Resuscitation in the dental practice

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Phil Jevon¹ looks at the new resuscitation guidelines published in October 2015 and discusses how dental practices should implement them.

A DUTY OF CARE

Every dental practice has a duty of care to ensure that an effective and safe service is provided for its patients. The satisfactory performance in a resuscitation attempt in the dental practice has wide-ranging implications in terms of resuscitation equipment, resuscitation training, standards of care, clinical governance, risk management and clinical audit.

The Resuscitation Council (UK) published new resuscitation guidelines in October 2015. The aim of this article is to understand these new guidelines and how dental practices should implement them. It highlights that the AED sign should be clearly displayed and that practices should display the 'Resuscitation in the Dental Practice' poster (Fig. 1) as an *aide-memoire* for the dental team.

GUIDELINES 2015: IMPORTANT MESSAGES

Promptly assess the unresponsive patient for signs of normal breathing

In the first few minutes following a cardiac arrest, the patient may be hardly breathing, or taking infrequent, irregular and slow gasps, often accompanied by a characteristic snoring sound. This is called agonal breathing and it originates from the brain stem, which remains

functioning for a few minutes following a cardiac arrest even when deprived of oxygen. Agonal breathing is common in the first few minutes following a cardiac arrest and, if correctly identified as a sign of cardiac arrest, is associated with higher survival rates.¹

Always be suspicious of cardiac arrest in a patient who presents with seizures: carefully check if the patient is breathing normally

Immediately following cardiac arrest, because cerebral blood flow is reduced to almost zero, a short seizure-like episode may be witnessed that could be confused with epilepsy. Dental staff should be suspicious of cardiac arrest in any patient presenting with seizures.

Minimise delay to starting chest compressions

On confirming cardiac arrest, stay with the patient and start chest compressions immediately while asking colleagues to call 999 for an ambulance and to fetch automated external defibrillator (AED)/resuscitation equipment. If alone, leave the patient, call 999 for an ambulance (consider the use of a speaker phone facility), fetch the AED, switch it on and follow the instructions before starting chest compressions.

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Perform effective chest compressions

Deliver compressions to the centre of the chest, at a depth of 5–6 cm, at a rate of 100–120 per minute. Following each chest compression, allow complete recoil of the chest as this will result in improved venous return to the heart (NB avoid leaning forward after each chest compression). As rescuer fatigue can lead to less effective chest compressions, it is advised to change the person performing chest compressions every two minutes – this coincides conveniently with the working of an AED (every two minutes it will ask you to stop CPR while it analyses the ECG). Changing CPR providers should not interrupt the delivery of chest compressions.

As soon as possible switch the AED on and follow the instructions

Combine chest compressions with ventilations

In clinical settings such as dental practices, there are usually good clinical reasons to avoid mouth-to-mouth ventilation; consequently it is rarely used. Perform chest compressions until the ventilation equipment, for example, pocket mask or bag/valve/mask device, arrives. Once ventilation equipment arrives, stop chest compressions and administer two ventilations. Then continue with chest compressions and ventilations at a ratio of 30:2.

Minimise interruptions to chest compressions

Only stop CPR if you are certain the patient has recovered and is breathing normally

Once the paramedics arrive they will advise accordingly.

RESUSCITATION IN THE DENTAL PRACTICE POSTER

A new 'Resuscitation in the Dental Practice' poster (Fig. 1) which has been endorsed by the British Dental Association (BDA) has been developed, which incorporates the new Resuscitation Council (UK) adult basic life support algorithm. This algorithm

should consider displaying the sign, as it will act as a constant reminder where their AED is stored. Some dental practices also display the sign on an external door or window, thus raising local awareness that there is an AED on the premises. To download the AED sign go to <https://www.resus.org.uk/defibrillators/standard-sign-for-aeds/>.

'IT HAS BEEN SHOWN THAT DEFIBRILLATION

WITHIN 3-5 MINUTES OF COLLAPSE CAN PRODUCE

SURVIVAL RATES AS HIGH AS 50-70%'

now includes the use of an AED (there is no longer an automated external defibrillation algorithm). This poster can be printed from the *BDJ Team* website (PDF) or downloaded from <https://www.walsallhealthcare.nhs.uk/Data/Sites/1/media/documents/health-and-safety/resus.pdf>.

IMPORTANCE OF THE AED

It has been shown that defibrillation within 3–5 minutes of collapse can produce survival rates as high as 50–70%.⁴ In dental practices, this could be achieved if an AED is immediately available. In the event of a cardiac arrest in a dental practice, as well as ensuring someone has called 999 for an ambulance, send a colleague to fetch the AED (and resuscitation equipment) while starting chest compressions. Each minute of delay to defibrillation reduces the probability of survival to hospital discharge by 10%.⁵

DEBRIEFING FOLLOWING AN EVENT

Following an event such as a medical emergency, the Resuscitation Council (UK)⁶ recommends a period of 'debriefing' which will enable dental staff to reflect on how the event was managed and how the patient was treated. Discussion could take place on how a similar event could and perhaps should be managed if it were to happen again.

PAEDIATRIC RESUSCITATION GUIDELINES

Cardiorespiratory arrest occurs less frequently in children compared with adults, hence both healthcare professionals and lay people are less likely to be involved in paediatric resuscitation. Most cardiorespiratory arrests in children are not caused by a primary cardiac problem but secondary to other causes, mostly respiratory insufficiency. The priority with paediatric resuscitation is, therefore, usually to reoxygenate the child.

The Resuscitation Council (UK)⁷ advises that dental professionals, when resuscitating infants and children, should follow the adult basic life support sequence of 30:2 with the following modifications that make it more suitable for use on children:

- Five initial ventilations before starting chest compressions
- If on your own (very unlikely), perform CPR for approximately one minute before going for help
- Compress the chest by one-third of its depth: in infants this equates to approximately four centimetres depth and in older children five centimetres depth
- Use two fingers to compress the chest in an infant younger one year; use one or two hands for a child older than one year to achieve an adequate depth of compression.

'DENTAL PROFESSIONALS, WHEN RESUSCITATING

INFANTS AND CHILDREN, SHOULD FOLLOW THE

ADULT BASIC LIFE SUPPORT SEQUENCE...'

Register the dental practice's AED with the local ambulance service

This is highly desirable so that ambulance control dispatchers can direct CPR providers to the nearest AED.² A visible AED sign outside the dental practice would be helpful.³

AED SIGN

The Resuscitation Council (UK) has designed a standard AED sign (Fig. 2) to indicate the presence of an AED. This sign, which has been accepted by the Health and Safety Executive (HSE), helps to reduce delay in locating an AED in an emergency. Dental practices

Fig. 1 Resuscitation in the Dental Practice poster

RESUSCITATION IN THE DENTAL PRACTICE

References

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Resuscitation Council UK (2015) *Adult basic life support and automated external defibrillation* <https://www.resus.org.uk/resuscitation-guidelines/adult-basic-life-support-and-automated-external-defibrillation/> accessed 13/11/2015

Resuscitation Council UK (2015) *Primary dental care equipment list* <https://www.resus.org.uk/quality-standards/primary-dental-care-equipment-list/> accessed 13/11/2015

Acknowledgements

Poster designed as an aid memoir by Phil Jevon Medication Education with the help of Mr N Rashid & Miss R Joshi ED Consultants, Mrs S Church, Consultant Orthodontist, Steve Webb Clinical Skills Technician and the dental nurses, Walsall Healthcare NHS Trust, Manor Hospital Walsall, UK

Adult basic life support algorithm reproduced with kind permission of the Resuscitation Council (UK), London

Ambulance image kindly supplied by WMAS

Simrun Rehsi, Undergraduate BSc Computing for Business (ITMB), Aston University, Birmingham for her IT support

WALSALL HEALTHCARE NHS TRUST DECEMBER 2015

Defibrillation is rarely needed in children, although it is advised to use paediatric electrode pads for defibrillation of children under eight years of age. If they are not available, adult electrodes placed in an antero-posterior orientation will suffice.⁶

TEAM APPROACH TO RESUSCITATION

Resuscitation requires a system to be in place to optimise the chances of the patient surviving. This system requires technical and non-technical skills (teamwork, situational awareness, leadership, decision making).⁶ An effective team leader is paramount. Ideally, the dentist should assume the role of team leader, allocating team members specific roles they understand and are able to undertake.

Whether the emergency is in the dental surgery itself, or in another part of the building, it is important to ensure there is 360 degree access to the patient ('Circle of Life').⁶

Position 1

Airway & ventilation – if a bag/valve/mask device is used, then ideally two persons are needed; one to open the airway and ensure a good seal with the mask while a second person squeezes the bag. The person holding the mask on will find sitting on the dentist's stool more comfortable.

Fig. 2 Automated external defibrillator (AED) sign

back and overseeing the resuscitation attempt, the dentist will be in a better position to help ensure that the resuscitation attempt runs smoothly, effective resuscitation is provided, appropriate decisions are made and the patient and rescuer's safety is maintained.

PREVENTION OF CARDIAC ARREST

In the majority of sudden cardiac deaths outside hospital, there is a history of heart

compressions and switching on the AED and following its instructions as soon as possible.

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'PROMPT RECOGNITION OF CARDIAC CHEST PAIN

AND RAPID ACTIVATION OF THE EMERGENCY

SERVICES WHERE APPROPRIATE REMAINS A

PRIORITY FOR DENTAL PROFESSIONALS.'

Position 2

High quality chest compressions – at patient's left side. The dental chair should be horizontal and at a comfortable height for the person performing chest compressions. Be prepared to alternate with the operator at position 3 to avoid fatigue.

Position 3

AED use and alternative chest compressions provider (avoiding fatigue) – ideally the opposite side of position 2.

Position 4

Team leader (usually the dentist) standing at the foot end of the dental chair - by standing

disease and warning symptoms (usually chest pain) in the hour preceding cardiac arrest.⁸ The prompt recognition of cardiac chest pain and rapid activation of the emergency services where appropriate remains a priority for dental professionals, as well as ensuring immediate access to an AED.

CONCLUSION

In the event of a cardiac arrest in the dental practice, dental professionals should ensure a swift, effective and safe resuscitation response to help optimise the chances of the patient surviving. The Resuscitation Council (UK)'s Guidelines 2015 stress the importance of calling 999, performing effective chest

This article was originally published in the BDJ on 11 March 2016 in Volume 220 issue 5, pages 261–263.

MEDICAL EMERGENCIES POSTERS

Did you see our earlier article from Phil Jevon, *Updated posters to manage medical emergencies in the dental practice*? It was published in *BDJ Team* in March and is available to read at the following link: <http://www.nature.com/articles/bdjteam201655>

bdjteam2016120