

Basic Paediatric Life Support

Guidelines 2005



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Peter J. Safar
1924 – 2003

The European Resuscitation Council (ERC):
Paediatric Life Support (PLS) 1994, 1998, 2000

International Liaison Committee on Resuscitation
(ILCOR)

+

American Heart Association:

‘Guidelines 2000 for Cardiopulmonary Resuscitation
and Emergency Cardiovascular Care’

Paediatric Life Support Working Party
of the European Resuscitation Council 2004 / 2005

Resuscitation (2005) 67S1, S97–S133



**European
Resuscitation
Council**

www.erc.edu

RESUSCITATION



www.elsevier.com/locate/resuscitation

European Resuscitation Council Guidelines for Resuscitation 2005 Section 6. Paediatric life support

**Dominique Biarent, Robert Bingham, Sam Richmond, Ian Maconochie,
Jonathan Wyllie, Sheila Simpson, Antonio Rodriguez Nunez,
David Zideman**

ERC Guidelines 2005

Strong focus on simplification

Many children receive no resuscitation at all
because rescuers fear doing harm

Better resuscitate as adult than doing nothing

Chest compressions / air ventilation alone
may improve outcome

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, early defibrillation)

Children – secondary cardiac arrest (non-cardiac
origin)
(hypoxia → respiratory failure → cardiac arrest)

Primary cardiac arrest in children < 15 %

Outcome of CPR in children: 3 – 17 % survival,
survivors: severe neurological disability (80 %)

Factors, which could affect outcome
of BLS:

Recognition of condition, which can lead to cardiac
arrest and properly performed BLS.

Epidemiology:

119 patients < 18 years with cardiac arrest,
45 % < 1 year, 64 % < 3 years of age,
causes of cardiac arrest:

Sudden infant death syndrome	32 %
Drowning	22 %
Another respiratory diseases	9 %
Congenital heart diseases	4 %
Neurological diseases	4 %
Oncological diseases	3 %
Cardiological diseases	3 %
Drug overdose	3 %
Smoke inhalation	2 %
Anaphylaxis	2 %
Endocrinological diseases	2 %

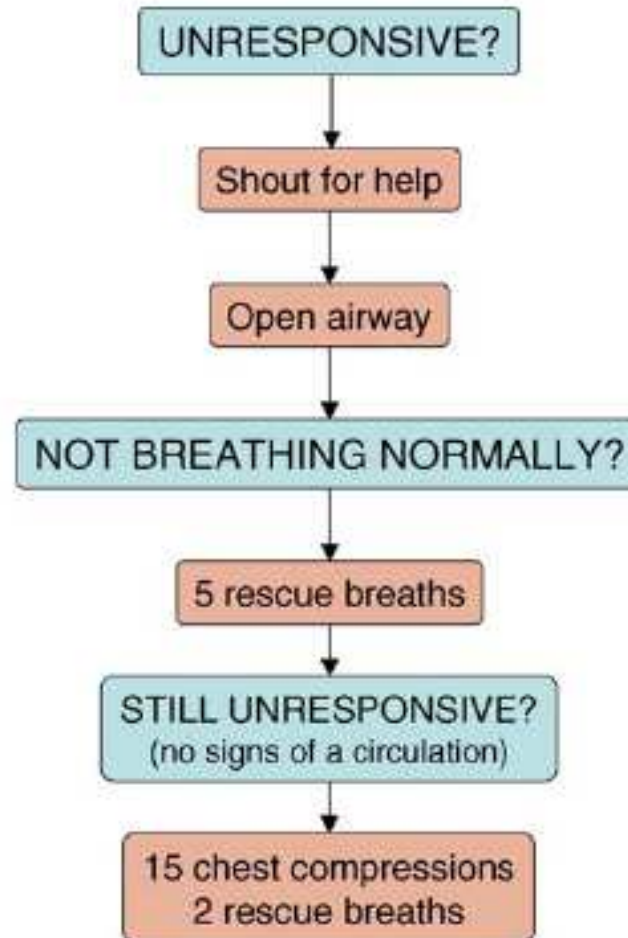
Definitions (CPR point of view):

Infant: < 1 year of age

Child: 1 year – puberty

Paediatric Basic Life Support Algorithm

Paediatric Basic Life Support
(Healthcare professionals with a duty to respond)



After 1 minute call resuscitation team then continue CPR

Figure 6.1 Paediatric basic life support algorithm.

Check Responsiveness

1. Ensure the **safety** of rescuer and child

2. Check the child's **responsiveness**:

stimulate + ask

child with suspected


cervical spinal injuries should not be shaken

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 (tilt head and lift chin)
(Esmarch manoeuvre)



OPEN AIRWAY
Head Tilt, Chin Lift
(Jaw Thrust)

Esmarch manoeuvre

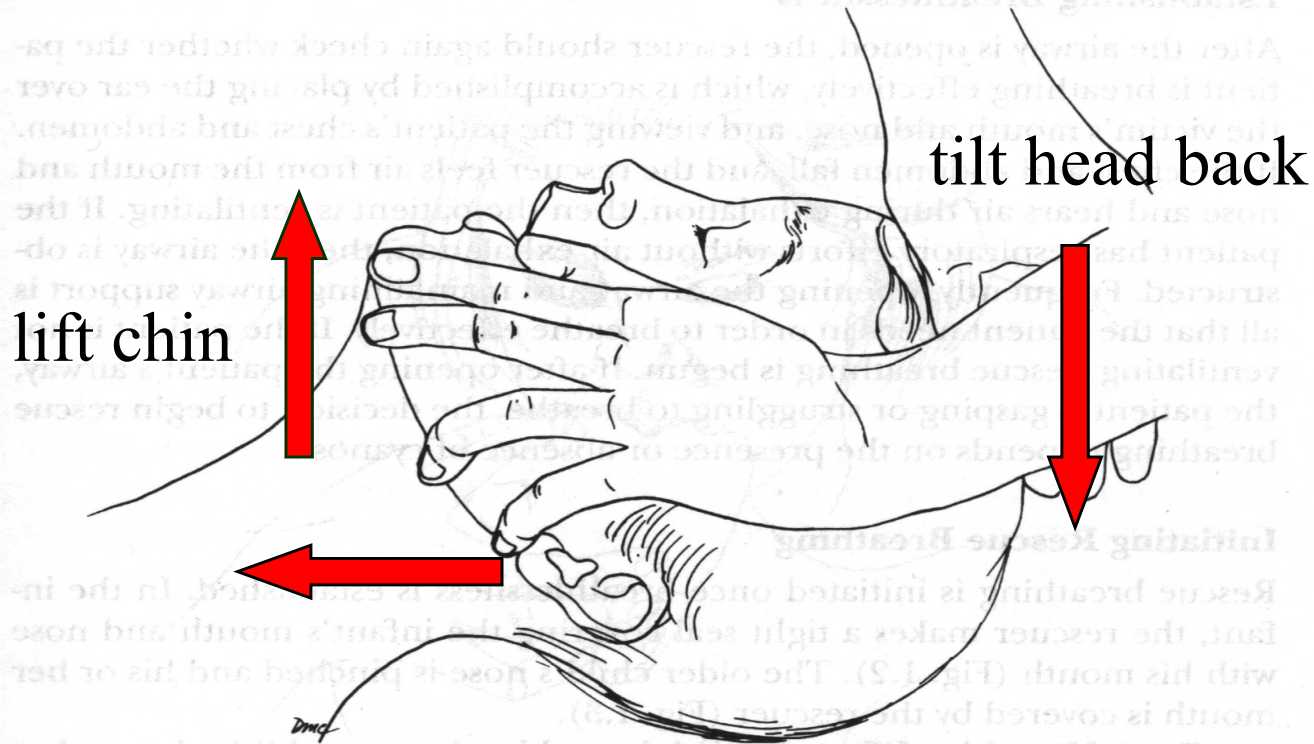


Figure 1.1. Head-tilt/chin-lift airway position. The rescuer places one hand on the patient's forehead, with his or her other hand supporting the angle of the patient's mandible while pulling the chin upward.

Check Responsiveness



OPEN AIRWAY
Head Tilt, Chin Lift
(Jaw Thrust)

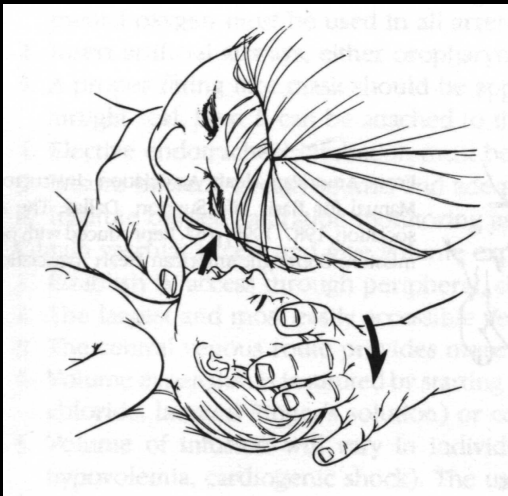


CHECK BREATHING
Look, Listen, Feel

1. Ensure the safety of rescuer and child
2. Responsiveness stimulate + ask
Open airways

3. Breathing

- Look – chest movements
- Listen – breath sounds at child's nose and mouth
- Feel – air movement on your cheek



10 s for decision that breathing is absent

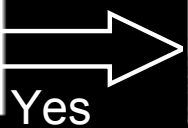
Check Responsiveness



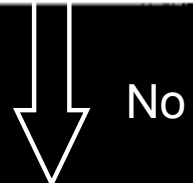
OPEN AIRWAY
Head Tilt, Chin Lift
(Jaw Thrust)



CHECK BREATHING
Look, Listen, Feel



If breathing,
place in
recovery position



Give two effective
BREATHS

1. Ensure the safety of rescuer and child

2. Responsiveness stimulate + ask

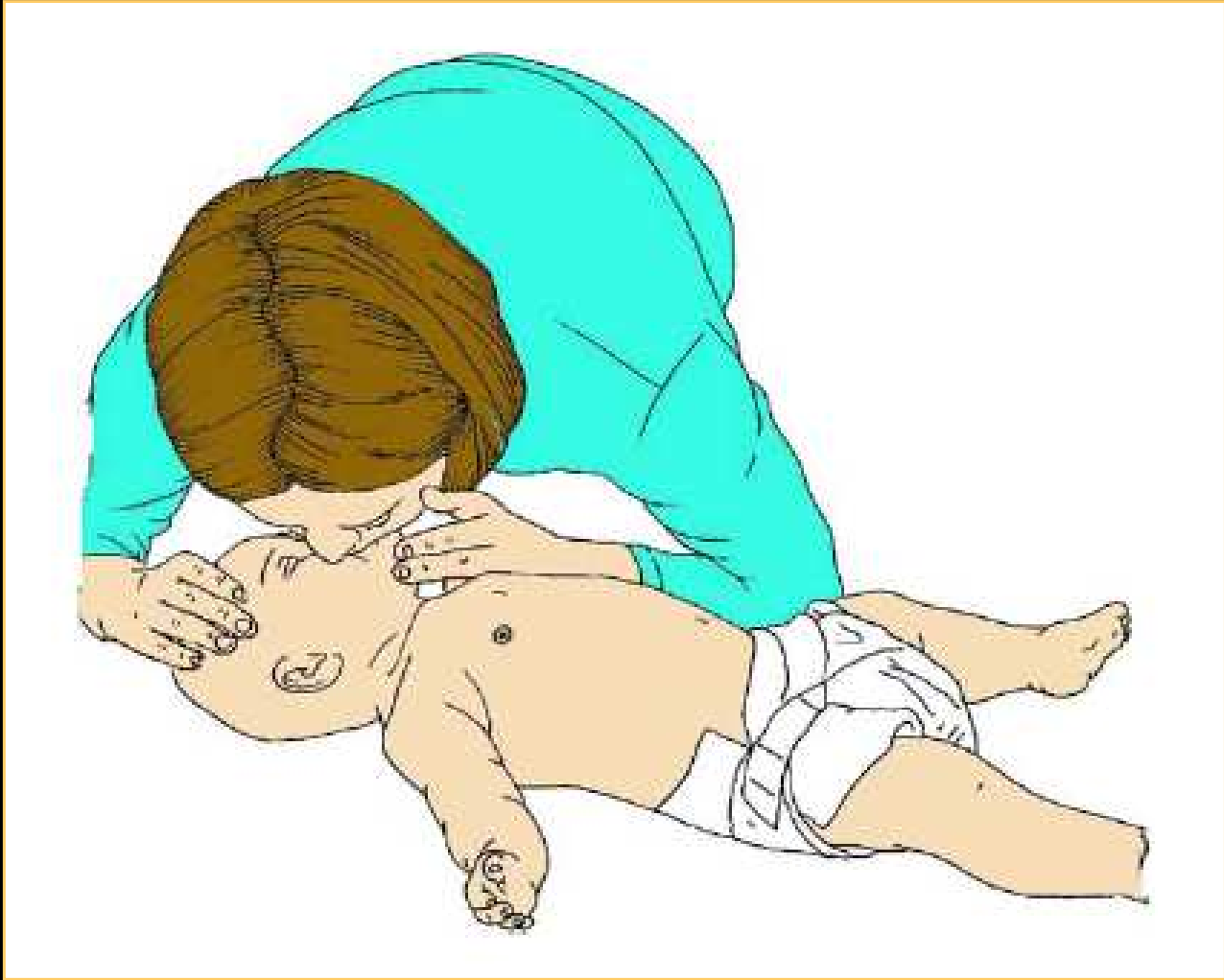
Open airways

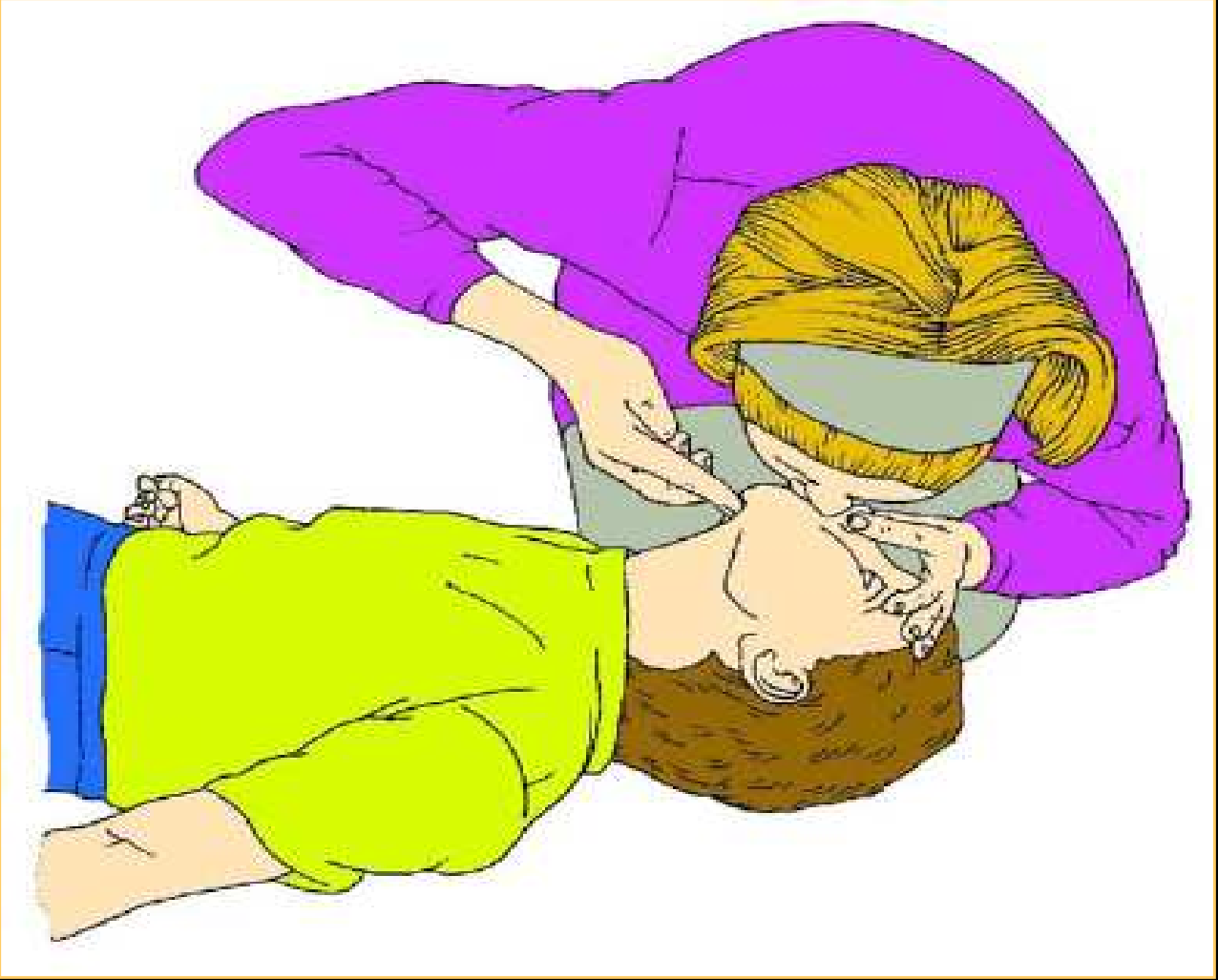
3. Breathing

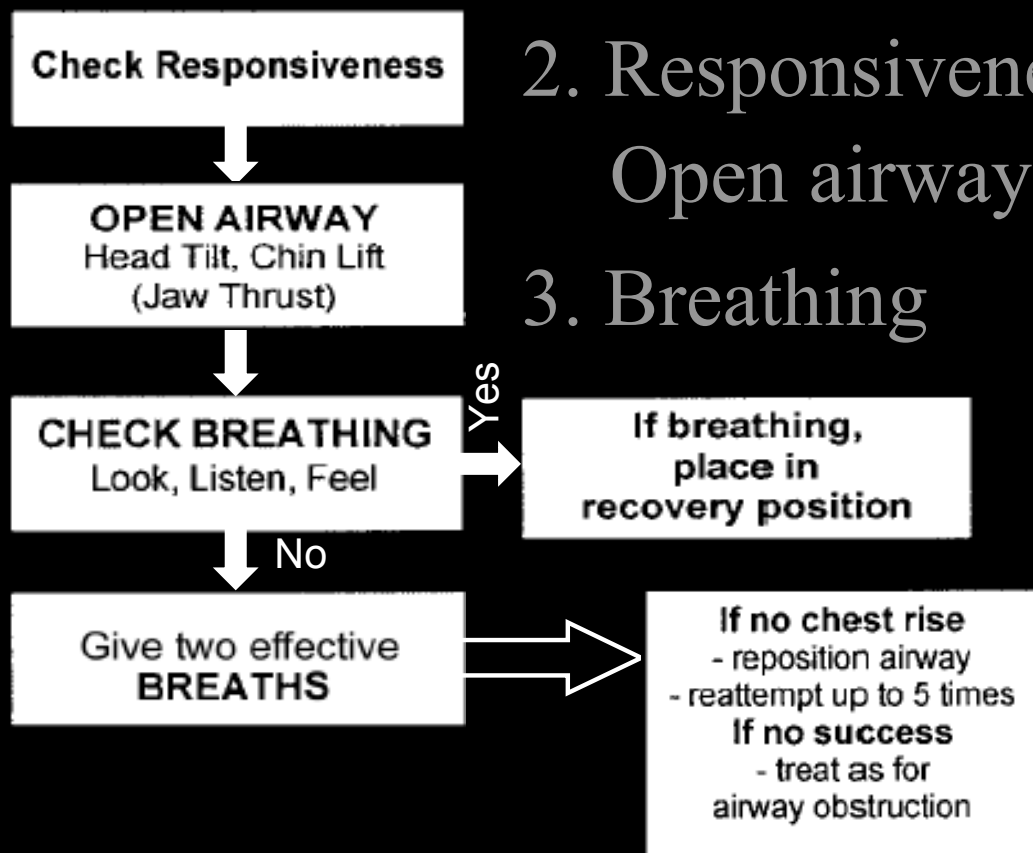
If the child is breathing →
recovery position (lateral position, without
obstruction of airways, free drainage of fluid)

If the child is not breathing →

- 5 slow breaths
- 1 – 1.5 s each
- movement of chest







1. Ensure the safety of rescuer and child
2. Responsiveness stimulate + ask
Open airways
3. Breathing

No chest movements →

- open the mouth, remove obstruction
- open the airways (Esmarch manoeuvre)
- 5 slow breaths
- foreign body obstruction sequence

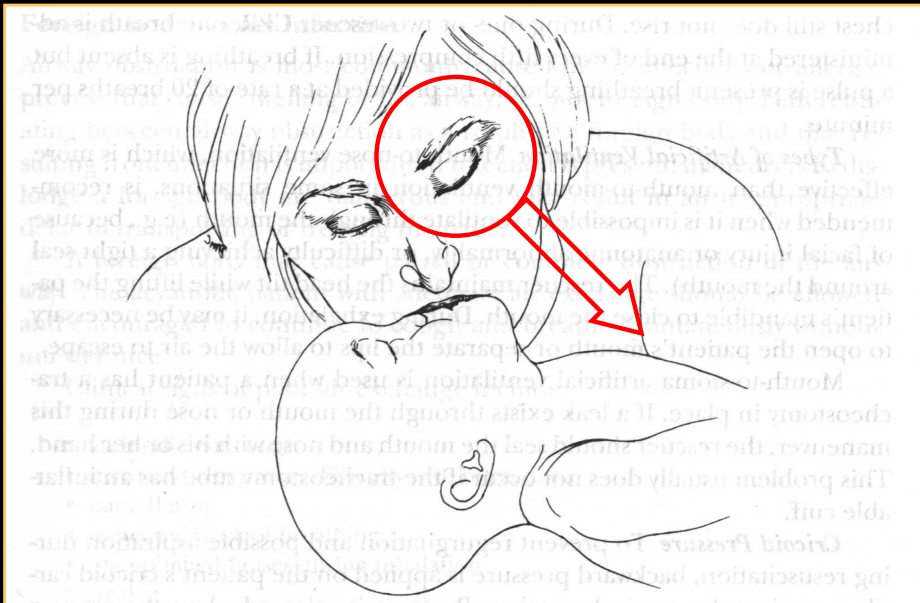


Figure 1.2. Artificial ventilation in infants. The rescuer places the patient's head in sniffing position and places his or her mouth over both the mouth and nose, making a tight seal.

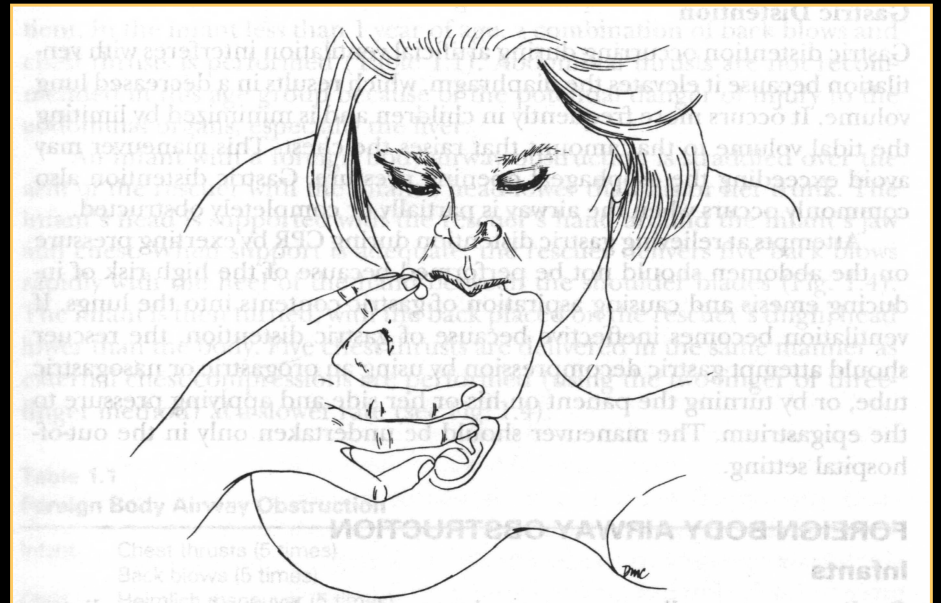
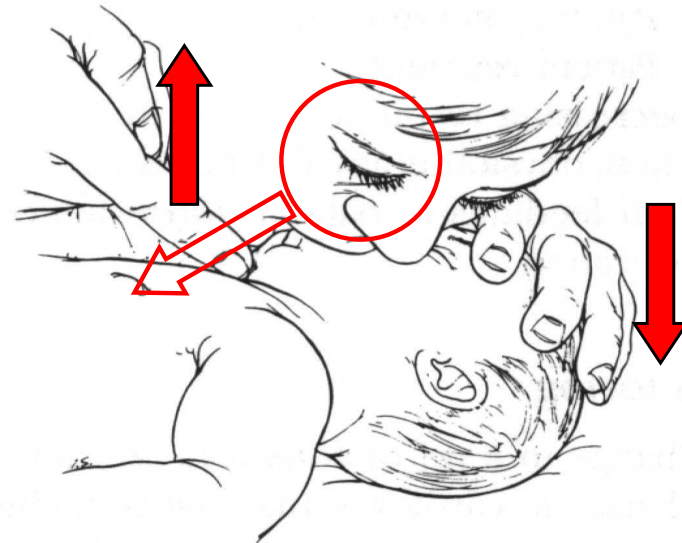


Figure 1.3. Mouth-to-mouth ventilation. The rescuer places the patient's head in the sniffing position, pinches off the nose, takes a deep breath, and exhales into the patient's mouth.



From Standards and guidelines for cardiopulmonary resuscitation (CPR) and emergency cardiac care (ECC). Part IV: Pediatric basic life support. JAMA 255:2954-2960, 1986. Copyright 1986, American Medical Association.

Check Responsiveness



OPEN AIRWAY
Head Tilt, Chin Lift
(Jaw Thrust)



CHECK BREATHING
Look, Listen, Feel

Yes

**If breathing,
place in
recovery position**

No

**Give two effective
BREATHS**

If no chest rise
- reposition airway
- reattempt up to 5 times
If no success
- treat as for
airway obstruction



**Check for signs
of a circulation**
Check Pulse
(10 secs maximum)

1. Ensure the safety of rescuer and child
2. Responsiveness stimulate + ask
Open airways
3. Breathing

4. Circulation within 10 s

- movement, coughing, breathing
- pulse infant: a.brachialis child: a.carotis

Check Responsiveness



OPEN AIRWAY
Head Tilt, Chin Lift
(Jaw Thrust)



CHECK BREATHING
Look, Listen, Feel

Yes

**If breathing,
place in
recovery position**

No

**Give two effective
BREATHS**

→

If no chest rise
- reposition airway
- reattempt up to 5 times
If no success
- treat as for
airway obstruction

**Check for signs
of a circulation**
Check Pulse
(10 secs maximum)



Compress Chest
15 compressions:
2 ventilation
100 compressions/minute

1. Ensure the safety of rescuer and child
2. Responsiveness stimulate + ask
Open airways
3. Breathing

4. Circulation
is present →

- continue breathing

is absent →

slow pulse (under 60/min) →

not sure →

- chest compressions
- breathing +
chest compressions

Check Responsiveness



OPEN AIRWAY
Head Tilt, Chin Lift
(Jaw Thrust)



CHECK BREATHING
Look, Listen, Feel

Yes

**If breathing,
place in
recovery position**

No

**Give two effective
BREATHS**

Yes

If no chest rise
- reposition airway
- reattempt up to 5 times
If no success
- treat as for
airway obstruction

**Check for signs
of a circulation**
Check Pulse
(10 secs maximum)



Compress Chest
15 compressions:
2 ventilation
100 compressions/minute

1. Ensure the safety of rescuer and child

2. Responsiveness stimulate + ask

Open airways

3. Breathing

4. Circulation

Infant

- lower third of sternum
- compression of sternum with 2 fingers to 1/3 of depth of infant's chest

• rate 100 / min

• 1 rescuer: after 30 compressions 2 breaths (ratio 30:2)

• 2 rescuers – ratio 15:2

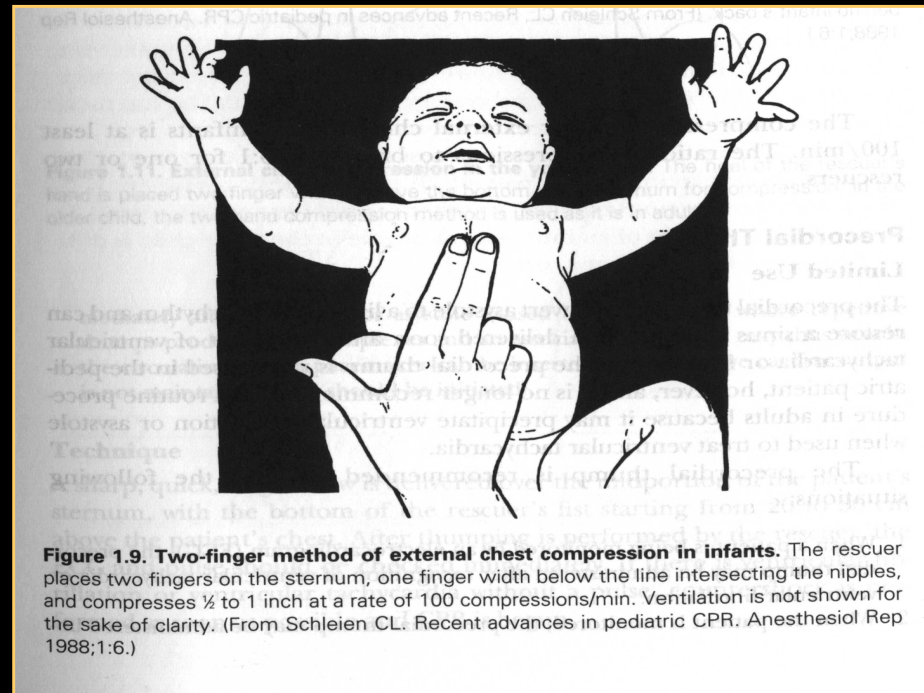
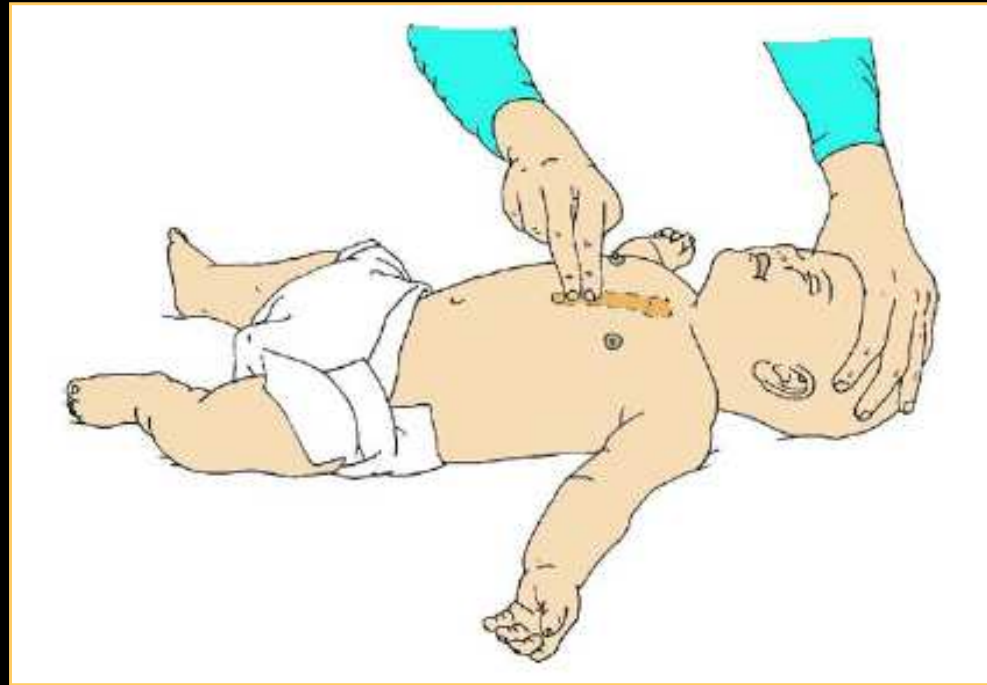


Figure 1.9. Two-finger method of external chest compression in infants. The rescuer places two fingers on the sternum, one finger width below the line intersecting the nipples, and compresses $\frac{1}{2}$ to 1 inch at a rate of 100 compressions/min. Ventilation is not shown for the sake of clarity. (From Schleien CL. Recent advances in pediatric CPR. Anesthesiol Rep 1988;1:6.)

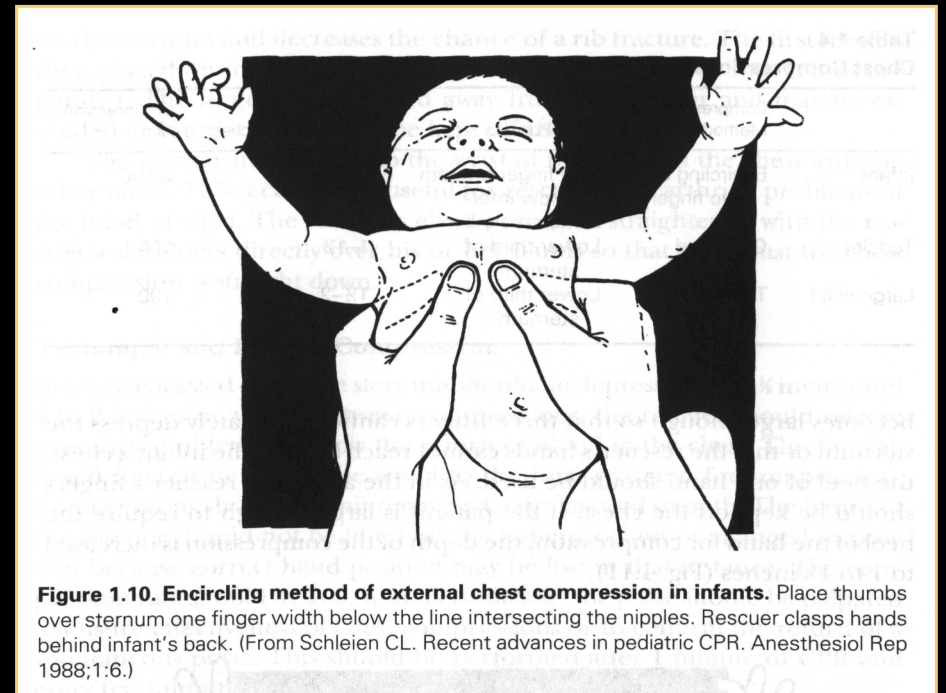


Figure 1.10. Encircling method of external chest compression in infants. Place thumbs over sternum one finger width below the line intersecting the nipples. Rescuer clasps hands behind infant's back. (From Schleien CL. Recent advances in pediatric CPR. Anesthesiol Rep 1988;1:6.)

Check Responsiveness



OPEN AIRWAY
Head Tilt, Chin Lift
(Jaw Thrust)



CHECK BREATHING
Look, Listen, Feel

Yes

**If breathing,
place in
recovery position**

No

**Give two effective
BREATHS**

Yes

If no chest rise
- reposition airway
- reattempt up to 5 times
If no success
- treat as for
airway obstruction

**Check for signs
of a circulation**
Check Pulse
(10 secs maximum)

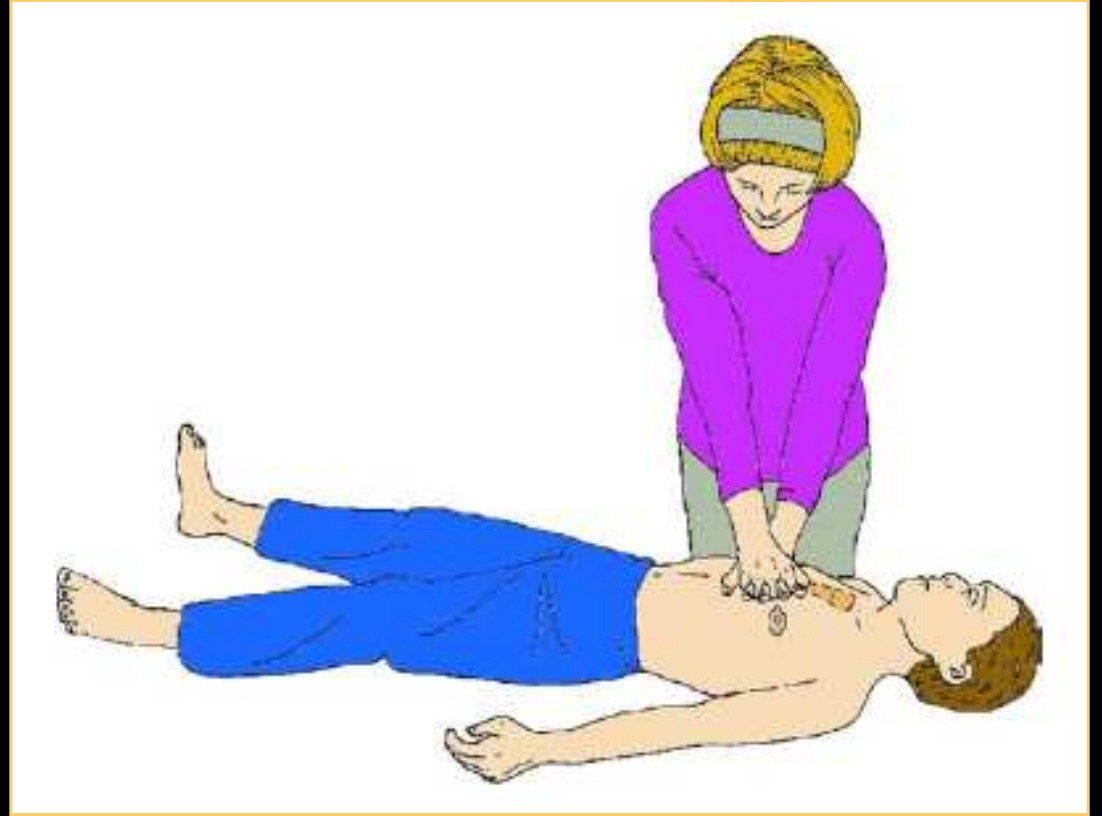


Compress Chest
15 compressions:
2 ventilation
100 compressions/minute

1. Ensure the safety of rescuer and child
2. Responsiveness stimulate + ask
Open airways
3. Breathing

4. Circulation Child

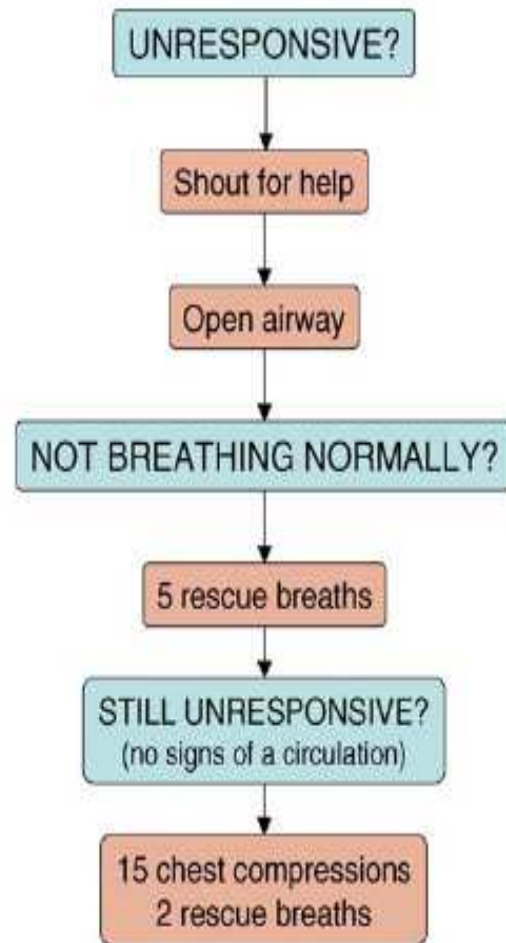
- lower third of sternum
- compression of sternum with arms straight to 1/3 of depth of child's chest
- rate 100 / min
- 1 rescuer – ratio 30:2
- 2 rescuers – ratio 15:2



Continue resuscitation until

- the child shows signs of life (spontaneous breathing, pulse, movement)
- qualified help arrives
- rescuer become exhausted

Paediatric Basic
Life Support
(Healthcare
professionals
with a duty to
respond)



After 1 minute call resuscitation team then continue CPR

Figure 6.1 Paediatric basic life support algorithm.

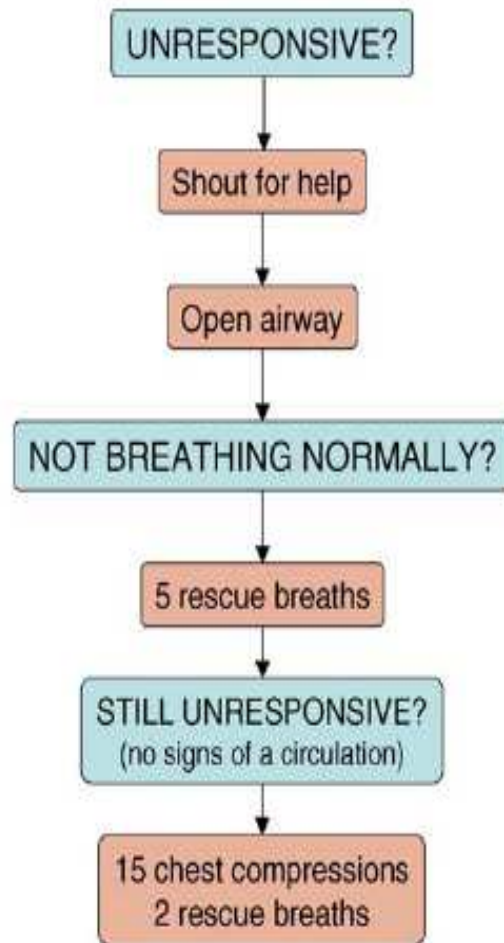
When to call for assistance

> 1 rescuer → one should start with CPR, another calls

1 rescuer → perform CPR for 1 min before calling for assistance

Only exception:
child with known heart disease

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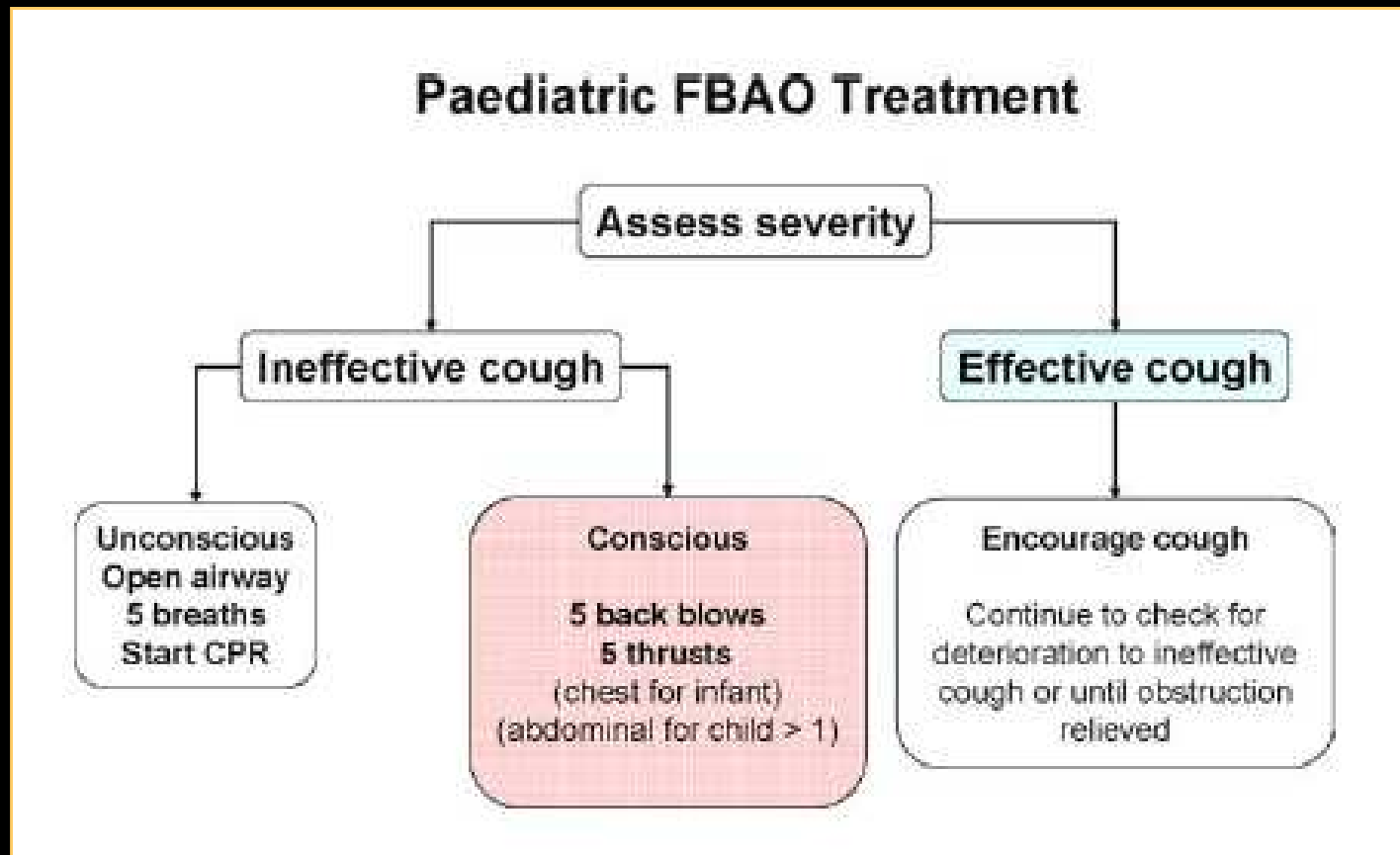


After 1 minute call resuscitation team then continue CPR

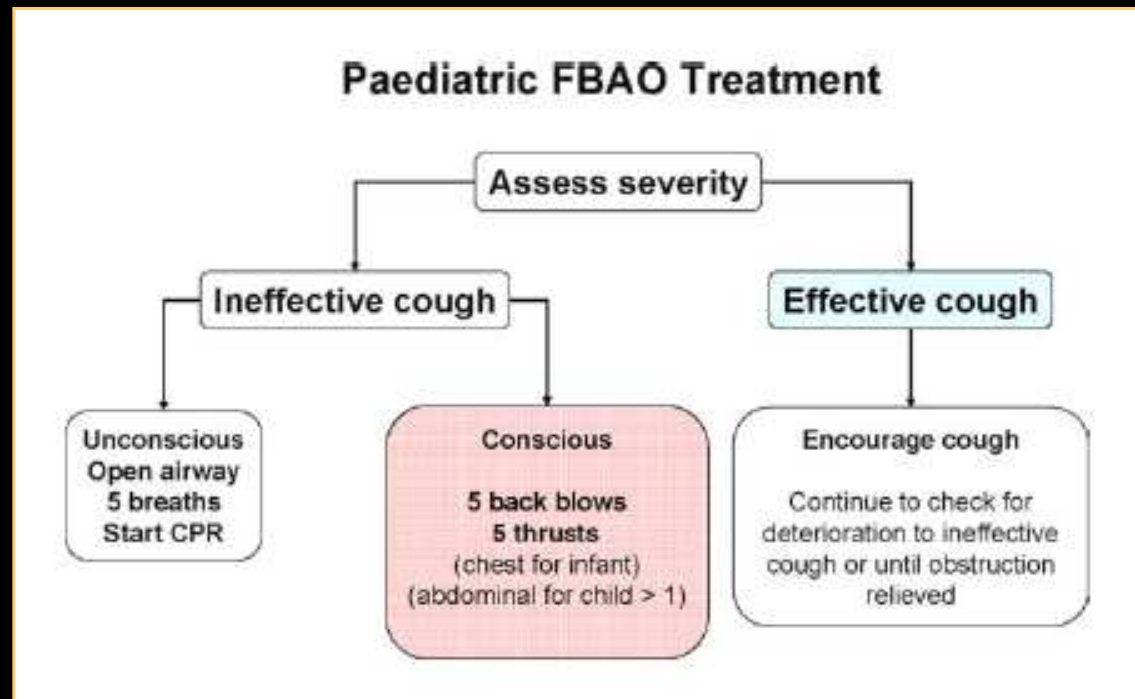
Figure 6.1 Paediatric basic life support algorithm.

Foreign-body airway obstruction

Sudden onset of coughing, stridor or gagging



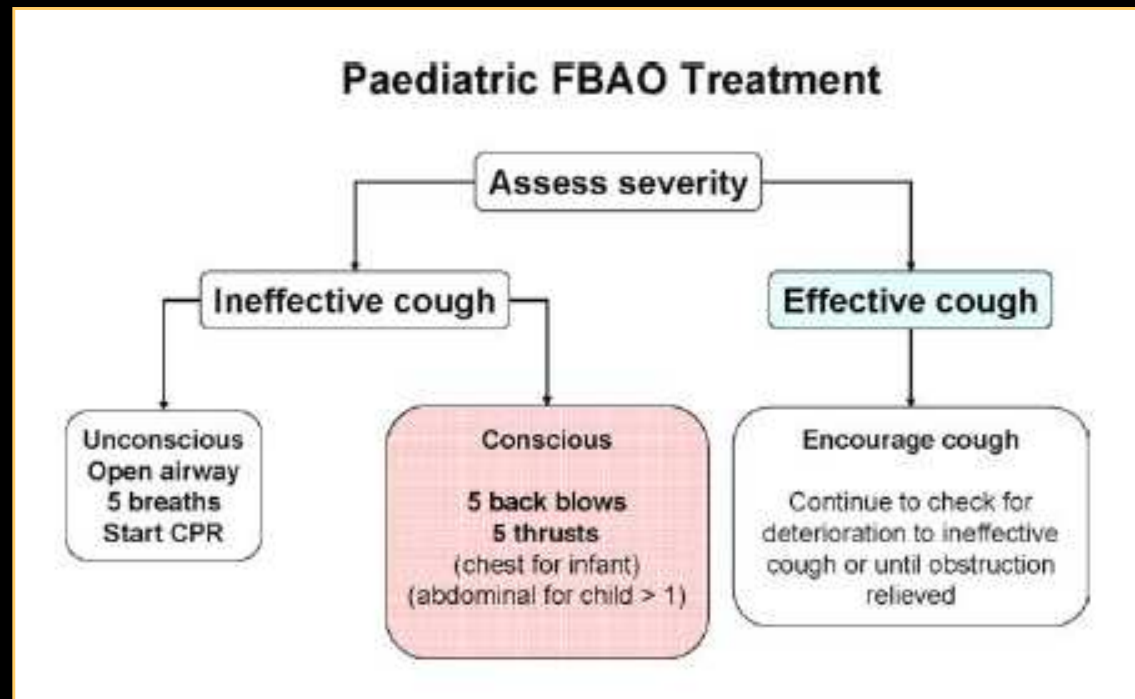
Foreign-body airway obstruction



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)

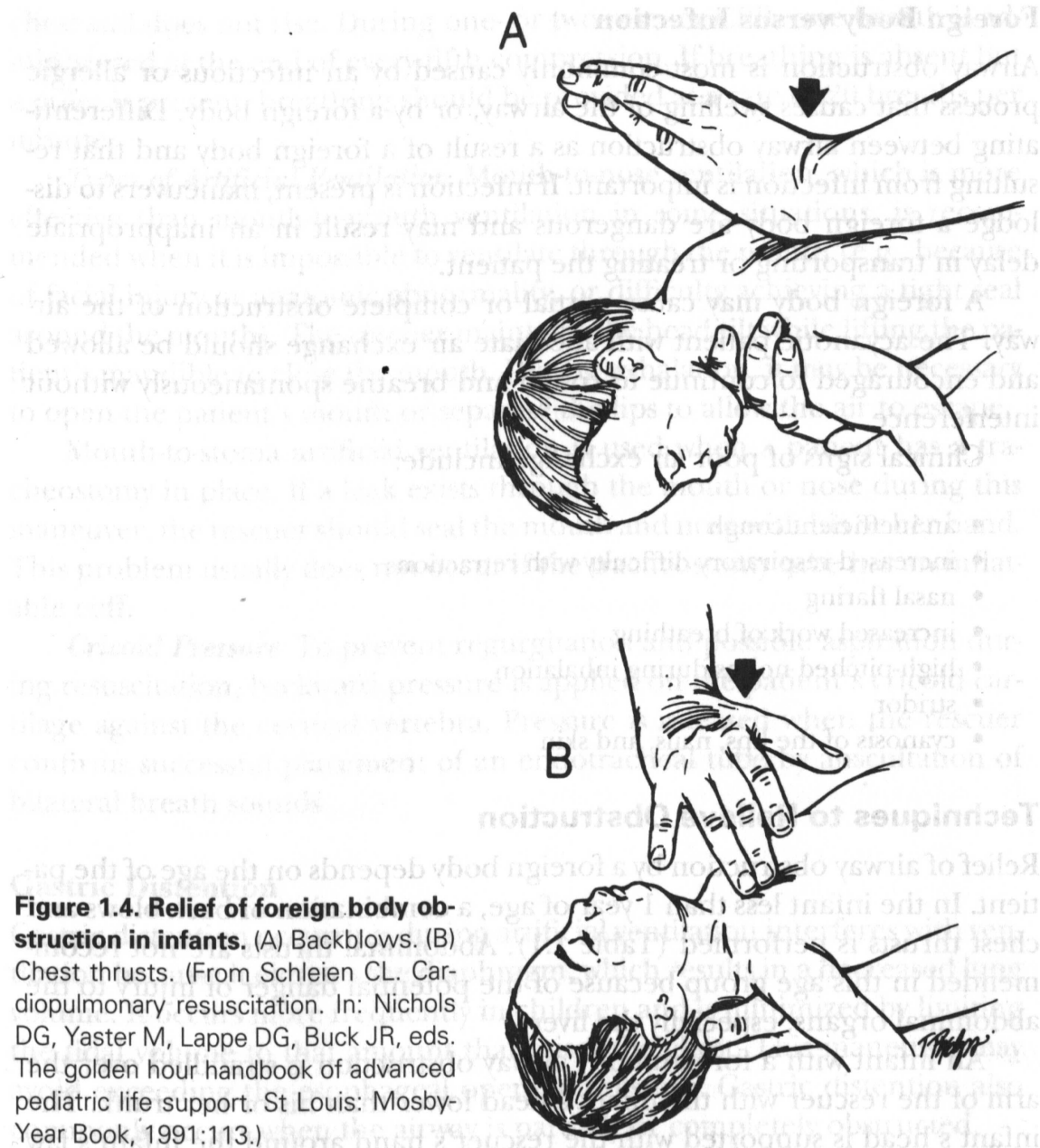


Figure 1.4. Relief of foreign body obstruction in infants. (A) Backblows. (B) Chest thrusts. (From Schleien CL. Cardiopulmonary resuscitation. In: Nichols DG, Yaster M, Lappe DG, Buck JR, eds. The golden hour handbook of advanced pediatric life support. St Louis: Mosby-Year Book, 1991:113.)

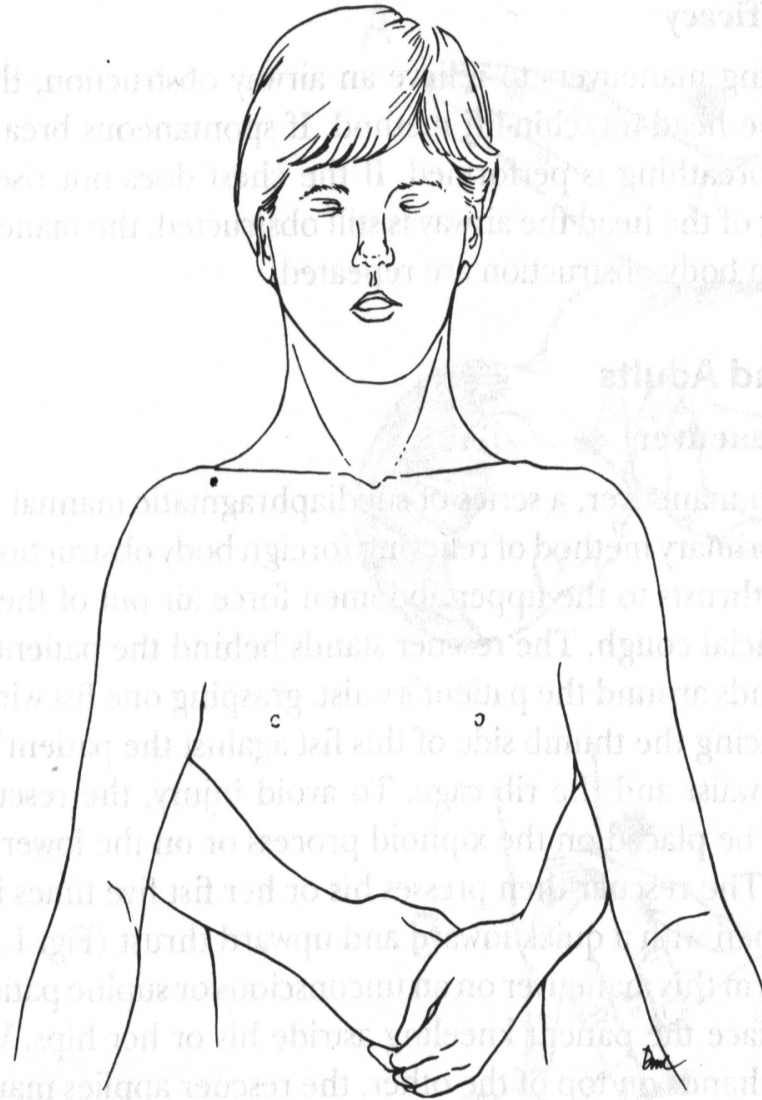
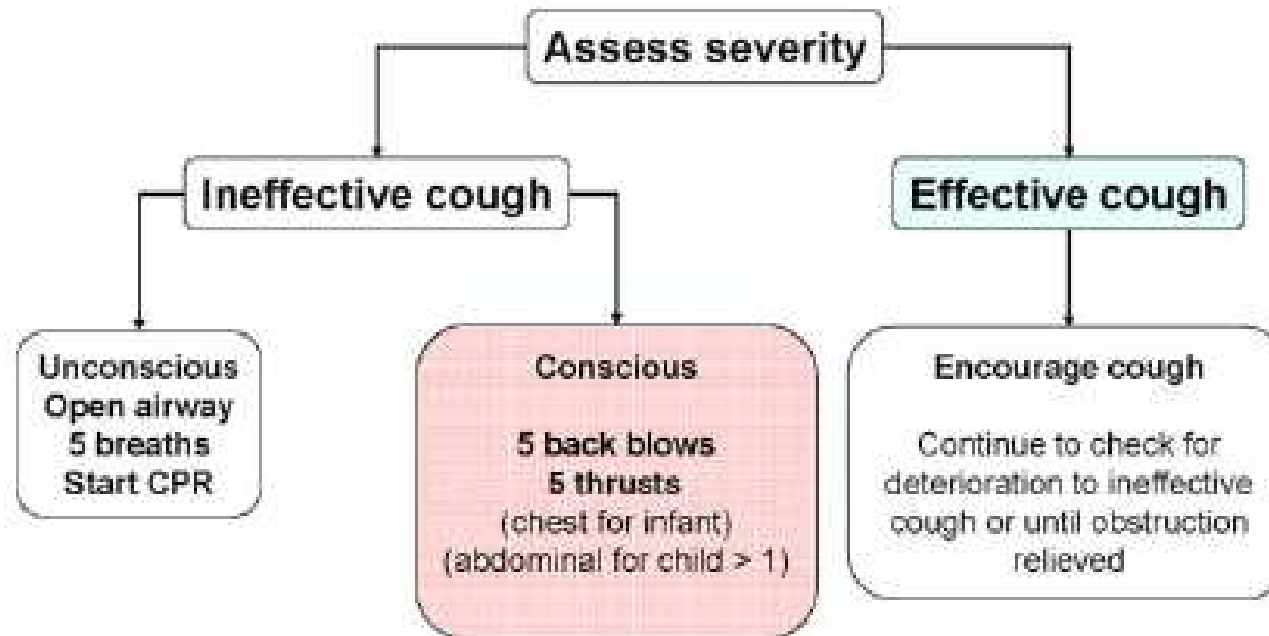


Figure 1.5. Foreign body obstruction—manual thrusts with the patient standing and the rescuer behind the patient. The rescuer places hands and clasps them in the midabdominal area below the xiphoid and exerts a rapid inward thrust on the patient's abdomen.

Foreign-body airway obstruction

Paediatric FBAO Treatment



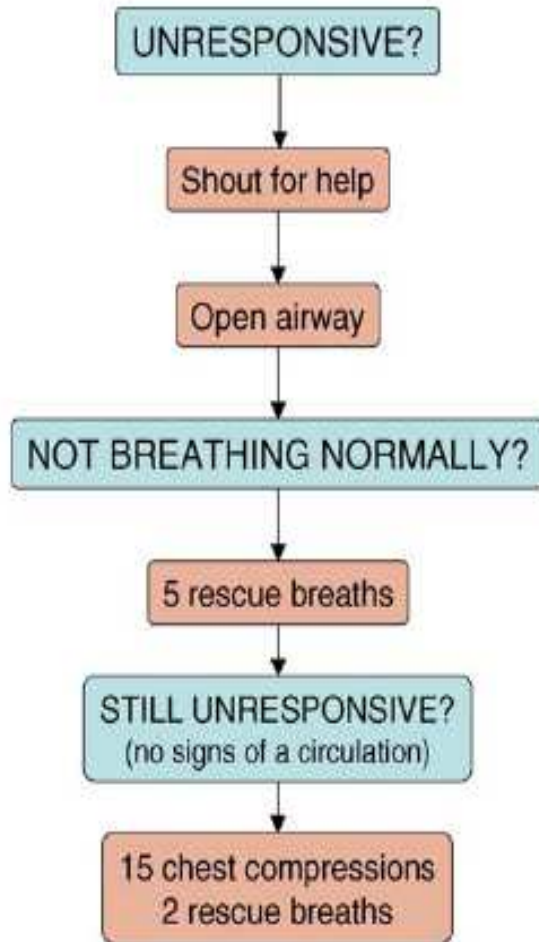


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Paediatric Basic Life Support
(Healthcare professionals with a duty to respond)



After 1 minute call resuscitation team then continue CPR

Figure 6.1 Paediatric basic life support algorithm.

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