

The Resuscitation Council (UK), along with other Resuscitation Councils throughout the world, have issued new guidelines following an “international symposium”, held in America last year. The worlds leading experts on resuscitation shared the latest scientific research to produce the first worldwide consensus on how resuscitation can best be performed. This has resulted in significant changes to the existing guidelines.

This document is intended to help you learn some of the science behind the changes, which in-turn should help you to remember them. **Please read this document in conjunction with the “first aid book supplement”.**

It must be stressed that the changes are merely an improvement to the previous guidelines, and the previous guidelines are still an effective method of resuscitation. If you are in any doubt about the new guidelines, you should perform resuscitation in the same way you practiced on your first aid course.

The summary of scientific evidence is in **black ink**.

- *The resulting changes to the guidelines are in blue italics.*

Adult, Child and Baby Resuscitation:

Every time there is a pause in chest compressions (to give breaths for example), the blood pressure falls. It takes a few chest compressions to raise the blood pressure enough to perfuse oxygen through to the heart tissues. It is well documented that in ‘real life’, interruptions in chest compression are common and are associated with a reduced chance of survival.

- *The new guidelines place greater importance on uninterrupted chest compressions.*
- *The ratio of chest compressions to breaths is now **30 to 2**.*

Because chest compressions are much less effective than a normal heart beat (about 30% of the blood flow; but just enough to critically keep the heart and brain oxygenated) there is less blood circulated, and therefore the oxygen demand of the body is less. This means that the patient can cope with less airflow in the lungs during CPR than they would require normally.

- *Further evidence to show that 30 to 2 is effective.*

Evidence shows that there is a relatively low incidence of there being a ‘foreign object’ in the mouth of the victim. The importance of minimising the delay to starting chest compressions is vital. Chest compressions are the best method of treatment of choking in the unconscious patient in any case.

- *The initial ‘check in the mouth’ has been removed, and the rescuer should only check in the mouth if they are failing to achieve effective breaths (just enough to see the chest rise). This should be done briefly **after** the next set of 30 compressions, before the next set of breaths.*

If a patient collapses with a “heart problem” cause, there is likely to be enough oxygen in the blood stream for the patient to survive on for up to 5 minutes without rescue breaths, providing the blood is circulated. The vast majority of cardiac arrests (82%) are of a “heart problem” cause.

- *The guidelines now **start CPR with chest compressions** before the breaths, as it can be assumed that there will be some oxygen in the blood in the majority of collapses.*
- *A ratio of 30 to 2 is best, but the new guidelines advocate chest compression only CPR (uninterrupted chest compressions) if the rescuer is **unable** or **unwilling** to perform mouth-to-mouth, as ‘chest compressions only’ is better than no CPR at all.*

The guidelines in 2001 identified that checking for ‘signs of circulation’ was prone to error (so they removed the pulse check). Studies have now shown that checking for breathing is also prone to error:

Approx. 40% of sudden cardiac arrest victims make ‘agonal’ (occasional) gasps after a cardiac arrest (for up to 4 minutes!). First aiders commonly misinterpret this as ‘normal breathing’, so CPR is incorrectly withheld from the cardiac arrest victim.

- *The new guidelines therefore indicate that ‘occasional gasps’ are a positive indication to start CPR. The new guidelines say to commence CPR if the patient “is unresponsive and **not breathing normally**” (rather than the previous “is the patient breathing?”).*
- *The guidelines recommend that ‘it should be emphasised during training that agonal gasps occur commonly in the first few minutes after sudden cardiac arrest’.*

There is evidence to show that performing chest compressions on a ‘healthy heart’ is unlikely to cause damage to it. The biggest risk of performing chest compressions inappropriately is breaking the ribs. If chest compressions are withheld from a cardiac arrest victim however, the patient is highly likely to die as a result. On balance therefore, it is better to perform chest compressions when you shouldn’t than withhold them when they are needed.

- *The new guidelines go as far as to say “If you have any doubt whether breathing is normal, act as if it is **not** normal” (so start CPR).*

Many rescuers are scared to commence mouth-to-mouth in ‘real life’ cardiac arrest situations. In the old guidelines they had to do this before they started chest compressions. In many cases this resulted in a significant delay to commencing chest compressions, and in some cases, no CPR being provided whatsoever!

- *For Adult CPR, the new guidelines now start the sequence with **chest compressions first**.*
 - *The guidelines now emphasise further that the rescuer should take **no more** than 10 seconds to check for normal breathing.*
 - *If the rescuer is ‘unable or unwilling’ to perform rescue breaths, there is now the option of performing ‘chest compression only’ resuscitation, as this is better than no CPR at all.*
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There is a vast amount of evidence showing that the more complicated the CPR guidelines are, the less likely the rescuer will be able to perform them effectively in a “real life” situation. It is vital therefore to simplify the guidelines as much as possible.

- *Child guidelines have been brought in line with adult guidelines (with a few simple changes that can make it even more suitable for children).*
- *There are fewer steps in the sequence:*
 - *There is no ‘mouth check’ before opening the airway.*
 - *There is no ‘circulation check’ – CPR commences as soon as it is established that the patient ‘is ‘unresponsive’ and ‘not breathing normally’.*
 - *Using fingers to locate the hands for chest compression has been replaced with ‘**place your hands in the centre of the chest**’ (this also takes less time).*
- *The guidelines in general have been simplified as much as possible.*

There is much evidence to show that ‘rescuer fatigue’ results in poor chest compressions in a comparatively short period of time, yet it is now clear that effective compressions are essential.

- *The new guidelines recommend changing rescuers (if possible) about every 2 minutes.*

Child and Baby Resuscitation:

There is evidence to show that children have not received resuscitation because the potential rescuer ‘feared harm’. This was also fuelled by the knowledge that child CPR was ‘different to adult CPR’ and the rescuer may not have practiced the ‘child’ version.

- *The new guidelines have brought adult and child CPR in line and stress that ‘ADULT CPR’ is better than ‘NO CPR’.*
- *For ease of teaching and retention, therefore, first aiders should be taught that **the adult sequence can also be used for children** who are not responsive and not breathing.*
- *The new guidelines say that for a child, ideally:*
 - *Compress the chest by approximately **one-third of its depth**:*
 - *Use **two fingers** for an infant under 1 year;*
 - *Use **one or two hands** for a child over 1 year as needed to achieve an adequate depth of compression.*

The fact remains that the likely cause of a cardiac arrest **in children** is asphyxia, rather than a ‘heart problem’, so the heart is likely to stop secondary to the fact that breathing stopped, and there is likely to be little (if any) oxygen left in the blood at the time of cardiac arrest.

- *The new guidelines say that the adult sequence of CPR can be carried out on a child, but the following minor modifications to the adult sequence will, however, make it even more suitable for use in children:*
 - *Give **five initial rescue breaths** before starting chest compressions.*
 - *If you are on your own perform CPR for about 1 minute before going for help.*

Remember – if you are unsure about the new guidelines – perform resuscitation as you learned it on your first aid course.