Resuscitační vzdělávání v praxi:

od školních lavic k pacientovým výsledkům

Martin Michalov

Nemám finančný konflikt záujmov

ZaMED

SLOVENSKÁ RESUSCITAČNÁ RADA

EUROPEAN RESUSCITATION COUNCIL

GUIDELINES 2025

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Practice Guideline

European Resuscitation Council Guidelines 2025 Education for Resuscitation

Sabine Nabecker[a,1,], Timo de Raad[b,1], Cristian Abelairas-Gomez[c,d], Jan Breckwoldt[e], Olfa Chakroun-Walha[f,g], Barbara Farquharson[h], Silvija Hunyadi-Antičević[i], Carsten Lott[j], Sebastian Schnaubelt[k,l,m], Joyce Yeung[n,o], Andrew Lockey[p,q,2], Robert Greif[r,2], for the ERC Education for Resuscitation Collaborators*

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VZDELÁVANIE V RESUSCITÁCII
KĽÚČOVÉ INFORMÁCIE

Neustály rozvoj inštruktorov zlepšuje kvalitu učiteľov, čo má priamy vplyv na vzdelávanie

Časté formatívne hodnotenie usmerňuje učenie sa u účastníkov všetkých typov kurzov resuscitácie

Trénujte operátorov tiesňovej linky záchrannej zdravotnej služby v rozpoznávaní zastavenia obehu a operátorom asistovanej resuscitácii

Debriefing tímu po nácviku zastavenia krvného obehu pre zdravotníckych pracovníkov podporuje rutinné klinické debriefingy po resuscitácii v reálnom živote

Vyučujte tímové zručnosti a etické princípy vo všetkých základných a pokročilých simuláciách resuscitácie

Vzdelávajte všetkých členov komunity o zástavení obehu
Prispôsobte vzdelávacie prístupy a materiál kontextu, cieľovej skupine a zdrojom dostupným v prostrediach s obmedzenými zdrojmi

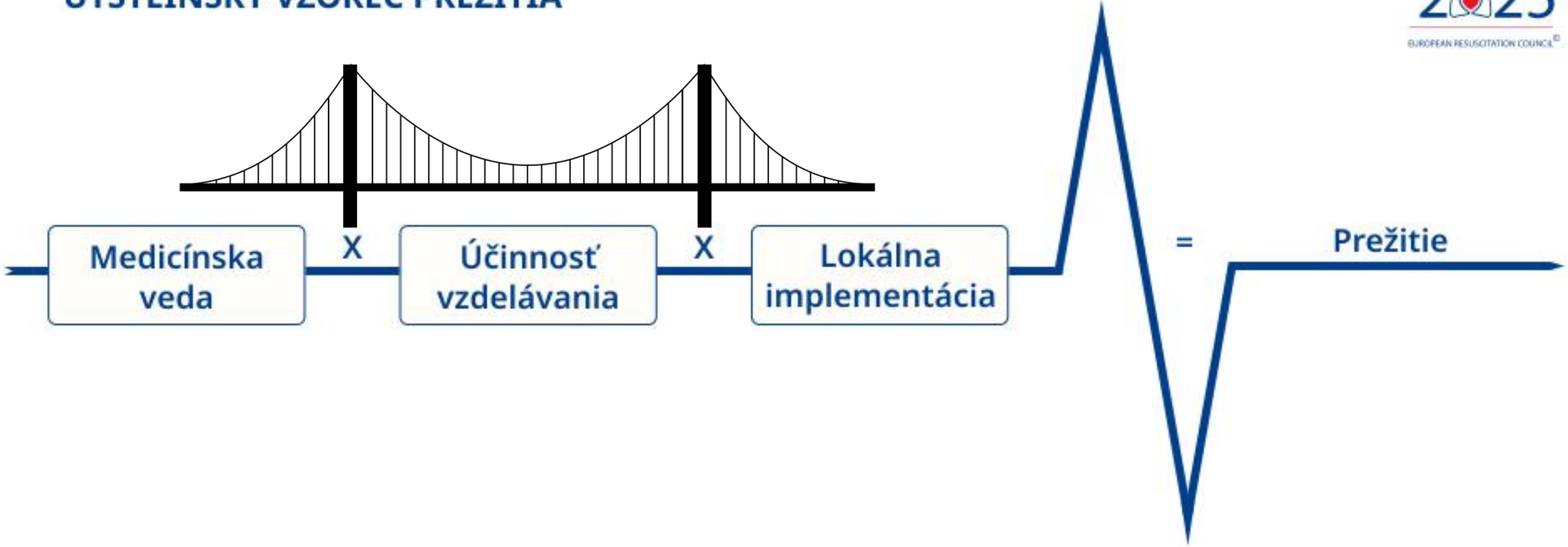
Začnite s výcvikom resuscitácie v rámci predškolského vzdelávania a potom pokračujte každoročným tréningom resuscitácie v školách

Poskytnite všetkým zdravotníckym pracovníkom, ktorí poskytujú starostlivosť pacientom so zastavením krvného obehu, akreditovaný výcvik v resuscitácii na príslušnej úrovni

Na zlepšenie získavania zručností a ich udržanie využívajte časovo rozložené učenie sa (viacero krátkych vyučovaní rozložených v čase) a učenie sa in-situ (priamo na pracovisku)

Pri výučbe resuscitácie by sa mali používať zariadenia poskytujúce spätnú väzbu o kvalite kompresii hrudníka v reálnom čase

UTSTEINSKÝ VZOREC PREŽITIA



Včasné rozpoznanie a privolanie pomoci
Prevencia zastavenia srdca
Včasná KPR a defibrilácia
AED
Zachovanie mozgu a naštartovanie srdca
Rozšírená a poresuscitačná starostlivosť
Optimalizácia funkcií mozgu a srdca
Prežitie a zotavenie
Obnovenie kvality života


ONE-SIZE FITS ALL
STORE
SALE
CORNJETT

Koho učíme?

Bariéry


Včasné rozpoznanie a privolanie pomoci
Prevencia zastavenia srdca
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AED
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Prežitie a zotavenie
Obnovenie kvality života

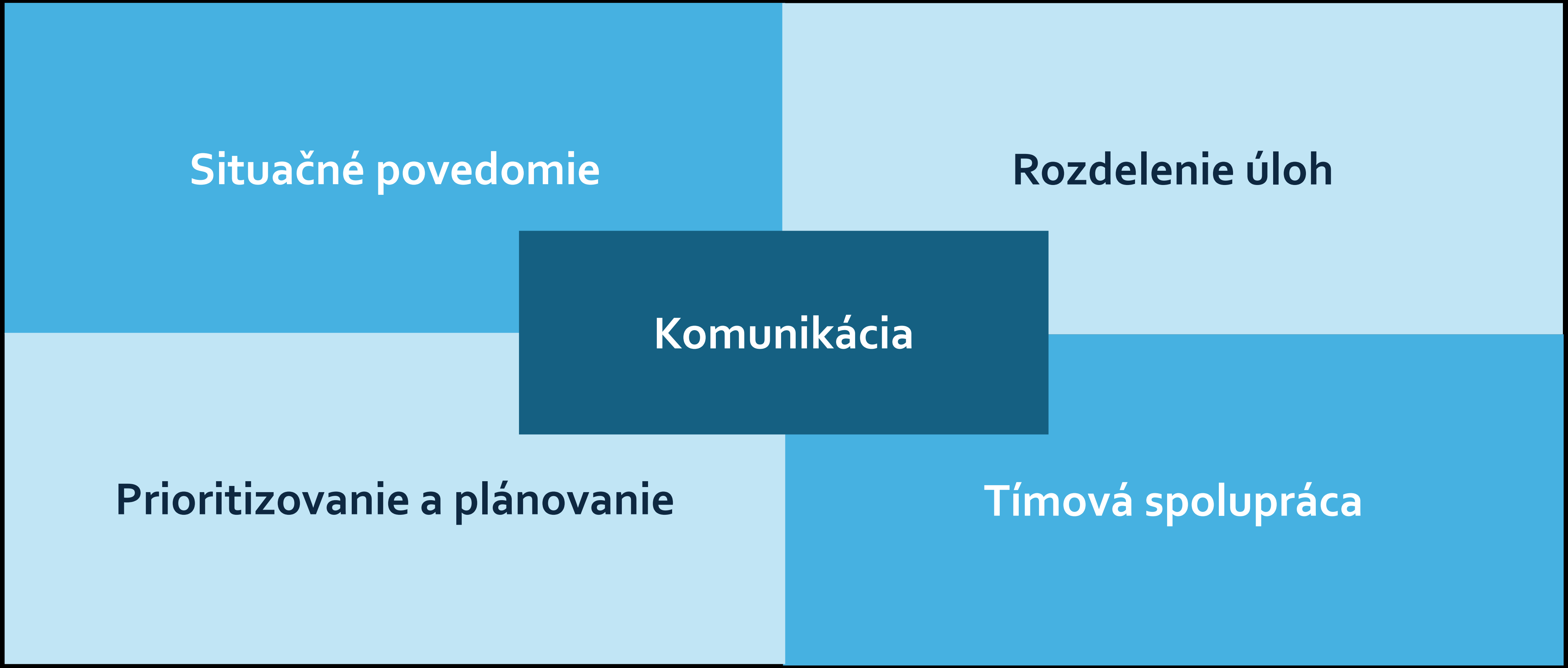

155


TRANSPORT STRETCHER

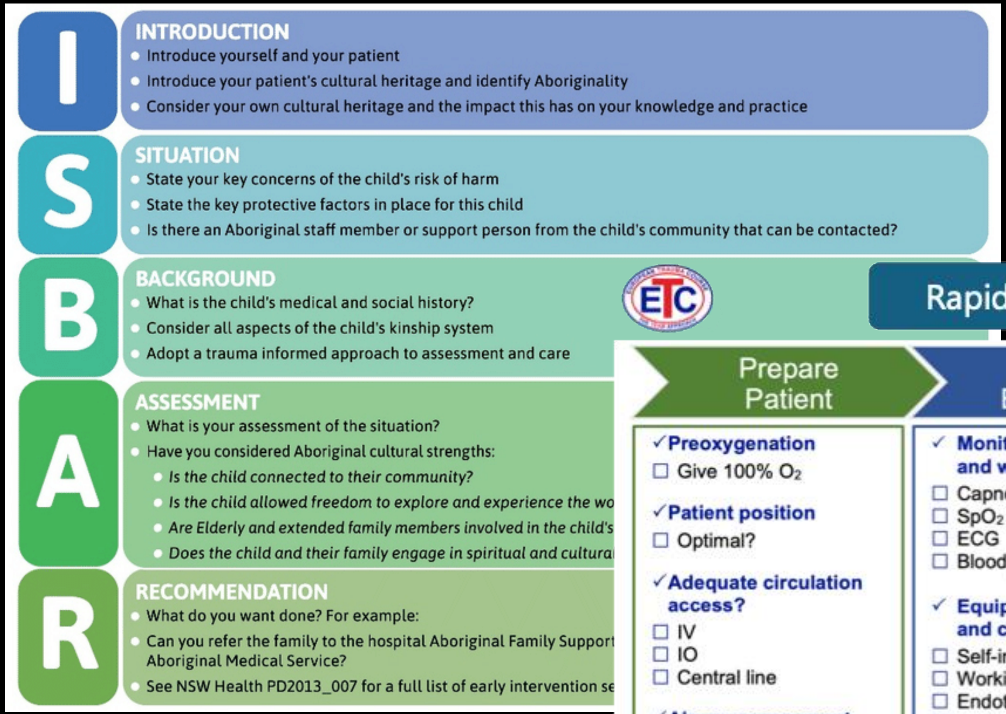
Čo učíme?

Deň 1		Učebňa 1	Učebňa 2	Učebňa 3	Učebňa 4
08:00 – 08:20	Registrácia účastníkov				
08:20 – 08:30	Stretnutie s koučami				
08:30 – 09:00	Úvod a privítanie	Martin			
	Workshop	Romana, Radim, Peter	Jojo, Dušan, Tomáš	Dominik, Marcela, Ivana	Jana, Gabika, Jakub
09:00 – 10:00		KPR a defibrilácia	KPR a defibrilácia	KPR a defibrilácia	KPR a defibrilácia
10:00 – 11:00		Zhoršujúci sa pacient	Zhoršujúci sa pacient	Zhoršujúci sa pacient	Zhoršujúci sa pacient
11:00 – 11:15	**Kávová prestávka**				
11:15 – 12:05		Srdcové rytmy a EKG	Dýchacie cesty/i.o./kapno	Srdcové rytmy a EKG	Dýchacie cesty/i.o./kapno
12:05 – 12:55		Srdcové rytmy a EKG	Dýchacie cesty/i.o./kapno	Srdcové rytmy a EKG	Dýchacie cesty/i.o./kapno
12:55 – 13:45	**Obed**				
13:45 – 14:15	Algoritmus ALS	Ivana			
14:15 – 14:45	Ukážka simulovaného scenára				
	Scenáre zastavenia krvého obehu	Romana, Gabika, Ivana	Jojo, Radim, Jakub	Dominik, Dušan, Peter	Jana, Marcela, Tomáš
14:45 – 15:30		SIMT 1	SIMT 1	SIMT 1	SIMT 1
15:30 – 16:00		SIMT 2	SIMT 2	SIMT 2	SIMT 2
16:00 – 16:15	**Kávová prestávka**				
16:15 – 16:40	Netechnické zručnosti	Martin			
16:40 – 17:05	Scenáre zastavenia krvného obehu	SIMT 5 Netechnické zručnosti	SIMT 5 Netechnické zručnosti	SIMT 5 Netechnické zručnosti	SIMT 5 Netechnické zručnosti
17:05 – 17:35		SIMT 3 Rozhodovací proces	SIMT 3 Rozhodovací proces	SIMT 3 Rozhodovací proces	SIMT 3 Rozhodovací proces
17:35 – 17:45	Koučing				
17:45 – 18:45	Porada inštruktorov				
19:30	**Spoločná večera**				

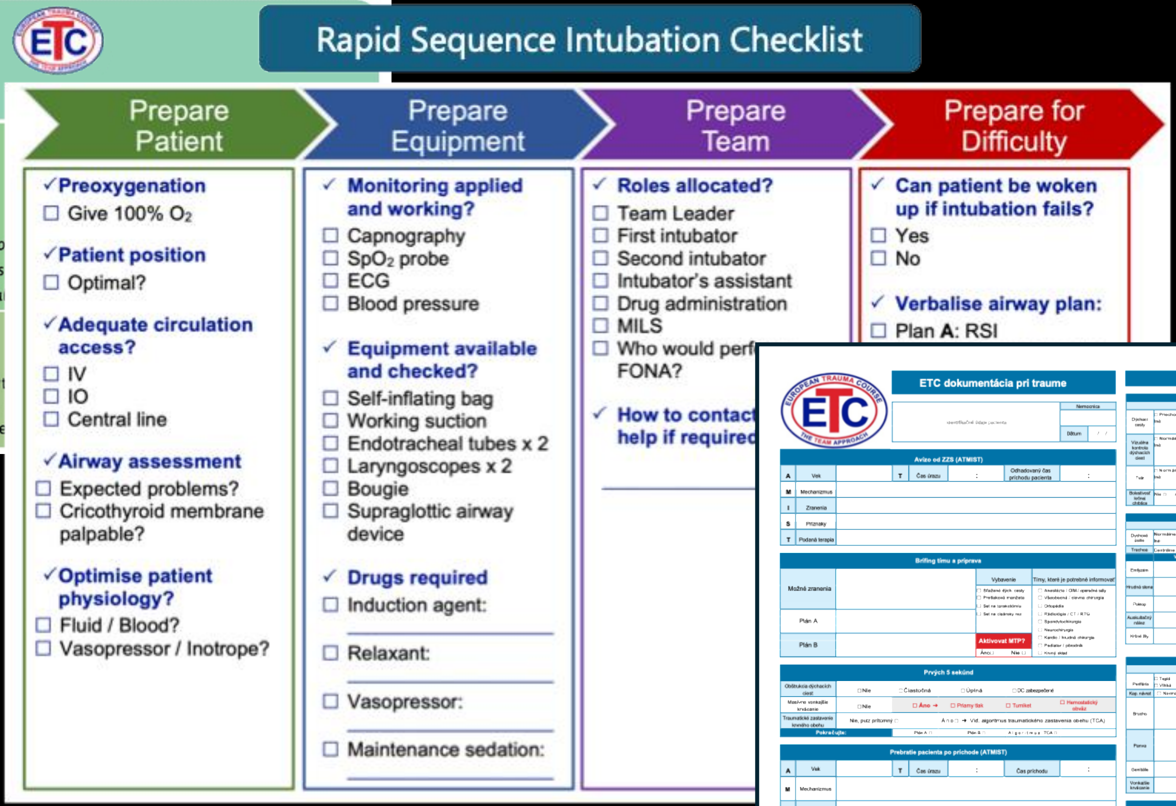

LONE
HERO


Situačné povedomie
Rozdelenie úloh
Komunikácia
Prioritizovanie a plánovanie
Tímová spolupráca

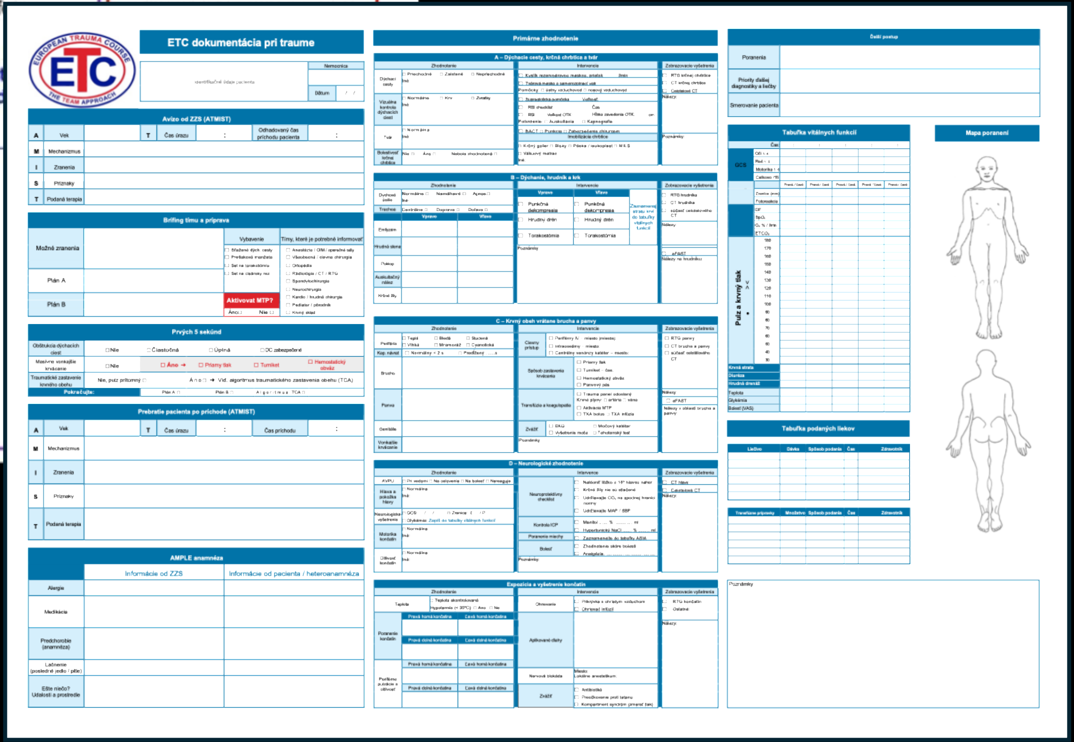

...AND THAT IS WHY WE LIFT ON THREE...



I
INTRODUCTION
Introduce yourself and your patient
Introduce your patient's cultural heritage and identify Aboriginality
Consider your own cultural heritage and the impact this has on your knowledge and practice
S
SITUATION
State your key concerns of the child's risk of harm
State the key protective factors in place for this child
Is there an Aboriginal staff member or support person from the child's community that can be contacted?
B
BACKGROUND
What is the child's medical and social history?
Consider all aspects of the child's kinship system
Adopt a trauma informed approach to assessment and care
A
ASSESSMENT
What is your assessment of the situation?
Have you considered Aboriginal cultural strengths:
Is the child connected to their community?
Is the child allowed freedom to explore and experience the wo
Are Elderly and extended family members involved in the child's
Does the child and their family engage in spiritual and cultura
R
RECOMMENDATION
What do you want done? For example:
Can you refer the family to the hospital Aboriginal Family Support
Aboriginal Medical Service?
See NSW Health PD2013_007 for a full list of early intervention se



Rapid Sequence Intubation Checklist
Prepare Patient
Prepare Equipment
Prepare Team
Prepare for Difficulty
✓ Preoxygenation
☐ Give 100% O_2
✓ Patient position
☐ Optimal?
✓ Adequate circulation access?
☐ IV
☐ IO
☐ Central line
✓ Airway assessment
☐ Expected problems?
☐ Cricothyroid membrane palpable?
✓ Optimise patient physiology?
☐ Fluid / Blood?
☐ Vasopressor / Inotrope?
✓ Monitoring applied and working?
☐ Capnography
☐ SpO_2 probe
☐ ECG
☐ Blood pressure
✓ Equipment available and checked?
☐ Self-inflating bag
☐ Working suction
☐ Endotracheal tubes x 2
☐ Laryngoscopes x 2
☐ Bougie
☐ Supraglottic airway device
✓ Drugs required
☐ Induction agent:
☐ Relaxant:
☐ Vasopressor:
☐ Maintenance sedation:
✓ Roles allocated?
☐ Team Leader
☐ First intubator
☐ Second intubator
☐ Intubator's assistant
☐ Drug administration
☐ MILS
☐ Who would perf
FONA?
✓ How to contact
help if required
✓ Can patient be woken up if intubation fails?
☐ Yes
☐ No
✓ Verbalise airway plan:
☐ Plan A: RSI



ETC dokumentácia pri traume
Avízo od ZZS (ATMIST)
Brífing tímu a príprava
Prvých 5 sekúnd
Prebratie pacienta po príchode (ATMIST)
AMPLE anamnéza
Primárne zhodnotenie
A – Dýchacie cesty, krčná chrbtica a krk
B – Dýchanie, hrudník a krk
D – Neurologické zhodnotenie
Expozícia a vyšetrenie kontaktov
Tabuľka vitálnych funkcií
Mapa poranení
Tabuľka podaných liekov

No ROSC 70%

DŘÍVE VYSLOVENÉ PŘÁNÍ

Manuál nejen pro pacienty

CESTA DOMŮ


Jenny
Roxane
Andres

Ako učíme?


ALS
INSTRUCTOR

Výber

Príprava

Udržiavanie

Instructor potential

Príprava

Udržiavanie

Instructor potential

GIC + IC

Udržiavanie

Instructor potential

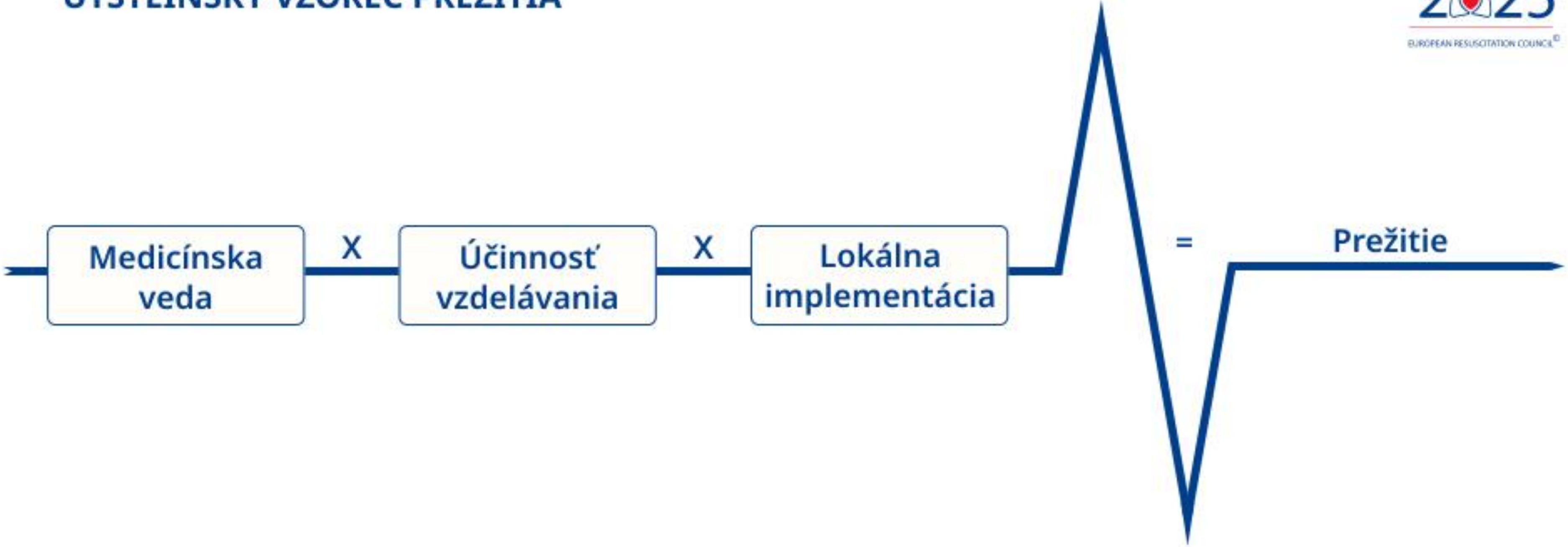
GIC + IC

EID

4. Additional course for instructors		
Educational program to teach ACLS instructors to evaluate team leader performance[20]	Educational program to review commonly observed errors and to identify critical errors in particular.	Trained instructors identified more critical errors, and gave more correct grade assignments.
ATP[28,29]	Instructors undertook ATP as additional training, focusing on decision making in equivocal situations.	Trained instructors were less prone to incorrectly failing candidates. (Thorne CJ, 2013). Instructors with additional training were significantly more confident at assessing. (Thorne CJ, 2015).
Neonatal resuscitation workshop[13]	2-day neonatal resuscitation workshop (content: lectures; scenario development and enactment; video recording and playback; and debriefing) to enhance teaching abilities.	Pre- and post-test comparisons showed significant improvements in participants' perceptions of their teaching ability.
Clinical teacher training course/ workshop (enhance teaching skills and methods)[16]	2-day BLS and emergency medicine teacher training program (content: "role of the teacher", "needs of learners", "providing feedback", "structure of session", "defining learning objectives", "activating learners", "teaching of skills", "teaching with patients.)	Students taught by untrained teachers performed better in some domains. Teaching quality was rated significantly better by students of untrained teachers.

J Am Heart Assoc. 2022;11:e025661. DOI: 10.1161/JAHA.122.025661

UTSTEINSKÝ VZOREC PREŽITIA



Impact of accredited advanced life support course participation on in-hospital cardiac arrest patient outcomes: A systematic review

Catherine Patocka[a,*], *Andrew Lockey*[b,c], *Kasper G. Lauridsen*[d,e,f], *Robert Greif*[g,h]

Table 5 – GRADE Summary of findings table for 'Advanced life support'.

No of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No of patients: ACLS/ ALS	No of patients: No ACLS/ ALS	Effect: Relative (95% CI)	Certainty	Importance
ROSC											
7	Observational studies	serious[a]	serious[b]	serious[c]	serious[d]	none	480/ 1211 (39.6%)	261/ 882 (29.6%)	**OR 1.66** (1.24 to 2.21)	⊕○○○ Very low	CRITICAL
Survival to discharge and 30 days											
8	Observational studies	serious[a]	serious[b]	serious[c]	serious[d]	none	309/ 995 (31.1%)	111/ 672 (16.5%)	**OR 2.48** (1.21 to 5.09)	⊕○○○ Very low	CRITICAL
1 year survival											
2	Observational studies	serious[a]	serious[b]	serious[c]	serious[d]	none	51/ 262 (19.5%)	31/ 193 (16.1%)	**OR 3.61** (0.11 to 119.42)	⊕○○○ Very low	CRITICAL

[a] Mixture of serious and low risk of bias studies.
[b] Some studies showed significant improvement, and some showed no improvement.
[c] Differences in patient type, hospital type, provider type and team composition, and nature of intervention.
[d] Absence of confidence intervals.

https://doi.org/10.1016/j.resplu.2023.100389

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Table 6 – Pooled risk ratios from hospital based Neonatal Resuscitation Courses.

Outcome	Studies (n)	Participants (n)	RR	95% CI
All stillbirths	9	1,334,307	0.88	0.82 to 0.94
Fresh stillbirths	6	231,455	0.71	0.54 to 0.93
1-day neonatal mortality	5	216,373	0.58	0.38 to 0.90
7-day neonatal mortality	5	296,300	0.78	0.63 to 0.97
28-day mortality	6	1,090,594	0.89	0.65 to 1.22
Perinatal mortality	4	1,178,446	0.78	0.70 to 0.87

https://doi.org/10.1016/j.resplu.2023.100389

Impact of adult advanced cardiac life support course participation on patient outcomes—A systematic review and meta-analysis

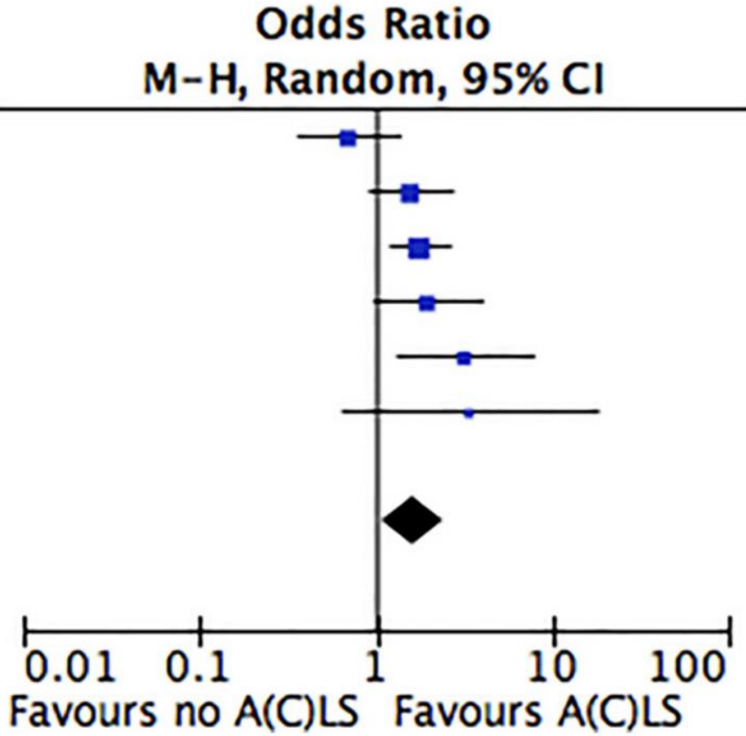
Andrew Lockey[a,*], Yiqun Lin[b], Adam Cheng[b]

ROSC

	A(C)LS		No A(C)LS			Odds Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% CI
Makker 1995	68	180	21	45	17.7%	0.69 [0.36, 1.34]
Pottle 2000	128	160	100	139	21.5%	1.56 [0.91, 2.67]
Sodhi 2011	97	343	52	284	27.0%	1.76 [1.20, 2.58]
Moretti 2007	46	102	16	54	16.5%	1.95 [0.97, 3.94]
Lowenstein 1986	32	53	12	37	12.6%	3.17 [1.32, 7.66]
Sanders 1994	7	35	2	29	4.7%	3.38 [0.64, 17.71]
Total (95% CI)		**873**		**588**	**100.0%**	**1.64 [1.12, 2.41]**
Total events	378		203			

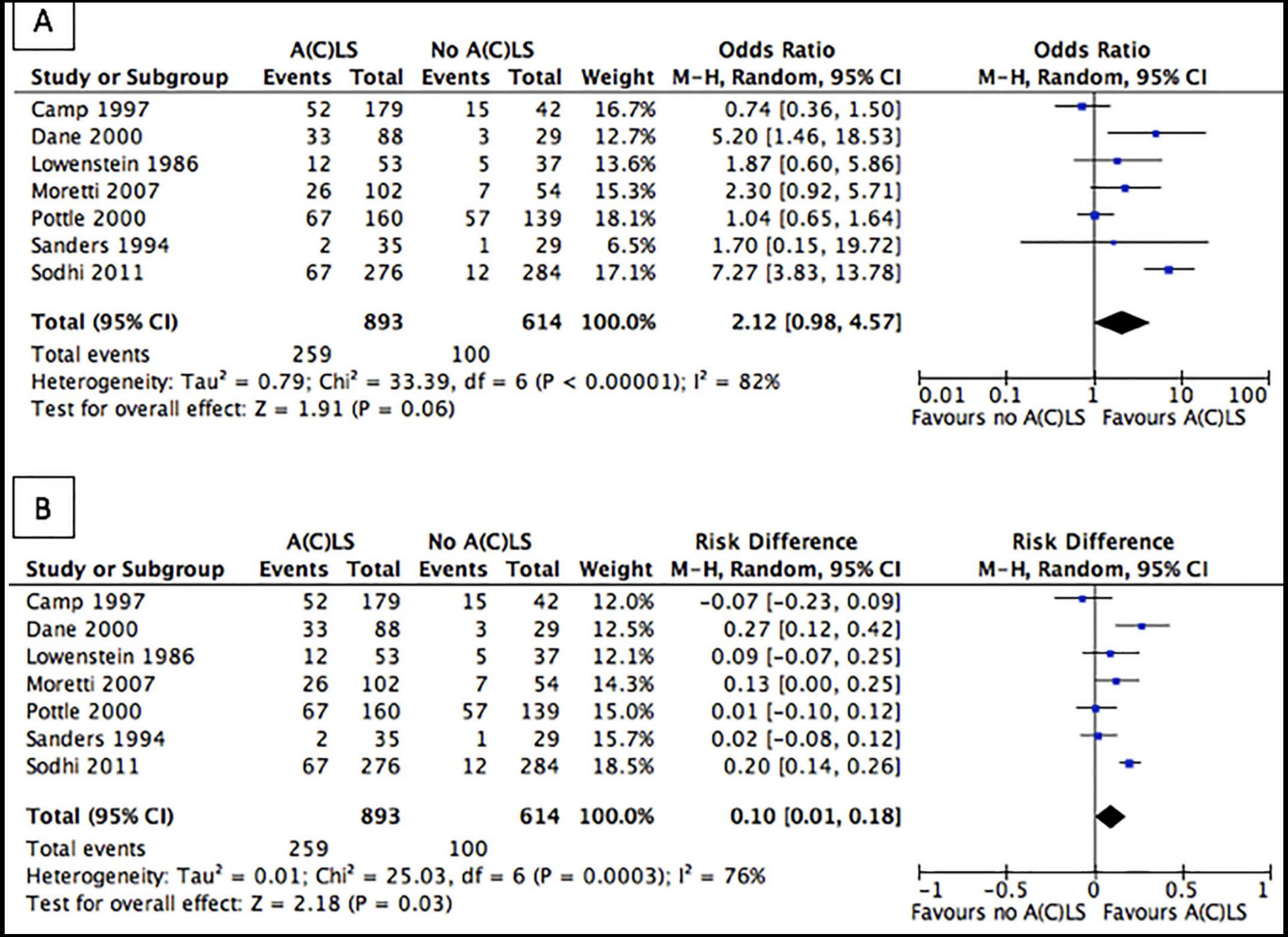
Heterogeneity: $Tau^2 = 0.10$; $Chi^2 = 9.83$, df = 5 (P = 0.08); $I^2 = 49\%$

Test for overall effect: Z = 2.53 (P = 0.01)



https://doi.org/10.1016/j.resuscitation.2018.05.034

Discharge / 30 days



A

Study or Subgroup	A(C)LS Events	A(C)LS Total	No A(C)LS Events	No A(C)LS Total	Weight	Odds Ratio M-H, Random, 95% CI
Camp 1997	52	179	15	42	16.7%	0.74 [0.36, 1.50]
Dane 2000	33	88	3	29	12.7%	5.20 [1.46, 18.53]
Lowenstein 1986	12	53	5	37	13.6%	1.87 [0.60, 5.86]
Moretti 2007	26	102	7	54	15.3%	2.30 [0.92, 5.71]
Pottle 2000	67	160	57	139	18.1%	1.04 [0.65, 1.64]
Sanders 1994	2	35	1	29	6.5%	1.70 [0.15, 19.72]
Sodhi 2011	67	276	12	284	17.1%	7.27 [3.83, 13.78]
Total (95% CI)		**893**		**614**	**100.0%**	**2.12 [0.98, 4.57]**
Total events	259		100			

Heterogeneity: $Tau^2 = 0.79$; $Chi^2 = 33.39$, df = 6 (P < 0.00001); $I^2 = 82\%$
Test for overall effect: Z = 1.91 (P = 0.06)

B

Study or Subgroup	A(C)LS Events	A(C)LS Total	No A(C)LS Events	No A(C)LS Total	Weight	Risk Difference M-H, Random, 95% CI
Camp 1997	52	179	15	42	12.0%	-0.07 [-0.23, 0.09]
Dane 2000	33	88	3	29	12.5%	0.27 [0.12, 0.42]
Lowenstein 1986	12	53	5	37	12.1%	0.09 [-0.07, 0.25]
Moretti 2007	26	102	7	54	14.3%	0.13 [0.00, 0.25]
Pottle 2000	67	160	57	139	15.0%	0.01 [-0.10, 0.12]
Sanders 1994	2	35	1	29	15.7%	0.02 [-0.08, 0.12]
Sodhi 2011	67	276	12	284	18.5%	0.20 [0.14, 0.26]
Total (95% CI)		**893**		**614**	**100.0%**	**0.10 [0.01, 0.18]**
Total events	259		100			

Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 25.03$, df = 6 (P = 0.0003); $I^2 = 76\%$
Test for overall effect: Z = 2.18 (P = 0.03)

https://doi.org/10.1016/j.resuscitation.2018.05.034

Začnite skoro
Šite na mieru
Ľudské faktory a etika
Kvalita inštruktora
Akreditované kurzy

Ďakujem za pozornosť

michalov.martin@zamed.sk

V.
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POZNAČTE SI DO KALENDÁRA!


EUROPEAN
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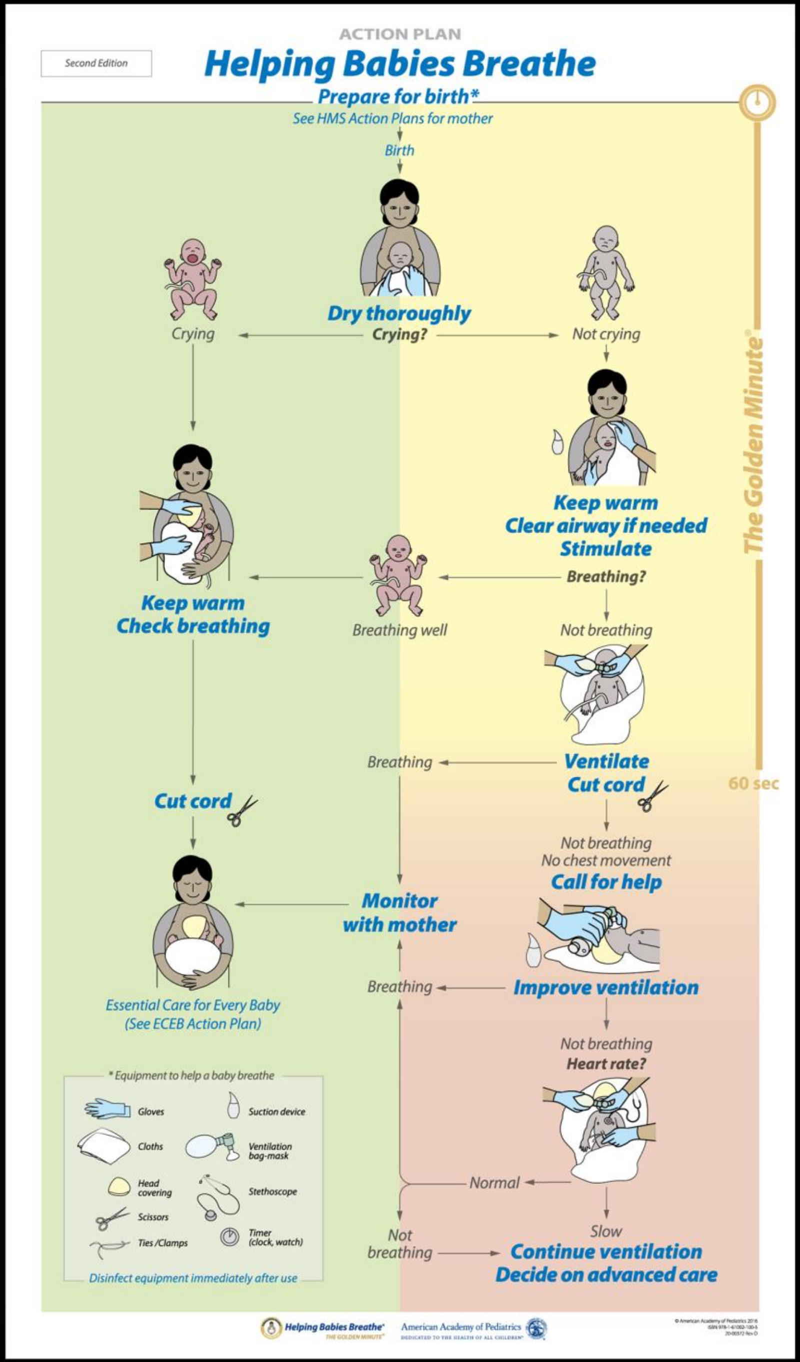

Helping babies breathe

Perinatal mortality n=25 108

RR 0.75; p<0.001

Intrapartum-related stillbirths n=125.720

RR 0.31–0.76

1 day neonatal mortality n=111 289

RR 0.37–0.67

Impact of adult advanced cardiac life support course participation on patient outcomes—A systematic review and meta-analysis

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Certainty assessment							No of patients		Effect		Certainty	Importance
Noof studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	ALS	no ALS	Odds Ratio (95% CI)	Risk Difference (95% CI)		
ROSC												
[illegible]	observational studies	serious[a]	serious[b]	serious[c]	serious[d]	none	378/873 (43.3%)	203/588 (34.5%)	**OR 1.64** (1.12 to 2.41)	**RD 0.10** (0.03 to 0.17)	⨁◯◯◯ VERY LOW	CRITICAL
Survival to Discharge												
7	observational studies	serious[a]	serious[b]	serious[c]	serious[d]	none	259/893 (29.0%)	100/614 (16.3%)	**OR 2.12** (0.98 to 4.57)	**RD 0.10** (0.01 to 0.18)	⨁◯◯◯ VERY LOW	CRITICAL
30 day survival												
[illegible]	[illegible]tional studies	not serious	not serious	not serious	serious[d]	none	22/102 (21.6%)	2/54 (3.7%)	**OR 7.15** (1.61 to 31.69)	**RD 0.18** (0.08 to 0.27)	⨁◯◯◯ VERY LOW	CRITICAL
1 year survival												
2	observational studies	serious[a]	serious[b]	not serious	serious[d]	none	51/262 (19.5%)	31/193 (16.1%)	**OR 3.61** (0.11 to 119.42)	**RD 0.08** (0.13 to 0.30)	⨁◯◯◯ VERY LOW	CRITICAL

https://doi.org/10.1016/j.resuscitation.2018.05.034