

FACULTY OF MEDICINE
MASARYK UNIVERSITY
UNIVERSITY HOSPITAL BRNO



DEPARTMENT OF **PAEDIATRIC**
ANAESTHESIOLOGY
AND INTENSIVE CARE MEDICINE



First aid for children

Paediatric basic life support and FBAO





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University of Pittsburgh Safar Center for Resuscitation Research

University of Pittsburgh
Critical Care Medicine
UPMC Health System

Peter J. Safar 1924 – 2003





Paediatric Life Support (PLS)

1994, 1998, 2000, 2005, 2010, 2015


- The European Resuscitation Council (ERC):
 - Guidelines 2015
 - www.erc.edu

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 **Resuscitation** 

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European Resuscitation Council Guidelines for Resuscitation 2015
Section 6. Paediatric life support 

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ERC Guidelines 2015

1. The incidence of critical illness, particularly cardiopulmonary arrest and injury in children is much lower than in adults
2. The illnesses and pathophysiological responses of paediatric patients often differ from those seen in adults
3. Many paediatric emergencies are managed primarily by providers who are not paediatric specialists and who have limited paediatric emergency medical experience
 - Strong focus on simplification



Resuscitation of the child is different from adults

A lot of common in technique, but another starting point in children

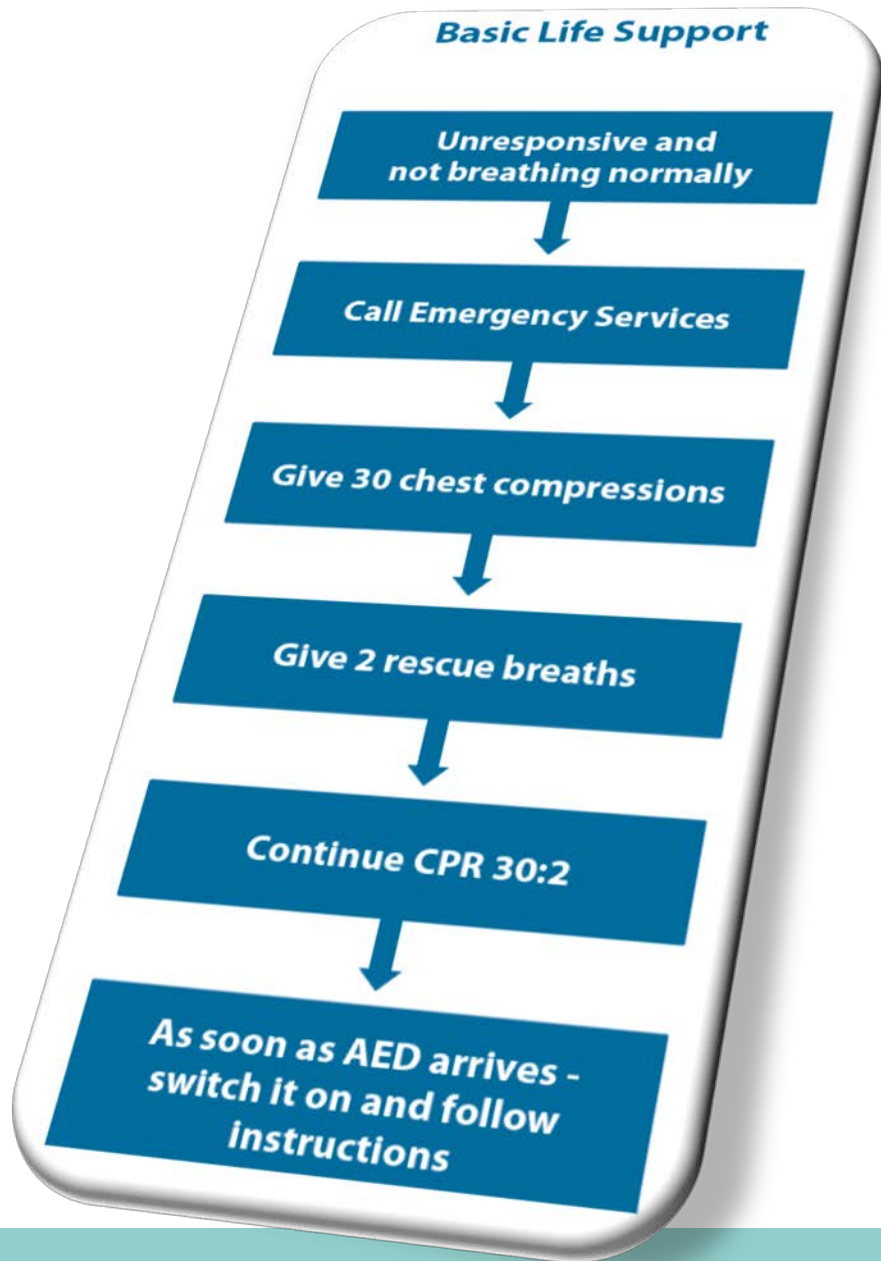
- **Adults** – primary cardiac arrest (cardiac origin)
(sudden, usually sufficient oxygen in the beginning, early defibrillation)
- **Children** – secondary cardiac arrest (non-cardiac origin)
(hypoxia → respiratory failure → cardiac arrest)
low level of oxygen in the beginning



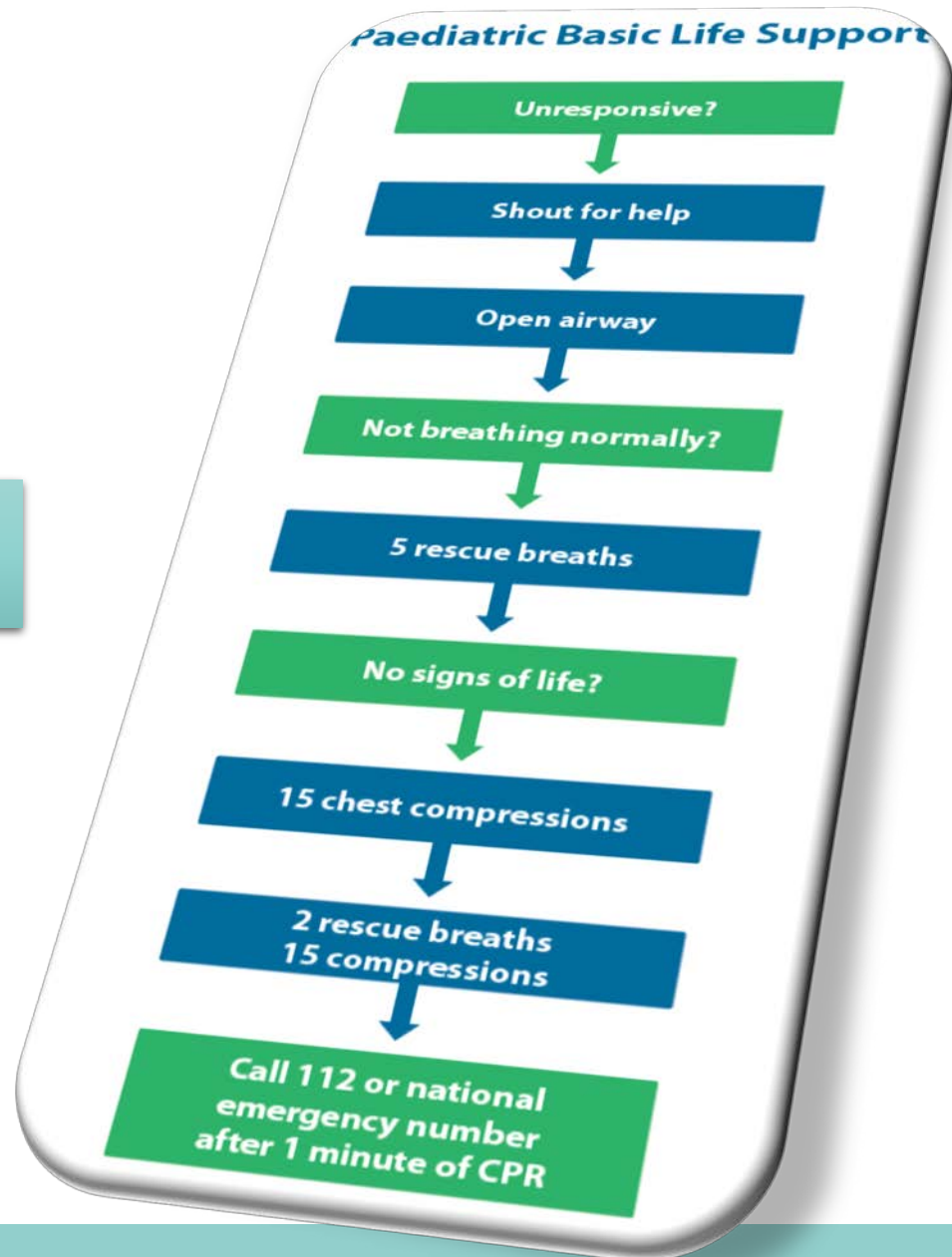
Definitions of terms in CPR

- Newly born
- Infant: < 1 year of age
- Child: 1 year – puberty
- Adult





VS



AHA / PALS

ABC or CAB?




CPR is as easy as
C-A-B

Compressions
Push hard and fast on the center of the victim's chest

Airway
Tilt the victim's head back and lift the chin to open the airway

Breathing
Give mouth-to-mouth rescue breaths


American Heart Association 
Learn and Live

©2010 American Heart Association 10/10DS3849

VS

Follow The ABC's of CPR

- A** • Airway
- B** • Breathing
- C** • Circulation



Safety

Stimulate

Shout for help

Airway

Breathing

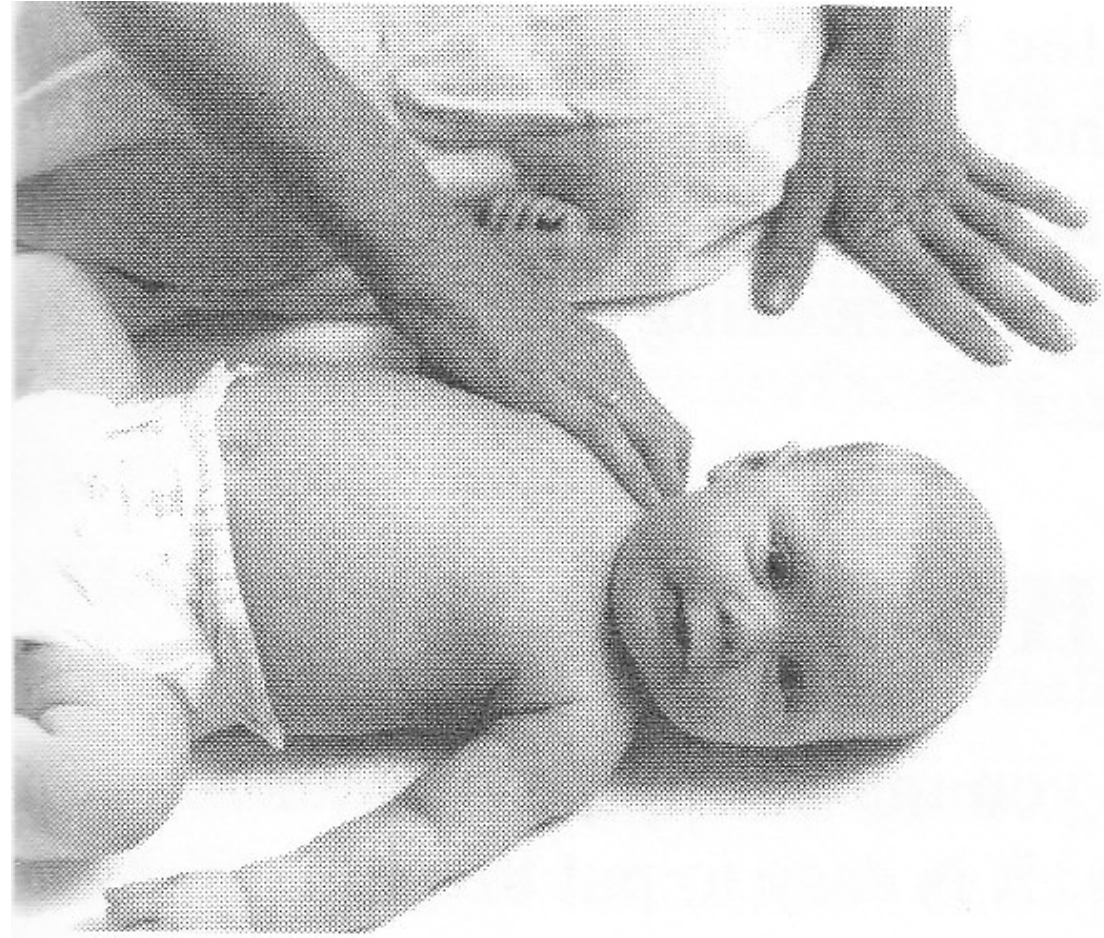
Circulation

Reassess



1. How to begin

1. Ensure the safety of rescuer and child
2. Check the child's responsiveness:
 - Stimulate + ask loudly (*Are you all right?*)
 - **If the child responds by answering or moving** → Leave the child in the position in which you find him + Reassess him regularly
 - **If the child does not respond** → Shout for help + Open the child's airway



2. Open the child's airway

Head tilt and chin lift

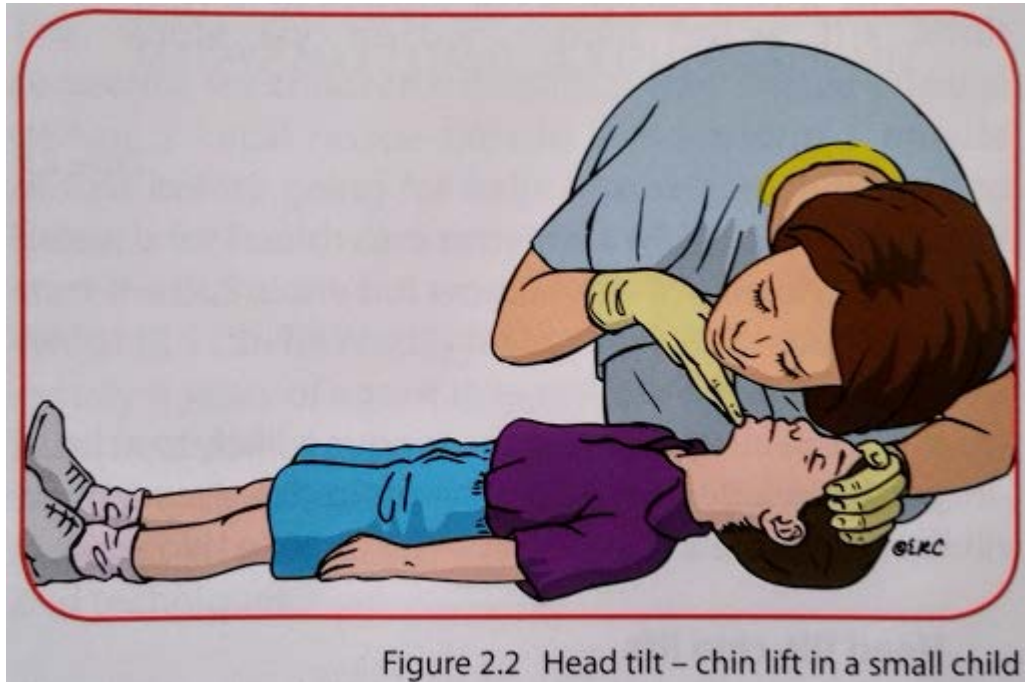


Figure 2.2 Head tilt – chin lift in a small child

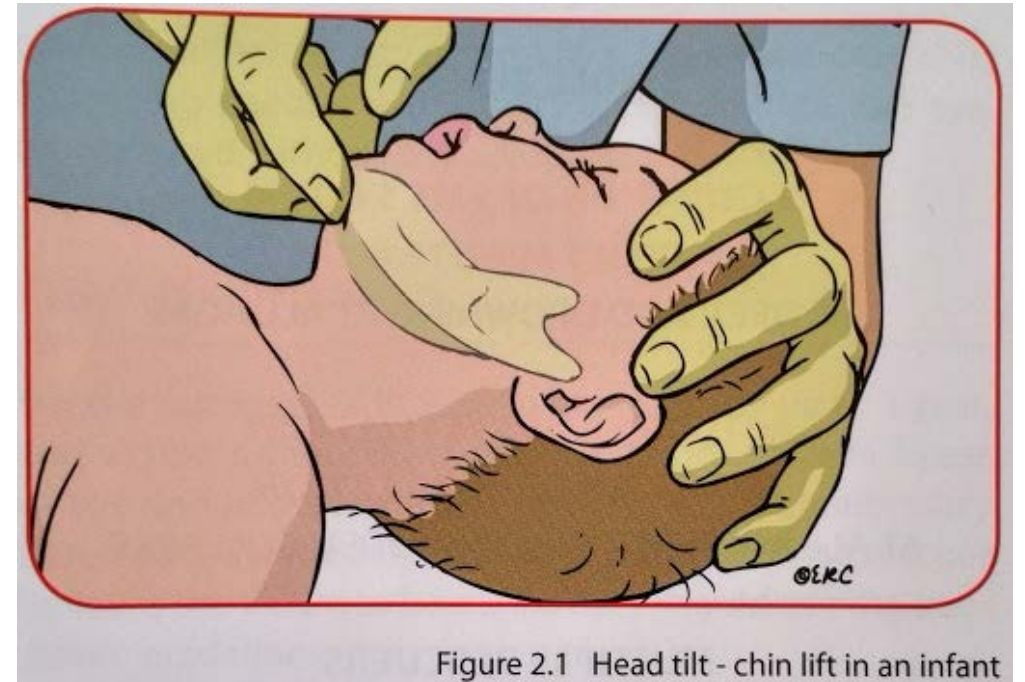
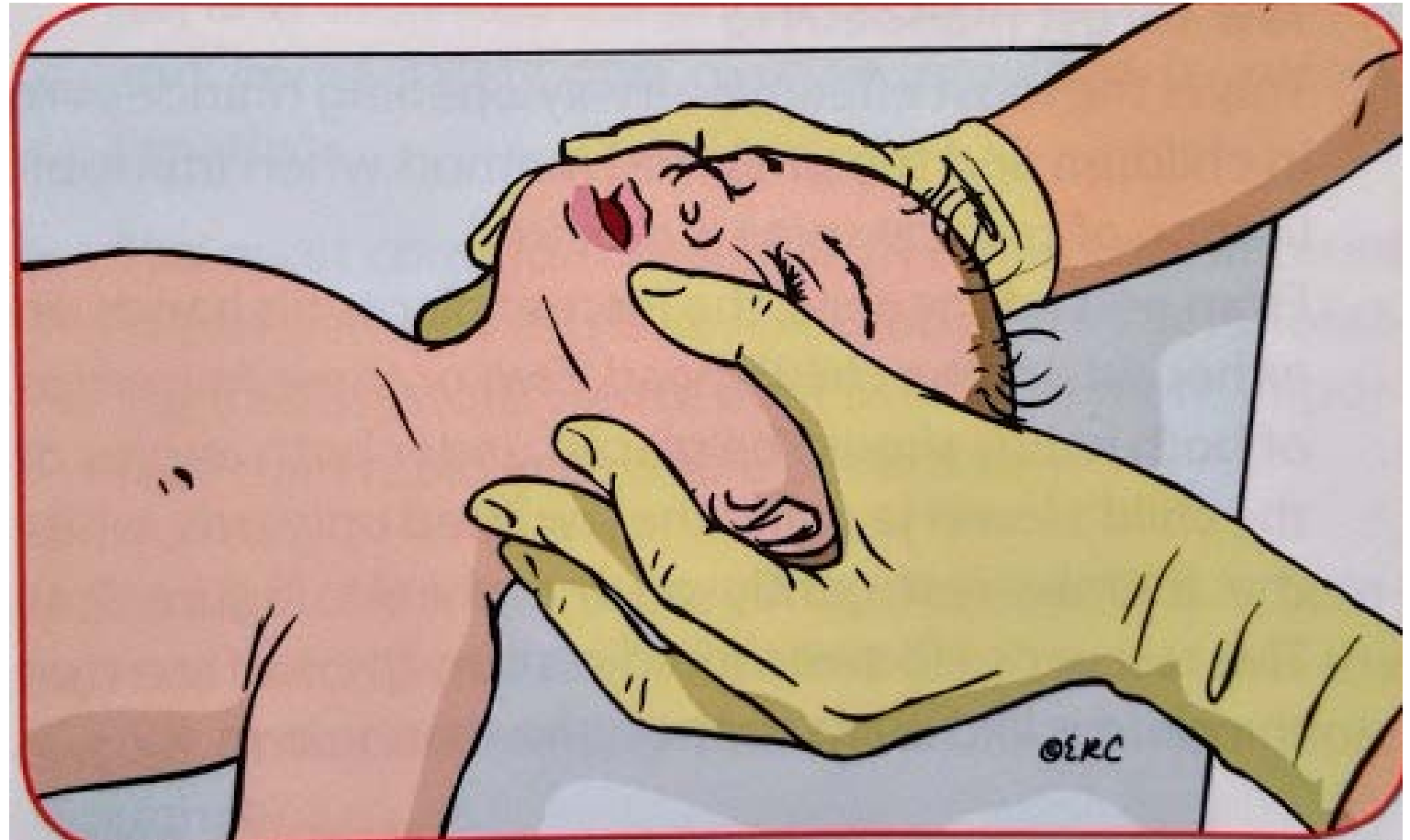


Figure 2.1 Head tilt - chin lift in an infant

2. Open the child's airway

Jaw thrust



3. Breathing

- **L**ook – chest movements
- **L**isten – breath sounds at child's nose and mouth
- **F**eel – air movement on your cheek

<10s for decision that breathing is absent



If the child is breathing normally

- Turn the child on his side into the recovery position
 - Lateral position, without obstruction of airways, free drainage of fluid
- Send or go for help—call the emergency services
- Check for continued breathing.



If the infant is not breathing

5 slow breaths!!!

- Approximately 1s each
- Movement of chest



If the child is not breathing

5 slow breaths!!!

- Approximately 1s each
- Movement of chest



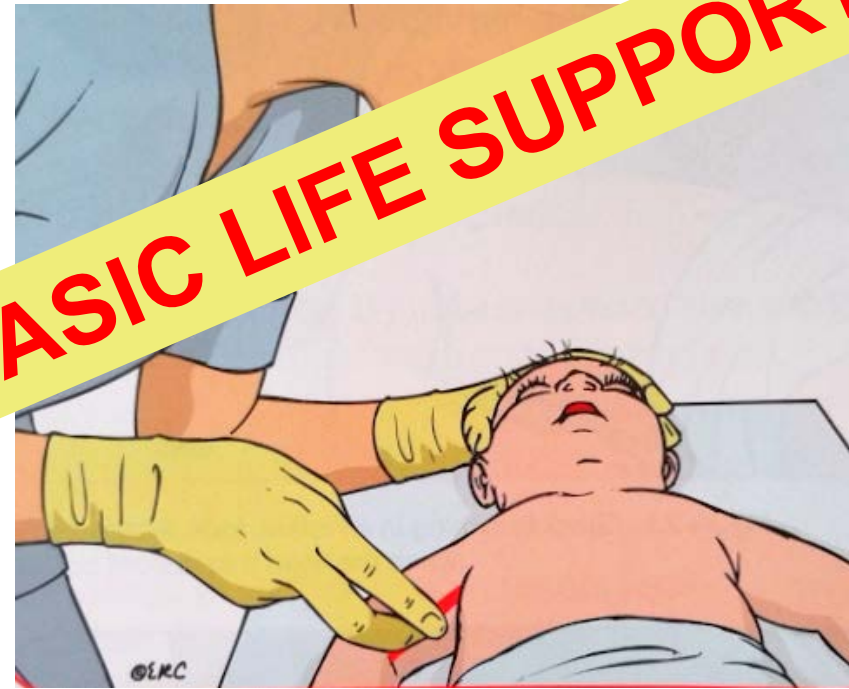
No chest movements??

- Open the mouth + remove obstruction
- Open the airways (jaw thrust)
- 5 slow breaths
- Foreign body obstruction sequence



4. Circulation

- **Movement, coughing, breathing**
 - Take no more than 10s to Look for signs of life
- **Pulse**
 - infant: a.brachialis child: a.carotis



Do not perform in BASIC LIFE SUPPORT



4. Circulation

- **Circulation is present**

→ continue breathing

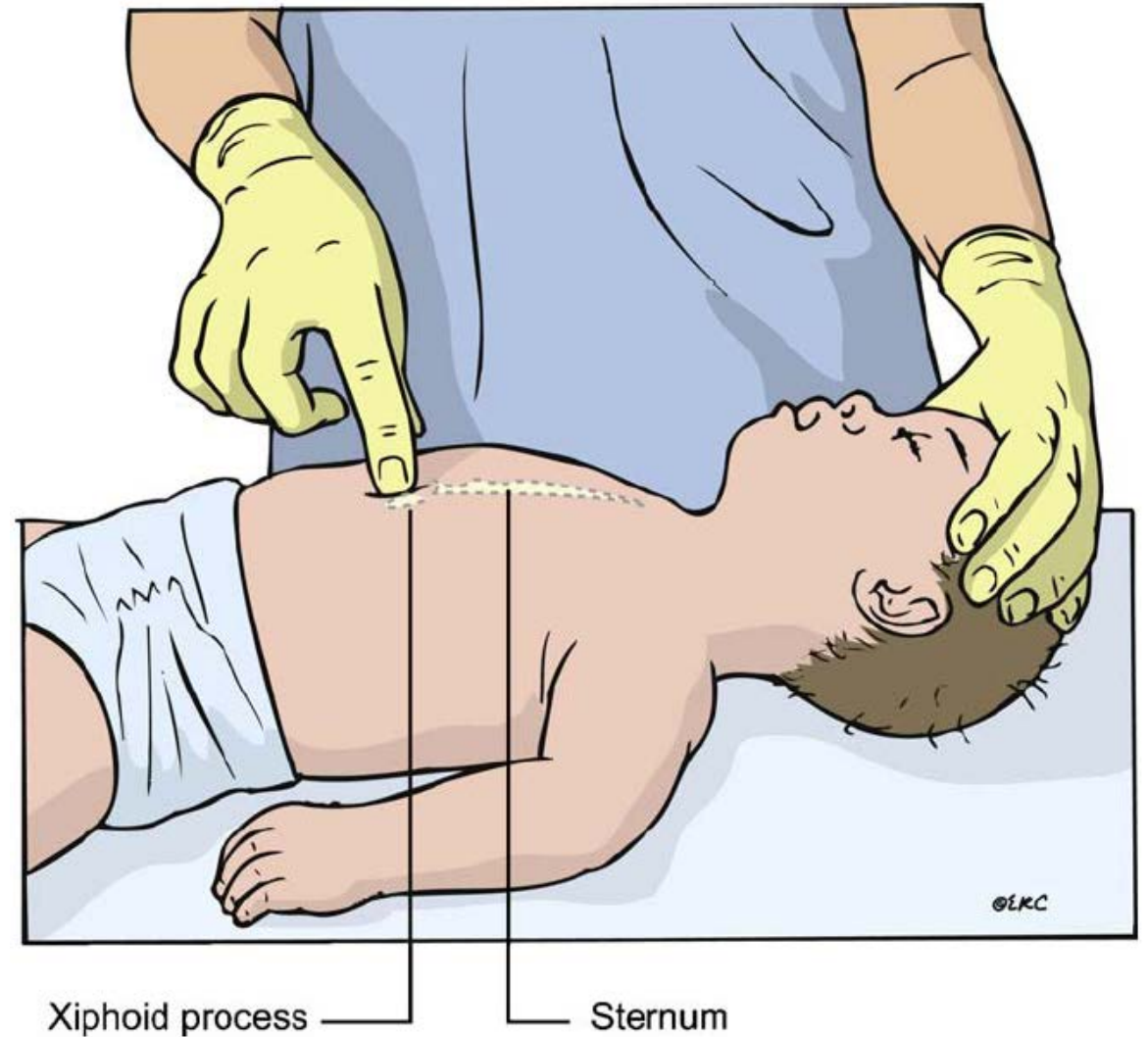
- **Circulation is absent**

→ chest compressions / breathing + chest compressions

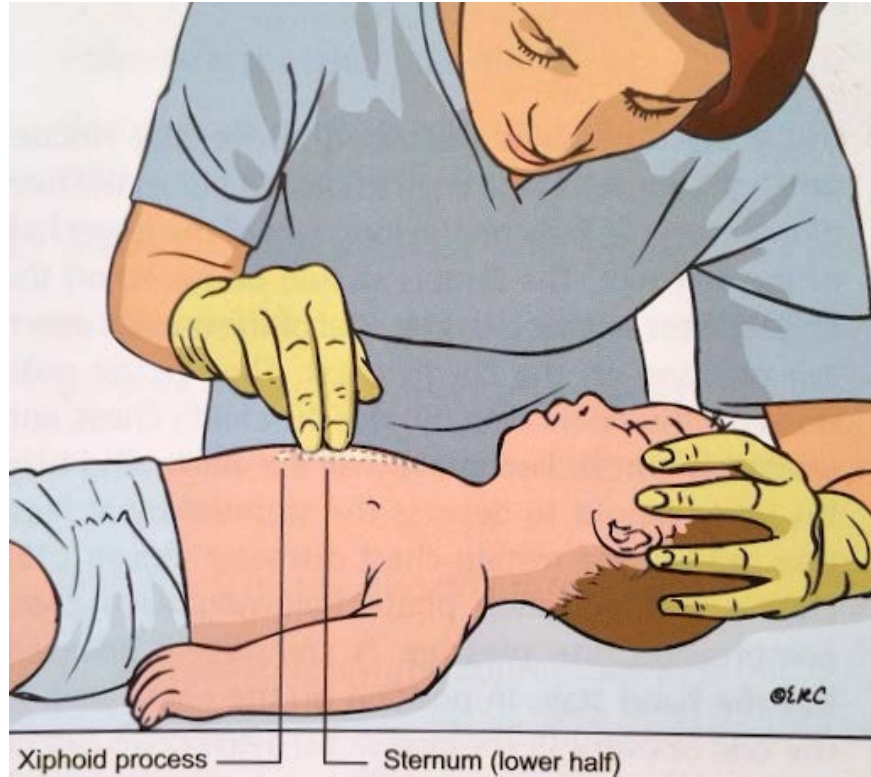


Chest compression in infants

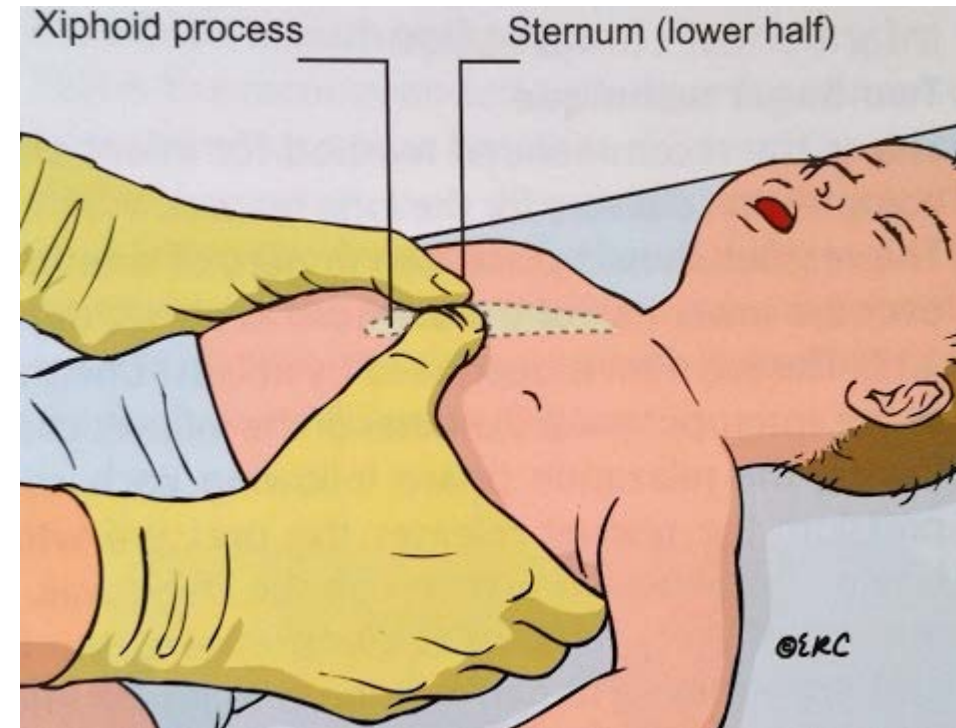
- Lower half of sternum
- Compression of sternum with 2 fingers to 1/3 of depth of infant's chest (cca 4cm)
- Rate 100/min
- Ratio 15:2



1 rescuer



2 rescuers



Chest compression in children over 1 year of age

- Lower half of sternum
- Compression of sternum with arms straight to 1/3 of depth of child's chest (cca 5cm)
- Rate 100/min



When to call for assistance??

- **More than 1 rescuer** → one should start with CPR, another calls
- **1 rescuer** → perform CPR for 1 min before calling for assistance



Only exception:
Sudden collapse + 1 rescuer
(suspect primary cardiac event)

Do not interrupt resuscitation until

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



Automated External Defibrillation



Automated External Defibrillation

- **For Child > 8 years** (cca 25 kg) – standard adult AED
- **For 1 year to 8 year old**
 - Use attenuated pads if available
 - Adult AED may be used if attenuator device not available
- **For < 1 year old**
 - Use only if manufacturer instructions indicate it is safe



Foreign body airway obstruction (FBAO)



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Foreign body airway obstruction

- Sudden onset of coughing, stridor or gagging
- Spontaneous cough is likely – more effective and safer than any manoeuvres
 - If the child is able to breath and cough – encourage spontaneous efforts

Signs of foreign body airway obstruction.

General signs of FBAO

- Witnessed episode
- Coughing/choking
- Sudden onset
- Recent history of playing with/eating small objects

Ineffective coughing

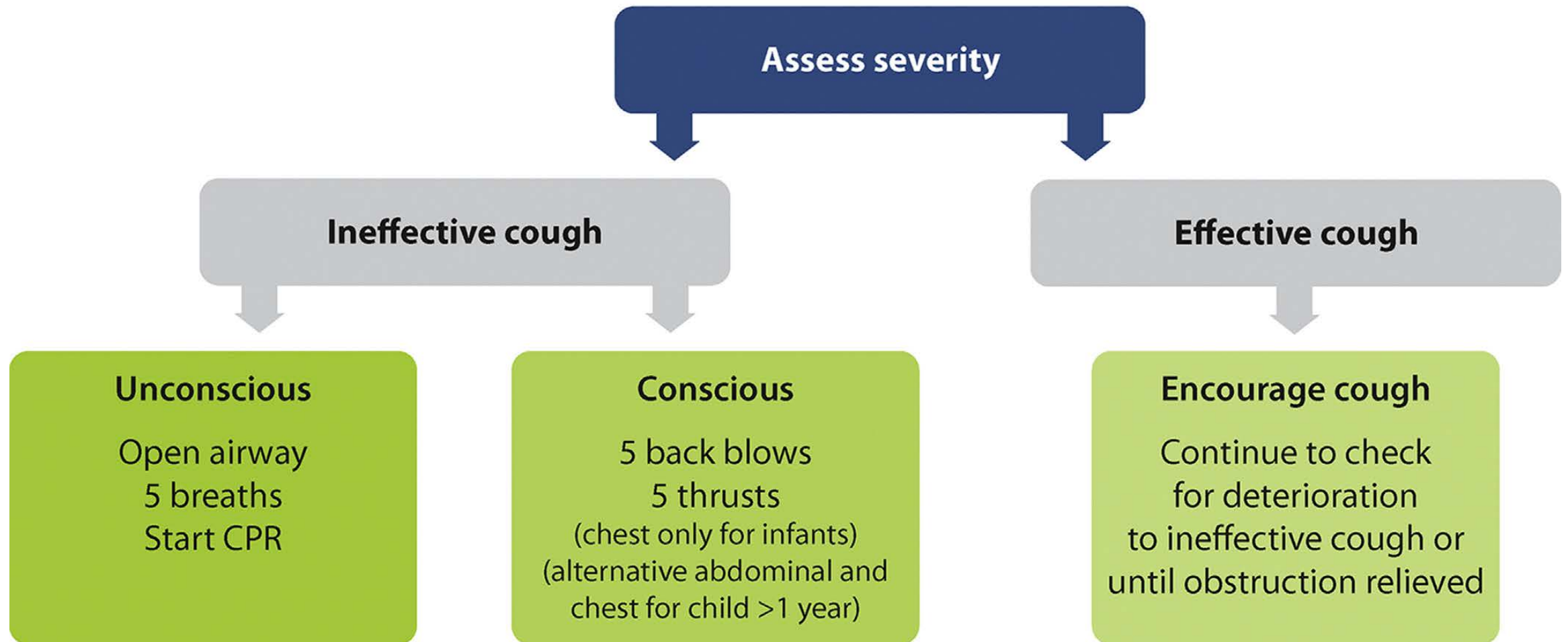
- Unable to vocalise
- Quiet or silent cough
- Unable to breathe
- Cyanosis
- Decreasing level of consciousness

Effective cough

- Crying or verbal response to questions
- Loud cough
- Able to take a breath before coughing
- Fully responsive



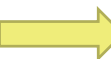
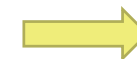
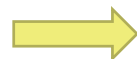
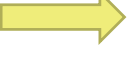
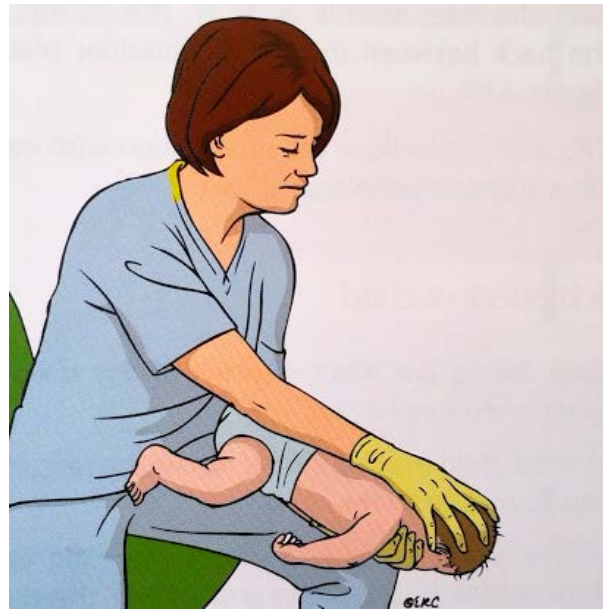
Foreign body airway obstruction



Foreign body airway obstruction

- infant -

- Hold the child in a prone position, head lower than chest
- 5 blows between shoulder blades
- 5 chest thrusts to the sternum



Foreign body airway obstruction - child -

- Hold the child in a prone position, head lower than chest
- 5 blows between shoulder blades
- 5 abdominal thrusts (Heimlich manoeuvre)

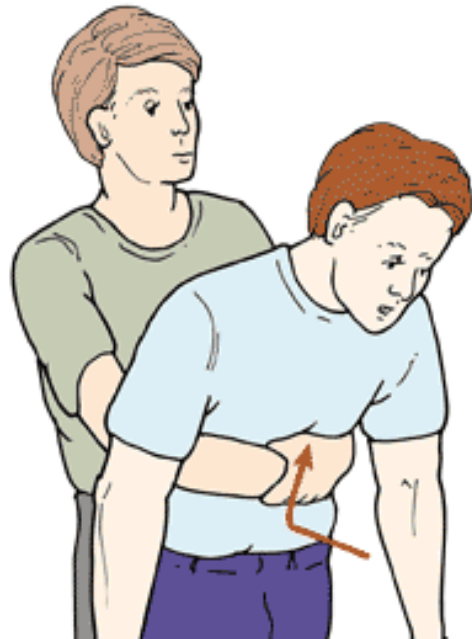
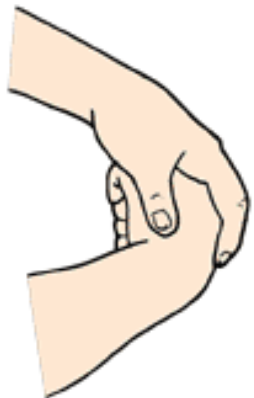
Heimlich Maneuver



1. Lean the person forward slightly and stand behind him or her.



2. Make a fist with one hand.



Thanks for your attention...

