Basic life support of babies and children with a tracheostomy

Information for families

Great Ormond Street Hospital
for Children NHS Trust

This leaflet explains about basic life support for babies and children with a tracheostomy.

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Why is it necessary?

Each year, a number of babies and children will suffer an accident or illness severe enough to stop them breathing (respiratory arrest). In a small number of these cases, it will even stop their heart beating (cardiac arrest). The best chance of ensuring their survival is to give them emergency treatment known as cardiopulmonary resuscitation (CPR). CPR can consist of many different things, but the initial, vital part is Basic Life Support (BLS).

This booklet covers the techniques required for Basic Life Support (BLS) of babies (up to one year of age) and children over one year of age who have a tracheostomy.

This is not a substitute for receiving training in BLS but aims to serve as a reminder of what you have been taught. The techniques described must not be practised on healthy babies and/or children, but on specially designed manikins.

For information on BLS techniques for older children and adults or if you have any questions or want further training in BLS, please contact one of the organisations at the end of this leaflet.

Normal breathing and circulation

To understand why a person needs BLS when their breathing and/or heart have stopped, it is important to know how the heart and lungs work.

Normally when people breathe in (inhale) air through their mouth/nose/tracheostomy, it passes down their air passages (or airway) to their lungs. In the lungs, oxygen is extracted from the air and is absorbed into the bloodstream. This blood is then pumped through the heart and circulated via the blood vessels around the body, to be delivered to every single body cell that is dependent on oxygen. At the same time, the waste product of the body's cells, carbon dioxide, is absorbed into the bloodstream and taken back to the lungs where it is breathed out (exhaled).

When this process fails to happen (for example, because of disease or a blocked airway) the body is deprived of oxygen and the person suffers a respiratory arrest.

Alongside this, the heart is continually pumping blood to the lungs to absorb the inhaled oxygen, which it then pumps around the rest of the body through the blood vessels. Each time the heart pumps blood out into the blood vessels and around the body, we can feel pulses at various points around the body. The number of times the heart pumps every minute is dependent on several factors, but generally, the younger the person is, the faster their heart has to pump. This accounts for the fact that babies and young children have a pulse rate that is much more rapid than adults.

If the heart stops beating and no blood is being pumped out, no pulses will be felt.

Normal breathing in babies

While some babies breathe in a quiet, regular pattern, many others demonstrate irregular breathing episodes. These may consist of irregular and jerky breaths or even occasional deep sighs. One pattern known as 'periodic breathing', which is particularly common in premature babies, consists of several breaths of varying depths followed by a pause of several seconds before the cycle is repeated again. These can all be normal breathing patterns for young babies and are not a sign that something is necessarily wrong. However, if you become particularly worried about your baby's breathing pattern or they appear unwell in any other way, it is important you seek medical advice.

Basic Life Support (BLS) of babies and children

What is Basic Life Support (BLS)?

BLS is a sequence of events that need to be undertaken to initially try to revive a collapsed person. It can be performed by anyone who has been trained to do so, and in almost any setting. If started as soon as the person requires it, BLS provides the best possible chance of a good outcome for the collapsed infant or child.

The key points in BLS are:

Airway

Breathing

Circulation

or ABC for short.

The first two steps of BLS – Airway & Breathing – deal with respiratory (breathing) arrest and the third step of BLS – Circulation – is intended to deal with cardiac (heart) arrest. However, this third stage will only be effective if Airway and Breathing are dealt with first. In other words, A needs to be dealt with before B, which needs to be dealt with before C.

BLS for babies and children differ in some important ways from that for adults and therefore require specific training for it to be effectively delivered.

The most important difference is that BLS for babies and children is mainly required for a respiratory (or breathing) emergency, while in adults, it is more likely that they will have a cardiac (or heart) problem. This means in the majority of babies and children, starting adequate BLS as soon as necessary may require only the breathing part to be given, as their heart will not be particularly affected.

However, as damage to the brain and other vital organs (such as the kidneys and heart muscle) starts to occur after just a few minutes of being short of oxygen, it is essential that when needed BLS is started immediately. Therefore, any person who suspects a baby or child is not breathing adequately, must be able to assess the need for, and start BLS without delay.

Instructions

1. Safety:

- If you think there is a problem with the baby or child, you must act confidently and quickly. However, make sure you are not putting yourself at risk and potentially causing two casualties. Therefore the first thing to do is to rapidly assess that it is safe for both you as the rescuer, and the child as the victim, for you to approach and touch the baby or child.
- Quickly look around the area in which the baby or child is lying to make sure there are no environmental hazards – for instance, road traffic, chemical spills, electrical currents. If necessary, you must make the area safe first before you approach.
- Before you touch the baby or child, have a look for any clues as to what may have caused the problem – for instance, have they fallen, or choked, or are there no obvious clues?
- If you have any suspicion the child's head, neck or spine could be injured, then they should be moved only if absolutely necessary. However, remember that even if a person has a severe head or neck injury and is not breathing, they will die without BLS. Therefore the risks of this need to be considered against not moving them.

2. Stimulate:

- Try to establish whether or not the baby or child is responsive – use gentle stimulation such as tugging the hair or pinching the child, as well as loudly calling their name if you know it, or asking them to wake up.

3. Shout:

- Do not leave the baby or child but call out for assistance from another person. As you continue to deal with the child, identify a person to go to call for the emergency services. You should ask them to phone for an ambulance, and tell the operator that a child with a tracheostomy is being resuscitated, stating the exact location. Ask them to come back to tell you they have done this.
- If you are on your own, still call out for help but do not leave the baby or child at this stage as it is essential you start to provide them with BLS.

4. Check and open the airway:



- If the baby or child is unresponsive, you must make sure their airway is not blocked and that air can pass to their lungs.
- Lie the baby or child on their back on a flat, firm surface and place one of your hands around the top of their head to support it. With the fingers of your other hand, gently lift the tip of the baby or child's chin backward. This exposes the tracheostomy (trachy) tube. Take care not to press on the soft tissues underneath though, as this may block the upper airway.



- Suction the tracheostomy tube (you will find that suctioning in the majority of cases clears the obstruction). However, if any resistance is felt or the suction catheter is unable to pass down the tube, change the tracheostomy tube **immediately**.
- If the stoma closes and the tube cannot be replaced, attempt to pass a smaller tube. If this is unsuccessful, thread a suction catheter through the tracheostomy tube and insert the tip into the stoma. Then attempt to guide the tracheostomy tube along the catheter and through the stoma. If this is also unsuccessful, ventilation can be attempted either via the catheter or by the nose/mouth method. These options will be discussed with you during your training session, as they may not be suitable for all infants or children.

5. Assess for breathing:





- Supporting the new tube, place the side of your face over the tracheostomy tube to listen and feel for any breath. At the same time, look at the baby or child's chest to observe any breathing movement. Take up to a maximum of ten seconds to check for breathing.
- If the baby or child is breathing normally – that is, more than a few occasional gasps – keep their airway open by suctioning the tube and regularly reassess the breathing as you wait for the ambulance to arrive. If you are on your own you must secure the tracheostomy tube with your emergency strapping. Then, either carry the baby or child with you to summon more help, or if they are too large to carry, turn the child onto their side into a position where their airway is kept open and they cannot roll over. Return to them as soon as you have summoned more help and reassess them as above. The person who demonstrates the procedure for BLS to you will discuss this in more detail appropriate to your baby or child.
- If the baby or child is not breathing, or there are only occasional infrequent gasps, you will have to provide rescue breaths for them.

6. Rescue breathing:





- With the baby or child lying on their back and the tracheostomy tube exposed, gently blow into the tracheostomy.
- To do this, put the catheter mount that you have been given from your emergency kit on the end of the tracheostomy tube. Cover the mount with your mouth and blow until you see their chest rising (this tells you that their lungs are inflating). Children that did not have the tracheostomy formed at GOSH should contact the Community Nurses for the adapter.
- Remove your mouth from the tracheostomy tube to let the breath escape from their lungs (you will see their chest fall again). Repeat this five times, at a rate of about one breath every two seconds.
- Breathing is adequate if you can see their chest rise and fall with each breath. After five rescue breaths, you must check to see whether or not oxygen is still circulating around the baby or child's body. To do this you must see if there are any 'signs of life'.

7. Check for ‘signs of life’:

- To do this, look at the baby or child for any breathing, swallowing or body movement. Take up to a maximum of ten seconds to check for ‘signs of life’. If there are none or you are in any doubt, you must proceed to chest compressions.



8. Chest compressions:

- To deliver these effectively and as safely as possible, the fingers or hand(s) need to be placed over the lower part of the sternum (breastbone).
- In babies (under one year): place two fingers approximately a finger's breadth up from the point where the ribs join the sternum. Check to see that you are not over the very end of the sternum – if you are, move your fingers further up the chest.



- In children above 1 year: place the heel of one hand approximately a finger's breadth up from the point where the ribs join onto the sternum. Again, check to see that you are not over the very end of the sternum – if you are move the heel of your hand further up the chest.
- Use your body weight to depress the sternum by one-third of the chest diameter. If it is difficult to achieve this depth, both hands (one on top of the other) may be needed.
- In all cases, the chest should be depressed fifteen times. Each depression (compression) should be a smooth, non-jerky manoeuvre that spends equal time in the depression (compression) and the relaxation phase. The fingers or hand(s) should not be removed from the chest wall until the cycle of fifteen is complete. Chest compressions should be delivered at a rate of approximately 100 times per minute.





9. Combining rescue breaths and chest compressions:

- Once you have started chest compressions, they need to be interspersed with rescue breaths. It is recommended that in babies and children, two breaths should be delivered between each cycle of fifteen compressions. This sequence of fifteen to two should be continued for approximately one full minute before you reassess the situation.

10. Reassessment:

- After one minute of BLS, you should stop and reassess the baby or child for any spontaneous breathing and signs of life in the same manner as before (steps 5 and 7). If there are none, then you must continue as indicated.
- Additionally, at this time you must check whether help is on the way. If someone has already been asked to summon more help, you must confirm that this is coming. If there is any doubt that more help has been summoned then you must now do this yourself. You may have to make a decision as to whether or not you can safely carry the baby or child with you to summon more help. If it is not possible to do this safely, then you must leave the child and summon more assistance. Return as quickly as possible, and resume BLS as before.

11. Continuing BLS:

- Once started BLS should be continued until:
  - there are any 'signs of life' from the baby or child (which means you need to reassess them and decide if BLS is still needed)
  - trained healthcare personnel take over from you
  - you are too exhausted to continue.

Conclusions

You never know when these vital life-saving skills may be necessary. It might not even be for your own child, but that of a friend, neighbour or complete stranger who could be dependent on someone like yourself having learned and practised these techniques.

Unfortunately, however, there are some tragic occasions when despite the best efforts of yourself, ambulance and hospital personnel, some babies and children will not respond to resuscitation attempts. However, by learning these essential skills and revising them regularly, you will give babies and children the best possible chance of survival.

Helpful hints

- **Read these instructions regularly to refresh your memory.**
- **Consider enrolling on a St John Ambulance or other recognised First Aid course.**
- **Try to imagine an emergency before it arises so that you can anticipate what you would do in that situation.**
- **Ensure other family members/ and friends know how to summon emergency help and encourage them to formally learn BLS skills also.**

Remember

SAFETY
STIMULATE
SHOUT for help
SUCTION/TUBE CHANGE

AIRWAY
BREATHING
CIRCULATION

Useful numbers

At Great Ormond Street Hospital:

Resuscitation Service
020 7813 8197 or 020 7829 7854

Tracheostomy Nurse Specialist
020 7405 9200 bleep 0712

St. John Ambulance
National Headquarters
27 St. John's Lane
London EC1M 4BU

Tel: 08700 10 49 50
Website: www.sja.org.uk

Notes

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