Lao PDR Integrated Emergency Response Training 2025

Update in EMS

CPR Guidelines

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Epidemiology

Out of hospital cardiac arrest (OHCA)

- USA :
  - 350 000 OHCA in 2023
  - 39.2% receive layperson-initiated CPR, 11.9% get an AED applied by general public ;
  - 10.4% OHCA survive their initial hospitalization, 8.2% survive with good functional status
- Europe :
  - 300 to 760 000OHCA in Europe in 2021;
  - 58% receive layperson-initiated CPR ; 28% get an AED applied by general public
  - 8% survival rate
- Asia
  - 3-6% survival rate
- Australia-NZ
  - 12% survival rate

In-hospital cardiac arrest (IHCA)

- USA :
  - 1.2% of adults admitted
  - 25.8% discharged from the hospital alive, 82% of survivors have good functional status
- Europe :
  - 1.5 and 2.8 per 1,000 hospital admissions
  - 15-30% discharged from the hospital alive

Etiology of Cardiac Arrest

- Cardiac arrest in adults: 90% cardiac cause,
- Particularly myocardial infarction and electric disturbances

- Arrests without a primary cardiac origin: 10%

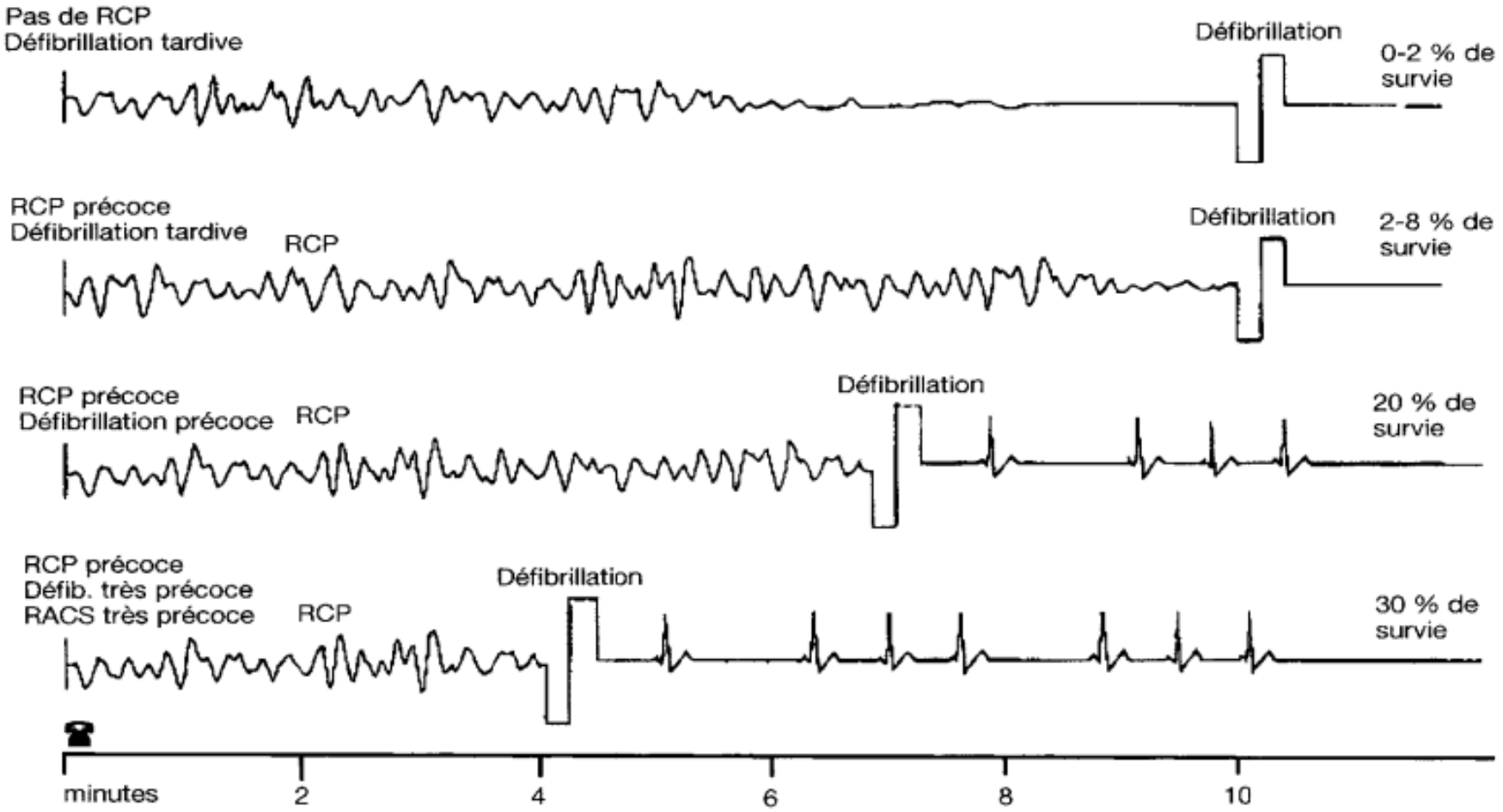
-> Consider treatment for reversible underlying cause

The main focus to secure the best outcome are :

- Rapid recognition
- Prompt provision of CPR
- Defibrillation of malignant shockable rhythms
- Post-ROSC supportive care
- Treatment of underlying causes

Adult chain of survival

Adult chain of survival



Adult IHCA Chain of Survival

Adult OHCA Chain of Survival

Basic Life Support

Basic Life Support

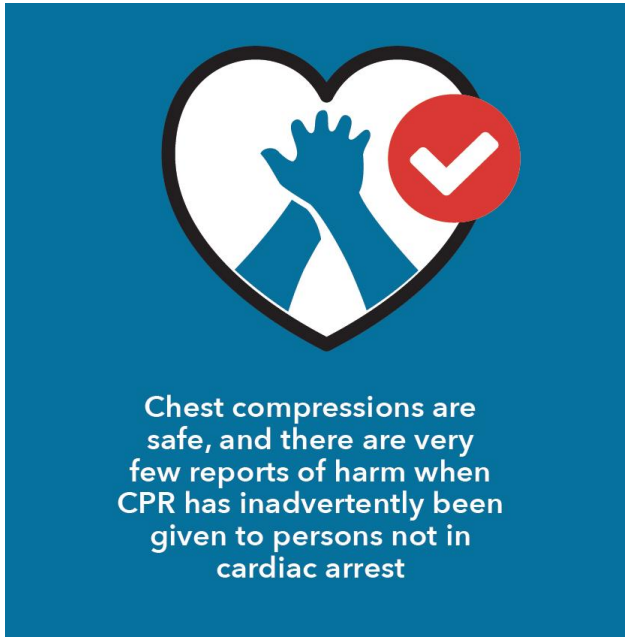
Recognition of Cardiac Arrest

Victim is unconscious/unresponsive with absent or abnormal breathing

- Lay rescuer : assume the victim is in cardiac arrest
- Healthcare provider : check for a pulse for no more than 10 seconds;

if no definite pulse is felt

->should assume the victim is in cardiac arrest



How to be sure of breathing?

- Lok at the chest : is it moving?
- Feel the breath with the back of the hand
- Put a hand on the belly, is there any movement?

➔If there is a breath or a movement within 10 seconds, breathing is efficient

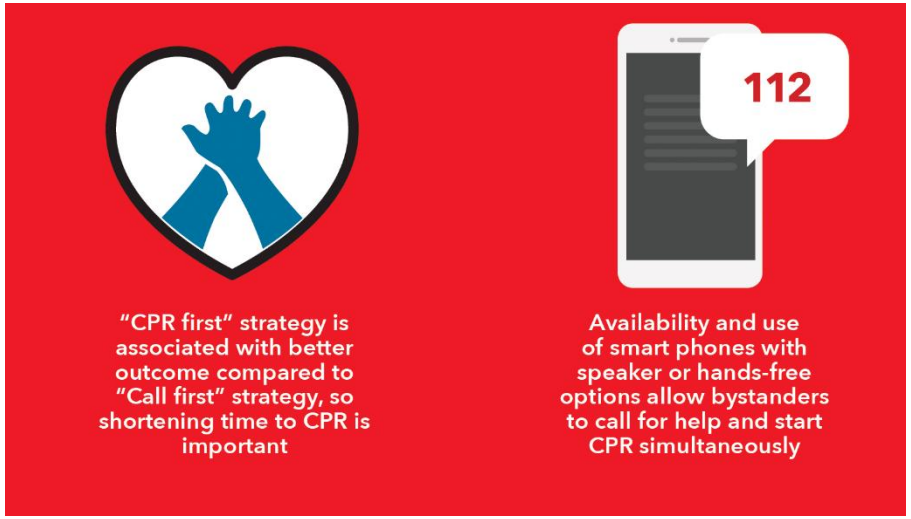
⚠Jerking movements can occur as if someone is having a seizure, check for breathing right after the movements stop

Call emergency services

- Activate the emergency response system first and immediately begin CPR
- If you are a lone rescuer and you have to leave a victim to alert the

EMS, activate the EMS first and then start CPR

- Put your phone on speaker mode



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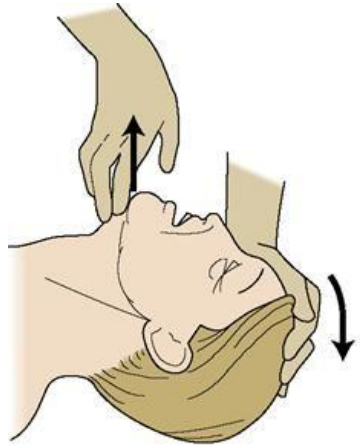
Opening the airway

- No cervical spine injury is suspected
  - Use the head tilt–chin lift maneuver to open the airway
  - Use of an airway adjunct (oral>nasal) with a bag-mask device
- Suspected cervical spine injury
  - Open the airway by using a jaw thrust without head extension.

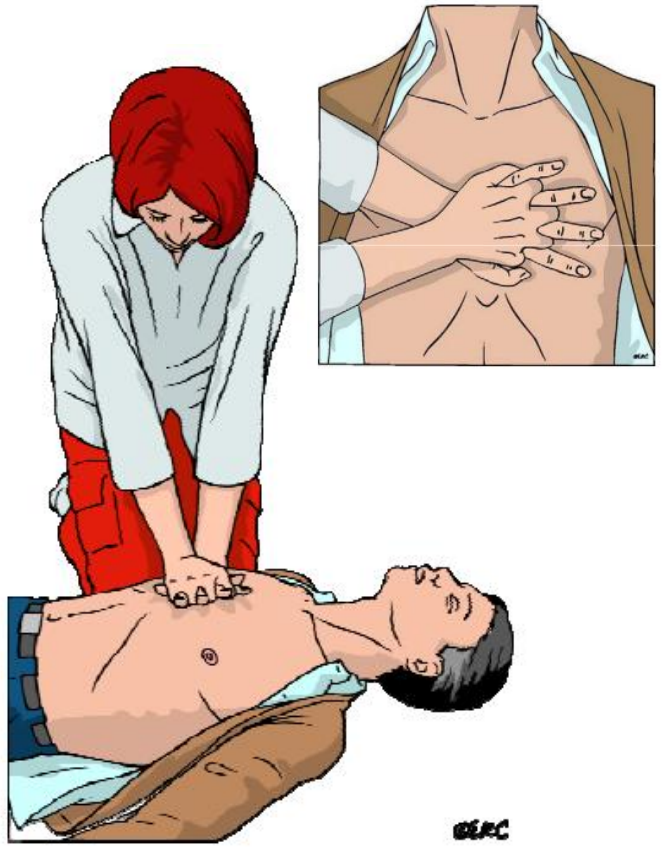


Head tilt–chin lift maneuver

Jaw-thrust maneuver

Positioning and Location for CPR

- Place the heel of one hand on the center of the victim’s chest = lower half of the sternum
- Place the heel of the other hand on top of the first so that the hands are overlapped.
- Conduct resuscitation where the victim is found when feasible
- Perform CPR on a firm surface and with the victim in the supine position



Compression Fraction and Pauses

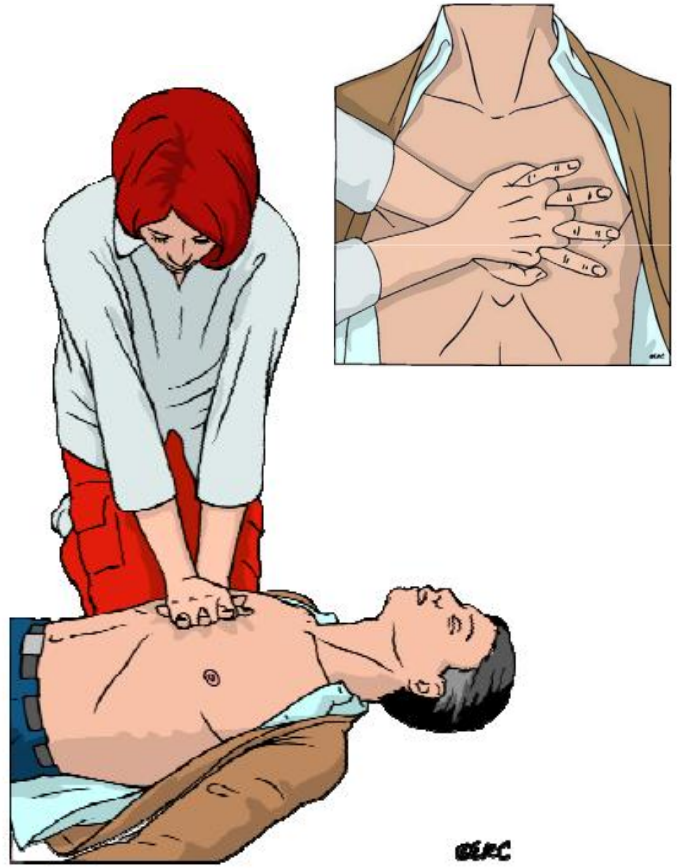
- Pauses in chest compressions should be as short as possible
- Minimize time to check for a pulse: no more than 10 s ; if not definitely felt, resume chest compressions
- Switch chest compressors approximately every 2 min (about 5 cycles at a ratio of 30:2)
- Immediately resume chest compressions after shock delivery
- If CPR without an advanced airway, it is reasonable to pause compressions to deliver 2 breaths, each given over 1 s.

Compression Depth and Rate

- Depth of at least 5 cm (<6 cm).
- Rate of 100 to 120/min.
- Avoid leaning on the chest between compressions
- Compression time = recoil/relaxation time

104 bpm

116 bpm



Fundamentals of Ventilation During Cardiac Arrest

- Tidal volumes of approximately 500 to 600 mL (visible chest rise)
- In patients without an advanced airway, either by mouth or by using bag-mask ventilation
- Breath duration 1 second (perform twice)
- Avoid excessive ventilation during CPR

Compression-to-Ventilation Ratio

- Before placement of an advanced airway :
  - ➢ cycles of 30 compressions and 2 breaths

- After placement of an advanced airway (ALS):
  - ➢ 1 breath every 6 s (10 breaths/min) while continuous chest compressions

BASIC LIFE SUPPORT

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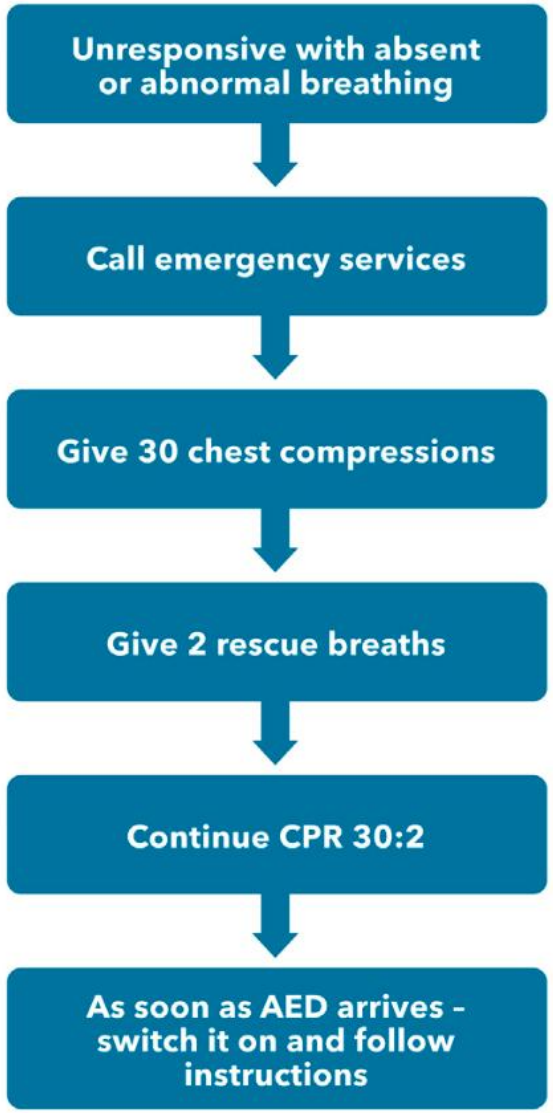

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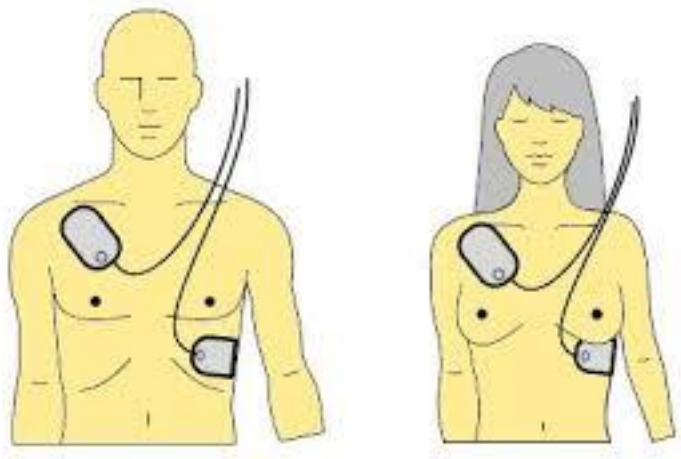
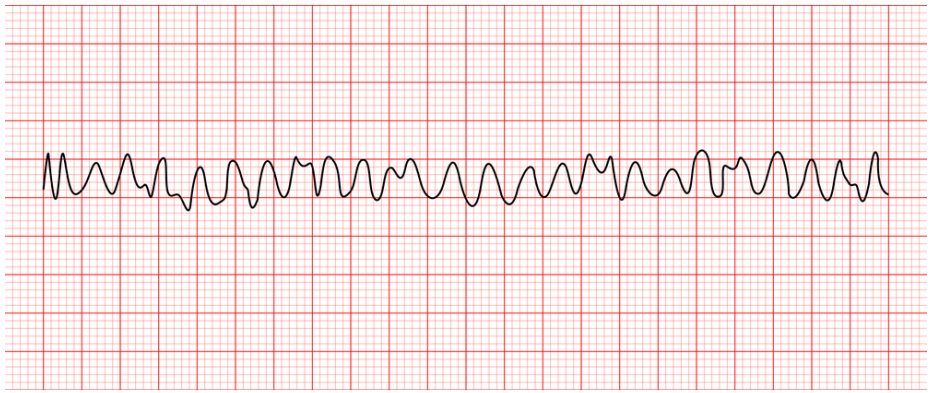
Defibrillation Indication, Type, Energy and Pads

- Recommended for treatment of tachyarrhythmias requiring a shock
- Biphasic > monophasic waveforms defibrillators
- Single shock strategy > stacked shocks if unmonitored cardiac arrest
- Manufacturer's recommended energy dose > maximal dose > other dose
- Place defibrillation pads on the exposed chest in an anterolateral position for adults and or anteroposterior for children
- Pad diameter > 8 cm in adults

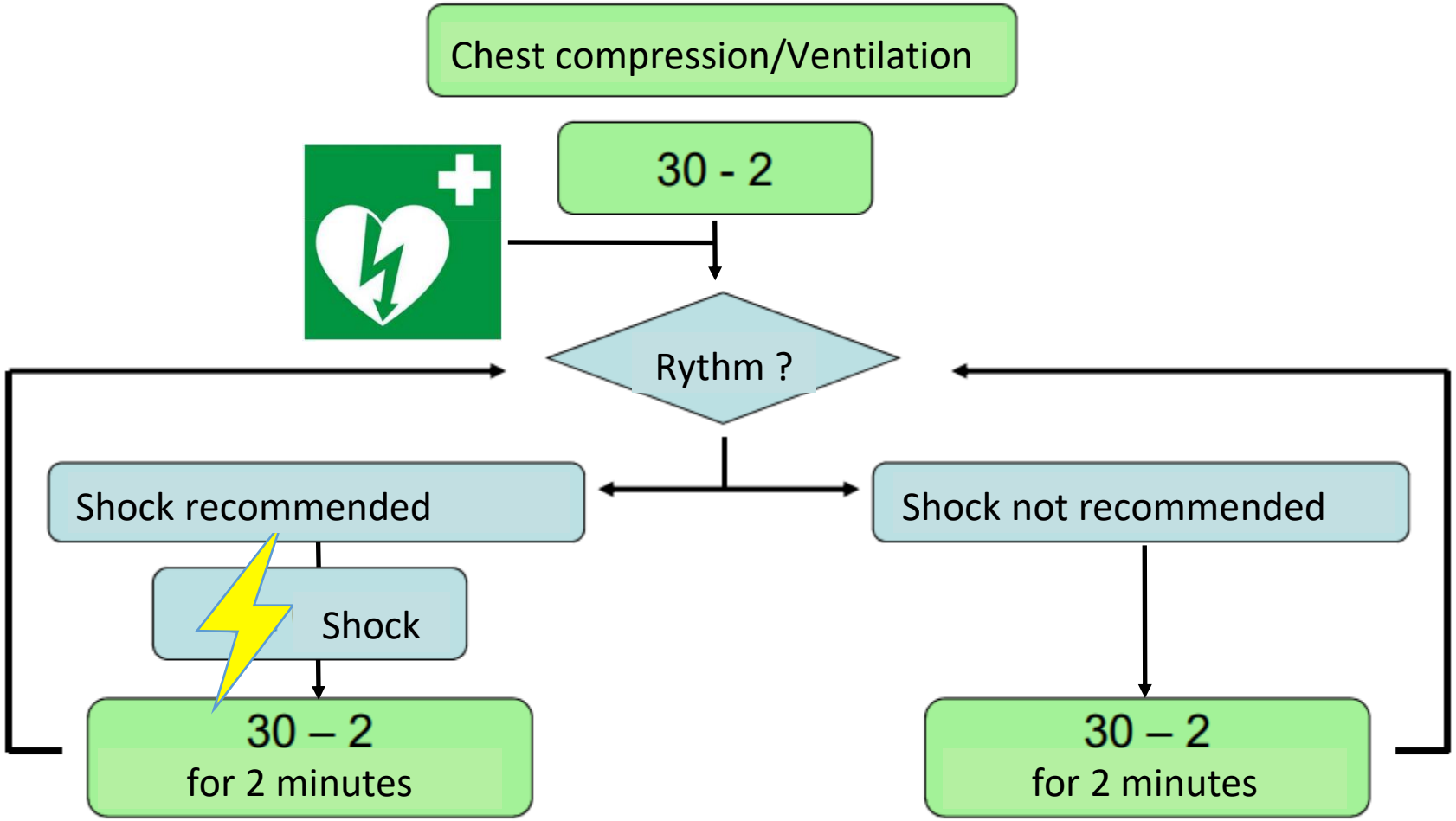


CPR Before Defibrillation and Postshock Rhythm Check

- CPR is recommended until a defibrillator or AED is applied.
- Defibrillate immediately VF/ no pulse VT
- Immediately resume chest compressions after shock administration (do not check postshock rhythm)



AED



Until ALS or ROSC

BASIC LIFE SUPPORT STEP-BY-STEP

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SEQUENCE/ACTION	TECHNICAL DESCRIPTION
SAFETY	• Make sure that you, the victim and any bystanders are safe
RESPONSE Check for a response	• Shake the victim gently by the shoulders and ask loudly: *"Are you all right?"*
AIRWAY Open the airway	• If there is no response, position the victim on their back • With your hand on the forehead and your fingertips under the point of the chin, gently tilt the victim's head backwards, lifting the chin to open the airway
BREATHING Look, listen and feel for breathing	• Look, listen and feel for breathing for **no more** than 10 seconds • A victim who is barely breathing, or taking infrequent, slow and noisy gasps, is not breathing **normally**
ABSENT OR ABNORMAL BREATHING Alert emergency services	• If breathing is absent or abnormal, ask a helper to call the emergency services or call them yourself • Stay with the victim if possible • Activate the speaker function or hands-free option on the telephone so that you can start CPR whilst talking to the dispatcher
SEND FOR AED Send someone to get an AED	• Send someone to find and bring back an AED if available • If you are on your own, **DO NOT** leave the victim, but start CPR
CIRCULATION Start chest compressions	• Kneel by the side of the victim • Place the heel of one hand in the centre of the victim's chest - this is the lower half of the victim's breastbone (sternum) • Place the heel of your other hand on top of the first hand and interlock your fingers • Keep your arms straight • Position yourself vertically above the victim's chest and press down on the sternum at least 5 cm (but not more than 6 cm) • After each compression, release all the pressure on the chest without losing contact between your hands and the sternum • Repeat at a rate of 100-120 min-1

SEQUENCE/ACTION	TECHNICAL DESCRIPTION
COMBINE RESCUE BREATHING WITH CHEST COMPRESSIONS	• **If you are trained to do so,** after 30 compressions, open the airway again, using head tilt and chin lift • Pinch the soft part of the nose closed, using the index finger and thumb of your hand on the forehead • Allow the victim's mouth to open, but maintain chin lift • Take a normal breath and place your lips around the victim's mouth, making sure that you have an airtight seal • Blow steadily into the mouth whilst watching for the chest to rise, taking about 1 second as in normal breathing. This is an effective rescue breath • Maintaining head tilt and chin lift, take your mouth away from the victim and watch for the chest to fall as air comes out • Take another normal breath and blow into the victim's mouth once more to achieve a total of two rescue breaths • Do not interrupt compressions by more than 10 seconds to deliver the two breaths even if one or both are not effective • Then return your hands without delay to the correct position on the sternum and give a further 30 chest compressions • Continue with chest compressions and rescue breaths in a ratio of 30:2
COMPRESSION-ONLY CPR	• **If you are untrained, or unable to give rescue breathes,** give chest-compression-only CPR (continuous compressions at a rate of 100-120 min-1)
WHEN AED ARRIVES Switch on the AED and attach the electrode pads	• As soon as the AED arrives switch it on and attach the electrode pads to the victim's bare chest • If more than one rescuer is present, CPR should be continued whilst the electrode pads are being attached to the chest
FOLLOW THE SPOKEN/ VISUAL DIRECTIONS	• Follow the spoken and visual directions given by the AED • **If a shock is advised**, ensure that neither you nor anyone else is touching the victim • Push the shock button as directed • Then **immediately** resume CPR and continue as directed by the AED

SEQUENCE/ACTION	TECHNICAL DESCRIPTION
IF NO SHOCK IS ADVISED Continue CPR	• **If no shock is advised,** immediately resume CPR and continue as directed by the AED

IF NO AED IS AVAILABLE
Continue CPR
	• If no AED is available, **OR** whilst waiting for one to arrive, continue CPR
	• Do not interrupt resuscitation until:
	  • A health professional tells you to stop OR
	  • The victim is definitely waking up, moving, opening eyes, and breathing normally
	  • OR
	  • You become exhausted
	• It is rare for CPR alone to restart the heart. Unless you are certain that the victim has recovered continue CPR
	• Signs that the victim has recovered
	  • Waking-up
	  • Moving
	  • Opening eyes
	  • Breathing normally

IF UNRESPONSIVE BUT BREATHING NORMALLY Place in the Recovery Position	• If you are certain that the victim is breathing normally but still unresponsive, place them in the recovery position **SEE FIRST AID SECTION** • Be prepared to restart CPR immediately if the victim becomes unresponsive, with absent or abnormal breathing

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What about paediatric basic life support?

PAEDIATRIC BASIC LIFE SUPPORT

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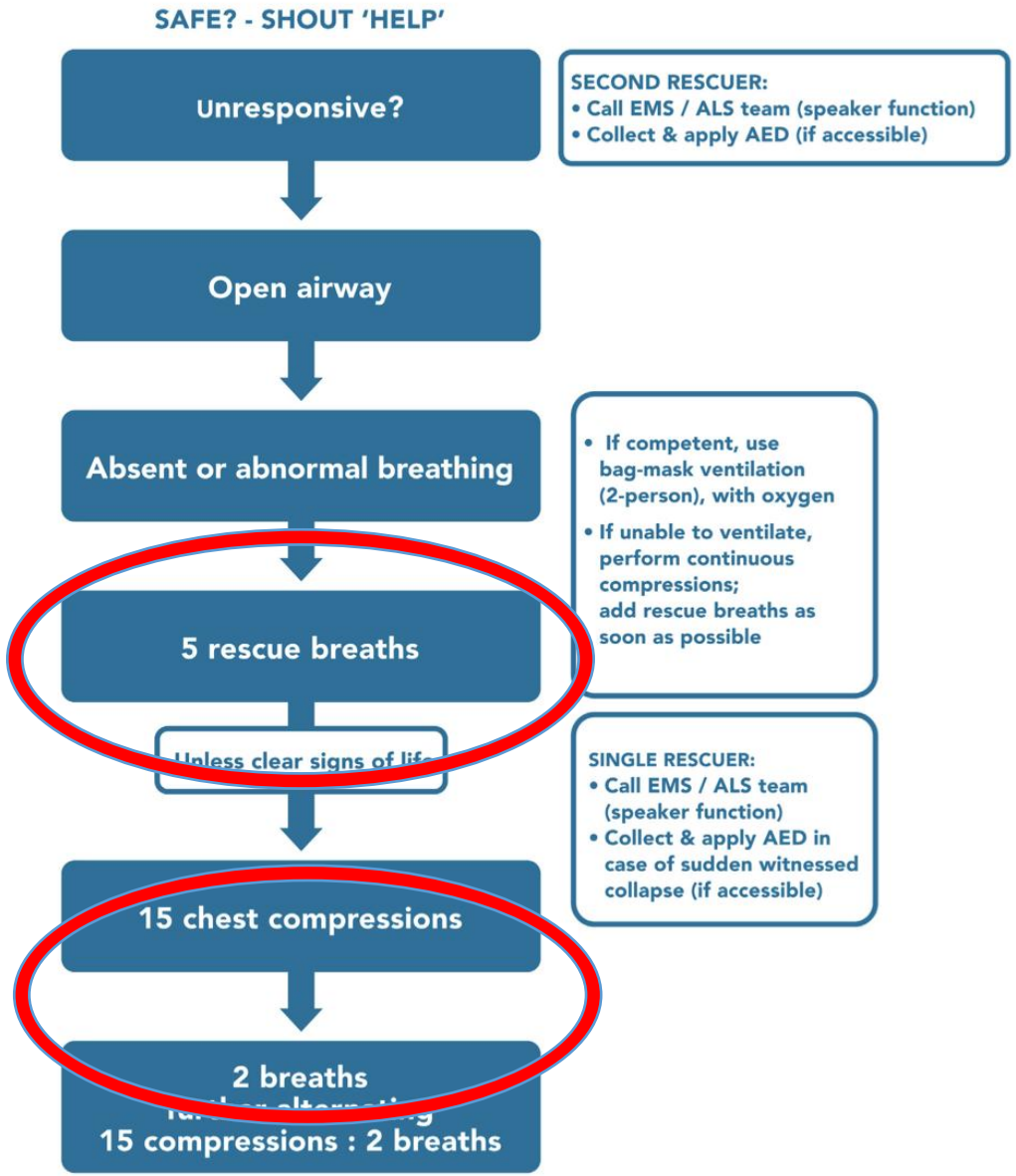

Fig. 2 – Paediatric basic life support.

Thank you !

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