Supplemental Table S1: Prior Treatment Recommendation and 2021 to 2025 Treatment Recommendations

Review topic, EIT number	Prior Treatment Recommendations year and type review	2021-2025 Treatment Recommendations year and type review	Knowledge gaps
1. Training Populations			
Disparities in Education **EIT 6102**	None–2020 EvUp	none 2023 ScopRev 2025 EvUp–no chance	How to design or target resuscitation educational programs to best serve underrepresented or minority populations The influence of geographic factors (eg, urban or rural areas, low-resource settings, remote areas), sex of laypersons, or the impact of laws requiring CPR training on the attendance of resuscitation education courses The extent of disparities in layperson resuscitation education in populations with special needs, such as disabled persons, pregnant women, schoolchildren, or kindergarten-aged children, and no studies were found in pediatric or neonatal resuscitation The influence of these barriers or enablers on the clinical outcome of OHCA
EMS experience and exposure **EIT 6104**	We suggest that EMS systems (1) monitor their clinical personnel's exposure to resuscitation and (2) implement strategies, where possible, to address low exposure or ensure that treating teams have members with recent exposure (weak recommendation, very low-certainty evidence). 2020 SysRev	The 2025 EvUp did not find further relevant articles; unchanged treatment recommendation	Only short-term outcomes were evaluated. Future studies should document neurologically intact survival to hospital discharge/30 days and adjust for potential confounders. There is limited evidence to define low/ideal exposure to OHCA resuscitation. There is limited evidence of exposure to rare OHCA cases. There is a need to study this in other groups of healthcare professionals. There is a need for interventional studies implementing strategies to improve EMS exposure to resuscitation.
BLS training for likely	Not done in 2020	We recommend BLS training for likely rescuers of	The long-term impact of training on patient outcomes

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rescuers of high-risk populations **EIT 6105**		populations at high-risk of out-of-hospital cardiac arrest (strong recommendation, low-to-moderate–certainty evidence). We recommend health care professionals encourage and direct likely rescuers of populations at high risk of cardiac arrest to attend BLS training (good practice statement). 2022 SysRev - the studies found in the 2025 EvUp did not trigger a change of the treatment recommendation	The best methods for training and retraining to achieve high attendance and skill retention Whether healthcare providers suggesting the need for BLS training, rather than providing training, influences likely rescuers to seek and obtain training
Patient outcomes when a team member attended a CPR course **EIT 6106**	We recommend the provision of accredited adult ALS training for healthcare providers (weak recommendation, very low-certainty evidence). 2020 SysRev	We recommend the provision of accredited ALS training (ACLS, ALS) for health care providers who provide ALS care for adults (strong recommendation, very low–certainty evidence). We recommend the provision of accredited courses in NRT (NRT, NRP) and HBB for health care providers who provide ALS care for newborns and babies (strong recommendation, very low–certainty evidence). We have made a discordant recommendation (strong recommendation despite very low–certainty evidence) because we have placed a very high value on an uncertain but potentially life-preserving benefit, and the intervention is not associated with prohibitive adverse effects. 2022 SysRev, the 2025 EvUp did not find further relevant articles; unchanged treatment recommendation:	The trainee characteristics and training/recertification frequency required to sustain the existing effect on patient outcomes The impact of other advanced life support courses (eg, pediatric) on patient outcomes The impact of blended-learning approaches on patient outcomes • The impact on resuscitation training of modifications necessitated by the COVID-19 pandemic
CPR Education Tailored for Specific Populations **EIT 6108**	new	The 2025 EvUp did not find further relevant articles; unchanged Good Practice Statement: The task force encourages resuscitation councils to develop, offer and implement	Which specific population groups may benefit from tailored BLS education Whether tailored BLS education is cost-effective across different populations

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		tailored BLS courses for specific populations based in their needs and specific educational approach. 2024 ScopRev	What kind and amount of tailoring are optimal Whether tailored courses would be effective for first responders with and without a duty to respond, including but not limited to police, firefighters, or lifeguards How standard courses compare with tailored courses in specific populations
2. Faculty Development			
Faculty development approaches for CPR instructors **EIT 6200**	new	The studies found in the 2025 EvUp did not trigger a change of the Good Practice Statement: The task force encourages resuscitation councils to implement faculty development programs for their teaching staff of their accredited resuscitation courses. 2022 ScopRev	The most appropriate life support instructor training strategy The best methods for objective measurement of core competence of instructors Strategies to build up an effective recertification or retraining program for life support course instructors Which feedback method or debriefing strategy is effective and how to teach instructors to use a debriefing method successfully in life support instructor training Whether continuous assessment and feedback to instructors from others, such as senior instructors or course directors, improves instructor competence and learning outcomes for the course participants The effect on patient outcome of instructor training
3. Knowledge Translation and Implementation			
Debriefing of resuscitation performance **EIT 6307**	We suggest data-driven, performance-focused debriefing of rescuers after IHCA for both adults and children (weak recommendation, very low-certainty evidence). We suggest data-driven, performance-focused debriefing of rescuers after OHCA in both adults and children	We suggest performing post-event debriefing after adult, pediatric and neonatal cardiac arrest in all settings (weak recommendation, very low certainty evidence). 2025 SysRev	Randomized controlled trials on debriefing after cardiopulmonary resuscitation are needed. The effect of debriefing by subgroups such as adult vs pediatric cardiac arrest, in-hospital vs out-of-hospital setting, or hot vs cold debriefing Cost-effectiveness of debriefing or effect of post-

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	(weak recommendation, very low-certainty evidence). 2020 SysRev		event debriefings in low-resource settings are warranted. Whether there are any negative effects of debriefing on the resuscitation team
Medical Emergency Systems for Adults **EIT 6309**	This recommendation is unchanged from 2015. We suggest that hospitals consider the introduction of an RRS (RRT/MET) to reduce the incidence of IHCA and in-hospital mortality (weak recommendation, low-certainty evidence). 2020 SysRev	We suggest that hospitals consider the introduction of a rapid response system to reduce the incidence of in-hospital cardiac arrest (weak recommendation, low-quality evidence). 2025 SysRev	The effect of RRSs on long-term survival with positive neurological outcomes The role of technology in enhancing RRS The essential components of the "afferent limb" in RRS (e.g. which vital signs, clinical observations, and laboratory parameters should be monitored, as well as the optimal frequency for these assessments) The optimal design of education programs to improve the recognition of patient deterioration The ideal composition of the "efferent limb," or the response team The most effective mechanism for escalating assistance The cost-effectiveness of rapid response systems in practice
Systems Performance Improvements **EIT 6310**	We recommend that organizations or communities that treat cardiac arrest evaluate their performance and target key areas with the goal to improve performance (strong recommendation, very low-certainty evidence). 2020 SysRev	We recommend that organizations or communities that treat cardiac arrest use system improvement strategies to improve patient outcomes. (strong recommendation, very low-certainty evidence). 2025 SysRev	The cost-effectiveness of individual interventions aimed at improving systems The feasibility of implementing community interventions across diverse resource settings The effects of individual and bundled interventions across diverse resource settings
Prehospital critical care for out-of-hospital CA patients **EIT 6313**	new	We recommend that prehospital critical care teams attend adults with non-traumatic out-of-hospital cardiac arrest within EMS systems with sufficient resource infrastructure (weak recommendation, low certainty of evidence).	RCTs investigating prehospital critical care teams for OHCA are needed. The evidence on children with out-of-hospital cardiac arrest is based on only one study. Which patient groups would benefit most from prehospital critical care teams

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		We suggest that prehospital critical care teams attend children with out-of-hospital cardiac arrest within EMS systems with sufficient resource infrastructure (weak recommendation, very low certainty of evidence). New 2025 SysRev	The optimal composition of prehospital critical care teams, their professional background, and training requirements The associated resource costs, cost-effectiveness, impact on health equity, and feasibility of implementation of prehospital critical care teams
CPR Coaching during adult and pediatric cardiac arrest **EIT 6314**	new	We recommend considering the inclusion of a CPR Coach as a member of the resuscitation team during cardiac arrest resuscitation in settings with adequate staffing (weak recommendation, very low certainty evidence). New 2025 SysRev	The identified evidence was limited (from one RCT simulation2, one clinical observational study1, one pilot RCT simulation7). Further evidence on CPR coaching from RCT are needed. The effect of CPR coaches on real cardiac arrest and patient survival outcomes The effect of CPR coaches on prespecified subgroups (e.g. adult vs pediatric patients, trained vs untrained CPR coaches, use of CPR feedback devices vs no CPR feedback devices). The optimal role and effectiveness of a CPR coach in out-of-hospital settings and in-hospital settings The cost-effectiveness or utilization of CPR coaches in limited resource settings
OHCA termination of resuscitation (TOR) rules **EIT 6303**	We conditionally recommend the use of TOR rules to assist clinicians in deciding whether to discontinue resuscitation efforts out of hospital or to transport to hospital with ongoing CPR (conditional recommendation/ very low-certainty evidence). 2020 SysRev	For adult out-of-hospital cardiac arrest, we conditionally recommend that emergency medical service systems may implement termination of resuscitation (TOR) rules to assist clinicians in deciding whether to discontinue resuscitation efforts at the scene or to transport to hospital with ongoing CPR. We suggest that TOR rules may only be implemented following local validation of the TOR rule with acceptable specificity considering local culture, values, and setting	The accuracy of TOR rules in clinical practice The compliance with out-of-hospital TOR rules currently in use Evidence-based implementation strategies for TOR rules for EMS The societal perceptions and acceptability of TOR rules The validation of TOR rules in children The impact of TOR rules on non-heart-beating organ donation The risk associated with emergent transport of futile

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		(conditional recommendation, very-low certainty evidence). For pediatric out-of-hospital cardiac arrest because of insufficient evidence we suggest against the use of TOR rules to decide whether to terminate resuscitation efforts (conditional recommendation, very-low certainty evidence). 2025 Adolopment	cases with ongoing resuscitation.
Community Initiatives to promote BLS implementation **EIT 6306**	We recommend implementation of resuscitation guidelines within organizations that provide care for patients in cardiac arrest in any setting (strong recommendation, very-low-certainty evidence). 2015 SysRev; 2020 ScopRev unchanged Treatment Recommendations	Good Practice Statement: We propose that community initiatives to promote BLS implementation should be endorsed and supported. 2025 ScopRevs	The effect of community initiatives to promote BLS implementation in more diverse geographic areas, including low resource settings The effect of community initiatives to promote BLS implementation on neonatal and pediatric resuscitations More well designed RCTs are needed to report key patient outcomes and enable a systematic review The effect of public campaigns such as World Restart A Heart in regions beyond the United Kingdom The influence of specific legal regulations on CPR uptake in countries other than China How specific laws and regulations affect community response to cardiac arrest The cost-effectiveness of each intervention for BLS implementation, and its specific impact on clinical outcomes
Family presence in adult resuscitation **EIT 6300**	new	We suggest that family members be provided with the option to be present during in-hospital adult resuscitation from cardiac arrest. (weak recommendation; very low certainty of evidence) We suggest that family members be provided with the option to be present	The impact of specific factors on patient, family, or providers, such as patient characteristics, precipitating events or illness resulting in cardiac arrest, family members as CPR bystanders, or the resuscitation setting The cultural, religious, or other sociological or health equity factors influencing

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		during out-of-hospital adult resuscitation from cardiac arrest acknowledging that providers are often not able to control this. (weak recommendation; very low certainty of evidence) Policies or protocols about family presence during resuscitation should be developed to guide and support healthcare professional decision-making. (Good Practice Statement) When implementing family presence procedures, healthcare providers should receive education about family presence during adult cardiac arrest resuscitation, including how to manage these stressful situations, family distress and their own responses to these situations. (good practice statement) 2022 SysRev, a 2025 EvUp suggest a new SysRev.	attitudes and behaviors regarding family presence during adult resuscitation The impact of unit-based policies and protocols or family support personnel on patient, family, and provider outcomes with family presence during resuscitation Cost-effectiveness of resourcing the resuscitation setting to accommodate family presence and the impact of these resources on health care professionals Whether the effect of family presence during resuscitation varies with specific family members (e.g., children, parents, partners)
Cardiac arrest centers EIT 6301 EvUp	We suggest adult patients with nontraumatic OHCA be cared for in cardiac arrest centers rather than in non–cardiac arrest centers in settings where this can be implemented (weak recommendation, very low-certainty evidence). For patients with IHCA, we found no evidence to support an EIT and ALS Task Force recommendation for or against the intervention. For patient subgroups with either shockable or non-shockable initial cardiac rhythm, the current evidence is inconclusive, and confidence in the effect estimates is currently too low to support a separate EIT and ALS Task Force recommendation. For regional triage of OHCA	We suggest adults with OHCA should be cared for in cardiac arrest centers (weak recommendation, very-low certainty evidence). 2024 SysRev, unchanged with the 2025 EvUp	A universal definition of CAC The effect of CACs for cardiac arrest in children or in the in-hospital setting The effect of CACs on long-term neurological intact survival The long-term benefits of CACs and the impact on patient-reported outcomes619 The effect of care at CACs in specific subgroups (eg, age, cardiac etiology, shockable or nonshockable rhythm) The cost-effectiveness of transferring and/or caring for patients at CACs Whether there are any negative outcomes associated with bypassing the closest hospitals (eg, deskilling in postarrest management) and transferring patients to CACs

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	patients to a cardiac arrest center by primary EMS transport or secondary interfacility transfer subgroups, the current evidence is inconclusive and confidence in the effect estimates is currently too low to support a separate EIT and ALS Task Force recommendation. 2020 SysRev		What defines a safe distance or time for transport to a CAC The impact on families, particularly those from remote regions The potential impact on organ donation There are insufficient data from large RCTs, including a broad variety of populations and etiology of cardiac arrest, because all but 1 study are observational trials.
Technology to summon providers **EIT 6302**	We recommend that citizen/individuals who are in close proximity to a suspected Out-of-hospital Cardiac Arrest event and willing to be engaged/notified by a smartphone app with mobile positioning system or Text Message-alert system should be notified (strong recommendation, very low-certainty evidence). 2020 SysRev	The studies found in the 2025 EvUp did not trigger a change of the treatment recommendation	There is a need for more high-certainty prospective studies including the critical outcome of long-term survival. Risk of bias is a common issue, with studies controlling for confounding factors only for a few outcomes. More RCT studies are needed for more robust evidence. There is no evidence of the cost-effectiveness of notifying laypersons through a smartphone app with an MPS or TM-alert system in the case of OHCAs. There was only 1 study assessing which of these technologies most improved outcome after OHCA (app versus text message). There is the need for more high-certainty evidence to determine the best technology to use in terms of OHCA outcomes. There is a need for the extension of these studies in different social, cultural, ethnic, and geographical contexts. The results of the included studies apply only to OHCAs of cardiac origin; there is a need for more evidence in cases of OHCA caused by trauma, drowning, intoxication, or suicide.

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			There is a need for more consistent high-certainty evidence on the impact of engaged/notified versus unnotified bystander responses on survival with favorable neurological outcome at hospital discharge, ROSC, and survival to hospital admission. The impact of engaged/notified versus unnotified bystander responses on bystander CPR rates and time to first compressions/shock delivery Safety of notifying CPR responders by a smartphone app with an MPS or TM-alert system to attend OHCA events The psychological or emotional impact imposed on responders by potential or actual engagement in a call to rescue
Willingness to provide CPR EIT 6304	To increase willingness to perform CPR, laypeople should receive training in CPR. This training should include recognizing gasping or abnormal breathing as a sign of cardiac arrest when other signs of life are absent. Laypeople should be trained to start resuscitation with chest compressions in adult and pediatric victims. If unwilling or unable to perform ventilation, rescuers should be instructed to continue compression-only CPR. EMS dispatchers should provide CPR instructions to callers who report cardiac arrest. When providing CPR instructions, EMS dispatchers should include recognition of gasping and abnormal breathing.	The EvUp did not found studies that change the previous statement. As the recommendation from 2020 was not based on a GRADE SysRev the EIT Task Force issued a Good Practice Statement in 2025: The task force encourages resuscitation councils, communities, and emergency medical services to provide easy access to BLS courses, raise awareness about cardiac arrest and its treatment, and utilize training, public outreach, and social media to increase laypersons' willingness to perform CPR	There is a need to assess the efficacy of interventions aiming to address known barriers and enhance facilitators for actual bystanders to provide CPR, use of AEDs, and call for help for OHCA victims There is a need to assess the best methods to teach how to overcome known barriers to perform CPR in CPR training course. There is a need to better understand those factors that enhance the willingness of bystanders to perform CPR and the barriers for those bystanders who were unwilling to perform CPR.

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	Unchanged from 2010, 2020 ScopRev		
Clinical decision rules to facilitate in-hospital DNCPR **EIT 6305**	new	We recommend against using any currently available pre-arrest prediction rule as a sole reason to not resuscitate an adult with in-hospital cardiac arrest (strong recommendation, very low certainty evidence). We are unable to recommend for or against any available pre-arrest prediction rule to facilitate do-not-attempt cardiopulmonary resuscitation discussions with adult patients or their next of kin as there are no studies investigating the effect of clinical implementation of such score for this indication. We are unable to provide any recommendation for pediatric patients as no studies on children were identified. 2022 SysRev. The 2025 EvUp did not found studies that change the previous statement.	Assessment of clinical decision tools to predict ROSC and long-term outcomes beyond hospital discharge or quality-of-life outcomes Assessment of clinical decision tools for prearrest prediction of IHCA survival for children Assessment of scores predicting survival with favorable neurological outcome that do not include physiological deterioration before cardiac arrest, which may be difficult to apply prospectively Prospective validation studies or randomized trials of in-hospital prearrest clinical prediction rules to be used for do-not-attempt CPR discussions and/or making do-not-attempt CPR orders How the use of clinical decision tools affects resuscitation practices, cost-benefit, or survival outcomes
Termination of Resuscitation for In-hospital Cardiac Arrest **EIT 6308**	We did not identify any clinical decision rule that was able to reliably predict death following in-hospital cardiac arrest. We recommend against use of the UN10 rule as a sole strategy to terminate in-hospital resuscitation (strong recommendation, very low certainty evidence). 2020 SysRev	The 2025 EvUp did not find any new articles; unchanged treatment recommendation from 2020.	There are no clinical decision tools to predict the absence of ROSC during in-hospital resuscitation. There are clinical decision tools that combine existing decision tool elements such as resuscitation duration and cardiac arrest rhythm with endtidal carbon dioxide and/or findings on cardiac ultrasound. No studies were found on the use of a clinical decision tool to terminate resuscitation for pediatric IHCA. There is a lack of prospective clinical validation studies and randomized trials investigating the use of a

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			clinical decision tool to terminate resuscitation during IHCA. It is unknown how the use of a clinical decision tool affects resuscitation practices,
Chain of survival **EIT 6311**	new	None 2024 ScopRev The 2025 EvUp found new studies, but they do not add any new information to the CoSTR 2024.	Whether there is a need for revising the classic Chain of Survival Who the Chain of Survival is targeted toward (clinicians, scientists, laypeople, stakeholders, or all of them), if laypersons need a simpler Chain of Survival than health care professionals do, and how it should be used optimally (a depiction of local systems to save lives, an educational framework, a cognitive aid, etc) Which of the various published Chains of Survival should be used by default; a comprehensive system could be evaluated for applicability in the future The impact of various kinds of Chains of Survival on educational outcomes, clinical outcomes, and patient survival
Impact of support on mental health in co-survivors of CA patients **EIT 6315**	new	none The 2025 EvUp found none relevant study for that PICOST.	We encourage further research to explore the effect of support for co-survivors who witnessed a cardiac arrest and the effect on their mental health.
4. Instructional design			
CPR feedback devices during training **EIT 6404**	These treatment recommendations are unchanged from 2015. We suggest the use of feedback devices that provide directive feedback on compression rate, depth, release, and hand position during CPR training (weak recommendation, low-certainty evidence). If feedback devices are not available, we suggest the use	We recommend the use of CPR feedback devices during resuscitation training for healthcare providers and lay providers. (Strong recommendation, moderate certainty of evidence). SysRev 2025	The relative and synergistic effect of feedback device use when combined with other educational strategies and instructional design features The impact of feedback devices on skill retention beyond the end of a course The impact of improved CPR skills from training with feedback devices on patient outcomes

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	of tonal guidance (examples include music or metronome) during training to improve compression rate only (weak recommendation, low-certainty evidence). 2020 SysRev		The costs associated with implementing feedback devices during resuscitation training, as well as its cost-effectiveness
CPR self-instruction vs instructor guided **EIT 6406**	We recommend instructor-led training (with manikin practice with feedback device) or the use of self-directed training with video kits (instructional video and manikin practice with feedback device) for the acquisition of CPR theory and skills in layperson adults and high school–aged (more than 10 years old) children (strong recommendation, moderate-certainty evidence). We recommend instructor-led training (with AED scenario and practice) or the use of self-directed video kits (instructional video with AED scenario) for the acquisition of AED theory and skills in layperson adults and high school–aged (more than 10 years old) children (strong recommendation, low-certainty evidence). We suggest that BLS video education (without manikin practice) be used when instructor-led training or self-directed training with video kits (instructional video plus manikin with feedback device) are not accessible, or when quantity over quality of BLS training is needed in adults and in children (weak recommendation, low-certainty evidence). There was insufficient evidence to make a recommendation on gaming as a CPR or AED training method. There was insufficient evidence to suggest a treatment effect on bystander	We suggest the use of either instructor-led training or self-directed digital training for the acquisition of CPR or AED skills in lay adults and high school-aged (>10 years) children (weak recommendation, very low certainty evidence). We suggest self-directed digital training be used when instructor-led training is not accessible, or when quantity over quality of CPR training is needed in adults and children (weak recommendation, very low certainty evidence). There was insufficient evidence to make a recommendation on game-in-film, virtual reality, computer programs, online tutorials or app-based training as a CPR or AED training method. 2025 SysRev	Standardised outcome measures (educational and CPR performance outcomes) are needed to enable pooling of data. Comparator groups should be aligned using standardised, accepted instructor-led training programmes to reduce inconsistency and uncertainty. The ability of these interventions and comparators to produce findings that meet accepted standards for adequate CPR that are maintained at defined time intervals Effectiveness of specific self-directed digital interventions, such as game-in-film, virtual reality, computer programmes, online tutorials or app-based training The treatment effect on bystander CPR rates and patient outcomes needs

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	CPR rates or patient outcomes. SysRev 2021		
In Situ Training **EIT 6407**	None, 2020 EvUp	We recommend that in-situ simulation may be considered as an option for cardiopulmonary resuscitation training where resources are readily available. (weak recommendation, very low certainty evidence). 2025 SysRev	Further high-quality research, with standardized interventions and outcomes would strengthen the certainty of the evidence (i.e. adequate control for confounding factors in non-randomised studies, adequate randomization process in RCTs). The resources required for implementation of in situ training, including direct and indirect costs, workload, and equipment needed The feasibility of in situ training in low and middle-income countries.
Manikin fidelity in resuscitation education **EIT 6410**	We suggest the use of high-fidelity manikins when training centers/ organizations have the infrastructure, trained personnel, and resources to maintain the program (weak recommendations, very low-quality evidence). If high-fidelity manikins are not available, we suggest that the use of low-fidelity manikins is acceptable for standard ALS training in an educational setting (weak recommendation, low-quality evidence). 2015 SysRev, 2020 EvUp	We suggest the use of high-fidelity manikins when training centers or organizations have the infrastructure, trained personnel, and resources to use them (weak recommendations, very-low-certainty evidence). If high-fidelity manikins are not available, we suggest that the use of low-fidelity manikins is acceptable for life support training in an educational setting (weak recommendation, low-certainty evidence). 2025 SysRev	Cost-effectiveness and implementation needs for high-fidelity manikin use in training Effect of high-fidelity manikins on longer term educational outcomes (skill and/or knowledge retention and/or decay) Specific simulation features that are most associated with improved learning Effect of high-fidelity manikin use in training on actual patient care processes and patient outcomes Benefits of high-fidelity manikin use in training in different resource settings
Cognitive aids during resuscitation **EIT 6400**	We recommend against the use of cognitive aids for the purposes of lay providers initiating CPR (weak recommendation, low-certainty evidence). We suggest the use of cognitive aids for health care providers during trauma resuscitation (weak recommendation, very low–certainty evidence). In the absence of studies on CPR,	We suggest the use of cognitive aids by health care providers in resuscitation (weak recommendation, very low certainty of evidence). We do not recommend the use of cognitive aids for lay providers initiating CPR (weak recommendation, low certainty of evidence). We did not examine the use of cognitive aids in health	The impact of cognitive aids in real-life cardiac arrests and on patient survival Effective strategies for implementation of cognitive aids during training and real-life resuscitation for health care professionals The most effective type of cognitive aid and how this will be influenced by the

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	no evidence-based recommendation can be made. There are insufficient data to suggest for or against the use of cognitive aids in lay provider training. We suggest the use of cognitive aids for training of health care providers in resuscitation (weak recommendation, very low–certainty evidence). 2020 SysRev	professional or lay rescuer training in resuscitation so no recommendation for or against can be made. 2024 SysRev, a 2025 EvUp did not change the treatment recommendation	increasing use of artificial intelligence Cost-effectiveness of the use of cognitive aids during resuscitation and training The effect of cognitive aids for health care professional and layperson training
Provider workload and stress during resuscitation EIT 6401	new	None - 2024 ScopRev, a 2025 EvUp did not change the conclusion of the CoSTR 2024	The association between workload/stress and resuscitation performance; more well-crafted experimental studies exploring the relationship between workload and performance of resuscitation teams are needed to gain more insight into this complex interaction Health care professionals' workload or stress during resuscitation on actual patients and how such workload and stress are associated with patient outcome The influence of personal factors, contextual factors, and clinical experience in mitigating the impact of external stressors and perceived workload
Stepwise approach to skills training in resuscitation EIT 6402	new	We suggest that stepwise training should be the method of choice for skills training in resuscitation (weak recommendation, very low certainty of evidence). 2023 SysRev, a 2025 EvUp did not change the treatment recommendation	The impact of the quality of the individual teacher performance A need for an Utstein-like uniform reporting of educational outcomes in resuscitation science to allow comparative summaries of such studies The learning needs of different participant groups and how stepwise training should be adapted to their needs (e.g. children or elderly)

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			The effect of step sequence and number of steps for training of various skills in different learner populations The effect of different approaches to skills teaching on participants' performance on real patients
Immersive Technologies –Virtual and Augmented Reality **EIT 6405**	None–2020 EvUp	We suggest the use of either augmented reality or traditional methods for basic life support training of lay people and healthcare providers (weak recommendation, very low certainty of evidence). We suggest against the use of virtual reality only for basic and advanced life support training of lay people and healthcare providers (weak recommendation, very low certainty of evidence). 2024 SysRev, a 2025 EvUp did not change the treatment recommendation	The relative and synergistic effect of immersive technologies when combined with other educational strategies (eg, video, gamification, feedback) The effects of different applications of AR and VR, which can be used in many ways (eg, real-time feedback, gamification, knowledge delivery) The impact of immersive technology on the acquisition and retention of knowledge and skills The effect of immersive technology–based training on team-based skill performance and process measures (eg, time to epinephrine, time to defibrillation) The role of the instructor when immersive technology is being used (eg, when it is beneficial for the instructor to provide feedback and the type of training the instructor requires when using immersive technology in resuscitation courses) The costs associated with implementing and maintaining AR and VR devices as well as cost-effectiveness of these training modalities
Blended Learning approach for life support education **EIT 6409**	new	We recommend blended learning as opposed to non-blended approach for life support training where resources and accessibility permit its implementation (strong recommendation, very low–certainty evidence).	The elements of instructional delivery that are associated with better educational outcomes Whether certain levels of blended learning (ie, how much, what exactly, when

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		2022 SysRev, a 2025 EvUp did not change the treatment recommendation	used) are more beneficial than others Whether there is a difference in outcomes between approaches where online learning is added to established face-to-face content or where it substitutes for elements of the face-to-face contact Whether blended learning life support education leads to better patient outcomes Whether certain subgroups of participants (eg, first time versus recertification) have better educational outcomes from a blended learning approach How blended learning compares with online-only learning
Gamified learning vs non-gamified learning **EIT 6412**	None, 2020 EvUp	We suggest the use of gamified learning be considered as a component of resuscitation training for all types of BLS and ALS courses (weak recommendation, very low certainty of evidence). 2024 SysRev, a 2025 EvUp did not change the treatment recommendation	A more consistent definition of gamification across research studies (eg, use of video-based content delivery alone does not necessarily constitute a "game," although this term is frequently used to describe such training elements) Optimal approaches to dissemination of gamified learning elements as well as platforms to varied learner groups and settings Costs, resources, and time requirements for implementation of gamified learning The association between gamified learning elements and differences in stress and/or cognitive load The impact of gamified learning on care delivery and/or patient outcomes
Scripted debriefing vs non-scripted debriefing **EIT 6413**	new	Good Practice Statement 2024 Consider using debriefing scripts to support instructors during debriefing in resuscitation programs	The relative and synergistic effect of scripted wording versus data-informed debriefing during resuscitation training

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		because they may improve learning and performance. Instructors need to ensure they have a complete understanding of how the debriefing script should be used. 2024 ScopRev; a 2025 EvUp did not change the treatment recommendation	The impact of scripted debriefing on knowledge and skill retention The impact of scripted debriefing during training on patient or process outcomes in real resuscitations The importance of debriefer adherence to debriefing scripts and its influence on learning and performance outcomes The influence of debriefer experience and learner characteristics on the impact of debriefing scripts The impact of linking the content of debriefing scripts to clinically important metrics and clinically relevant outcomes
Rapid Cycle Deliberate Practice in Resuscitation Training **EIT 6414**	None, 2020 EvUp	We suggest that it may be reasonable to include Rapid Cycle Deliberate Practice for BLS and ALS training (weak recommendation, very low–certainty evidence). 2024 SysRev, a 2025 EvUp did not change the treatment recommendation	The effect of RCDP in other populations (laypeople, first responders, and experienced health care professionals) The medium or long-term follow-up effect of RCDP Resources required and costs of implementation of RCDP in resuscitation training curriculum of health care professionals and other populations The effect of RCDP on resuscitation training and clinical outcomes and patient survival There is heterogeneity in the use of terms, and standardized definitions of deliberate practice and RCDP were not used across studies, making identification of relevant comparative studies difficult
Team competences in resuscitation training **EIT 6415**	We suggest that specific team and leadership training be included as part of ALS training for health care providers (weak recommendation, very low–certainty evidence). 2020 SysRev	We suggest that teaching teamwork competencies be included in BLS and all kinds of advanced life support training (weak recommendation, very low quality of evidence).	Benefits of training team competencies on clinical resuscitation performance outcomes and patient outcomes The optimal instructional design, duration, and mode of

Review topic, EIT number	Prior Treatment Recommendations year and type review	2021-2025 Treatment Recommendations year and type review	Knowledge gaps
		2024 SysRev, a 2025 EvUp did not change the treatment recommendation	delivery for training of team competencies Whether training in particular competencies is more important than others and whether this depends on the group of learners Cost-effectiveness of team competencies training and effectiveness in low-resource settings
Current active PICOST not addressed in the CoSTR 2025			
Resuscitation training in low-income countries EIT 6100	This treatment recommendation is unchanged from 2015: We suggest that alternative instructional strategies would be reasonable for BLS or ALS teaching in low-income countries (weak recommendation, very low quality of evidence). The optimal strategy had yet to be determined. 2020 ScopRev		
Spaced Learning EIT 6408 SysRev	For learners undertaking resuscitation courses, we suggest that spaced learning (training or retraining distributed over time) may be used instead of massed learning (training provided at 1 single time point) (weak recommendation, very low-certainty evidence). 2020 SysRev		There were no studies examining spaced learning in adult ALS. There was a lack of data on the impact of spaced learning on quality of performance in actual resuscitations. There was a lack of data on impact of spaced learning on patient survival with favorable neurological outcome. In neonates, there were limited data on infant mortality at 24 hours after delivery. There are currently no data on survival to hospital discharge or long-term survival in neonates. There were insufficient data to examine the effectiveness of spaced learning on skill acquisition compared with maintaining skill performance and/or preventing skill decay.

Review topic, EIT number	Prior Treatment Recommendations year and type review	2021-2025 Treatment Recommendations year and type review	Knowledge gaps
			There were insufficient data to examine the effectiveness of spaced learning on laypeople compared with healthcare providers. There were limited data on impact of spaced learning on human factors (team behaviors and nontechnical skills). There was no evidence on cost-effectiveness and resource implications of spaced learning. There is a need to understand how to address high attrition rates in spaced learning. For spaced learning to be effective, we will need to understand how to engage learners by using the learners' motivation and reduce their burden.