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CPR for an adult, AED

ERC guidelines 2021

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Learning objectives

- The student will learn the BLS algorithm.
- The student will learn the BLS algorithm with AED.
- The student will learn when to start and when to end CPR.

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1. Basic BLS algorithm without AED

BLS – Basic Life Support

- Approach carefully
- Check consciousness
- Open the airway
- Check breathing
- Call 155/112 for help
- 30 chest compressions
- 2 rescue breaths

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30 chest compressions

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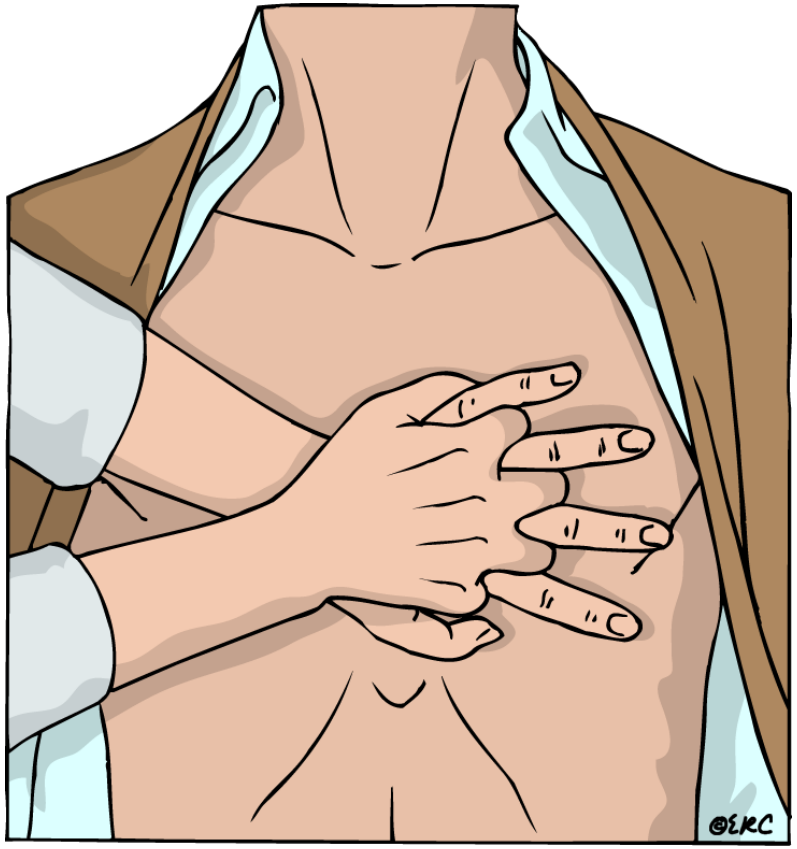
Chest compression



- Position of the victim on the back, hard surface
- The rescuer is kneeling by the side of the victim
- Place the heel of your hand in the centre of the chest with the other hand on top
- Interlock your fingers (make sure that the fingers are kept off the ribs)
- Upper limbs outstretched, straight back

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Chest compression

- **Compress the chest regularly**
  - **rate of 100 – 120 per minute**
  - **to a depth of 5 - 6 cm**
  - compression to release ratio 1:1

- We make sure that the chest is sufficiently relaxed, but we do not lose contact
- Replace the rescuer every 2 minutes (if possible)

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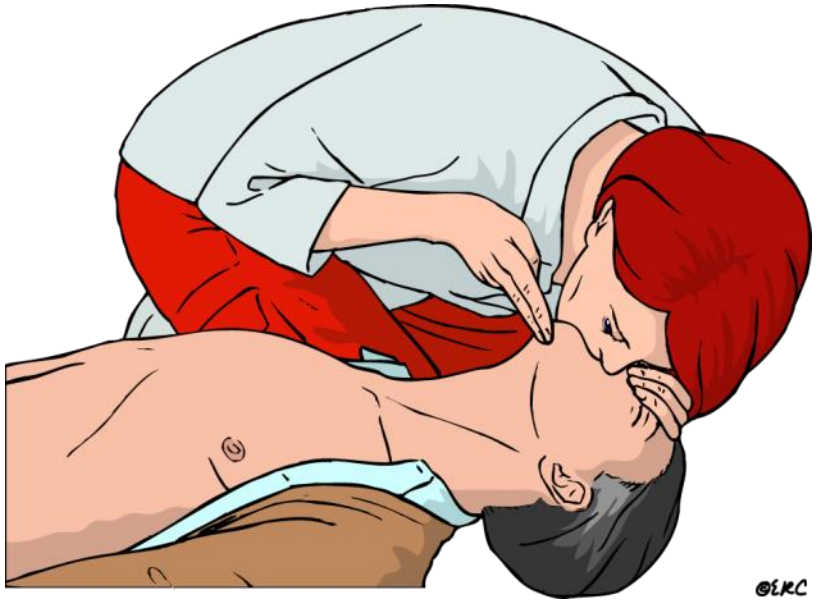
2 rescue breaths



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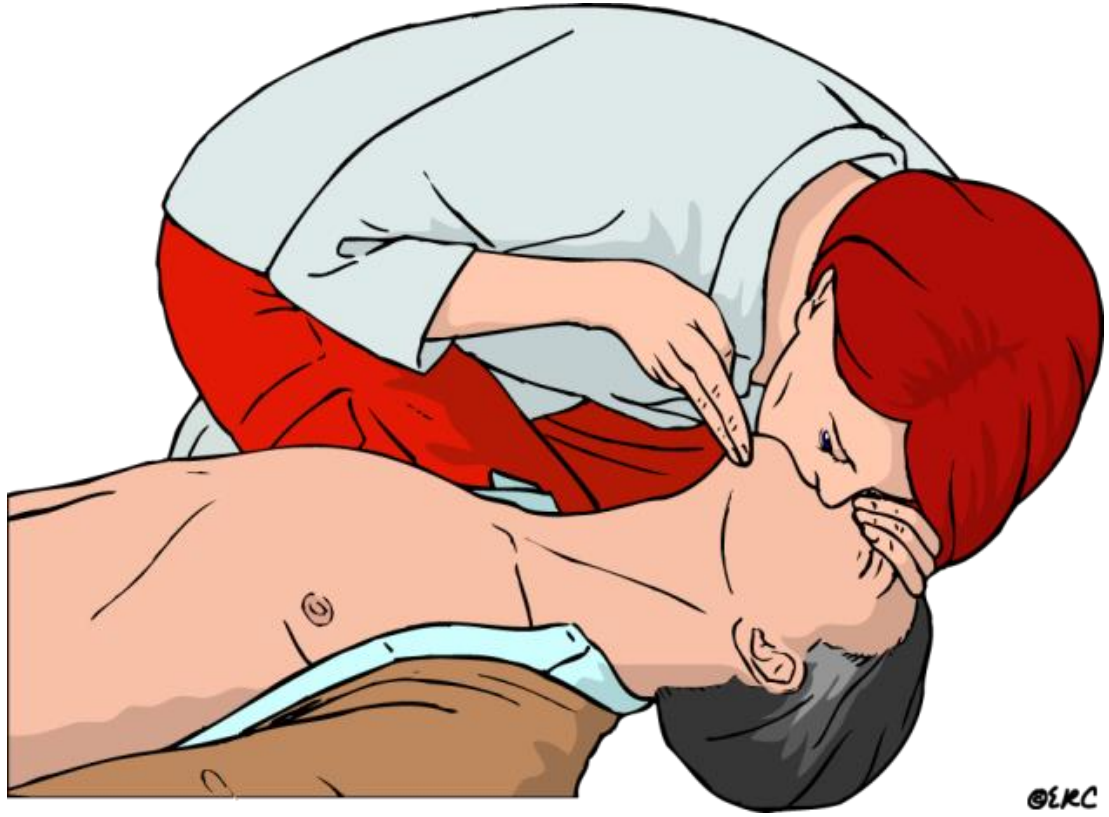
Mouth-to-mouth respiration (adults)

- Open the airway
  - tilt head back and lift the chin
- Squeeze the nostrils
- Take a breath
- Place lips around victim’s mouth
- Blow into the victim’s mouth, normal tidal volume -> until the chest rises (about 500ml, 6ml / kg)



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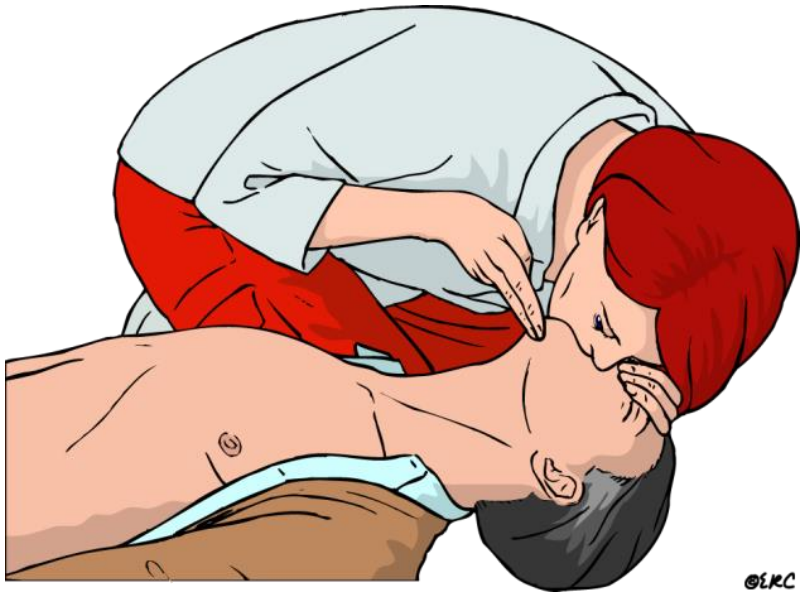
Mouth-to-mouth ventilation (adults)

- A complete rescue breath should take one second
- Let the casualty passive breathe out, approximately 1s
- Try to minimize the interruption of chest compression
- Rescue breaths in a cycle of 30:2, maximum 5s



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Ineffective breathing

- during 2 attempts to breathe into the casualty’s mouth - resistance or the chest does not rise

!! don't waste time!!

- perform another cycle of 30 chest compressions
- before another attempt to breathe, look for the cause :

* open mouth and with 2 fingers remove visible foreign bodies
* check/improve head tilt
* leave firmly adhered denture/remove loose denture

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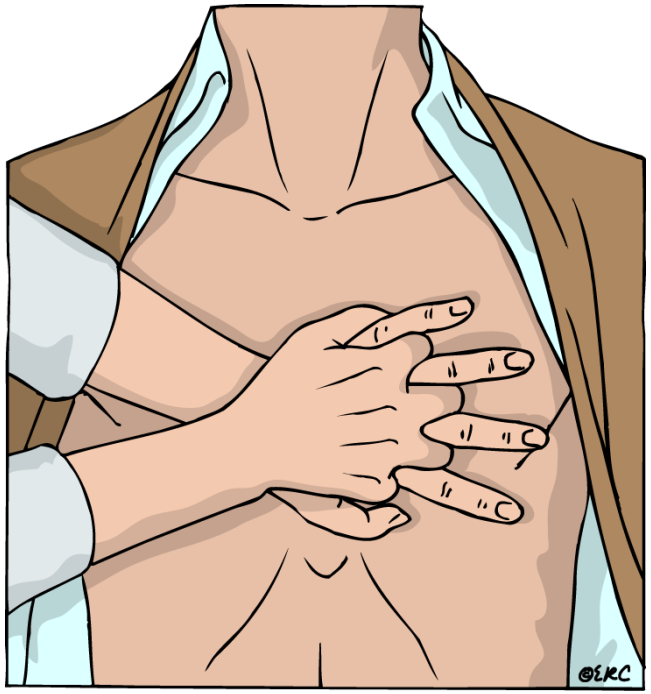
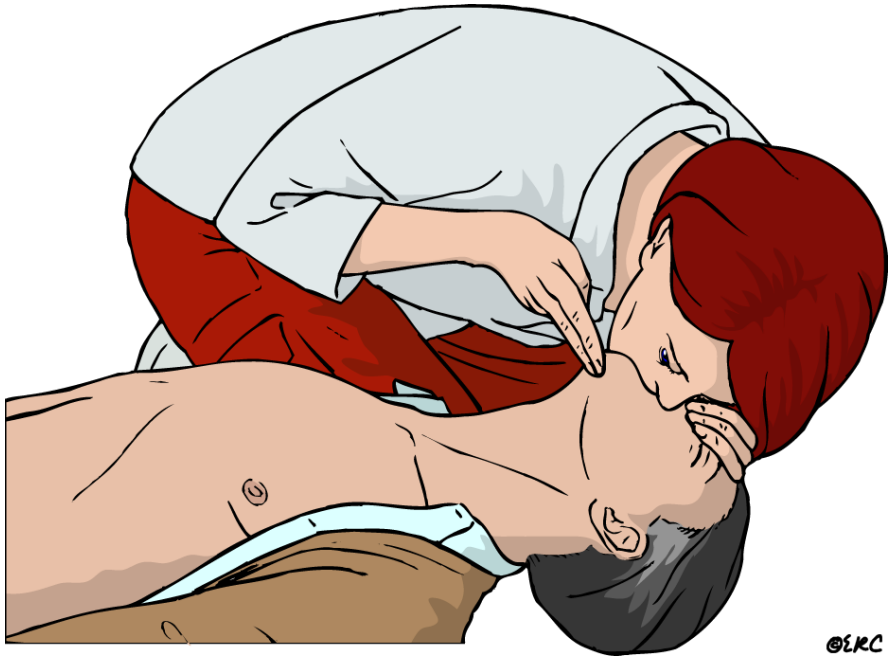
Continue with CPR





30 : 2

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Hands-only resuscitation

Alternative to provide BLS for cases :

- If we are not willing to blow into the victim’s mouth
- If we are worried that we might do breathing wrong or we don't want to do that, we only perform an uninterrupted chest compression

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2. BLS algorithm with using AED

- AED = *automatic external defibrillator with visual and acoustic help*

- Designed for use by lay rescuers
- Better CPR outcomes
- Located at airports, in sports halls, in main square…

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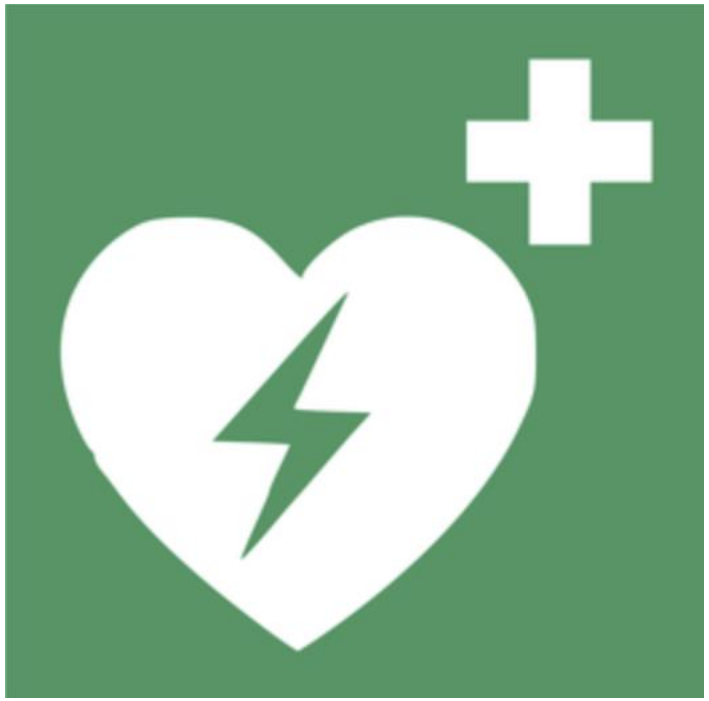
Changes in algorithm with using AED



- Approach carefully
- Check consciousness
- Open the airway
- Check breathing
- Call 155/112 for help
- **Connect the AED**
- **Follow the AED instructions**

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Turn on AED

Some devices turn on automatically by opening the top cover

Sticking the electrodes on the exposed chest

- In case of 2 rescuers – continue in CPR during sticking the electrodes

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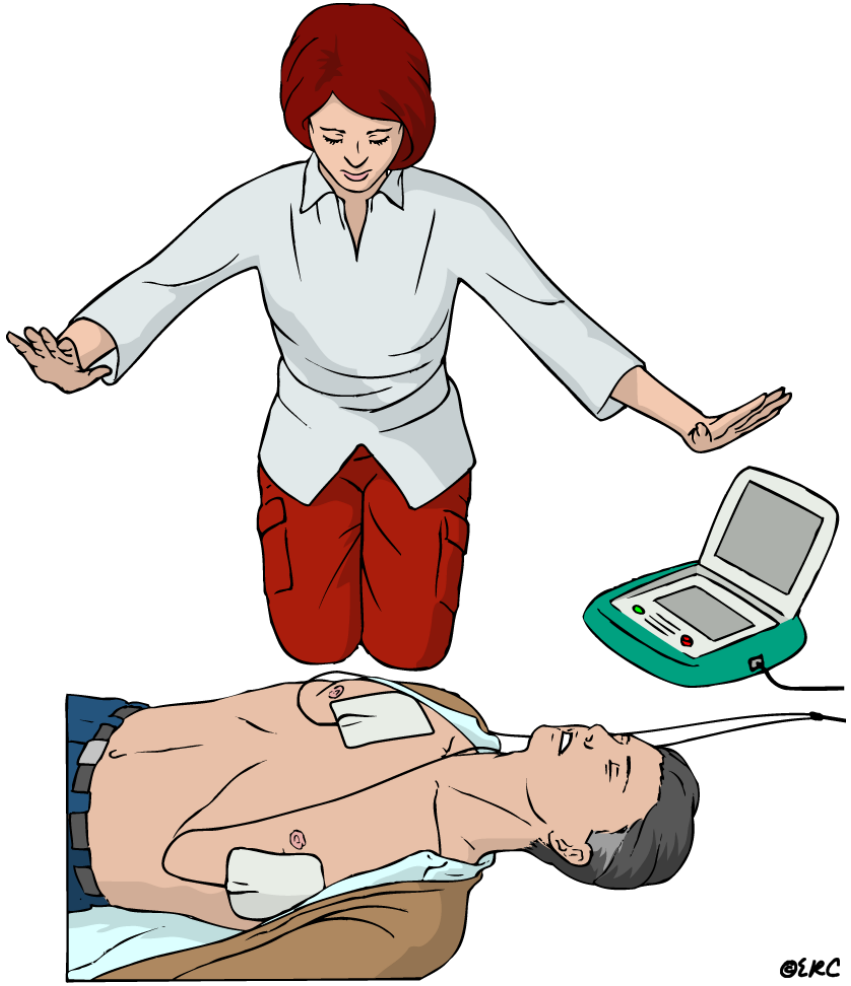
Heartbeat analysis: Do not touch!



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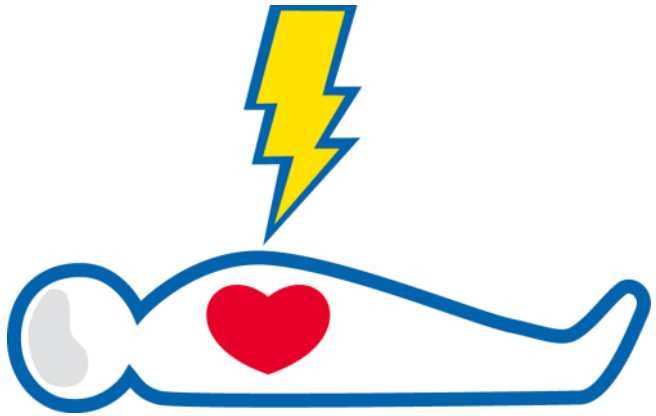
Shock recommended

- Step back!
- Perform defibrillation (the device usually prompts you to press the button)



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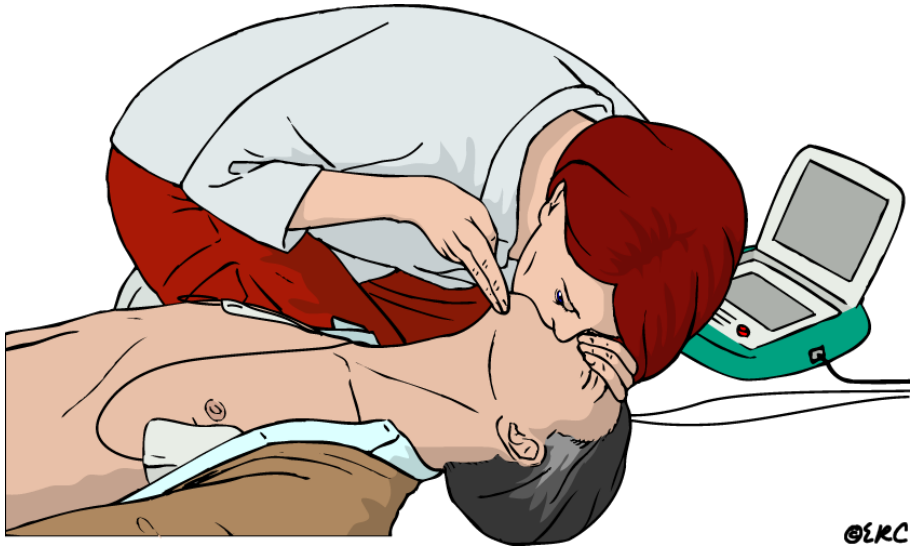
Follow the instructions after defibrillation



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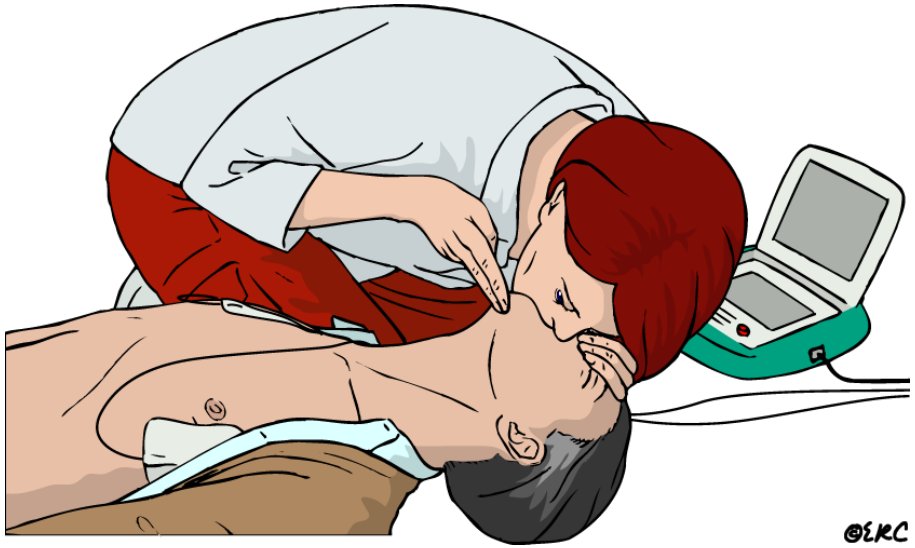
Shock is not recommended

Follow the instructions of the device



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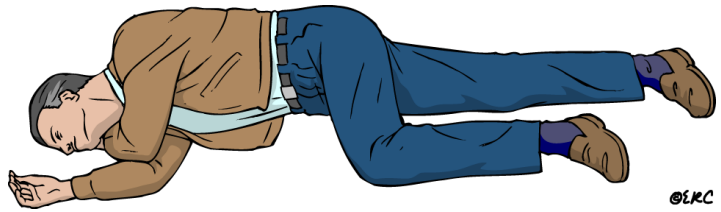
If the casulty starts breathing normally – place victim in recovery position and monitor vital signs



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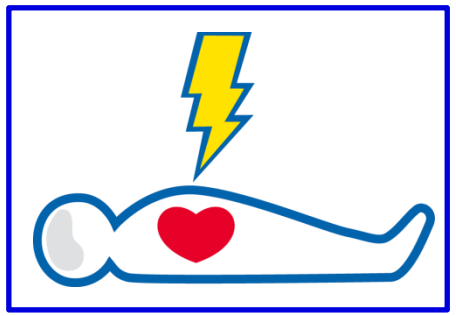

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When to start CPR?

unconsciousness + breathless = without circulation

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When not to start CPR

- with certain signs of death (long delay)
  - postmortem stiffness = rigor mortis
  - putrid odor, etc..
- injury incompatible with life (decapitation)
- rescuer in direct danger of life
- terminal state of incurable disease

When stop CPR?

- **Circulation restore:** spontaneous defensive movements, consciousness or occurrence of normal breathing

  → recovery position and monitoring of vital functions until the arrival of the emergency medical service
  CAVE: gasping
- handover of the emergency medical service
- exhaustion = if the rescuer is so exhausted that he cannot continue to do CPR
- there is a new danger for the rescuer

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Major BLS mistakes

- insufficient head tilt in adults
- insufficient chin lift
- long diagnosis of circulatory arrest
- failure to control the raising and lowering of the chest during rescue breaths
- blow of unnecessarily large volume of air
- failure to take turns early and regularly before exhaustion
- compression frequency too fast

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Learning outcomes

- The student is able to describe the basic BLS algorithm.
- The student knows how to technically perform compressions and artificial respiration.
- The student knows how to properly use an AED for CPR.

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Thank you for your attention!

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