

***POST
RESUSCITATION
CARE***



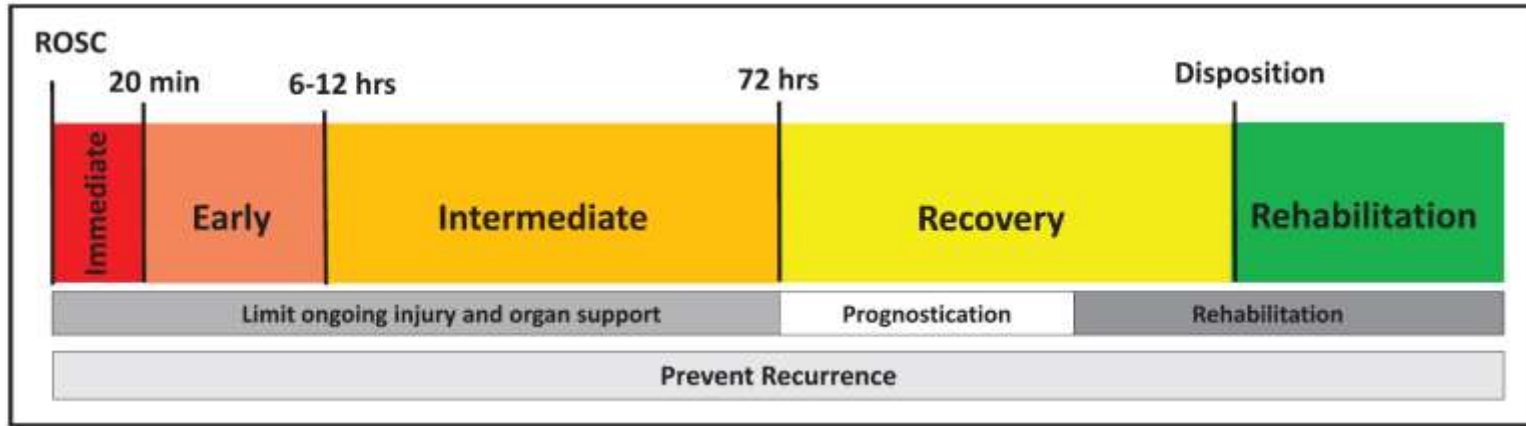
FRANCESCO CARDONA

Medizinische Universität Wien
& ERC SEC-PLS

ROSC!



PHASEN WÄHREND POST-RESUS CARE



DAS PROBLEM

OHCA

7000–23000 p.a.(USA)

7,2% VF/VT

Überleben 13,2%

“Gutes” 8,4%

IHCA

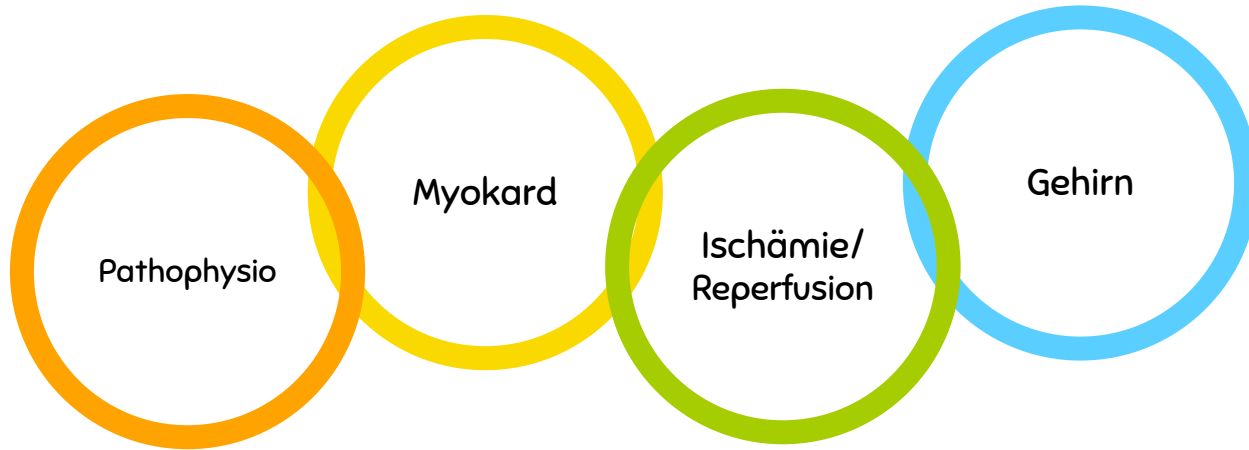
15200 p.a.(USA)

93,3% in ICU

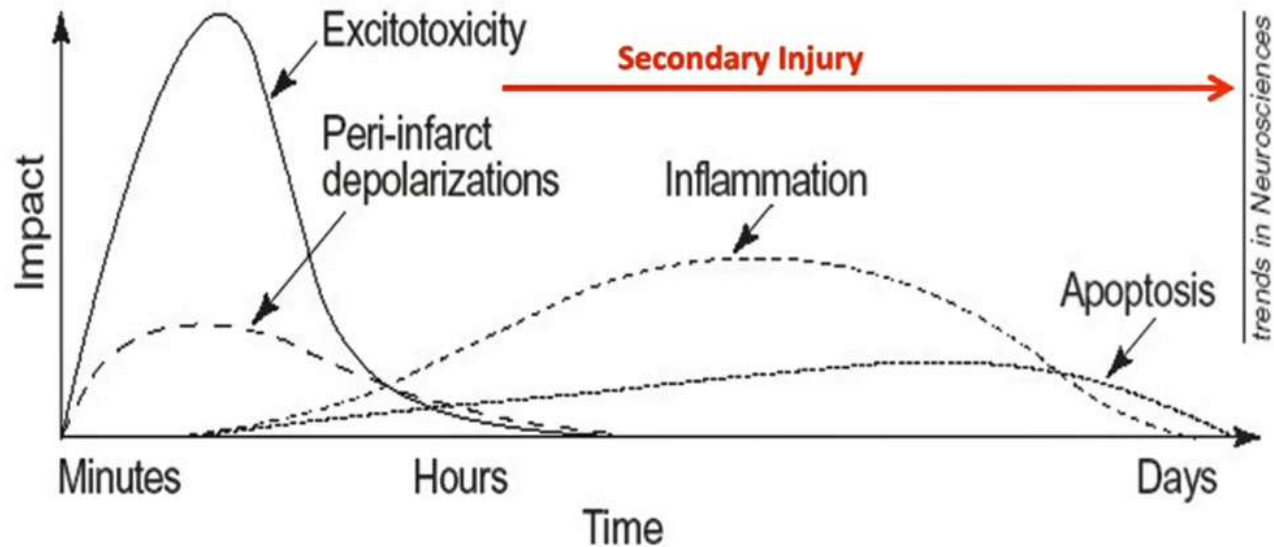
Überleben 45%

“Gutes” 68%

POST-CARDIAC ARREST SYNDROME



Brain injury over time





WIEDERBELEBUNG
ENDET NICHT MIT
ROSC



***ZEREBRALE
SCHÄDIGUNG***

Krampfanfälle

GEHIRN

Myokloni

Zerebrales Ödem

Koma

BEI ALLEN KINDERN



Hypotension



Hypercapnia and hypocapnia



Hyperoxia and hypoxia

BEI KINDERN IM KOMA



Targeted temperature management



Continuous EEG monitoring



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



BLUTDRUCK

ASSOCIATIONS OF HYPOTENSION DURING FIRST SIX HOURS POST-CARDIAC ARREST WITH OUTCOMES.

	No hypotension	Hypotension	Unadjusted	Fully Adjusted
	N (%)	N (%)	OR (95% CI); P	OR (95% CI); P
In-hospital mortality	70/169 (41)	114/214 (53)	1.61 (1.07, 2.43); 0.022	1.71 (1.02, 2.89); 0.042
Unfavorable outcome	82/160 (51)	128/207 (62)	1.54 (1.02, 2.34); 0.043	1.83 (1.06, 3.19); 0.032

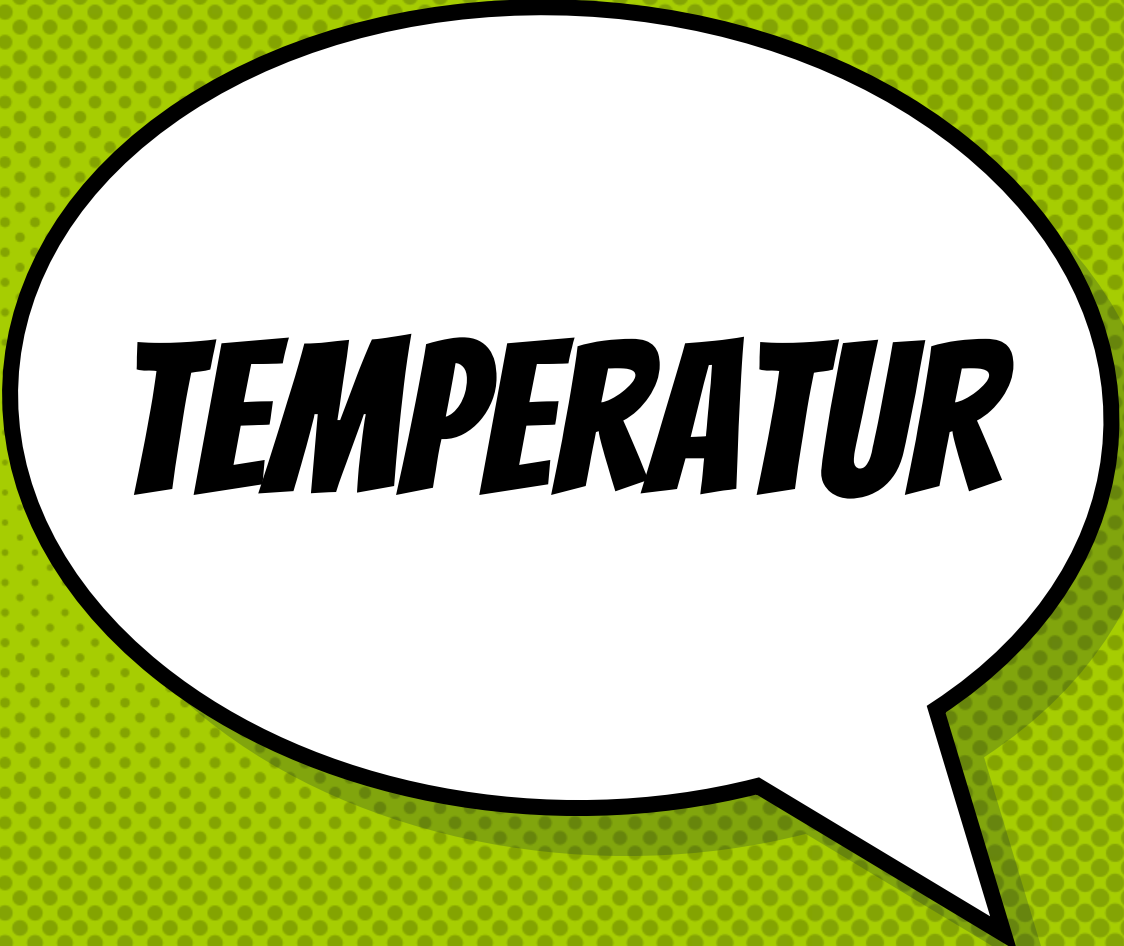
Hypotension defined as a minimum systolic blood pressure < 5th percentile; percentiles derived from normative age and sex data. OR, odds ratio; CI, confidence interval

EMPFEHLUNG

ERC: Mean Blutdruck > 5 . Perzentile

AHA: Systolischer Blutdruck > 5 . Perzentile

Mit Volumen oder Vasopressoren behandeln



TEMPERATUR

ZWEI STUDIEN ZU HYPOTHERMIE BEHANDLUNG IN KINDERN

THAPCA-IH
THAPCA-OH

Beide frühzeitig beendet

EMPFEHLUNG

ERC: Vermeide Fieber ($<37,5^{\circ}\text{C}$), TTM (34°C / 36°C)

AHA: Normothermie (36°C - $37,5^{\circ}\text{C}$) *oder* Hypothermie
(32°C - 34°C)

*Externe Temperaturregulation, kontinuierliche
Temperaturmessung, Optimale Dauer unklar*



SAUERSTOFF

EMPFEHLUNG

ERC: nach SaO_2 oder SpO_2 94%-98%

AHA: Ziel OxyHb 94%-99%

Entsprechend kindlicher Grunderkrankung



VENTILATION

CO₂

EMPFEHLUNG

ERC: Starte mit einer normalen Atemfrequenz und Tidalvolumen für das Kind und erziele ein normales PaCO_2 . Versuche sowohl Hypo- als auch Hyperkapnie zu vermeiden, Vorsicht mit ETCO_2

AHA: Limit exposure to severe hypocapnia/hypercapnia

Entsprechend kindlicher Grunderkrankung

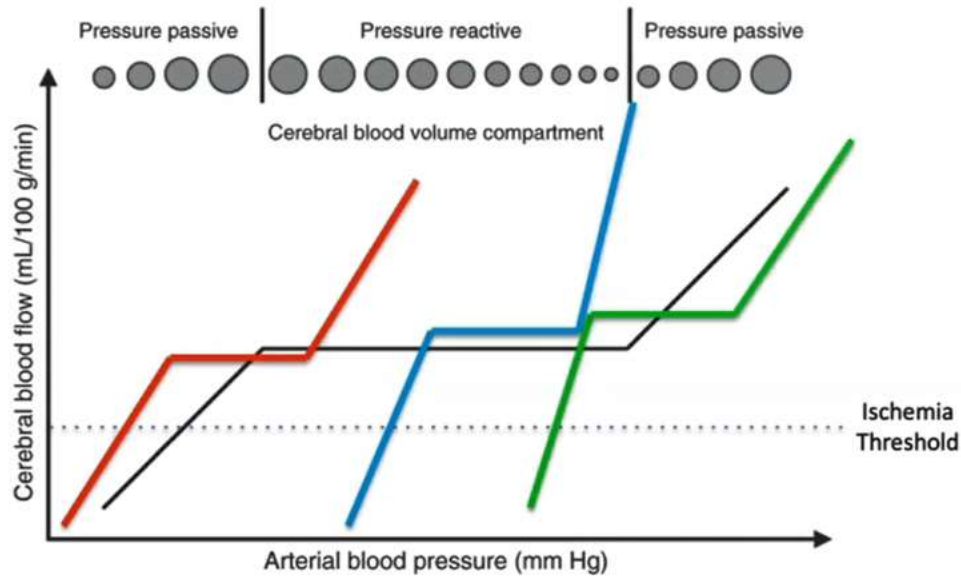


GLUCOSE

EMPFEHLUNG

ERC: kontrolliere Blutzucker und vermeide sowohl Hypo- als auch Hyperglykämie. Vorsicht bei zu strikter Blutzuckerkontrolle, da es das Risiko für Hypoglykämie steigert

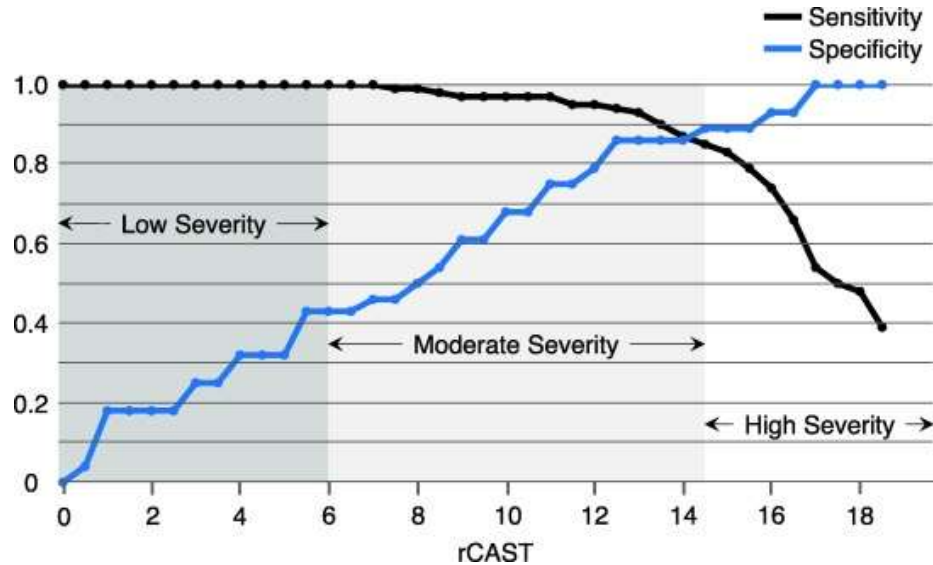
INDIVIDUELLE UNTERSCHIEDE



NEUROMONITORING

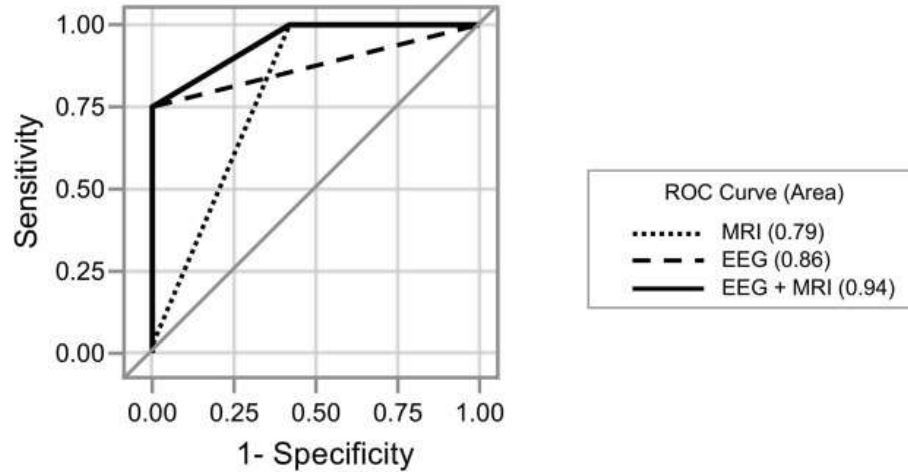
- × Viele Möglichkeiten
- × Nicht den Monitorwert behandeln
- × Stratifizierung
- × Autoregulation





Yasuda (2021) The rCAST score is useful for estimating the neurological prognosis in pediatric patients with post-cardiac arrest syndrome before ICU admission: External validation study using a nationwide prospective registry

ROC Curves for Comparisons



Smith (2022) – Magnetic resonance imaging adds prognostic value to EEG after pediatric cardiac arrest

PEDIATRIC CPC

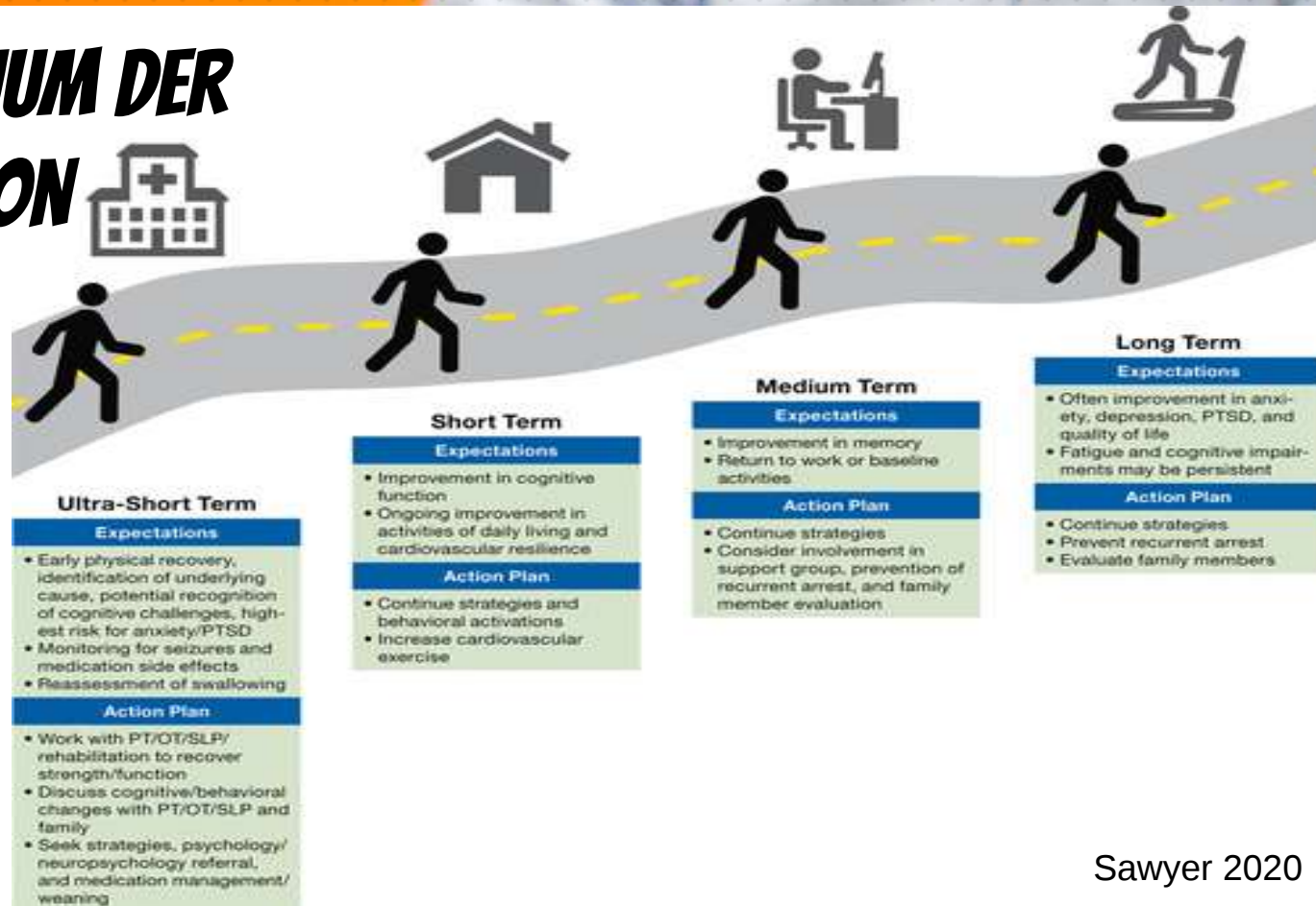
Score	Category	Description
1	Normal	Age-appropriate level of functioning In preschool-aged children, appropriate development In school-aged children, attendance in regular classes
2	Mild disability	Can interact at an age-appropriate level Minor neurologic disease that is controlled and does not interfere with daily functioning (eg, seizure disorder) In preschool-aged children, possibly minor developmental delays, but with > 75% of all daily living developmental milestones above the 10th percentile In school-aged children, attendance in regular school but in a grade that is not appropriate for age or in the appropriate grade but failing because of cognitive difficulties
3	Moderate disability	Below age-appropriate functioning Neurologic disease that is not controlled and severely limits activities In preschool-aged children, most daily living developmental milestones below the 10th percentile In school-aged children, can do ADLs but attend special classes because of cognitive difficulties or a learning deficit
4	Severe disability	In preschool-aged children, ADLs milestones below the 10th percentile and excessive dependence on others for activities of daily living In school-aged children, possibly severe impairment that prevents school attendance and dependence on others for ADLs In preschool-aged and school-aged children, possibly abnormal motor movements, including nonpurposeful, decorticate, or decerebrate responses to pain
5	Coma or vegetative state	Unawareness
6	Death	—

* Worst level of performance for any single criterion is used for categorizing. Deficits are scored only if they result from a neurologic disorder. Assessments are based on medical records or an interview with the caretaker.

From Recommended guidelines for uniform reporting of pediatric advanced life support: The pediatric Utstein style; statement for health care professionals from the Task Force of the American Academy of Pediatrics, the American Heart Association, and the European Resuscitation Council; Pediatrics 96(4):765–779, 1995.

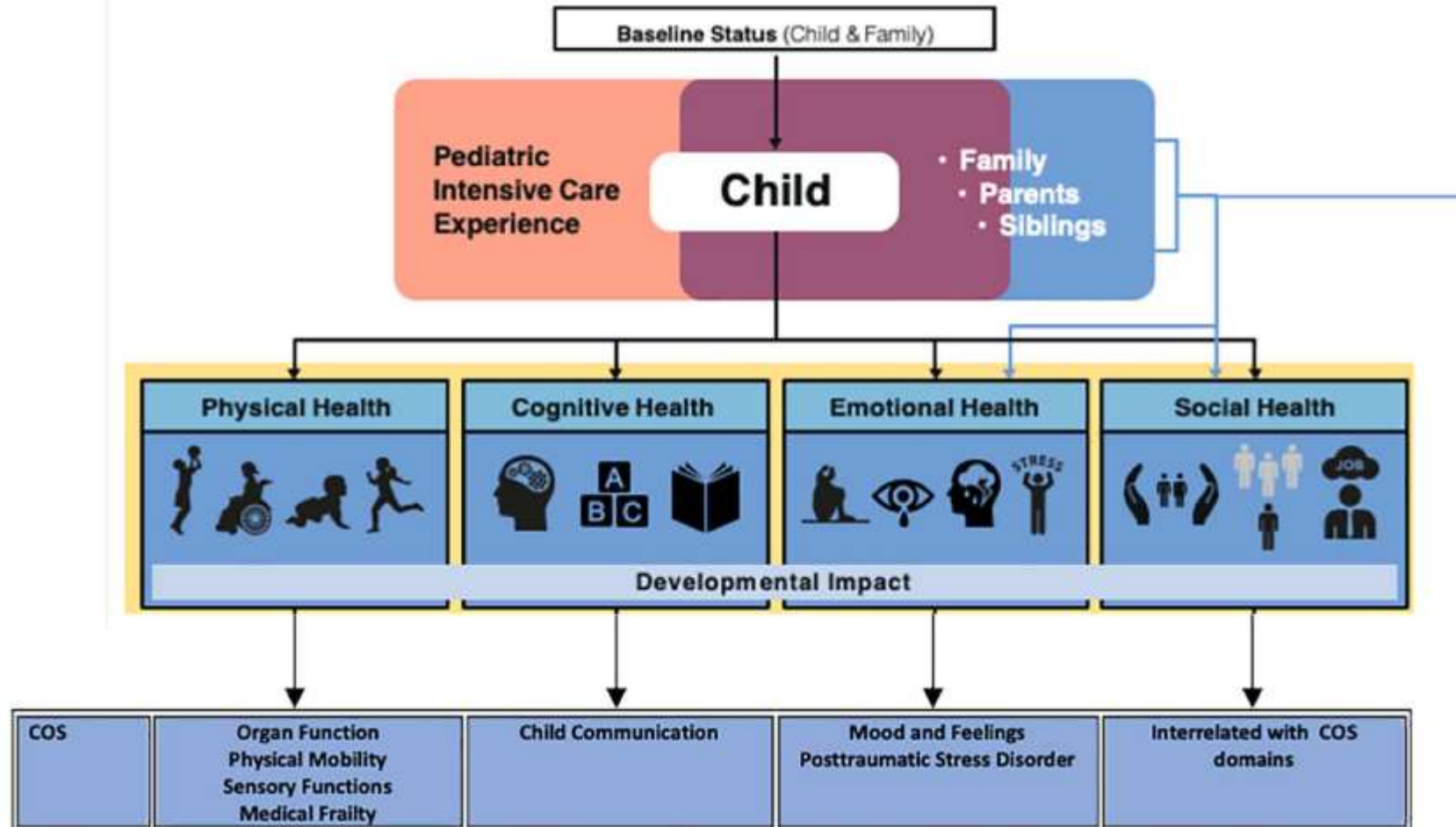
ADLs = activities of daily living.

DAS KONTINUUM DER REHABILITATION



Sawyer 2020

Post Intensive Care Syndrome - Pediatrics (PICS-p)



500 PEDIATRIC LIVES COULD BE SAVED - JUNG ET AL

Preventing pediatric cardiac arrest has the highest priority.

Regular mandatory training in basic life support

Training should include crew-ressource management

Feedback during resuscitation

Structured debriefings

Post-resuscitation treatment is critical

***A PICTURE IS WORTH A
THOUSAND WORDS***



DANKE!



Noch Fragen?

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