

About 12 people attended the professional training session and the following is the excellent report on the evening by Dawn Cox.

## Defibrillator Training

With The West Midlands Ambulance Service Trainer

23<sup>rd</sup> August 2012, Prospect Village Hall, Staffordshire.

Many of you are probably aware of the drive to see defibrillators available at Obedience dog shows following the death of Alan Warner. Several have already been purchased through money raised in remembrance of Alan, and training of willing volunteers has begun. Having attended a training session last night, and taken some notes, I have been asked to write a simple guide.

Sudden cardiac arrest is a condition that could affect any one of us at any time. Often victims are young, with no known predisposing heart condition. 250 kids in school die from cardiac arrest each year, and 250 people in total per day in this country.

Cardiac arrest is when the heart fails to pump blood effectively around the body (either by beating erratically, or by stopping altogether), starving vital organs of oxygen – the most important of those being the brain. When cardiac arrest occurs, the victim drops to the floor, and at that point is dead, unless they receive immediate treatment – CPR, defibrillation (in most cases) and ongoing hospital treatment. Heart attack, or myocardial infarct is different to that – there is a clot in one of the arteries (coronary) that supplies blood to the heart muscle, and that particular portion of heart muscle dies, but the rest of the heart can keep beating and sending adequate oxygen around the body, depending on the severity of the heart attack. Angina is where only a small amount of oxygen carrying blood gets through a narrowed artery to the heart muscle – it stays alive, but aches for more oxygen. Heart attacks and angina can precede cardiac arrest, but cardiac arrest can also occur out of the blue as a response to many things, for example, hard exercise – as with young footballers, or even as a response to a sudden shock in those people with undiagnosed heart conditions. The predisposition to arrest is often very hard to diagnose even through testing. Heart disease is more likely to be present in people with a family history of heart disease, those with high blood pressure, high cholesterol, diabetes and also in those who smoke, drink alcohol in excess, are obese or have a poor diet, but it is not exclusive to those people.

In the event of cardiac arrest, chances of survival decrease by 10% every minute without treatment and only 1 in 6 members of the public will attempt CPR. Only 2.5% - 5% of victims will survive a cardiac arrest, but the odds of survival increase to 50% with the use of a defibrillator. 85% of victims of cardiac arrest have a heart arrhythmia (either ventricular fibrillation or ventricular tachycardia) which will respond to shock treatment, thereby giving them a better chance of survival. In recognition of that, the number of defibrillators now available in public places such as shopping centres is growing, with 2,500 currently in the West Midlands.

Each of the cells within the heart is capable of generating a heartbeat. The sinoatrial node, a group of specialised cells, coordinates the beats of each cell to produce a smooth contraction and relaxation of the heart chambers, allowing the heart to fill and to pump blood around the body. Ventricular fibrillation and ventricular tachycardia are arrhythmias where the sinoatrial node has lost

control and each of the heart cells are doing their own thing and preventing the necessary contraction and relaxation. Shocking the heart will momentarily stop the heart altogether, giving the sinoatrial node a chance to take up control again. A heart that has stopped altogether, will not respond to an electrical current being put through it, and the defibrillators will not allow you to deliver a shock to a victim whose heart has stopped.

The defibrillators that have been bought, look like this:-



<http://www.cardiacscience.com/cardiology-products/aed-defibrillator/portable-aed-machines-powerheart-aed-g3-automatic-semiautomatic-defibrillators.php>

There is a battery at the bottom, which is guaranteed for 4 years and needs no re-charging during that time. The green light – top right of the picture, tells you that the unit is 'Rescue Ready'.

The unit is opened via the yellow button in the top centre, at which point, it will start talking to you straight away. When open, it looks like this:-



Two pads are contained within the protective packaging, and a lead connects them to the defibrillator. It's already pre-assembled. The defibrillator will tell you to take the 2 pads out of the packaging and place them on the victim – the 1<sup>st</sup> one between the nipple and the shoulder on the right, and the 2<sup>nd</sup> one below the chest on the victim's left hand side as shown in the picture here, and also in the picture on the pad's packaging.



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The blue sheet that sits between the 2 pads when they are in storage, is removed altogether. The removal of the blue sheet allows the defibrillator to know what you are doing, and to guide you appropriately. Once the pads are in place, the defibrillator asks you to stop touching the victim so that it can take a trace of the victim's heart activity for analysis. It may tell you to stand clear and then deliver a shock – by pressing the red button which will have lit up. Once the shock has been delivered, or if a shock is not appropriate, the defibrillator will tell you that it's safe to touch the patient, and to recommence CPR (you are likely to be quicker than the machine at this point – so as soon as the shock has been delivered, you can restart CPR – those chest compressions will keep your

victim's brain alive). It even beeps out the rhythm for you for the cardiac compressions (30 of them) and tells you when to deliver 2 breaths. It will take a new reading of the victim's heart activity every 2 minutes, and advise accordingly. It will not allow you to deliver a shock if it's not appropriate for you to do so (the red button won't light up, and if you push it, nothing happens) – either when the heart is beating normally, or when the heart has stopped altogether.

The defibrillator is very easy to use, and you will not be able to cause any further damage to the victim if you try and use it when it's not needed – it just will not work. There is a chance that you could deliver a shock to yourself by accident, by touching the victim at the point the shock is delivered, and although not to be recommended, this is likely to cause you nothing more than a tingling sensation in your fingers.

As with all modern technology, the defibrillator is a clever piece of kit. It records everything that has happened once the unit is opened and stores that information – this can be useful when the victim gets to hospital. It has a lead to attach it to a computer to enable you to download that information and to upload updates. It turns itself on at 03.10 every morning and does a circuit check, and then turns itself off again. It will let you know if it has found any problems – a red light will come on and the defibrillator will bleep. Once a week it will shock itself. A date in the window at the front of the machine, will tell you when the pads will need changing, and the 'service' button lights up if there are any updates pending. The unit also contains a pair of scissors to cut the victims' clothing quickly to enable the chest to be exposed, a razor to shave the chest if it is very hairy and a towel to dry the chest – all before putting the pads in place. Very heavy chain necklaces will need removing, and also bra wires – but lighter chains and piercings are fine to be left in situ.

When a victim has a cardiac arrest, he/she will slump to the floor and become unresponsive. Your 1<sup>st</sup> instinct will be to run over to try and help the victim – but please ensure that it is safe for you to do so – at dog shows, it will be the victim's protective dog that is likely to cause you the most problems! Send someone to phone for an ambulance, get the defibrillator and the show First Aider.

Once it's safe to approach the victim, call them and shake them to try and get a response. If they don't respond, you need to ensure that their airway (nose and mouth) is not blocked by their tongue, vomit, blood or a loose object. Look inside their mouth and remove anything loose that you see, before tilting the head back and lifting the chin to open the airway.



Put your ear close to the victim's nose and mouth to hear or feel signs of breathing and at the same time look along the length of their chest to watch for the rise and fall (don't be fooled that the victim

is breathing by gasps that don't cause any movement of air or movement of the chest – these gasps are just reflex twitches), for up to 10 seconds. If they are not breathing, start chest compressions to a depth of 5cms or 2.5ins, at a rate of 120 per minute. 'Ha ha ha ha, staying alive, staying alive' is the beat or 'Nelly the elephant' for those of you who are not Beegees fans!).



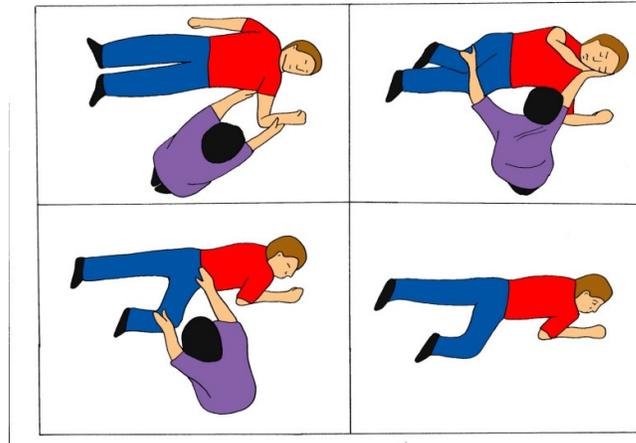
You cannot do any damage if you have made a mistake and given CPR to a victim who is still breathing, or whose heart is still beating. Equally, when giving chest compressions – you may hear or feel cracking of the ribs – don't worry about it, this is unlikely to signify fractured ribs, but even if it does, it's ok – the victim won't die of fractured ribs, but he/she will die if you do not continue with your chest compressions. Decide whether you are prepared to give breaths – this can be given as mouth to mouth, or via a face mask if available. Make sure that the victim's head is tilted back and the chin is lifted – either pinch the victim's nose and seal your lips around his/her's to give mouth to mouth, or use a face mask with one-way valve to cover the victim's nose and mouth – you will need a good seal between the mask and the victim's face. Watch for the rise of the chest as you give a breath to check that you are being effective.



The most important things to do though are the chest compressions – the victim will have about 8 minutes of oxygen in their system at the point of arrest, and chest compressions will cause some additional movement of air in and out of the lungs, to add a little bit more. The pumping of that oxygen around the body is what will keep the victim alive until their heart resumes its normal beat – this will only happen if it is shocked with the defibrillator. If you decide that you are prepared to give

breaths as well – these should be delivered at a rate of 2 breaths, of 1 second each, to every 30 chest compressions.

If the victim is breathing, but otherwise not responding, place him/or her in the recovery position to prevent him/her choking, but monitor closely in case he/she deteriorates.



As soon as the defibrillator arrives – use it! CPR and use of the defibrillator must continue until the victim is handed over to the ambulance service, unless the victim is well enough to sit up and talk to you – which, with your intervention, he/she may just do. Leave the defibrillator in situ though if that does happen – just in case your victim goes off again.

I hope that this is helpful.

Dawn Cox