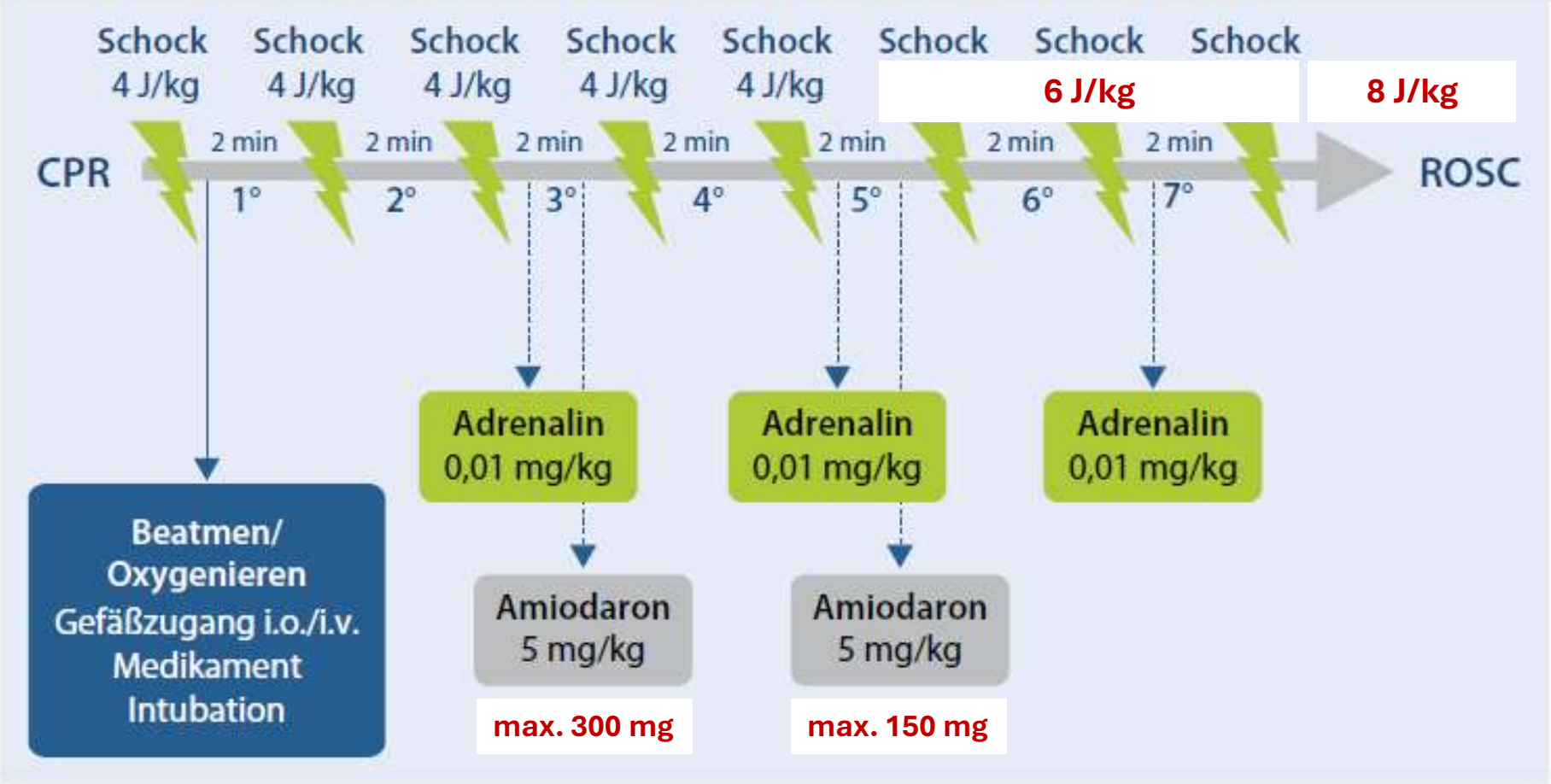
Welche Herzleistung schaffen wir mit CPR?

- 10%
- 25%
- 50%
- 75%
- 100%

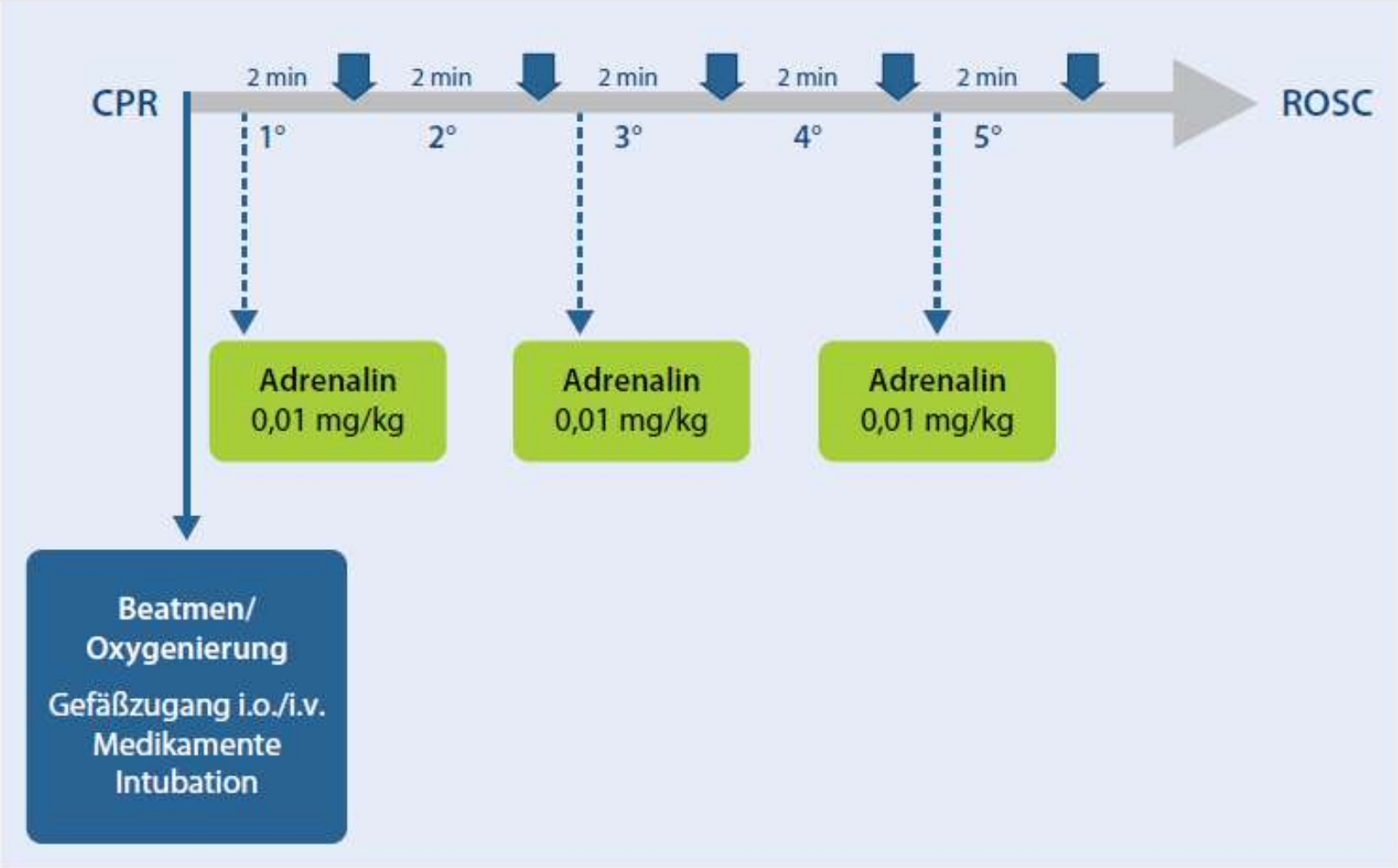
PAEDIATRIC ADVANCED LIFE SUPPORT



Defibrillierbar



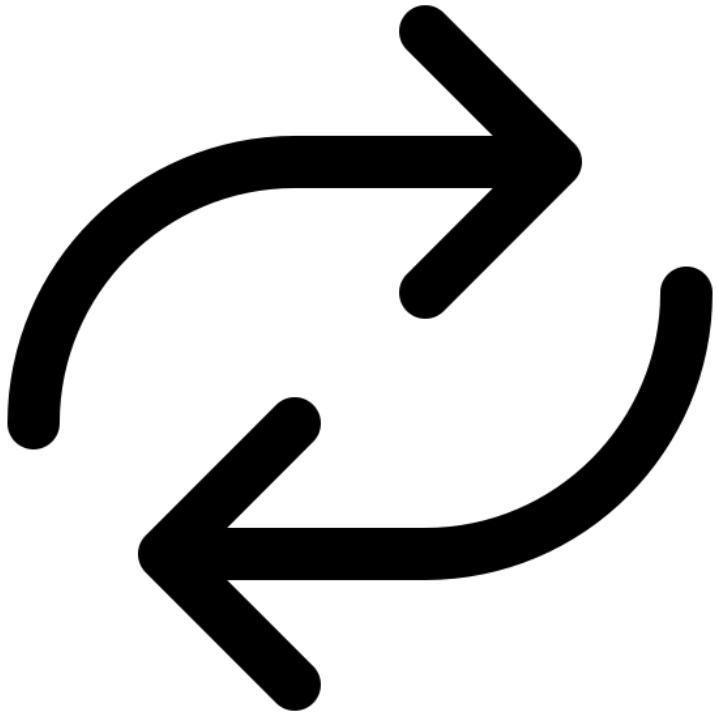
Nicht defibrillierbar



Welche Medikamente sind routinemäßig unter CPR sinnvoll?

- Adrenalin
- Amiodaron
- Vasopressin
- Lidocain
- Calcium
- Natrium-Bicarbonat

Reversible Ursachen



H ypoxie

H ypovolämie

H ypo- / Hyper [K^+ Mg^{++} Ca^{++} Glukose]

H ypo- / Hyperthermie

H erzbeuteltamponade

I ntoxikation

T hrombose

S pannungspneumothorax

Reversible Ursachen

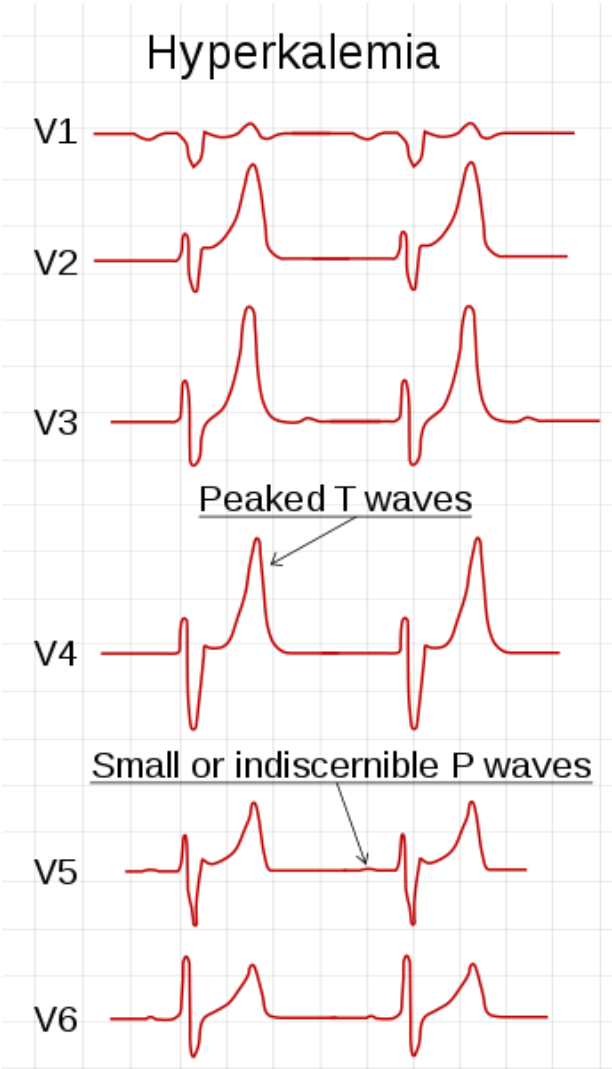
Measurement report

16.02.17 09:10
Serial number : 4500
Instrument ID : QF4500
Operator ID : DR.ABG
CCU Local District Hospital

Pat. ID	047328	
Patient Name	Mr. White	
Date of birth		
Remark	Room Air	
FIO_2	0.21	
Temperature	37.0 °C	
pH	7.390	[7.350 – 7.450]
pCO_2	4.99 kPa	[4.67 – 6.00]
pO_2	12.25 kPa	[10.67 – 13.33]
$cHCO_3^-$	24.0 mmol/L	[22 – 26]
BE	0.7 mmol/L	[-2.0 – +2.0]
Na^+	140.0 mmol/L	[135.0 – 148.0]
K^+	8,23	[3.50 – 4.50]
Cl^-	100.0 mmol/L	[98.0 – 107.0]
Ca^{2+}	1.200 mmol/L	[1.120 – 1.320]
Hct	40.0 %	[35.0 – 50.0]
tHb	130.0 g/L	[120.0 – 150.0]
COHb	1.0 %	[0.5 – 2.5]
O_2Hb	97.0 %	[95.0 – 99.0]
MetHb	1.0 %	[0.4 – 1.5]
SO_2	99.0 %	[75.0 – 99.0]
Glu	4.0 mmol/L	[3.3 – 6.1]
Lac	1.0 mmol/L	[0.4 – 2.2]

Hyperkaliämie – Therapie (in welcher Reihenfolge)

- Calcium gluconicum 10% (0,5ml/kg max 20ml)
- Insulin 0,1 IE/kg
- Inhalative Beta-Agonisten
- Natrium-bicarbonat 1mmol/kg
- Resonium



CPR Optimieren

- Feedback
- ETCO2
  - >20mmHg
- Diastole
  - >25mmHg

ROSC

ABCDE

ROSC

Hypotension

Hypercapnia and hypocapnia

Hyperoxia and hypoxia

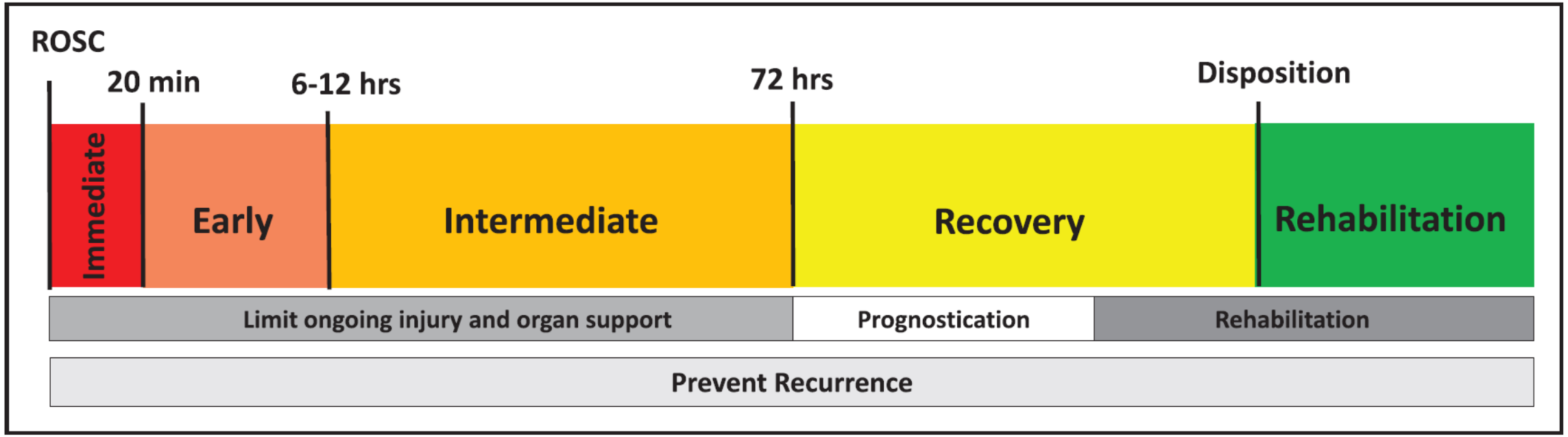
Targeted temperature management

Continuous EEG monitoring

Delaying prognosis decisions until at least 72 hours after return to normal temperature

Bei allen Kindern

Bei Kindern im KOMA


ROSC
20 min
6-12 hrs
72 hrs
Disposition
Immediate
Early
Intermediate
Recovery
Rehabilitation
Limit ongoing injury and organ support
Prognostication
Rehabilitation
Prevent Recurrence

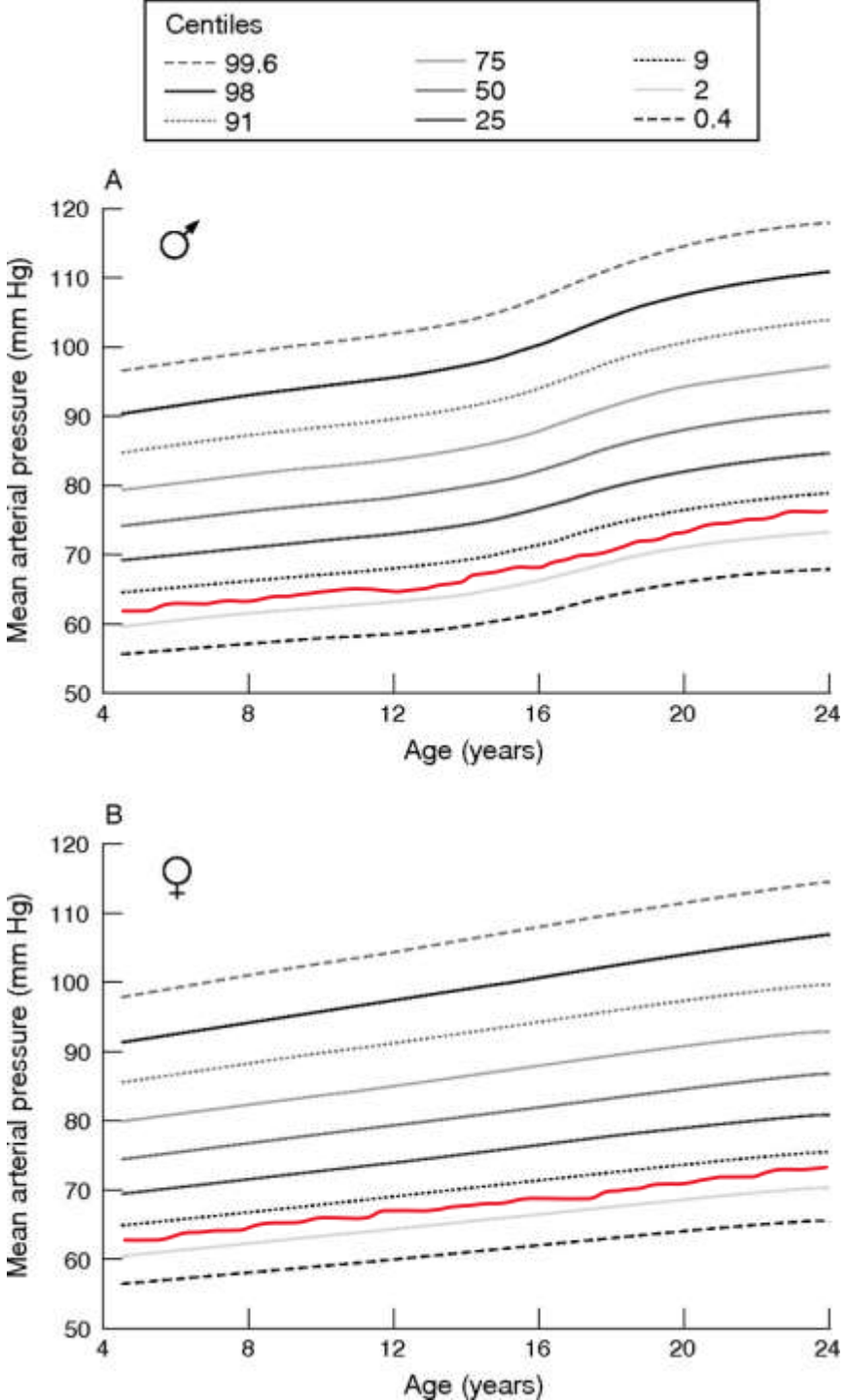
Post Resuscitation

Temperatur

- 2 Tage Hypothermie + 3 Tage Normothermie ODER
- 5 Tage Normothermie
- Fieber vermeiden und aggressiv behandeln

Post Resuscitation
Blutdruck

- **Arterie!**
- Über 5. Perzentile
- Systole unter 95. Perzentile



Post Resuscitation

Vitalparameter

- Temperatur
- Blutdruck
- Myokardiale Dysfunktion
- Glukose
- EEG / Krampfanfälle

ECPR

- Patient mit reversibler Ursache
- Hochwertige CPR
- ECPR Protokolle
- IHCA >> OHCA

Notfallmedizin, ECPR, Med. Universität Wien

ECPR
ja oder nein?

Tab. 1: Score to predict mortality after extracorporeal life support during active resuscitation

Variables	1 Point	2 Points	3 Points	6 Points
Length of CPR (minutes)	< 40	40–59	60–104	≥ 105
Lactate (mmol/L)	< 8.0	8.0–13.9	14.0–17.9	≥ 18.0
pH	> 7.00	6.85–7.00	6.61–6.84	≤ 6.60

Abbreviations: CPR, cardiopulmonary resuscitation; ECLS, extracorporeal life support.

"Using a cutoff of 9, this score has a positive predictive value of 94%...."

Fragen?

Zur Diskussion

- Der Defi wird erst in der 5. Minute während der Reanimation angewandt. Wie könnte die Diskussion aussehen?