Basic Life Support in Children and Infants

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Objectives

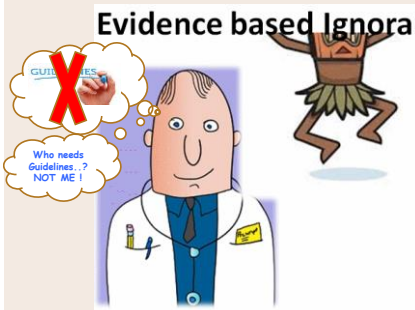
- Understand the importance of BLS
- How to assess the collapsed victim
- How to perform chest compression and rescue breathing
- How to perform safe defibrillation using an automated defibrillator
- How to manage the choking victim

2019

Survival after cardiac arrest

~ 0 %

Evidence based Ignorance !



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- We do not know anything
- The reason we do not know anything is because we have predetermined ideas about what is appropriate, what can be done, and what cannot be done
- The majority of critically ill patients in USA are withdrawn from life support within 2 days after admission to the ICU! We do not let them live or at least "fight for it"

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Pediatric Basic Life Support

Chain of Survival

Basic Life Support

- Sequences of procedures performed to restore the circulation of oxygenated blood after a sudden respiratory and/or cardiac arrest
- Chest compressions and pulmonary ventilation performed by anyone who knows how to do it, anywhere, immediately, without any other equipment

Basic Life Support

- Unresponsive?
- Shout for help
- Open airway
- Not breathing normally?
- 5 rescue breaths
- No signs of life?
- 15 chest compressions
- 2 rescue breaths
  15 compressions
- Call cardiac arrest team
  or Paediatric ALS team
  after 1 minute of CPR

Approach safely!

Scene

Rescuer

Victim

Bystanders

- Unresponsive?
- Shout for help
- Open airway
- Not breathing normally?
- 5 rescue breaths
- No signs of life?
- 15 chest compressions
- 2 rescue breaths
  15 compressions
- Call cardiac arrest team
  or Paediatric ALS team
  after 1 minute of CPR

Do NOT move the victim…

- Until qualified help arrives

  or

- Unless the scene dictates otherwise

Check response

- Unresponsive?
- Shout for help
- Open airway
- Not breathing normally?
- 5 rescue breaths
- No signs of life?
- 15 chest compressions
- 2 rescue breaths
  15 compressions
- Call cardiac arrest team
  or Paediatric ALS team
  after 1 minute of CPR

Check response

- Stimulate the child
- Ask "Are you all right?"
- If the child responds by answering, crying or moving:
  - Leave the child in the position in which you find him (provided he is not in further danger)
  - Check his condition and call for help
  - Reassess him regularly
- If he does not respond:

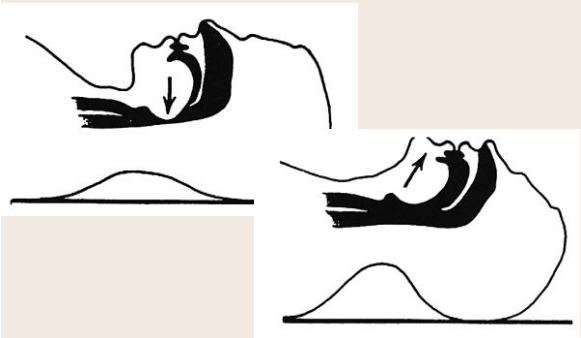
Shout for help

Open airway

Open airway

- Head tilt and chin lift
  - Lay rescuers
  - Non-healthcare rescuers
- No need for finger sweep unless solid material can be seen in the airway

Open airway



Open airway

Jaw thrust (Healthcare professionals)

Check breathing

Check breathing

Check breathing

- Look, listen and feel for NORMAL breathing
- If the patient is breathing normally → Recovery position

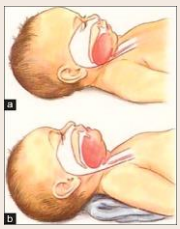
Check breathing

- Look, listen and feel for NORMAL breathing
- If the patient is breathing normally → Recovery position
- DO NOT confuse *AGONAL breathing* with NORMAL breathing

Agonal breathing

- Occurs shortly after the heart stops in up to 40% of cardiac arrests
- Described as barely, heavy, noisy, or gasping breathing
- Recognize as a sign of cardiac arrest
- Erroneous information can result in withholding CPR from cardiac arrest victim

Check breathing (infant)



5 rescue breaths

- While performing the rescue breaths note any gag or cough response to your action
- These responses or their absence will form part of your assessment of 'signs of life', which will be described later

Rescue breaths for an infant

- Ensure a neutral position of the head as an infant's head is usually flexed when supine
  - This may require some extension (a rolled towel/blanket under the upper part of the body may help to maintain the position) and a chin lift
- Take a breath and cover the mouth and nose of the infant with your mouth, making sure you have a good seal.
  - If the nose and mouth cannot be covered in the older infant, the rescuer may attempt to seal only the infant's nose or mouth with his mouth (if the nose is used, close the lips to prevent air escape)
- Blow steadily into the infant's mouth and nose for about 1 sec, sufficient to make the chest visibly rise
- Maintain head position and chin lift, take your mouth away from the victim and watch for his chest to fall as air comes out
- Take another breath and repeat this sequence five times

Rescue breaths for an infant

If you have difficulty achieving an effective breath:

- The airway may be obstructed
- Open the child's mouth and remove any visible obstruction. Do not perform a blind finger sweep
- Reposition the head. Ensure that there is adequate head tilt and chin lift but also that the neck is not overextended
- If head tilt and chin lift has not opened the airway, try the jaw thrust method
- Make up to five attempts to achieve effective breaths, if still unsuccessful, move on to chest compressions

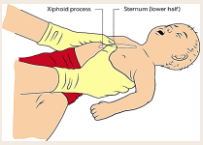
Assess the child's circulation

- Take no more than 10 sec to:
- Look for signs of life – this includes any movement, coughing or normal breathing
  - Gasps or infrequent, irregular breaths are abnormal
- If you check the pulse, ensure that you take no more than 10 sec:
  - Pulse check is unreliable
  - The complete picture of how the patient appears must guide whether BLS is required
  - If there are no signs of life, start BLS

Chest compressions – Children

- Compress the lower half of the sternum
  - The compression should be sufficient to depress the sternum by at least one third of the anterior–posterior diameter of the chest
- Release the pressure completely
- Repeat at a rate 100–120 min^{-1}
- After 15 compressions, tilt the head, lift the chin, and give two effective breaths
- Continue compressions and breaths in a ratio of 15:2

Chest compressions – Infants



- The lone rescuer compresses the sternum with the tips of two fingers
- If there are two or more rescuers, use the encircling technique
  - Place both thumbs flat side by side on the lower half of the sternum (as above) with the tips pointing towards the infant's head
  - Spread both hands with the fingers together to encircle the lower part of the infant's rib cage. The fingers should support the infant's back
- For both methods, depress the lower sternum by at least one third the anterior–posterior dimension of the infant's chest or by 4 cm

Chest compression in children > 1 year

- To avoid compressing the upper abdomen locate the xiphisternum by finding the angle where the lowest ribs join in the middle
- Place the heel of one hand on the sternum one finger's breadth above this
- Lift the fingers to ensure that pressure is not applied onto the child's ribs
- Position yourself above the victim's chest and, with your arm straight, compress the sternum to at least one third of the anterior–posterior dimension of the chest or by 5 cm.
- In larger children or for small rescuers, this is achieved most easily by using both hands, with the rescuer's fingers interlocked

Continuous chest compressions-only CPR

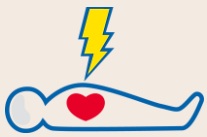
Do not interrupt resuscitation until

- The child shows signs of life (starts to wake up, to move, opens eyes and to breathe normally
- More healthcare workers arrive and can either assist or take over
- You become exhausted

Call Emergency Medical Services (EMS)

- 112: European emergency phone number (166)
- Available everywhere in the EU
- Free of charge

Automated external defibrillator (AED)



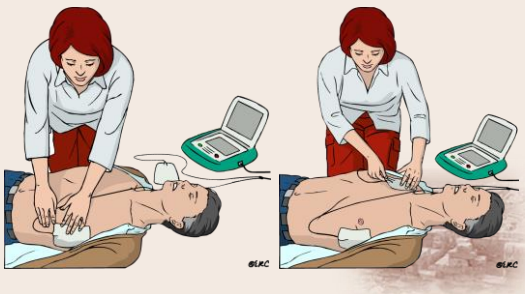
AED and BLS

- Continue with CPR until the AED arrives
- Attach the AED and follow the instructions
- For 1–8 year old, use attenuated pads if available

AED

- Some AEDs will automatically switch themselves on when the lid is opened

Attach pads to casualty's bare chest



Analyzing rhythm - do NOT touch victim

Shock indicated

- Stand clear
- Deliver shock

Shock delivered
Follow AED instructions

15

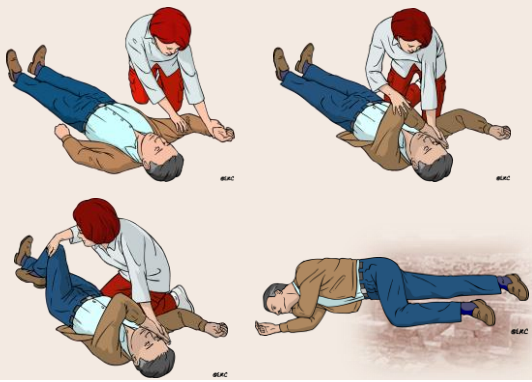
2

No shock advised
Follow AED instructions

15

2

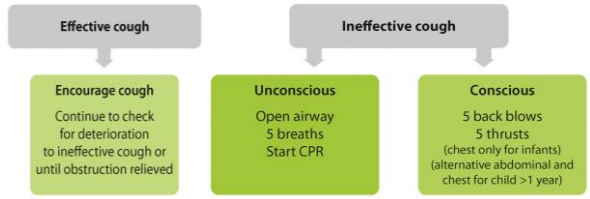
Recovery position – Children



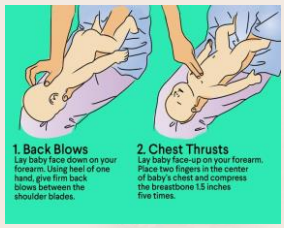
Recovery position – Infant

- Cradle them in your arms, with their head tilted downwards
- Call 166 (112)
- Monitor their breathing, pulse, and level of response

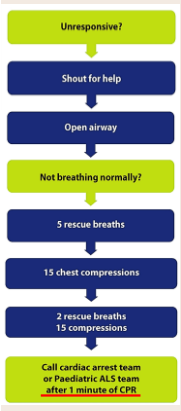
Foreign body airway obstruction

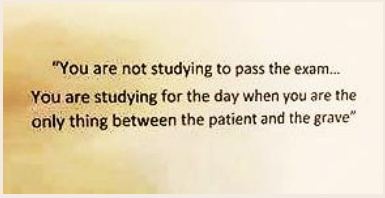


FBAO – Infants



Pediatric BLS algorithm





Optimal CPR is not easy...

...but its difference from

"any" CPR DEFINITELY is many lives...

MCQ 1

- What is the optimal compression depth during pediatric BLS?
  1. 3 cm
  2. 9 cm
  3. 10 cm
  4. 6 cm
  5. 5 cm

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  3. 10 cm
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  5. 5 cm

MCQ 2

- **The correct BLS steps for children are:**
  1. **Assess the individual and start 30:2 CPR**
  2. **Start 30:2 CPR, attach the AED, and give two more breaths**
  3. **Give 5 breaths and assess the individual**
  4. **Assess the individual, give 5 breaths, start 15:2 CPR**
  5. **Immediately place the patient in recovery position**

MCQ 2

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  1. Assess the individual and start 30:2 CPR
  2. Start 30:2 CPR, attach the AED, and give two more breaths
  3. Give 5 breaths and assess the individual
  4. **Assess the individual, give 5 breaths, start 15:2 CPR**
  5. Immediately place the patient in recovery position

MCQ 3

- **After delivering a shock with an AED, what is the next step in caring for a children?**
  1. **Reassess for a pulse**
  2. **Do chest compressions only**
  3. **Resume CPR**
  4. **Do ventilation only**
  5. **Establish IV access**

MCQ 3

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  3. **Resume CPR**
  4. Do ventilation only
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MCQ 4

- An 8-year-old student turns blue and collapses while eating at school. You are concerned that this student may have choked. What is the best method to clear an obstruction from the airway?
  1. Begin CPR with chest compressions
  2. Abdominal thrust (Heimlich maneuver)
  3. Back blow
  4. Blind finger sweep
  5. None of the above

MCQ 4

- An 8-year-old student turns blue and collapses while eating at school. You are concerned that this student may have choked. What is the best method to clear an obstruction from the airway?
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  2. Abdominal thrust (Heimlich maneuver)
  3. Back blow
  4. Blind finger sweep
  5. None of the above

MCQ 5

- The proper steps for operating an AED are:
  1. Power on the AED, attach electrode pads, shock the person, and analyze the rhythm
  2. Power on the AED, attach electrode pads, analyze the rhythm, and shock the person
  3. Power on the AED, analyze the rhythm, attach electrode pads, and shock the person
  4. Power on the AED, shock the person, attach electrode pads, and analyze the rhythm
  5. None of the above

MCQ 5

- The proper steps for operating an AED are:
  1. Power on the AED, attach electrode pads, shock the person, and analyze the rhythm
  2. **Power on the AED, attach electrode pads, analyze the rhythm, and shock the person**
  3. Power on the AED, analyze the rhythm, attach electrode pads, and shock the person
  4. Power on the AED, shock the person, attach electrode pads, and analyze the rhythm
  5. None of the above


Thank you for your attention !
Me too ! ! !