

- 1 [h1] European Resuscitation Council Guidelines 2025: First aid
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35 [h1] Conflicts of Interest

- 36 TD is the chair of ILCOR's First Aid Task Force, Lead for Implementation of ILCOR's ten steps for IHCA,
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48 [h1] Abstract

- 49 The European Resuscitation Council has produced these First Aid guidelines based on the 2025
- 50 International Consensus on Science with Treatment Recommendations on First Aid of the
- 51 International Liaison Committee on Resuscitation (ILCOR), reviews of the expert group composed to
- 52 write these recommendations, and available selected peer-reviewed literature after discussion and
- agreement within this experts' group. General topics include expectations of a first aid provider, first
- aid courses, contents of a first aid kit, how to approach a person with impaired responsiveness,
- recovery position, the use of a pulse oximeter and the administration of oxygen. Medical
- 56 emergencies include anaphylaxis, choking, asthma, chest pain, hypoglycaemia, opioid overdose,
- 57 recognition of stroke, and suicidal thoughts. Trauma-related emergencies include cervical spine
- 58 motion restriction, control of life-threatening bleeding, management of open chest wounds,
- 59 concussion and preservation of an amputated body part. Environmental emergencies include
- 60 drowning, hypothermia, hyperthermia and snake bite. First aid procedures for the prevention and
- 61 management of life-threatening conditions that could progress to cardiac arrest, have been
- 62 included. The management of a cardiac arrest is described in the 2025 ERC Basic Life Support
- 63 guideline.
- 64
- 65 **[h1] Keywords:** emergency treatment, pre-medical treatment, helping behaviours, emergency care,
- 66 immediate actions
- 67
- 68



69 [h1] Introduction and scope

70 First aid (FA) is described as a helping behaviour by anyone for any medical condition, in any 71 situation, including self-care. Its provision typically involves recognising, assessing, and prioritising 72 needs, providing care within the provider's competencies whilst recognising their limitations, and 73 seeking additional help, such as activating the emergency services.¹ All resuscitation, including basic 74 and advanced life support, begins with first aid interventions: assessing scene safety, recognising 75 decreased responsiveness or abnormal breathing, positioning the person appropriately, and 76 responding to life-threatening conditions. First aid serves as a crucial first link in the chain of survival. 77 Since 2021, the ERC has focussed its scope and now emphasises the importance of first aid in the 78 cardiac arrest chain of survival, i.e. in reducing morbidity and in preventing cardiac arrest. The ERC 79 Guidelines 2025 First Aid focus on life-threatening conditions and conditions where first aid could 80 reduce morbidity and prevent progression to cardiac arrest. Therefore, topics which were previously 81 included, and are not directly related to the revised scope, may not be included this year (see Table 82 1). The guidelines are based on the 2025 International Liaison Committee on Resuscitation (ILCOR) 83 Consensus on Science with Treatment Recommendations (CoSTR) for First Aid¹ and Basic Life 84 Support.¹ When developing these guidelines, the ERC First Aid Writing Group used published 85 systematic reviews and scoping reviews, together with the CoSTRs including careful consideration of 86 the evidence to decision tables, the narrative reviews and task force discussions specified under 87 justifications. For topics not reviewed by ILCOR, other systematic reviews, single studies or expert 88 consensus of the writing group members have been used to inform the guidelines. In total these 89 guidelines include 24 topics, subdivided into seven general principles, eight medical emergencies, 90 five trauma emergencies, and four environmental emergencies. 91 Remote or low-resource settings may highlight the increased importance of first aid when there is a 92 longer delay before professional medical care is available. Therefore, in this first aid guidelines, the 93 World Health Organization (WHO) tool for equity, WHO-INTEGRATE², was used when formulating 94 concise guidelines for clinical practice. When drafting the guidelines a community advisor (LB) was a 95 full member of the writing group involved in every step of the process to ensure universal

96 understanding by all readers. Likewise, one writing group member (KT) with experience from

- 97 working in low-resource settings has screened all advice for clinical practice with guidance from the
- 98 equity lens INCLEN.^{3,4} An online survey distributed through social media and open between
- 99 22/01/25 and 09/04/25, with 1406 respondents from 37 countries, has been used to inform clinical
- 100 practice.⁵ Full details of how equity has been present in every step of the development of the
- 101 guidelines can be found in the Appendix A.



- 102 All First Aid Writing Group members and the Guideline Steering Committee agreed to this version,
- 103 which was posted for public comment between DATE and DATE. A total of [INSERT NUMBER]
- 104 individuals from [INSERT COUNTRIES] submitted [INSERT NUMBER] comments, leading to [INSERT
- 105 CHANGES] in the final version. The guidelines were presented to and approved by the ERC General
- 106 Assembly on DATE. The methodology used for guideline development is presented in the Executive
- 107 summary. [INSERT REF]
- 108

109 Key messages

- 110 1. STRUCTURED ASSESSMENT.
- 111 Use an ABCDE approach to identify and treat threats to life quickly. ABCDE stands for; A-Airway, B-
- 112 Breathing, C-circulation, D-Disability, E-Exposure
- 113 2. FOREIGN BODY AIRWAY OBSTRUCTION.
- 114 Use an escalating approach with cough, back blows and abdominal thrusts.
- 115 3. LIFE-THREATENING BLEEDING.
- 116 Use an escalating approach with manual direct pressure and thereafter haemostatic dressing and/or
- 117 tourniquets.
- 118 4. DROWNING.
- 119 Offer flotation, remove from water and provide immediate care as needed including avoiding
- 120 hypothermia.
- 121 5. FIRST AID COURSES.
- 122 Tailor first aid courses to the needs of participants and settings and empower equity



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123 [h1] Summary of key changes or new evidence

124 **Table 1.** The major changes in the ERC 2025 First Aid Guidelines.

ERC 2021 First Aid Guidelines	ERC 2025 First Aid Guidelines
Not included	Expectations of a first aid provider - Always call
	for help as a general principle and only use
	equipment you have been trained to use.
Not included	First aid courses - should empower equity and
	be tailored to national/regional requirements
	rather than conducted in a standard format.
	They should expand on psychological
	preparedness training, and how to cope with
	anxiety and distress before and after providing
	first aid.
Not included	First aid kits - A tailored kit based on risks and
	users should be clearly marked and available in
	homes, vehicles, buildings, public spaces, etc.
Recovery position	Approach to a person with impaired
Optimal position of shock	responsiveness and the positioning of their
	body - structured first assessment of a person
	appearing ill or injured (ABCDE),
	Cardiac arrest, recovery position and optimal
0	position in shock have been merged into a
+ 6	single algorithm.
Not included	Use of pulse oximetry and administration of
	oxygen
	Use a pulse oximeter to titrate the administered
	oxygen to a saturation of 94-98%.
	In person with known chronic obstructive
·	pulmonary disease, aim for an oxygen
	saturation between 88 – 92%.
Not included	Choking - Use an escalating strategy from
	encouragement to cough to back blows to
	abdominal thrusts.



Not included	Opioid overdose - Administer nasal naloxone in
	an unresponsive person with suspected opioid
	overdose who is not breathing or breathing
	abnormally.
Not included	Suicidal thoughts - Ask about suicidal ideation.
	offer hope and help to contact professionals.
Not included	Preservation of amputated body part - Keep
	cool without freezing and transport part with
	injured person to hospital
Not included	Drowning - Eirst aid provider should not enter
	the water if wateringd. Dravide flatation device
	the water in untrained. Provide notation device
	or lifebuoy. If trained and appropriate to do so,
	enter water with flotation devices. After
	removal from the water, if unresponsive, call
	for help, provide 5 rescue breaths and continue
	standard BLS.
Not included	Snake bite (European Viper) - Keep the person
	calm and with the bitten body part immobilised
	whilst transferring to a medical facility.
• Oral rehydration solutions for treating	Not included.
exertion-related dehydration	Since 2021, the ERC has focussed its scope and
• Management of presyncope	now emphasises the importance of first aid in
• Cooling of thermal burns	the cardiac arrest chain of survival, i.e. in
• Thermal burn dressings	reducing morbidity and in preventing cardiac
 Dental avulsion 	arrest. As these topics were not directly related
• Compression wrap for closed extremity	to this revised scope, they were no longer
joint injuries	included.
 Straightening an angulated fracture 	
• Eye injury from chemical exposure	

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159	[h2] Cardiac arrest
160	• If you suspect a cardiac arrest, call the emergency number (112) and follow the dispatcher
161	instructions on how to perform cardiopulmonary resuscitation (CPR)
162	• Start CPR without worrying about accidentally hurting the person. It is more important to try
163	to save their life than causing an injury.
164	Continue CPR until professional help arrives
165	
166	[h2] Structured first aid assessment of a person appearing ill, injured or in shock (ABCDE)
167	Place immediate attention to safety, responsiveness of the victim, and catastrophic
168	bleeding.
169	• Use the ABCDE framework to structure your assessment of a person in need (Table 3).
170	 Is the person's Airway open?
171	 Is the person Breathing?
172	 Does the person have Chest pain or signs of shoCk?
173	 Is the person responDing adequately?
174	 Has the person got any External injuries?
175	
176	[h2] Recovery position
177	Place adults and children with decreased level of responsiveness who do NOT meet the
178	criteria for CPR into a lateral (side-lying) recovery position (Figure 1).
179	• In situations such as agonal breathing or trauma, do NOT move the person into the recovery
180	position.
181	
182	[h2] Use of a pulse oximetry and use of oxygen for acute difficulty breathing
183	Give oxygen to a person with difficulty breathing and looking cyanosed (blue tinged) but
184	only if you are trained in its use.
185	Use a pulse oximeter to titrate the administered oxygen.
186	• Give oxygen via a simple facemask or non-rebreathing mask and then titrate flow rate to
187	maintain an oxygen saturation of 94-98%.
188	• If the person has chronic obstructive pulmonary disease, titrate the oxygen flow to maintain
189	an oxygen saturation between 88 – 92%.



190	•	In the presence of life-threatening hypoxaemia (oxygen saturation <88%) give oxygen with a
191		higher flow to everyone, including persons with chronic obstructive pulmonary disease
192		having difficulty in breathing in the out-of-hospital setting.
193		
194	[h2] M	ledical emergencies
195	[h3] Aı	naphylaxis
196	• Susp	ect anaphylaxis if someone has:
197	0	Stridor (which could be due to upper airway swelling), wheezing (which could be due to
198		lower airway obstruction) or breathing difficulties
199	0	Flushing, rash (hives), cold or clammy skin or is feeling faint
200	0	Abdominal pain, vomiting, or diarrhoea
201	0	A recent exposure to known food allergens or insect stings
202	• Call y	vour emergency number (112)
203	• En	sure that the person remains in a sitting or lying position
204	• Giv	ve intramuscular adrenaline as soon as possible via autoinjector into the outer thigh in the
205	reo	commended dose (self-administered or given by trained individuals)
206	0	0.5 mg for adults
207	0	0.3 mg for children aged 6-12 years
208	0	0.15 mg for children aged 1-5 years
209	• If a	n autoinjector is not available, use a device for intranasal administration
210	• Giv	e a second dose of adrenaline, if symptoms persist 5 minutes after administration
211		
212	[h3] Cł	noking in an adult person
213	•	Suspect choking if a person is suddenly unable to speak or talk, particularly if eating.
214	•	Ask the person – "Are you choking?"
215	•	Encourage the person to cough.
216	•	If unable to cough or the cough becomes ineffective, give up to 5 back blows (Figure 3a).
217	•	If back blows are ineffective, give up to 5 abdominal thrusts (Figure 3b).
218	•	If choking has not been relieved after 5 abdominal thrusts, continue alternating 5 back blows
219		with 5 abdominal thrusts until choking is relieved, or the person becomes unresponsive.
220	•	Call your emergency number (112).
221	•	Do NOT use blind finger sweeps to try and remove a foreign body from the mouth or airway.
222	•	If the person becomes unresponsive, start CPR.



223	 Any person successfully treated for choking with abdominal thrusts or chest compressions
224	should be evaluated by a healthcare practitioner since complications and injuries may occur.
225	
226	[h3] Asthma
227	Assist persons with asthma who are having problems using their own bronchodilator device.
228	
229	[h3] Chest pain in a responsive adult:
230	Reassure the person and sit or lie them in a comfortable position.
231	• Encourage and assist a person with cardiac sounding chest pain in self-administering 150-300 mg
232	of chewable aspirin as soon as possible whilst awaiting transport to hospital (but not to adults
233	with known aspirin allergy).
234	• Assist a person with known angina to self-administer their nitro-glycerine spray or tablets.
235	Stay with the person until help arrives.
236	
237	[h3] Hypoglycaemia (low blood sugar value)
238	• Suspect hypoglycaemia in someone with diabetes or chronic malnutrition AND sudden impaired
239	responsiveness or behavioural change
240	• Give glucose or dextrose tablets (15-20 g), by mouth if the person is awake and able to swallow.
241	• If feasible, measure capillary blood sugar using a blood glucose meter and treat if low (a value
242	less than 4.0mmol/l or 70 mg/dL) and repeat measurement after treatment.
243	• If glucose or dextrose tablets are not available give other dietary sugars, such as a handful of
244	sugary sweets or 50-100ml of fruit juice
245	• If oral glucose is not available, give a glucose gel (partially held in the cheek, and partially
246	swallowed).
247	• Repeat giving oral glucose if the symptoms are still present and not improving after 15 minutes.
248	• If the person has a prescribed glucagon autoinjector, this could be administered under the skin
249	in the outer thigh (self-administered or by trained individuals). Some diabetics may have
250	glucagon syringes for nasal use.
251	• For children, consider administering half a teaspoon of table sugar (2.5g) under the child's
252	tongue, if they are uncooperative with swallowing oral glucose.
253	• Call your emergency number (112) if the person is/or becomes unresponsive or the condition
254	does not improve.



255	Following recovery from symptoms (5-10 minutes after sugar intake) encourage the person to
256	eat a light snack.
257	• Do not give oral sugar due to the risk of aspiration in unresponsive person, instead, call your
258	local emergency number.
259	
260	[h3] Opioid overdose
261	• Suspect an opioid overdose if the person is breathing is slowly, irregularly or not at all, is
262	extremely drowsy or unresponsive, or has pinpoint (very small) pupils
263	If the person is unresponsive and not breathing normally, start CPR.
264	• Administer intra-nasal naloxone, or if you are trained, use an intramuscular naloxone autoinjector
265	Reassess the person according to ABCDE (Table 3)
266	The management of general intoxications and opioid overdose has been described in the ERC
267	Guidelines 2025 Special Circumstances in Resuscitation.
268	
269	[h3] Stroke
270	Use a stroke assessment scale to decrease the time to recognition and call for help
271	Give oxygen only if you are trained in its use and the person is showing signs of hypoxia (bluish
272	lips and rapid breathing).
273	
274	[h3] Suicidal thoughts
275	• Ask the individual "Are you alright?" "How do you feel and why"? if an individual is at risk of
276	harming themselves.
277	 Ask if the person has suicidal thoughts and plans (how? where? when?).
278	Summarise to the person your understanding of how and why they have certain feelings.
279	Tell the person that you are going to ask for help.
280	• Call your emergency number (112) or suicide hotline, seek medical help, and give hope.
281	
282	[h2] Trauma emergencies
283	[h3] Cervical spinal motion restriction
284	 Suspect a cervical spine injury in a person who fell or dived from a height, was crushed by
285	machinery or a heavy object, was involved in a road traffic, or a sporting accident.
286	• Minimise movement of the neck if the person is awake and alert and encourage them to self-
287	maintain their neck in a comfortable stable position.



• In unresponsive persons lying on their back, kneel behind their head and immobilise their head
and neck using head or trapezius squeeze.
• Consider the need to open the person's airway using the 'jaw-thrust' technique (Figure 2).
• If the person is unresponsive and is lying face-down, check if their airway is open and hold their
neck in a stable position
If you need to open their airway, ask others to help you carefully roll them as a unit onto
their back whilst keeping their neck in line with their body and as stable as possible. Then
apply the head or trapezius squeeze.
• First aid responders with specialised training (e.g. ski patrol, lifeguard) may consider the selective
use of spinal motion restriction using their existing protocols.
• Never force an uncooperative person into any position, as this may exacerbate an injury.
[h3] Control of life-threatening bleeding
 Apply firm direct manual pressure to the bleeding injury.
Apply a standard or haemostatic dressing directly to the bleeding injury and then apply firm
direct manual pressure on top of the dressing.
Once bleeding is under control, apply a pressure dressing.
Apply a tourniquet as soon as possible for life-threatening extremity bleeding that is not
controlled by direct manual pressure.
[h3] Open chest wounds
Leave an open chest wound exposed to freely communicate with the external environment.
 Do not apply a dressing or cover the wound.
 If necessary, control localised bleeding with direct pressure.
If you are trained and the equipment is available, apply a specialised non-occlusive or vented
dressing, ensuring a free outflow of air when breathing out.
Observe the wound for air flow obstruction due to bleeding or clotted blood.
[h3] Concussion
Suspect concussion if a person has difficulties with thinking/remembering, displays physical
symptoms (headache, change in vision, dizziness, nausea or vomiting, seizures, sensitivity to
light/noise), emotional changes or changes in behaviour (increased sleepiness, reduction in
normal activities, loss of responsiveness, confusion).



- Remove the person from physical activities.
- Refer to a healthcare professional for further advice and assessment.
- 323
- 324 [h3] Preservation of an amputated body part
- Manage any severe bleeding first (see 'Control of life-threatening bleeding').
- Retrieve the body part as quickly as possible and keep it cold without freezing.
- Wrap the part in a sterile dressing or a clean cloth moistened with saline or water.
- Place the wrapped part in a clean watertight plastic bag or container and put the watertight bag
- 329 or container holding the body part, inside another bag containing ice or ice-water. A cooler or
- instant cold packs could be used for cooling.
- Keep the part always cooled. Avoid direct contact with ice or freezing. Label the container with
 the person's name and time the part was stored.
- Transport the part with the injured person to the same hospital as quickly as possible.
- 334
- 335 [h2] Environmental emergencies
- 336 [h3] Drowning
- Do not enter the water as you might risk drowning yourself if you are not trained in water rescue.
- If the person is awake and responsive, stay on land and reach out to the person through
- floatation devices, lifebuoy, rescue tube or other rescue equipment.
- 340 Trained first aiders or lifeguards in the water or on a boat:
- Call for help before you enter the water.
- Provide a flotation device, lifebuoy, rescue tube or other rescue equipment.
- Keep the person's head out of the water.
- Assess if the person is unresponsive and not breathing. If feasible and safe (with an
- effective flotation device), provide 5 rescue breaths in the water as soon as possible.
- Retrieve the person to land or a rescue boat as soon as possible.
- Once out of the water, provide 5 rescue breaths if the person is not breathing, if necessary, start
 standard CPR.
- Attach an AED, if available, and follow the instructions.
- 350 On land, if the person has drowned and is unresponsive and not breathing:
- If feasible and safe, provide 5 rescue breaths and start standard CPR.
- Attach an AED, if available, and follow the instructions.
- 353



354	[h3] Prevention of hypothermia
355	Insulation: Cover the individual with dry blankets or clothing to minimise heat loss.
356	• Wind protection: Shield the person from wind using barriers or by moving them to a sheltered
357	area.
358	• Wet clothing removal: Gently remove wet clothing and replace it with dry garments to prevent
359	further cooling.
360	• Ground isolation: Place insulating materials, such as blankets or pads, between the individual and
361	the cold ground.
362	In settings where hypothermia might be common, implement tailored prevention plans and
363	training for first aid providers.
364	
365	[h3] Heat stroke
366	Observe symptoms of heat stroke with high ambient temperature, like elevated core body
367	temperature, confusion, agitation, disorientation, seizures or unresponsiveness.
368	Prevent exertional heat stroke (i.e. during long-distance sport events in a hot climate) by
369	adequate preparation and provide tools for diagnosis (e.g.: rectal temperature probes) and
370	cooling (e.g. immersion ice-water baths).
371	With suspected heat stroke remove the person from the heat source and commence passive
372	cooling by removing excess clothing and placing the person in a cooler/shaded location.
373	• Use any technique immediately available to provide active cooling, if core temperature >40°C use
374	whole body (neck down) cold water (1 to 26°C) immersion until the core temperature falls below
375	39°C, alternatives are: tarp-assisted cooling oscillation (TACO) (Figure 4) ice sheets, commercial
376	ice packs, fan alone, cold shower, hand cooling devices, cooling vests and jackets or evaporative
377	cooling (mist and fan).
378	Where possible monitor core temperature (rectal thermometer).
379	• If a core temperature cannot be obtained, continue cooling for 15 minutes or until neurological
380	symptoms resolve, whichever is first.
381	Remember: cool first, transfer second.
382	• Continue cooling as needed during transportation to a medical facility for further evaluation.
383	
384	[h3] Snake bite
385	The only indigenous highly venomous snake in Europe is the European Viper, which has a haemolytic
386	toxic venom.



- Call your local emergency number.
- Keep the person calm and at rest.
- Keep the bitten body part still and immobilise the affected limb as this may slow venom spread.
- Remove tight clothes, rings or watches from the affected limb.
- Avoid harmful actions: Do not apply a pressure dressing, ice, heat, or use tourniquets.
- Do not cut the wound and never try to suck out the venom.
- 393



397

- 394 [h1] The evidence informing the first aid guidelines
- 395 [h2] Expectations of a first aid provider, first aid courses, implementation of first aid guidelines

This provides evidence-informed recommendations aimed at improving the immediate response to

396 and considerations for different settings

398 injury and sudden illness. Research in first aid is limited and indirect evidence from prehospital 399 studies have been used to inform these guidelines. Put simply, all resuscitation starts with first aid 400 and first aid is often just the start of interventions needed to save lives. First aid is the helping 401 behaviour that could be lifesaving. For some, the only step will be calling emergency services for 402 help, for others, calling for help will be the first step in a series of interventions. All first aid providers 403 should only use the equipment and medication they have been trained to use. A systematic review⁶ 404 and two cohort studies⁷ suggest that simple manoeuvres such as opening the airway or stopping a 405 bleed might prevent death. An ILCOR scoping review suggests that these helping behaviours and the 406 willingness to train is stronger in first aid providers who have witnessed someone collapsing.⁸ When teaching first aid and implementing first aid guidelines, four essential domains should be 407 408 considered: the recipient, the provider, the treatment, and the setting (Table 2). Taking these 409 domains into account will support implementation across various provider skill levels, ranging from 410 untrained bystanders to healthcare professionals, and across diverse environments including 411 remote and low-resource areas. Remote and low-resource settings may highlight the increased 412 importance of first aid when there is a longer delay before professional medical care is available. In 413 many settings first aid providers are legally protected by Good Samaritan laws.⁹ The ethical aspects 414 of first aid have been described in the ERC Guidelines on Ethics in Resuscitation (REF), while the 415 educational aspects are in the ERC Guidelines Education for Resuscitation (REF). 416 First aid courses are designed to equip participants with the knowledge, skills, and confidence 417 needed to act in a wide range of situations, fostering a community prepared to respond effectively 418 when emergencies arise. The ERC promotes structured training programs reducing known barriers 419 to training such as advanced age, lower socioeconomic and educational status, as well as being part 420 of minority groups due to race or language.¹⁰ 421 Helping severely ill or injured persons as a first aid provider may be stressful.^{11,12} An ILCOR scoping 422 review⁸ suggested that courses with a tailored content based on the participants' needs and 423 requirements, related to specific environmental risks, may be more effective than the delivery of

- 424 standardised one-size-fits-all courses.⁸ Course directors should promote equity by delivering courses
- 425 that reduce disparities between disadvantaged and privileged populations. Furthermore, the
- 426 content should be socio-culturally appropriate, and the knowledge and skills taught should be



- 427 appropriate for use within the regional health system.^{2,4} The comprehensive and multifaceted
- 428 aspects of education within resuscitation have been described in the ERC Guidelines 2025 Education
- 429 for Resuscitation (REF).
- 430
- 431 **Table 2.**

First aid domains for evidence evaluation	Examples of characteristics
and treatment recommendations	
First aid recipient	Age, sex, gender, health status, capacity to provide consent
First aid provider	Knowledge, training/education, preparedness, familiarity, duty to respond, professional scope, capability
Treatment	Invasiveness, skills required, technology, efficacy and effectiveness, cost
Setting and environment	Low- or high-resource, safety, cultural norms and values, urban or remote

432

433 [h2] First aid kits

434 The ERC recommends that all workplaces, leisure centres, public buildings, homes, and vehicles 435 should be equipped with appropriate first aid kits. The content of a first aid kit should be tailored to 436 the environment and to potential medical emergencies that may arise. In workplaces and public 437 spaces, these kits should comply with local legal health and safety requirements, be clearly marked, 438 and remain easily accessible.¹³ For the home or vehicle use, individuals can purchase a pre-filled first 439 aid kit or assemble one themselves if local laws allow. A well-stocked first aid kit should include 440 essential supplies such as adhesive dressings, medium and large wound dressings, roller bandages, 441 triangular bandages, safety pins, adhesive tape, disposable gloves, surgical face masks, plastic 442 aprons, hand sanitisers, and a face shield or a pocket mask, all stored in a suitable well-marked 443 watertight container. Additional useful items can include scissors, tweezers, tough cut shears. In 444 many countries, car first aid kits must include a warning triangle and a high-visibility jacket to 445 improve first aid provider safety and to meet legal requirements. Specialised first aid equipment 446 should be included in first aid kits based on the specific risks associated with a job or location. 447 An online survey by this Writing Group⁵ found that tourniquets (for catastrophic bleeding) and 448 naloxone (for opiate overdose treatment) are becoming more widely available and are used,



- underscoring the growing understanding of their significance in first aid and emergency responsesituations.
- 451 First aid kits in workplaces with a high risk of severe bleeding, such as forestry or construction,
- 452 should contain tourniquets and haemostatic dressings. The presence of bleeding control kits in
- 453 public spaces has been shown to improve confidence of lay responders¹⁴ who are more likely to use
- them, particularly if they have received prior training in these techniques. Additionally, bystander
- 455 training programs such as 'Stop the bleed' have demonstrated that individuals equipped with
- 456 trauma first aid kits are more confident and effective in hemorrhage control.¹⁴ High-risk
- 457 environments for opioid-related medical emergencies, such as substance abuse treatment centers,
- 458 nightclubs, and public transportation hubs, should have naloxone readily available for immediate
- 459 overdose intervention¹⁵, if compatible with local legislation. Those providing first aid in extreme
- 460 weather outdoor settings should consider adding a compact survival bag, splinting, wound dressings,
- 461 a flashlight, and a whistle to first aid kits.
- 462

463 [h2] Cardiac arrest

- 464 The delivery of high-quality chest compressions is a key step in the chain of survival for patients in 465 cardiac arrest and immediate CPR initiated by first aid providers is associated with improved 466 outcomes. However, there may be reluctance amongst first aid providers to initiate CPR for fear of 467 causing harm. Injuries resulting from CPR performed on persons with prolonged cardiac arrest are 468 common and mainly involve rib and sternal fractures, and lung and abdominal organ injuries.^{16,17} On 469 the other hand, the risk of harming persons by doing CPR while they are actually not in cardiac 470 arrest, is largely unfounded. A systematic review of persons who received chest compressions but 471 were not in a cardiac arrest undertaken by the ILCOR First Aid Task Force included five observational 472 studies with 1031 patients, 18 but only 9 (<1%) experienced injuries, including rib fractures and 473 different internal bleedings, and 24 (2 %) reported symptoms such as post incident chest pain.¹⁸ 474 First aid providers and other rescuers such as trained bystanders, healthcare professionals and those 475 with a duty to respond, should initiate CPR for presumed cardiac arrest without concerns of causing 476 unintentional injury, even if a person might not be in cardiac arrest. The initial management of a 477 cardiac arrest has been described in the ERC Guidelines 2025 Basic Life Support.(REF) 478 479 [h2] Structured first aid assessment of a person appearing ill, injured or in shock (ABCDE)
- 480 A recent scoping review¹⁹ including 57 studies reported 39 different assessment tools for healthcare
- 481 professionals or healthcare students. Of these, 23 used the structured ABCDE approach.¹⁹ The



482 reasons for variation between the 23 different ABCDE approaches related to different assessor

- 483 competencies and specific overall goals for the assessment. Time to completion of the first
- 484 assessment in the scoping review was between two to six minutes in a simulated environment. The
- 485 ERC recommends the use of the ABCDE structured assessment, or a similar assessment framework
- 486 for all healthcare professionals and first aid providers.
- 487 Following an initial check for scene safety, the first aid assessment begins with checking for
- 488 responsiveness and the presence of any immediate life-threatening conditions. To assess a
- 489 responsive person, observe their appearance, ask questions to learn about their symptoms, allergies
- 490 and medical history and, after obtaining permission, check for physical signs of any illness or injury.
- 491 The framework ABCDE could be used to structure the assessment of a person appearing ill or
- injured. Table 3 is a summary of the assessment process and immediate actions to undertake, details
- 493 are provided under each subsection. The assessment should be thorough but only take a few
- 494 minutes to complete. The assessment of an ill or injured child is described in the ERC Guidelines
- 495 2025 Paediatric Life Support. (REF)
- 496

497 The European Society of Intensive Care Medicine has defined shock as a life-threatening, generalised 498 form of acute circulatory failure associated with inadequate oxygen utilisation by the cells.²⁰ Shock 499 has multiple causes, however the main aim for a first aid provider should be to prevent the person 500 from further deterioration by reassessing vital signs as well as by keeping the person in a supine 501 position, rather than by moving them into an alternative position.²¹ The use of passive leg raising 502 may provide a transient (<7 min) improvement in heart rate, mean arterial pressure, cardiac index, 503 or stroke volume for those with no evidence of trauma.^{22,23} The optimal degree of elevation has not 504 been determined, with studies of passive leg raising ranging between 30-60-degrees elevation. 505 Because improvement with passive leg raising is brief and its clinical significance uncertain, it is not 506 recommended as a routine procedure, although it may be appropriate in some first aid settings. 507 These recommendations place an increased value on the potential, but uncertain, clinical benefit of 508 improved vital signs and cardiac function, by positioning a victim with shock in the supine position 509 (with or without passive leg raise), over the risk of moving the victim.



 \langle

510 Table 3. The ABCDE for a first aid provider

	Assess	Possible immediate action for an adult person
Safety	Is it safe to approach the person? (Road traffic? Spilled chemicals? Violent persons?)	
Responsiveness	Gently stimulate the person. Ask loudly "Are you ok?"	
Catastrophic	Are there any signs of life-threatening bleeding?	Stop the bleeding with direct manual pressure,
Bleeding		gauze dressings, haemostatic dressings or a
		tourniquet.
A-Airway	Is the person's airway open?	Place your hand on the forehead and your
	Has the person fallen from a height or experienced	fingertips under the point of the chin, gently tilt
	major trauma? (Consider cervical spine injury)	the persons head back, lifting the chin to open the
		airway (Figure 2).
		Do not move the person unless they are in an
		unsafe situation.
		Apply cervical spinal motion restriction.
B- Breathing	Is the person breathing?	If unresponsive and not breathing normally, call
	"Look, Listen, Feel" for normal breathing	your local emergency number and start CPR
	(maximum 10 seconds).	according to dispatcher instructions.
	Listen for wheezing or stridor.	If suspected anaphylaxis, if trained, administer
	Is there any obvious swelling of the oral airway?	adrenaline 0.5mg intramuscular.
	Is the person choking and unable to cough? Ask	If suspected choking give back blows and
	"are you choking?"	abdominal thrusts.
	Are there any signs of hypoxia (bluish discoloration	If trained, administer oxygen to improve oxygen
	of lips, nails or skin)?	saturation to 94-98%.
	Assess oxygen saturation level with a pulse	
	oximetry.	
C-Circulation	Does the person have chest pain?	Make the person comfortable.
	Is there any pain in the chest, neck or arm; or a	If suspected cardiac chest pain – administer 150-
+.6	'severe pressure in the chest' feeling?	300mg chewable aspirin.
	Are there any signs of a low blood pressure or	Turn the person supine (lying on back) unless there
	shock:	is suspected spinal injury.
	- Very fast or very slow heart rate?	Consider the use of passive leg raising as a
	- Skin pale, cool or clammy?	temporising measure while waiting for advanced
	- Dizziness or confusion?	emergency medical care.
		Continue to monitor person carefully for
		deterioration or loss of responsiveness (possible
		cardiac arrest).



D-Disability	Assess level of responsiveness using the acronym	If concussion suspected – remove from physical
	AVPU;	activity.
	• A-Alert	If suspected hypoglycaemia - administer glucose or
	• V- Verbal- respond to your voice	dextrose tablets (15-20 g) via mouth.
	• P- Pain- respond to pain from squeezing	If suspected opioid overdose – administer nasal
	their shoulder	naloxone.
	U- Unresponsive	*. O *
	Use a scale for stroke assessment if appropriate	
E-Exposure	Check for external injuries by checking the whole	Prevent hypothermia -remove wet clothes and use
	body surface area (head, neck, trunk and limbs).	blankets.
	Measure core temperature (if possible).	Hyperthermia – start active cooling.
		Preserve amputated parts in cool container and
		bring to the same hospital with the injured person.
Lise the recovery p	osition in a parson with a decreased level of responsiv	anass of pontraumatic actiology, who is breathing

Use the recovery position in a person with a decreased level of responsiveness of nontraumatic aetiology, who is breathing normally and does not require immediate resuscitation interventions (Figure 1). Reassess for signs of airway occlusion, inadequate or agonal breathing, and unresponsiveness.

- 511
- 512

513 [h2] Recovery position

514 An ILCOR scoping review of the recovery position in adults and children with decreased levels of 515 responsiveness—due to medical illness or non-physical trauma and not meeting criteria for CPR— 516 identified 34 studies.²¹ Most of these were conducted in awake, healthy volunteers and focused on 517 comfort and ensuring non-occlusion of the vascular supply to the dependent arm. A recent 518 randomised controlled trial (RCT) on volunteers positioned in recovery position with bent or straight 519 arm showed no difference in upper arm vascular supply or comfort²⁴, therefore either may be used. 520 It can be used in persons with reduced responsiveness to maintain a clear airway and, in children, results in decreased hospitalisation rates.²⁵ However, in a single observational study, the semi 521 522 recumbent position was favoured over the lateral position in opioid overdose.²⁶ Based on the ILCOR 523 scoping review, the ERC recommends positioning the person in a lateral, side-lying recovery (lateral 524 recumbent) position as opposed to leaving the person supine. A person placed in the recovery 525 position should be monitored for continued airway patency, breathing and their level of 526 responsiveness. If these critical signs deteriorate the person should be repositioned into a supine 527 position and, if required, CPR initiated. For a person with agonal breathing or who has suffered 528 trauma, you should not use the recovery position.



529	For adults and children with a decreased level of responsiveness due to medical illness or non-
530	physical trauma, who do NOT meet the criteria for the initiation of rescue breathing or chest
531	compressions (CPR), place the person into a lateral (side-lying) recovery position (Figure 1):
532	• Make sure that the person's legs are straight.
533	• Place the arm nearest to you out at a right angle to the body. The arm can be straight
534	(Figure 1a) or bent (Figure 1b).
535	• Bring the far arm across the chest and hold the back of the hand against the person's
536	cheek nearest to you.
537	• With your other hand, grasp the far leg just above the knee and gently lift the knee up,
538	keeping the foot on the ground, to bend the knee.
539	• Keeping the hand pressed against the cheek, pull on the far, bent leg to carefully roll the
540	person towards you onto their side.
541	 Adjust the upper leg so that both hip and knee are bent at right angles.
542	 Carefully tilt the head back to make sure the airway remains open.
543	 Adjust the hand under the cheek, if necessary, to keep the head tilted and facing
544	downwards to the side to allow liquid material to drain from the mouth.
545	Check regularly for normal breathing.
546	Only leave the person unattended, if necessary, to seek help.
547	
548	[h2] Use of pulse oximetry
549	A pulse oximeter is a non-invasive device that sends red and infrared light through a fingertip,
550	earlobe or other tissue and, using a sensor, measures the oxygen saturation (the level of oxygen
551	bound to haemoglobin) in the blood and the pulse rate. A 2022 ILCOR scoping review did not
552	identify any studies evaluating the use of pulse oximetry specifically in the first aid setting. ²⁷
553	However, pulse oximeters have been widely used by the public for daily self-monitoring of blood
554	oxygen saturation and heart rate during COVID-19 and other respiratory infections, and in patients

with chronic obstructive pulmonary disease (COPD), pulmonary embolism, asthma, and cystic
 fibrosis.²⁷ Pulse oximeters are now commonly included in many first aid kits and wearables such as

- 557 watches and fitness bands. Use of a pulse oximeter should never replace or delay a structured
- 558 ABCDE assessment (Table 3). Hypoxaemia may be missed due to an overestimation of oxygen
- 559 saturation in persons with dark skin and others with high levels of skin pigmentation.^{6,28-31} Pulse
- 560 oximeter readings may also be inaccurate or unreadable in shock or low perfusion states, with increased nail
- 561 thickness or polish, a low battery level, movement or vibration, and in extremes of temperature.³²

562



563 [h2] Use of oxygen for acute difficulty of breathing

564 Not all first aiders are trained or allowed to administer oxygen. However, some first aid

organisations train and equip their members to safely and effectively give supplemental oxygen for

- specific conditions associated with hypoxia, such as following drowning, or carbon monoxidepoisoning.
- 568 A 2015 ILCOR review suggested the use of supplementary oxygen in persons with symptoms of hypoxia.^{33,34} More recently, the use of supplementary oxygen in persons with an acute exacerbation 569 570 of COPD was highlighted in a 2025 ILCOR scoping review.³⁵ One randomised trial³⁶ evaluated the 571 emergency medical service use of fixed flow oxygen of 8-10 L/min via a nonrebreathing face mask 572 compared with titrated oxygen via nasal prongs to maintain an oxygen saturation between 88% -573 92% in patients with diagnoses of COPD and acute shortness of breath. The use of fixed flow oxygen 574 in patients with an acute exacerbation of COPD was found to have a Risk Reduction of 4.5 for 575 mortality compared with titrated oxygen. Other retrospective studies have also found uncontrolled 576 oxygen flow in acute exacerbations of COPD to be associated with an increased risk of death, 577 assisted ventilation or respiratory failure.³⁷⁻³⁹ No evidence was found in the scoping review to 578 suggest against the first aid administration of oxygen in adults or children exhibiting signs or 579 symptoms of acute shortness of breath or hypoxia in the out-of-hospital setting. The indirect 580 evidence identified suggests that uncontrolled oxygen may be harmful for patients with acute 581 exacerbations of COPD. These first aid recommendations are based on an ILCOR good practice 582 statement that suggests that supplementary oxygen administration should be titrated to an oxygen 583 saturation of 88-92% for patients with an acute exacerbation of COPD.³⁵ However, in the presence of 584 life-threatening hypoxaemia (oxygen saturation <88%), high-flow or high concentration oxygen 585 should not be restricted.
- 586

587 [h2] Medical emergencies

588 [h3] Anaphylaxis

Anaphylaxis is a severe, life-threatening hypersensitivity reaction that can be fatal if not promptly
identified and treated. Foods, drugs, insect stings or venom and latex are the most common triggers
in Europe according to a systematic review.⁴⁰ About one fourth of all cases in the European
Anaphylaxis Registry occur in children, with the most common trigger being food (tree nuts, cow's
milk, chicken eggs) while bee stings are most common in adults.^{41,42} Fatal anaphylaxis can occur
rapidly following exposure, time to reaction depends on route of exposure and type of allergen—
within five minutes for iatrogenic reactions, 15 minutes for insect stings or venom, 30 minutes for



- food-related reactions and up to a delay of more than 4 hours for oral drugs.⁴¹ These timeframes
 underscore the critical importance of effective first aid strategies for managing anaphylaxis.⁴³
- 598

599 Recognition of anaphylaxis

600 Recognising and diagnosing anaphylaxis can be challenging due to a wide constellation of symptoms 601 that often mimic allergic and non-allergic disorders.⁴⁴ An updated 2023 ILCOR scoping review lists 602 the most common signs and symptoms for anaphylaxis as anxiety, breathing difficulties (including 603 noisy breathing, wheezing or persistent cough), airway narrowing, swelling of the face and the 604 tongue, difficulty in talking and/or a hoarse voice, abdominal pain, diarrhoea, nausea and vomiting, 605 hives, welts and flushing, signs of shock (including confusion or agitation, pallor and floppiness, loss 606 of responsiveness), and cardiac arrest.⁴⁵ The same ILCOR scoping review found recent studies on 607 education, action plans, protocols, and factors affecting adrenaline auto-injector use suggest that 608 training improve anaphylaxis recognition due.

609

610 Treatment of anaphylaxis

611 Positioning the person lying supine with raised legs, or if breathing problems sitting with legs

612 stretched, might prevent circulatory deterioration (expert opinion).^{46,47}

613 The World Allergy Organization recommends the administration of intramuscular adrenaline as the 614 first-line treatment for anaphylaxis, at a dose of 0.01 mg/kg up to a maximum of 0.5 mg for adults 615 and teenagers. For children this is equivalent to 0.15mg for those aged 1-5 years and 0.3 mg for 616 children aged 6-12 years.⁴⁸ Adrenaline is typically self-administered via an autoinjector and can be 617 given by trained individuals, including family members, friends, and first aid providers. Prompt 618 administration is critical, and in persons where symptoms persist, a second dose may be necessary. 619 We identified three studies related to second-dose adrenaline administration for anaphylaxis, but 620 none focused on the first aid setting. One study found that patients receiving multiple doses of 621 adrenaline for anaphylaxis had higher hospital admission rates, but no data were reported on 622 symptom resolution or adverse effects.⁴⁹ A second study documented that anaphylaxis patients 623 needing multiple doses of adrenaline experienced more severe symptoms but ultimately had more 624 often resolution of symptoms.⁵⁰ The third study compared the pharmacokinetics and 625 pharmacodynamics of three different adrenaline delivery methods: intramuscular injection, 626 autoinjectors, and intranasal administration and concluded that intranasal administration might be a 627 safe and effective option, particularly for persons reluctant to carry and use injection devices.⁵¹ 628 Based on an ILCOR scoping review⁵² and a 2025 evidence update¹, we recommend that a second



- 629 adrenaline dose may be injected after 5 minutes when symptoms of severe anaphylaxis fail to
- 630 resolve.⁵³ The management of anaphylaxis has been described in the ERC Guideline 2025 Special
- 631 Circumstances in Resuscitation(REF).
- 632

633 **[h3] Choking**

- 634 Choking, or foreign body airway obstruction (FBAO), is a common problem and occurs most
- 635 frequently in young children and in elderly persons.^{54,55} Children, in particular, tend to put various
- 636 objects in their mouths that can easily obstruct their airway,⁵⁶ while adults tend to choke on meat,
- 637 nuts, grapes, and other food.^{56,57} The ERC guidelines are informed by the 2020 ILCOR systematic
- 638 review⁵⁸ and ILCOR 2025 evidence update and CoSTR including justifications.¹
- 639

640 Recognition and Immediate intervention

- 641 A foreign body can lodge in the upper airway, trachea, or lower airway (bronchi and bronchioles).⁵⁹
- 642 In a partial airway obstruction, air may still pass around the obstruction, allowing some ventilation
- 643 and the ability to cough or to speak. With complete obstruction, no air can pass around the
- 644 obstruction and a person is unable to speak, has a weakening or absent cough, and is struggling or
- 645 unable to breathe. If untreated, complete airway obstruction will rapidly cause hypoxia, loss of
- 646 responsiveness and cardiac arrest in a few minutes.
- 647
- 648 Evidence from the 2025 ILCOR evidence update¹ supports existing recommendations for bystanders 649 to undertake foreign body removal as soon as possible after recognition. When performed prior to 650 cardiac arrest, bystander first aid interventions for foreign body removal have been shown to be 651 effective and to improve survival.^{54,60-62} The largest observational cohort study to date evaluated the 652 effectiveness of FBAO interventions in both responsive and unresponsive patients with out-of-653 hospital FBAO.⁵⁴ A bystander performed the initial FBAO intervention in 643 cases (90.7%) and was 654 successful in relieving the obstruction in 492 patients (76.5%). Of the 492 patients who had relief of 655 their FBAO with bystander intervention, 480 (97.6%) survived. A second multicentre observational 656 study of 407 patients transported to the emergency department after a FBAO reported that 657 bystanders attempted to intervene in 55% of witnessed cases and successfully relieved the 658 obstruction in 48%. Survival was significantly higher with bystander interventions, and 23.8% of 659 patients had a favourable neurological outcome.⁶³
- 660
- 661 Treatment



662 Awake, responsive person with foreign body airway obstruction 663 A person who is awake, responsive and able to cough, should be encouraged to do so as coughing 664 generates high and sustained airway pressures and may expel the foreign body.⁶⁴⁻⁶⁶ Back blows, 665 abdominal and chest thrusts are reserved for persons who have signs of severe complete airway 666 obstruction, such as inability to cough or speak. If the person starts to show signs of fatigue, back 667 blows are the recommended initial intervention. Compared with back blows, abdominal thrusts and 668 chest thrusts or chest compressions as a first intervention are associated with decreased odds of 669 FBAO relief and more reports of intervention-associated injuries.⁵⁴ Although guidelines recommend 670 alternating back blows and abdominal/chest thrusts, many FBAOs may be resolved using a single 671 technique. In a 2024 cohort study, only 16% of responders reported alternating techniques⁵⁴. 672 If unable to cough or the cough becomes ineffective, give up to 5 back blows (Figure 3a): 673 Stand behind the person • 674 Use the heel of your hand to apply blows between the shoulder blades in the centre of the • 675 back. 676 If back blows are ineffective, give up to 5 abdominal thrusts (Figure 3b): 677 Stand behind the person and put both your arms around the upper part of their abdomen. • 678 • Lean the person forward. 679 Clench your fist and place it between the umbilicus (navel) and the ribcage. • 680 Grasp your fist with the other hand and pull sharply inwards and upwards. ٠ 681 If choking has not been relieved after 5 abdominal thrusts, continue alternating 5 back blows with 5 682 abdominal thrusts until choking is relieved, or the person becomes unresponsive. 683 684 Unresponsive person with foreign body airway obstruction 685 If at any point, the choking person becomes unresponsive with absent or abnormal breathing, chest 686 compressions must be initiated in accordance with standard BLS and continued until the person 687 recovers or emergency services arrive. The rationale for this is that chest compressions generate 688 higher airway pressures than abdominal thrusts and may potentially alleviate the obstruction, whilst 689 also providing a cardiac output.^{67,68} 690 A blind finger sweep, as a means of removing unseen solid material, may worsen airway obstruction 691 or cause soft tissue injury.⁶⁹ Only attempt a finger sweep when an obstruction can be clearly seen in 692 the mouth. 693 694 Suction-based devices for choking



695 In recent years, manual negative-pressure (suction-based) devices have become increasingly 696 available and promoted for the removal of airway foreign bodies. The devices work by attaching a 697 mask to a plunger unit with a one-way valve, placing the mask over the choking person's face and 698 pulling on the plunger handle to create suction. One version of the device includes a phalange 699 attached to the mask and that must be inserted into the patient's mouth. A 2020 ILCOR systematic 700 review⁶⁹ and CoSTR included a single observational study that reported relief of the FBAO and 701 survival in 10 patients with FBAO who were treated with a suction-based device. The evidence was 702 insufficient to make any recommendation related to use of these devices. Since 2020, several new 703 studies of these devices have been published. The largest study, conducted in Japan, was a 704 prospective multicentre observational study of 407 patients transported to the emergency 705 department after a FBAO.⁶³ The study reported that bystanders attempted to intervene in 55% of 706 witnessed cases and successfully relieved the obstruction in 48% (92/192). The use of a suction 707 device was the most common first intervention (24.8%, n=101/407) followed by back blows (20.9%, 708 n= 85/407)). However, it was not clear what type of suction device was used in this study (e.g., 709 portable powered, vacuum, or manual airway clearance device). 710 Six case series reported relief of FBAO with use of a suction-based device in a total of 595/610 cases 711 (97.5%).⁷⁰⁻⁷⁵ Two of these case series focused on children (320 cases, total)^{71,73}, while two^{70,75} 712 focused on use of a specific suction-based device by healthcare providers in an adult daycare/senior 713 centre. In the case study by Bhanderi⁷⁰, the device use was part of a protocol and was introduced 714 after 2 rounds of 5 back blows alternating with 5 abdominal/chest thrusts failed to resolve the FBAO. 715 An additional case series⁶¹ noted relief of FBAO in 3/8 cases with suction from a vacuum cleaner. In 716 the 2023 case seriesby Dune⁷² use of an suction-based device was the last intervention before 717 resolution of FBAO signs and symptoms in 96.2% of 157 cases with one type of airway clearance 718 device, and for 93.1% of 29 cases with a second type of device. Most case series use data supplied 719 from the manufacturers, which creates serious bias because only the positive or successful results 720 are typically reported and the denominator is missing of all the intended used or cases with FBAO. A 721 simulation study showed equally successful number of attempts but higher positive pressure 722 gradients in thorax with abdominal thrusts than with the use of a specific suction-based device.⁷⁶ 723 The reported number of 'pulls' or suction manoeuvres required for FBAO relief varies between case series, with one study⁷⁵ reporting 54% required a single pull and 37% required 2-3 pulls. The case 724 725 series by Costable⁷¹ reported relief of the FBAO required between 1 to 10 pulls with the device. 726 Following use of a device, a finger sweep or rolling the person onto their side was required to

727 completely remove the foreign body in up to a third of cases reported in one series.⁷²



728 Few complications have been reported with use of suction-based devices for choking. Two cases of 729 perioral bruising felt to be due to the device were reported by Dunne⁷². For other reported adverse 730 events, including airway oedema (3 cases), intraoral abrasions/pain (3 cases) and oesophageal 731 perforation (1 case), it was unclear if these were due to the FBAO, other BLS interventions before 732 use of the device or due to the device itself. Dental injury was reported with use of the one brand of 733 device in 1/25 (3%) of patients in a retrospective analysis⁷⁵ and a single case of abrasions to the 734 oropharynx and gingiva was reported with use of the same brand device in the case series by 735 Dunne.⁷² Device malfunctions reported include occasional separation of the mask from the plunging unit.72 736 737 The evidence supporting the use of back blows and abdominal thrusts also comes primarily from 738 case reports.⁵⁸ However, these interventions can be applied immediately, with minimal training and 739 at no additional cost, with success reported in over three-quarters of cases. Users of devices would 740 have to remove the device from packaging, assemble it and unless trained refer to device 741 instructions, which may delay delivery of care using established FBAO protocols. There is no 742 regulatory agency oversight of suction-based devices manufactured and sold for clearing an airway 743 obstruction in a choking person. As such, users of these devices should be aware of potential 744 adverse effects and issues such as lack of adequate suction, lack of efficacy, oral injury, poor 745 outcomes, and potential delay in performing CPR once a choking person becomes unresponsive.

746 ILCOR did not make a recommendation because of insufficient evidence¹ and, for the same reason,

- the ERC is also unable to make a recommendation for or against the use of these devices.
- 748

749 Aftercare and referral for medical review

750 There are multiple case reports of serious injuries following treatment of FBAO with abdominal

- thrusts, and fewer reports of injuries following chest thrusts/compressions and back blows, as well
- as reports from the use of suction devices.^{58,72} Any person successfully treated with these measures
- should therefore be examined by a healthcare practitioner.
- 754 The management of choking in children has also been described in the ERC Guidelines 2025
- 755 Paediatric Life Support (REF).

756

757 **[h3] Asthma**

- 758 A scoping review from ILCOR in 2022 identified no significant harm from bronchodilators
- administered to individuals with asthma and respiratory symptoms.¹ The ERC agree with the ILCOR



- first aid task force recommendation that first aid providers should help to administer the persons
 own bronchodilators in individuals with asthma who are experiencing difficulties in breathing.
- 762

763 [h3] Chest pain

Chest pain is the most common symptom of an acute coronary syndrome aka 'heart attack'.⁷⁷ The pain is often described as pressure in the chest, with or without radiation of the pain to the neck, lower jaw, or left arm. According to the European Society of Cardiology, a quarter of women report jaw pain, nausea or shortness of breath instead of the classic symptoms which may delay diagnosis and treatment.⁷⁸ Patients with diabetes might express pain in the epigastric region or shortness of breath.⁷⁷

- An ILCOR systematic review in 2020 found that early prehospital aspirin improved survival compared
- with later in-hospital administration and there was no significant difference in the risk of
- 772 complications.⁷⁹ Although harm from aspirin in individuals with nontraumatic chest pain is
- vncommon, the ILCOR systematic review found no studies evaluating the risks of aspirin
- administration in the first aid setting.⁷⁹ Therefore, we continue to recommend the early prehospital
- administration of 150-300 mg aspirin to those with cardiac chest pain, by first aiders before the
- arrival of EMS, unless there is a potential contraindication such as aspirin allergy. For persons with
- known angina pectoris, we recommend first aiders assist them to self-administer their nitro-
- 778 glycerine spray or tablets.
- 779

780 [h3] Hypoglycaemia

781 Hypoglycaemia is defined as a blood glucose level below 4 mmol/L (or 70 mg/dL).^{80,81} There are 782 several different wordings of the definition of hypoglycaemia. A cross-sectional study from the US 783 has shown that the wording of different definitions is associated with misinterpretations and 784 therefore discrepancies in the prevalence of severe hypoglycaemia and the number of severe 785 hypoglycaemia episodes.⁸² People with lower education, lower household income and self-identified 786 racial minorities were associated with these discrepancies. Hypoglycaemia most commonly occurs in 787 individuals with diabetes who use insulin or other glucose-lowering medications, but it may also 788 occur in persons without diabetes because of prolonged fasting, excessive alcohol consumption, or 789 critical illness.⁸¹ Symptoms of hypoglycaemia can range from sweating, tremors, and palpitations to 790 confusion, seizures, and unresponsiveness.⁸⁰

791



significantly reduced the risk of severe hypoglycaemia-associated complications, including cognitive
 impairment and cardiac arrhythmias.⁸³ A 2018 review article highlighted the importance of
 structured education programs for individuals with diabetes to enhance the awareness and self management of hypoglycaemia symptoms.⁸⁴ The European Diabetes Working Group emphasise the
 role of continuous glucose monitoring in reducing severe hypoglycaemic episodes, particularly in
 insulin-dependent individuals.⁸⁵

An ILCOR systematic review from 2019 demonstrated that early recognition and intervention

799

792

800 Treatment of hypoglycaemia

801 An ILCOR systematic review identified evidence supporting that if the hypoglycaemic person is 802 responsive and able to swallow safely, they should be encouraged to consume 15-20 grams of fast-803 acting carbohydrates, such as glucose or dextrose tablets, fruit juice, or regular (non-diet) soda.⁸³ 804 Blood glucose values should be rechecked 15 minutes after ingestion of sugar and, if hypoglycaemia 805 persists, an additional 15 grams of carbohydrates should be given.⁸³ If symptoms improve, the 806 person should follow up with a balanced meal to prevent recurrent hypoglycaemia. 807 Oral sugars should not be provided to unconscious persons due to risk of blocking the airway and 808 aspiration. First aid responders may administer glucagon, either via injection or nasal spray, as per 809 the manufacturer's instructions if it is available and if they have been trained in its administration.⁸¹ 810 Early administration of glucagon in severe hypoglycaemia has been shown to improve recovery 811 outcomes and to reduce the risk of prolonged hypoglycaemia-induced complications.⁸⁶ The

- 812 implementation of public training programs, especially among schoolteachers, in glucagon
- 813 administration has significantly improved response times and outcomes.⁸⁷⁻⁸⁹
- 814

815 [h3] Opioid overdose

816 Opioid overdose causes central nervous system depression (sleepiness, unresponsiveness) and 817 respiratory depression, which, if untreated, can progress to respiratory arrest, cardiac arrest and 818 death. Naloxone is a safe and effective antidote that reverses the effects of opioid overdose, 819 restoring responsiveness and breathing.^{90,91} Naloxone is only effective for opioid overdoses and it 820 can take several minutes to work. Naloxone is not effective once cardiac arrest has occurred. 821 These guidelines are based on the 2024 ILCOR recommendation³⁵ and on the 2024 American Heart 822 Association and American Red Cross Guidelines for First Aid.⁹² According to a 2025 online survey 823 conducted by the ERC First Aid Writing Group⁵, naloxone is used by a wide range of individuals, from 824 doctors to bystanders, regardless of whether they have received formal training. Respondents



- 825 indicated that naloxone was most often administered in confirmed opioid overdoses (82%, n =903) 826 or in unresponsive individuals with suspected opioid overdose (71%, n = 787). Only one-third of 827 respondents reported the existence of formal training programs for naloxone use. Kits most 828 commonly included injectable naloxone or autoinjectors (90%, n = 874), followed by intranasal 829 formulations (40%, n = 394). Intranasal naloxone has efficacy comparable to intramuscular 830 administration and is now widely available in many countries. It was the most preferred option 831 among respondents, largely due to its ease of use by non-medical personnel. In most countries, 832 naloxone may be administered by doctors, nurses, and paramedics. In some countries, police 833 officers and laypersons are also authorized to use it.
- 834

835 Individuals who respond to an opioid overdose with naloxone should remain under observation after

- administration due to the risk of respiratory depression recurring. Training in opioid overdose
- 837 recognition and naloxone administration increases the likelihood of effective intervention, although
- 838 study findings are variable.^{93,94} One randomised controlled trial found that individuals who received
- practical training were more likely to use naloxone than those who received only passive
- 840 education.⁹⁵ We recommend that first aid responders administer naloxone to individuals with
- 841 suspected opioid overdose. The management of opioid overdose and general intoxication is outlined
- 842 in both the ERC Guidelines 2025 on Special Circumstances in Resuscitation (REF).
- 843

844 [h3] Stroke

- The global burden of stroke is high and increasing.⁹⁶ Over the last 20 years, new treatments such as 845 846 the rapid administration of thrombolytic therapy or endovascular reperfusion techniques for 847 ischaemic stroke, together with the medical or surgical treatment for haemorrhagic stroke, have 848 significantly improved outcomes.⁹⁷ Therefore, the European Academy of Neurology and the 849 European Stroke Organisation strongly recommend stroke recognition campaigns for laypeople, 850 tools facilitating early detection of stroke and prenotification of the hospital.⁹⁷ An ideal stroke 851 assessment system for first aid use must be easily understood, learned and remembered, must have 852 high sensitivity and must take a minimal time to be completed. 853 The 2024 evidence update¹ of the ILCOR First Aid task force did not identify any relevant article
- 854 concerning the recognition of stroke since the previous systematic review published in 2020,⁹⁸
- 855 neither the review nor evidence update could find evidence supporting one scale over another.
- 856 There are several suitable stroke scales for first aid providers, such as the BE-FAST (Balance, Eyes,
- 857 Arm, Speech, Time)⁹⁹ or FAST (Face, Arm, Speech, Time)¹⁰⁰ or CPSS (Cincinnati Prehospital Stroke



- 858 Scale).¹⁰¹ Further, the use of MASS (Melbourne Ambulance Stroke Screen) ¹⁰² or LAPSS (Los Angeles
- prehospital stroke screen)¹⁰³ can increase the specificity of stroke recognition if glucose
- 860 measurement is available.
- 861

862 [h3] Suicidal thoughts

863 About 720.000 people die worldwide from suicide every year.¹⁰⁴ Suicidal thoughts might be the 864 result of exposure to a stressful event and subsequent mental shock.¹⁰⁵ Two meta-analyses have 865 shown that a structured public health program such as 'Mental Health First Aid' increases knowledge 866 and reduces negative attitudes towards persons with mental health problems.^{106,107} However, one 867 Cochrane review could not demonstrate the long-term effects of Mental Health First Aid programs.¹⁰⁸ A systematic review by the Belgian Red Cross¹⁰⁹ listed the warning signs of suicide as 868 869 threats of suicide or self-injury, planning of suicide (how, where, when) and communicating (verbal 870 or written) about death or suicide. On recognising that someone is experiencing a mental health 871 crisis or expressing suicidal thoughts, a first-aid provider may feel concerned about maintaining 872 confidentiality. However, it is important to seek professional help for a thorough assessment of any 873 mental health problem or suicide risk. Talking through suicidal ideas with someone may decrease 874 the risk of suicide.¹⁰⁹ Experts recommend five principles for providing help in a mental health crisis: 875 promote calmness, a sense of safety, a sense of self- and community efficacy, instil connectedness 876 and infuse hope.¹¹⁰⁻¹¹² Foster calmness aims to reduce immediate reactions, it can be done by taking 877 a deep breath or just sitting down. Safety can be promoted by communicating that it is safe to talk 878 and that you will listen. Enabling of self and collective efficacy is about helping the person to take an 879 active role and thereby receive control and influence their own recovery. Instil connectedness are 880 done by avoiding isolation and reminding them that they are not alone. Lastly hope can be infused 881 by reminding the person that they will have capacity to recover and feel better after some help.

882

883 [h2] Trauma emergencies

884 [h3] Cervical spinal motion restriction

A 2015 systematic review by the ILCOR First Aid Task Force suggested that first aid providers do not use cervical collars.¹¹³ A 2024 ILCOR scoping review identified 46 experimental and 20 observational studies on the effectiveness of different types of spinal motion restriction.¹¹⁴ The scoping review^{1,115} identified evidence from 35 studies that supports not routinely applying cervical collars because although they decrease the range of cervical motion, they may impair respiration and swallowing, as well as contribute to a raised intracranial pressure.¹¹⁶ In 2024, the ILCOR First Aid Task Force



- acknowledged that this treatment recommendation should not, however, preclude trained first aid
- 892 providers (e.g. lifeguards treating a person with a diving injury) from using spinal motion restriction
- 893 devices (such as cervical collars) in accordance with existing local spinal motion restriction protocols.
- Based on the 2019 ILCOR scoping review¹¹⁷ with no identified contradicting evidence in the 2024
- 895 scoping review¹¹⁴, the ERC suggests that manual stabilisation may be applied by either head squeeze
- 896 or trapezius squeeze techniques to limit cervical spine movement.
- Head squeeze (Figure 4a):
- Place your elbows on the ground or on your knees
- Hold the person's head between your hands
- Position your hands so that your thumbs are above their ears and your other fingers are below
 their ears
- 902 Do not cover their ears so that the person can still hear
- 903 Trapezius squeeze (Figure 4b):
- 904 Place your elbows on the ground or on your knees
- Slide your hands onto the person's shoulder muscles on either side of their head
- Make sure that your thumbs point downwards on the front of the muscles and your fingers are
 parallel to the spine on the back
- 908 Move your forearms inwards to support their head. Firmly immobilise the head between your
 909 forearms at ear-height
- Consider the need to open the person's airway using the 'jaw-thrust' technique (Figure 2).
- 911
- If the person is unresponsive and is lying face-down, check if their airway is open and hold their
 neck in a stable position.
- If you need to open their airway, ask others to help you carefully roll them as a unit onto their
 back whilst keeping their neck in line with their body and as stable as possible. Then apply the
 head or trapezius squeeze.
- 917 First aiders with specialised training (e.g. ski patrol, lifeguard) may consider the selective use of
 918 spinal motion restriction using their existing protocols.
- Never force an uncooperative person into any position, as this may exacerbate an injury.
- 920
- 921 [h3] Control of life-threatening bleeding



- 922 Uncontrolled bleeding is a potentially preventable cause of death in trauma.¹¹⁸ The order of actions
- 923 (Figure 4) for the control of life-threatening bleeding are based on ILCOR's evidence update from
- 924 2025¹ and two initial 2021 systematic reviews.^{119,120}
- 925

926 Pressure devices or pressure points

- 927 Since the 2021 systematic review, the ILCOR evidence update¹ found seven new studies comparing
- 928 pressure device to add pressure local on the wound or proximal to it or pressure points proximal to
- 929 the wound with direct manual pressure on the site of the wound. While findings in these studies
- 930 suggested some potential benefits for the use of pressure points or pressure devices in some
- 931 settings, there were insufficient data to change any ILCOR recommendations. The ERC agrees with
- 932 ILCOR's continued recommendation using direct manual compression over pressure devices or
- 933 pressure dressings, and against the use of pressure points.
- 934
- 935 Tourniquets
- 936 Since the 2021 systematic review, the ILCOR evidence update¹ identified data from 29 new studies
- 937 demonstrating reduced in-hospital mortality and a lower incidence of shock with the use of
- tourniquets, thereby supporting their use to limit life-threatening bleeding. Commercial tourniquets
- 939 were shown to be simpler to apply and, compared with improvised tourniquets, achieved better
- 940 arterial occlusion. However, a systematic review and meta-analysis from 2025 did not demonstrate a
- 941 significant reduction in mortality or blood products with the use of prehospital tourniquets¹²¹.
- 942 Recent studies from Ukraine have raised a concern about secondary avoidable injuries due to
- 943 prolonged usage of tourniquets.^{122,123}
- 944 Use a manufactured tourniquet, if available:
- Place the tourniquet around the traumatised limb 5-7 cm above the injury, but not over a joint.
- Tighten the tourniquet until the bleeding slows and stops. This may be painful for the person.
- Write the time the tourniquet was applied on the device.
- Do not release the tourniquet. It should only be released by a healthcare professional.
- 949 In some cases, you may need to apply a second tourniquet, above the first tourniquet, to slow or
 950 stop the bleeding.
- 951 The 2021 ILCOR systematic review compared the effectiveness of different types of paediatric
- 952 tourniquets. Based on two cohort studies, ILCOR suggested the use of a manufactured windlass
- 953 tourniquet for the management of life-threatening extremity bleeding in children.¹²⁰ There was
- 954 insufficient evidence to recommend for or against the use of other tourniquet types in children. For



- 955 infants and children with extremities that are too small to allow the effective application of a
- 956 tourniquet before activating the circumferential tightening mechanism, direct manual pressure is
- 957 recommended, with or without the application of a haemostatic trauma dressing.
- 958

959 Haemostatic dressings

- 960 Since the 2021 systematic review, an ILCOR evidence update¹ identified five new articles suggesting
- 961 that haemostatic dressings decrease the duration of bleeding and improve survival with low
- 962 reported rates of side effects when compared to conventional gauze dressings. Therefore,
- 963 haemostatic dressing is recommended by the ERC for first aid providers.
- 964

965 [h3] Open chest wounds

966 The correct management of an open chest wound is important because inadvertent sealing of the 967 wound through the use of an occlusive dressing or device may result in the potential life-threatening 968 complication of a tension pneumothorax.¹²⁴ The 2015 ILCOR CoSTR suggested that first aid providers 969 should not apply an occlusive dressing or device to individuals with an open chest wound because 970 lack of human studies. An ILCOR evidence update in 2024 found that it is reasonable for the trained 971 first aid provider to apply a specialised non-occlusive or vented dressing if available¹. This statement 972 was based on identification of five porcine studies,¹²⁵⁻¹²⁹ one experimental study of chest seal 973 adhesion on healthy volunteers,¹³⁰ and one retrospective observational study from prehospital data 974 on penetrating chest trauma.¹³¹

975

976 [h3] Concussion

977 Concussion is common in adults and children following head injury. Head injury is important to 978 recognise because if the primary injury is missed it can lead to secondary brain injury and a worse 979 outcome. Concussion is difficult to recognise (often called minor traumatic brain injury) because of 980 the complexity of the symptoms and signs and the variation from immediate to delayed onset. 981 Furthermore, no consensus definition of concussion exits despite extensive work on finding such.¹³² 982 Symptoms such as difficulties with thinking/remembering, physical symptoms such as headache, 983 change in vision, dizziness, nausea or vomiting, seizures and a sensitivity to light/noise, emotional 984 changes or changes in behaviour (increased sleepiness, reduction in normal activities, loss of 985 responsiveness, confusion) can all indicate a concussion. 986



987 In 2015, the ILCOR CoSTR¹¹³ as well as the ERC First Aid 2021 guideline¹³³ made no recommendation 988 but acknowledged the role that a simple, validated, single-stage concussion scoring system could 989 play in the recognition of concussion by first aid providers. One study of lay responders identified 990 insufficient confidence and knowledge to make a decision about how to act in a head injury scenario 991 other than seeking medical assistance.¹³⁴ The following validated concussion assessment tools 992 designed for use by trained healthcare providers were identified but they do not fulfil the 993 requirements for reliable concussion assessment to be made by first aid providers because of their 994 complexity or need to perform neurocognitive testing: Glasgow Coma Scale (GCS)¹³⁵, Alert Verbal 995 Pain Unresponsive scale (AVPU)¹³⁶, Concussion Recognition Tool (CRT 6)¹³⁷, Immediate Post-996 Concussion Assessment and Cognitive Testing (ImPACT)¹³⁸, Standardized Assessment of Concussion 997 (SAC)¹³⁹, and the Sport Concussion Assessment Tool (SCAT 6).¹⁴⁰ Sports related guidelines and studies^{132,141,142} refer to the memorable phrases 'recognise, remove and refer' or 'when in doubt, sit 998 999 them out' approach. The ERC recommends that persons with a suspected concussion of any cause, 1000 be removed from physical activities and seek immediate medical review.

1001

1002 [h3] Preservation of an amputated body part

1003 The ERC recognises that the top priority when approaching a patient with an amputated or avulsed 1004 body part is to stop the bleeding and to resuscitate the person. However, retrieval and preservation 1005 of the amputated body part should not be overlooked, as surgical reimplantation may be attempted. 1006 A 2024 scoping review by the ILCOR First Aid Task Force identified 37 publications, mostly case 1007 reports and observational studies, documenting various techniques for preserving amputated and 1008 avulsed body parts prior to arrival at a hospital.¹⁴³ The evidence from this review supports non-1009 freezing cold storage of amputated body parts. This storage method is associated with higher rates 1010 of successful reimplantation, even after longer time intervals between the injury and surgery. 1011 The recommended preservation method is: Wrap the body part in a sterile gauze dressing or clean 1012 piece of cloth moistened with saline or water. Place the wrapped body part in a clean watertight 1013 plastic bag or container. Cool the bag or container containing the body part, inside another bag with 1014 ice or ice-water (Figure 6). The retrieved body part should be transported with the injured person to 1015 the hospital. No matter which part gets amputated or avulsed (ear, nose, lip, scalp, penis), the rates 1016 of successful reimplantation are surprisingly high. Even when cold storage is not possible and the transport time is more than 6 hours, it may still be possible to reimplant the body part successfully. 1017 Fingertips and fingers especially, appear to tolerate a lack of cooling better than other tissues^{1,144} 1018 1019



1020 [h2] Environmental emergencies

1021 [h3] Drowning

1022 Drowning is the process of experiencing respiratory impairment from submersion or immersion in

- 1023 liquid.¹⁴⁵ Children under five years of age account for nearly a quarter of all deaths among the
- 1024 300,000 annual drownings worldwide.¹⁴⁶
- 1025 Drowning rescue stresses prevention, recognition, provision of flotation, removal from water and
- 1026 further care as required. According to a 2021 scoping review, the risk of an untrained rescuer dying
- 1027 while trying to rescue a drowning person could be reduced using a non-contact approach.¹⁴⁷ A non-
- 1028 contact approach means reaching out to the person via a pole, rope, or flotation equipment without
- 1029 entering the water.¹⁴⁷
- 1030 The main medical problems in drowning are hypoxia, hypovolaemia and hypothermia. The 2022
- 1031 ILCOR systematic review recommended in-water resuscitation to start with ventilations only and on-
- 1032 boat resuscitation to be either ventilations only or standard CPR based on feasibility and safety.¹⁴⁸
- 1033 The initial number of rescue breaths lacks scientific evidence but for clarity the ERC recommends
- 1034 five initial ventilations. A retrospective case-matched observational study on oxygen administration
- 1035 by lifeguards did not show an increase in oxygen saturation or survival.¹⁴⁹
- 1036 The 2022 ILCOR systematic review stratified actions between laypersons and those with a duty to
- 1037 respond such as lifeguards. Laypersons are recommended to start resuscitation with chest
- 1038 compressions to prioritise the initiation of simple and fast resuscitation. This should be followed by
- 1039 mouth-to-mouth or the use of a pocket mask to provide expired air ventilation, if appropriate. Those
- 1040 with a duty to respond should consider providing initial rescue breaths with a bag-mask since the
- 1041 time to ventilation is critical in 'non-cardiac arrests' and may prevent deterioration to a cardiac
- 1042 arrest.¹⁵⁰
- 1043 A minority (6%) of drowning victims who deteriorate to cardiac arrest have a shockable rhythm.¹⁵¹
- 1044 The use of an AED has been given lower priority than initial rescue breaths, however for those with a
- 1045 shockable rhythm, early use of an AED will increase the chances of survival. The management of
- 1046 drowning is described in the ERC Guidelines 2025 Special Circumstances in Resuscitation(REF).
- 1047
- 1048 [h3] Prevention of hypothermia
- 1049 Accidental hypothermia, defined as an unintentional drop in core body temperature to below 35°C
- 1050 poses significant risks, including cardiac arrest. First aid providers play a crucial role in the
- 1051 prevention and initial management of hypothermia. Prehospital insulation, fast transfer to a hospital
- 1052 and rewarming are key interventions. A prospective observational study has shown that first aid



- 1053 interventions such as removing wet clothes, drying the person's body, the use of (isothermal)
- 1054 blankets and the use of heating pads, all individually increased core temperature in trauma
- 1055 patients.¹⁵² A two-step RCT among fire fighters has shown that active methods such as rewarming
- 1056 with warm air could be beneficial during a technical rescue in challenging terrain and it has been
- 1057 shown that fleece blankets will stop, but not correct heat loss.¹⁵³ An RCT involving trauma patients
- 1058 compared standard interventions such as removing wet clothing, providing clean dry garments and
- applying localised coverings for warmth with a more proactive strategy that included a tailored
- 1060 prevention plan and targeted training.¹⁵⁴ The study found that the tailored approach led to improved
- 1061 temperature regulation, enhanced quality of temperature management, better coagulation
- 1062 function, and a reduced incidence of adverse reactions.¹⁵⁴
- 1063 The full management of accidental hypothermia has been described in the ERC Guidelines 2025
- 1064 Special Circumstances in Resuscitation (REF).
- 1065

1066 [h3] Heat stroke and exertional hyperthermia

- Heat stroke is a severe heat-related illness that occurs when the body's thermoregulation system
 becomes overwhelmed or stops working. It is a true medical emergency and can lead to severe
 organ damage, cardiovascular collapse and death.¹⁵⁵ Non-exertional heat stroke typically occurs
 after prolonged exposure to the sun and is often seen during heat waves. However, it may occur
 during periods of hot weather in persons with impaired heat regulation, such as in elderly people or
 children. Exertional hyperthermia presents similarly but is associated with strenuous exercise.
- 1073

1074 Recognition and Immediate Care

1075 Suspect heat stroke in the setting of high ambient temperatures, in a person with a high core body 1076 temperature exceeding 40 °C, and with altered mental status (confusion, disorientation, agitation, 1077 coma) or seizures. Similar signs and symptoms are present in a person with exertional heatstroke 1078 but associated with strenuous physical activity. Although a core body temperature above 40 °C is an 1079 important finding in someone with suspected heat stroke, the measurement of core body 1080 temperature in first aid can be problematic as it requires availability of a specialised thermometer that is inserted into the person's rectum.^{156,157} In addition to privacy and cultural considerations, 1081 1082 training in the use of a core thermometer may be necessary. The tympanic temperature can be 1083 measured but it will only provide an approximation and not a definitive core temperature 1084 measurement. Oral and cutaneous thermometers have been found to be inaccurate for the



measurement of core temperature,¹⁵⁸ although when a temperature is elevated with one of these
devices, it may support clinical suspicion of hyperthermia and heat stroke.

1087The management of heat stroke and exertional hyperthermia is immediate, rapid cooling. A cooling1088rate of $\geq 0.15^{\circ}$ C /min has been shown to be associated with survival without medical complications1089for exertional heat stroke.^{159,160} Moving a person with suspected heat stroke out of the sun or away1090from a hot environment to a cooler, shaded location, removing excess clothing, and limiting exertion1091will initiate the cooling process. Emergency medical services should be summoned simultaneously1092while beginning cooling, and cooling is continued during transportation to the hospital until a target1093core temperature below 39° C is reached.^{161,162}

1094

1095 Active Cooling

1096 Active cooling interventions actively remove heat from the body and provide faster cooling for heat 1097 stroke than passive cooling. These interventions can include cool or cold/ice water total body 1098 immersion, spraying or misting water and fanning, and application of ice packs to the axilla and 1099 groin. A 2020 ILCOR systematic review of cooling methods for heat stroke summarised the rate of 1100 cooling achieved with various techniques from 63 studies.¹⁶³ The evidence supports active cooling 1101 using whole body (from the neck down) water immersion at 1 to 6°C until a core body temperature 1102 below 39°C has been reached. If the measurement of the core body temperature is not feasible, 1103 continue cooling for up to 15 minutes or until neurological symptoms resolve, whichever is first. 1104 Water immersion cooled faster than all other forms of active cooling, however ice and cold water 1105 may not always be available. Alternative methods of cooling include ice packs to the axillae, groin 1106 and neck, use of showers, ice sheets or towels, and misting/fanning but they are less effective than 1107 water immersion. There are no studies of cooling techniques in children or in people with non-1108 exertional heatstroke, but the evidence from the ILCOR systematic review supports rapid cooling 1109 with similar modalities in these populations.¹⁶³ In the first aid setting, improvisation may be 1110 necessary to provide active cooling. Placing the heat-injured person in a baby pool filled with water 1111 from a hose or wrapping a tarp around the person (filled with ice and gently oscillating the tarp) are 1112 alternative ways to provide active cooling in the outdoor setting (Figure 7). Cooling techniques 1113 reviewed in the systematic review were, in decreasing order of effectiveness, ice water immersion 1114 (15°C), temperate water immersion (20 to 25°C), cold water immersion (14 to 17°C), colder water 1115 immersion (8 to 12°C), commercial ice packs, showers (20°C), ice sheets and towels (3°C), hands and feet cold water immersion (16-17°C), cooling vests and jackets, cold intravenous fluids, fanning, 1116 1117 passive cooling, hand cooling devices and evaporative cooling.¹⁶³ The full management of accidental



- 1118 hypothermia and heat stroke has been described in the ERC Guidelines 2025 Special Circumstances
- 1119 in Resuscitation (REF).
- 1120

1121 [h3] Snake bite

1122 Snakebites in Europe are relatively uncommon, with approximately 7,992 cases reported annually, of which 15% are classified as severe.¹⁶⁴ Most incidents involve vipers of the Vipera genus, such as 1123 1124 the common European Viper or Adder (Vipera berus), the asp viper (Vipera aspis), and the nose-1125 horned viper (Vipera ammodytes). However, there are many rare and dangerous snakes which are 1126 kept as pets. Envenomation's (bites) often result in localised symptoms, including pain, swelling, and 1127 bruising, while severe cases may lead to systemic complications like coagulopathy and, in rare instances, organ failure. Two systematic review on first aid for snakebites^{165,166} and an expert 1128 1129 opinion¹⁶⁷ emphasise minimising movement, immobilising the affected limb, and avoiding ineffective 1130 or harmful interventions such as tourniquets, wound incisions, or venom suction. Seeking immediate 1131 medical attention remains crucial for effective management. European health organisations, 1132 including the World Health Organization and National Health Service UK,^{168,169} provide specific 1133 protocols for treatment. Unlike elapid snakebites with non-swelling neurotoxic venom,¹⁶⁹ which may 1134 benefit from pressure immobilisation, viper envenomation's require simple limb immobilisation

1135 without compression.



- 1136 Figure legends
- 1137 **Figure 1.** Recovery position to maintain an open airway with arm bent (a) and arm straight (b).
- 1138 **Figure 2.** Airway opening, jaw thrust (a) and chin lift (b).
- 1139 Figure 3. Order of actions for choking.
- 1140 Figure 4. Spinal motion restriction to maintain an open airway with the head squeeze method (a)
- 1141 and the trapezius squeeze method (b).
- 1142 **Figure 5**. Control of life-threatening bleeding.
- 1143 **Figure 6**. Steps for preservation of an amputated body part.
- **Figure 7.** Tarp assisted oscillating cooling in heat stroke.
- 1145 **Supplementary figure A**. ERC First aid guidelines 2025 in pictures.
- 1146
- 1147 Table legends
- 1148 **Table 1.** The major changes in the 2025 guidelines.
- 1149 **Table 2.** Essential domains to consider when implementing first aid guidelines to ensure accuracy
- 1150 and promote equity.
- 1151 **Table 3**. The ABCDE for a first aid provider.
- 1152 Supplementary table A. Overview on how equity was applied in the development of ERCs FA
- 1153 guideline 2025. The seven-step approach was adopted from Dewidar et al¹⁷⁰.
- 1154



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