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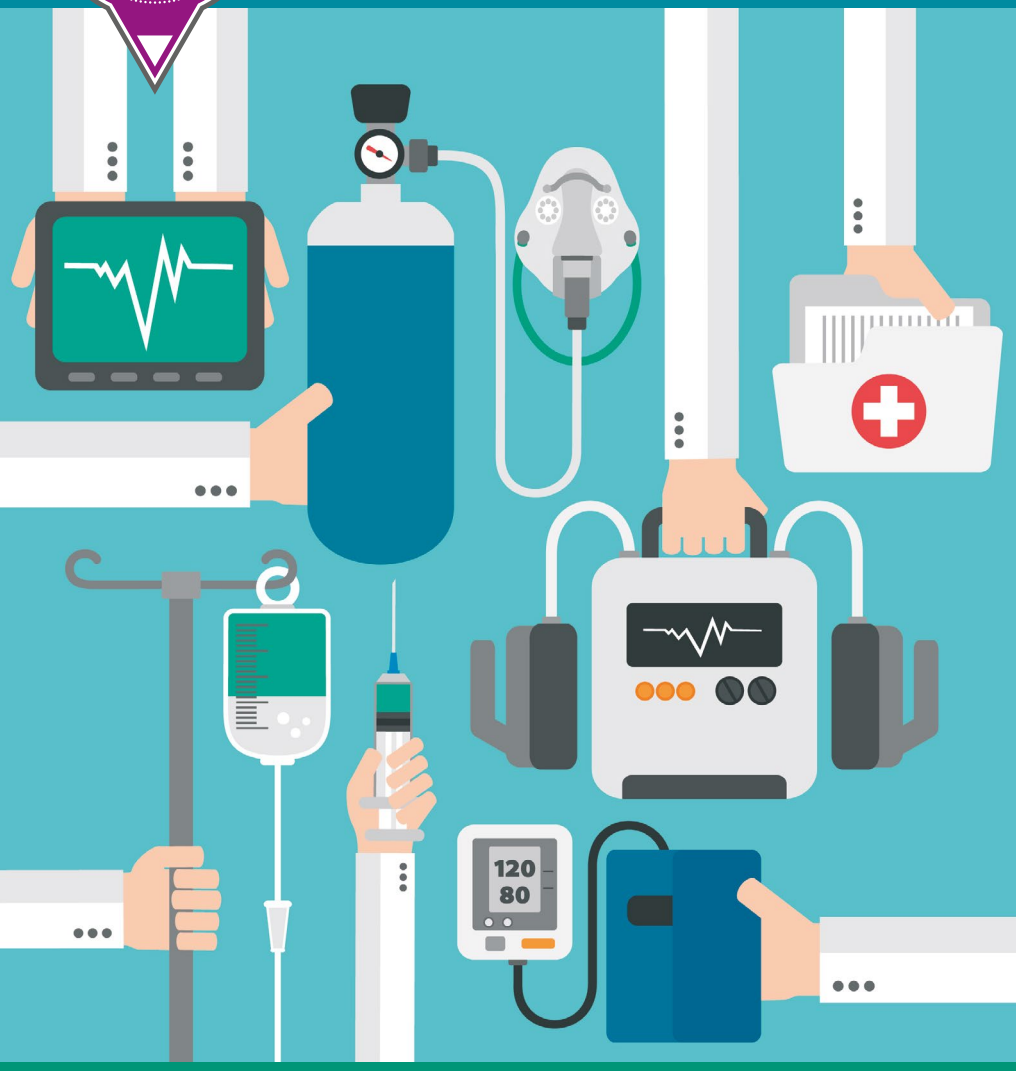

Top tips for managing medical emergencies in primary care

By **Christian Wiggin**[1] and **Ewen McColl**[2]

Key points

- The GDC advises annual medical emergencies and basic life support training
- Dental professionals will encounter medical emergencies in primary dental care every 1–2 years
- 'Hands on', practical simulation training is the preferred method of training
- Hypoglycaemia, vaso-vagal syncope, angina and non-specific collapse are the most common medical emergencies in dental practice.

Top tips

1. **Planning and preparation:**
   a. 'Failing to plan is planning to fail'
   b. Know your patients and anticipate their potential medical needs
   c. Equipment and drugs
2. **Training:**
   a. Training and simulation are essential
   b. Prepare for the worst and help increase mental resilience and confidence in your staff
   c. Know your equipment and where it is
   d. Involve all members of the team
3. **Use checklists**
4. **Logistics:**
   a. Create space
   b. Create a plan for ambulance service: access and egress
5. **Leadership:**
   a. Create a team leader
   b. Be assertive
   c. Share the mental model: include the team in decision making
6. **Take notes**
7. **Post incident: debrief and create honest feedback**
8. **Sedation: Specialist emergency medical training is essential.**

CPD questions

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Author information

[1]Critical Care Paramedic, Director – Crux Medical, Exeter, UK; [2]Head of School/Director of Clinical Dentistry, Peninsula Dental School (University of Plymouth), Derriford Dental Education Facility, Plymouth Science Park, Research Way, Plymouth, PL6 8BT, UK.

Fig. 1 The Medical Emergency Trolley

Introduction

Recent evidence indicates dental professionals will encounter medical emergencies in primary dental care approximately every 1–2 years.[1] The General Dental Council (GDC) recognises this and mandates that it is essential that *all* registrants are trained in dealing with medical emergencies, including resuscitation, and possess up to date evidence of capability clarifying that all registrants must follow the guidance set out by the Resuscitation Council UK (RCUK).[2] Considering that conditions contributing to such medical emergencies are increasing in prevalence in the UK[1] and, for example those living with diabetes are expected to rise in number to 10% of the population by 2040,[3] it is becoming increasingly important for dental teams to have effective plans in place to manage dental emergencies in a systematic, structured and, most importantly, effective manner.

Dental surgeries are not primarily designed to manage medical emergencies so expert input can help in management when such situations arise, often when least expected. These top tips, written by a pre-hospital air ambulance professional with over 20 years' experience managing life threatening emergencies and a dental professional with 30 years' dental experience and significant experience of managing medical emergencies, aims to equip dental practitioners with some useful tools intended to make the planning, identification and management of medical emergencies and resuscitation easier.

1.0 Planning and preparation

'Failing to plan is planning to fail'

Considering the GDC requirements and likelihood of encountering a medical emergency it is advisable to plan and prepare for the eventuality to ensure patients receive effective and timely management. It is also important to ensure staff have the confidence and appropriate tools and skills to intervene.

The development of a local guideline that is regularly updated, readily available and understood by the whole team is an essential recommendation. This plan should identify the equipment, locations, logistics and management for anticipated medical emergencies and give guidance for staff managing medical events that are outside of their regular expertise. They should be updated regularly to reflect RCUK guidelines and may include the development of checklists and treatment plans for likely medical emergencies.

Know your patients and anticipate their potential medical needs

By knowing patients' health needs and their previous medical history before commencing treatment, dental staff will hopefully be able to identify developing medical events before they become emergencies. Prevention is always better than cure and communication and recognition of a patient behaving differently to normal can be key.

> *'Prevention is always better than cure and communication and recognition of a patient behaving differently to normal can be key.'*

Equipment and drugs

The RCUK have recommended a minimal dental care equipment list for medical emergencies[4] which includes self-inflating bag (or Bag-Valve-Mask) and defibrillator. This equipment must be easily accessible and all staff should be familiar with its location, function and how to use it.[5] Emergency

drugs should be kept with this equipment. Guidance on what drugs should be contained in emergency drugs kits can be obtained from the Department of Health and via the British National Formulary.[6]

2.0 Training

The Resuscitation Council UK state there should be regular practice and teaching using simulation-based cardiorespiratory arrest scenarios.[5] This can only really be achieved by face-to-face teaching and 'hands on' practice. However, in a cross-sectional survey of dentists, dental hygienists, dental therapists and dental specialists in 2019, whilst 89.2% reported undertaking annual medical emergency training, only 62% of these received face-to-face basic life support training. Only 50.5% of respondents received face-to-face medical emergencies training, 48% received face-to-face training involving medical emergencies roleplay and 32% received training involving a simulation manikin.[7] Worryingly, against GDC recommendations, 2.3% of participants in a 2019 study only undertook training every two years, putting them at risk from a medico-legal perspective should an adverse incident occur.[7]

Training and simulation are essential

Whilst theoretical teaching is undoubtably important, simulation is certainly the preferred method of learning with 93% of participants in a cross-sectional survey in 2019 preferring practical-based with interaction, roleplay and/or simulation.[7] Practical simulation, as the recommended method of teaching basic life support and medical emergencies,[5] is not possible 'online' and goes beyond practising chest compressions on a manikin.

It is known that the most common medical emergencies managed by dental professionals include vaso-vagal syncope, hypoglycaemia, angina and non-specific collapse.[7,8] These conditions come on relatively quickly. Often a patient feels ill beforehand and often these patients go somewhere quiet, such as the toilet, to recover without causing further embarrassment. Simulation should include practising with full size manikins in difficult access locations in order to prepare staff for a real event. The authors' experience is that real time simulation in the dental practice, with all team members present, is absolutely essential.

It is rare for a patient to go into cardiac arrest without some symptoms preceding the event. Cardiac arrest may well be avoided if the patient is located, identified and managed before the medical emergency develops into a full cardiopulmonary arrest. Simulation should be structured to consider this.

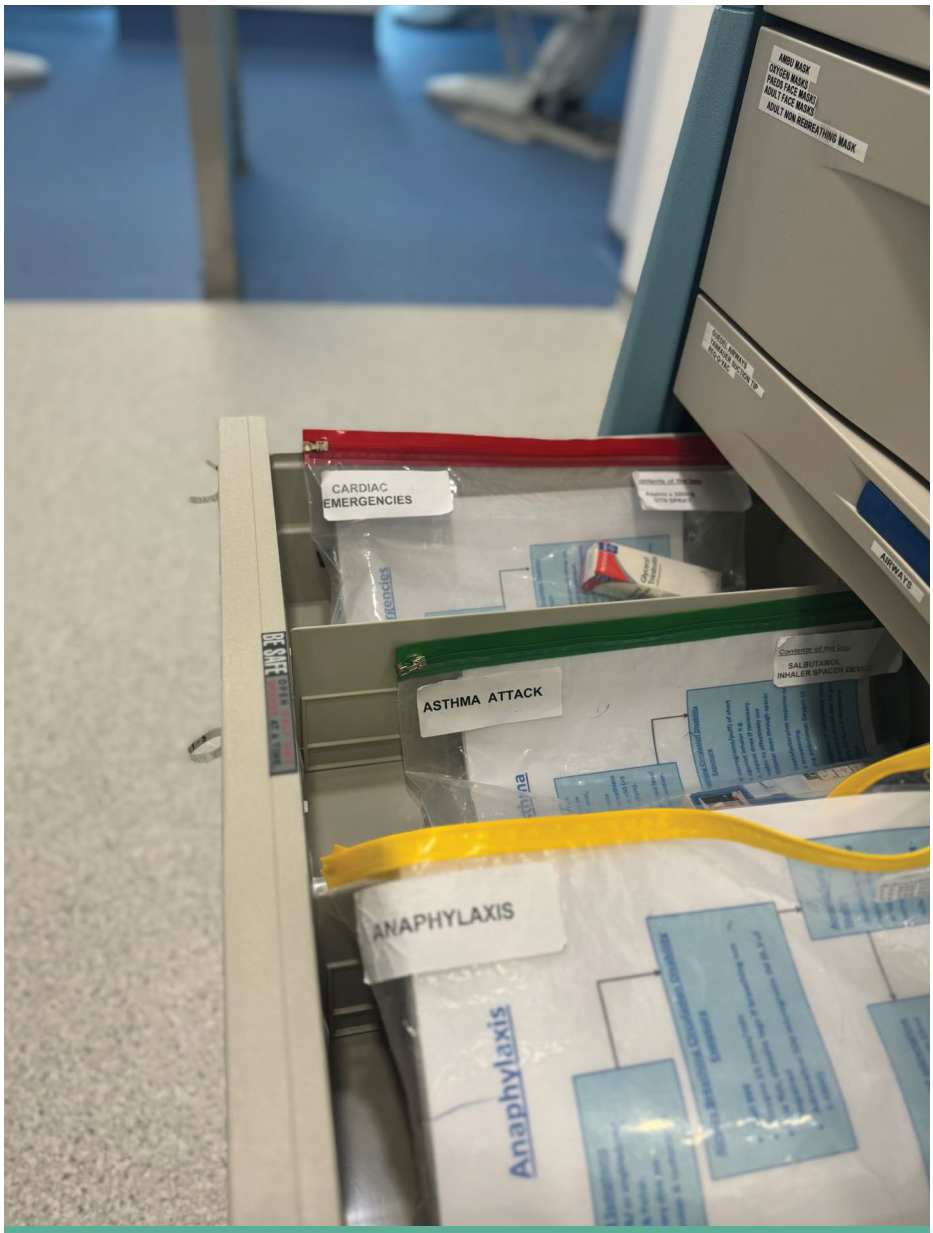

Fig. 2 Checklist and pouches for efficient management of medical emergencies

> *'True medical emergencies are challenging in every respect and will require all team members to step outside their comfort zone.'*

Prepare for the worst and help increase mental resilience and confidence in your staff

By simulating medical emergencies and resuscitation in challenging locations, with full size, heavy mannikins and led by experienced trainers in resuscitation, dental staff will develop confidence at overcoming the unexpected and increase their mental resilience to managing an event and processing it after the event. 'Train hard – fight easy' is a well-known military term and relates directly to the management of medical emergencies that often require an assertive and dynamic, medical response to prevent deterioration.

Medical emergencies are extremely stressful for those managing them, particularly when they happen suddenly and the medical team is not accustomed, or practised, at managing them. In these events the 'bandwidth' of clinicians will be significantly reduced. This should be anticipated and is a normal event. The physiological response is well described by Professor Grossman as an escalating loss of fine motor skills, followed by loss of gross motor skills, tunnel vision, dissociation and breakdown of mental performance as physiological stress increases.[9]

Professor Grossman advises on being very aware of this and recommends a technique of square breathing (breathing in for 4 seconds, holding for 4, breathing out for 4 and holding for 4) which actively stimulates the parasympathetic nervous system and reduces this physiological response. By improving the ability to perform fine motor tasks (such as taking a blood glucose reading or opening the zip on a bag) the function of the responding team will be improved. By training for the worst, being aware of your physiological response and anticipating the fact that the very simplest of tasks will become very difficult, management of these emergencies will become easier.

Know your equipment and where it is

Considering the reduction in bandwidth of the medical team when faced with a true emergency it is essential that planning for such events includes knowing exactly where the emergency medical equipment is and how to use it. It sounds obvious when preparing but an easily accessible and well laid out set of equipment will be invaluable when managing an emergency (Fig. 1).

Involve all members of the team

Dental surgeries are comprised of teams. In a medical emergency all members of the team are likely to be needed. Medical emergency and basic life support training should include all members of the team, from reception staff to senior dentists. A 'team' response to medical emergencies and resuscitation should be practised so all are aware of their roles, many of which are interchangeable. Including all team members in medical emergency training not only enhances team cohesion but will improve outcomes for patients should an emergency arise.

3.0 Use checklists

Checklists are a common tool used by professionals and laypeople around the world to manage serious medical events. Even high performing critical care helicopter teams use checklists to manage anticipated medical emergencies. Checklists are used to share mental models, prevent omissions of care and provide structure to the management of a medical emergency.

The Resuscitation Council UK has a clear list on likely medical emergencies that may be encountered by a dental team. By proactively designing checklists for each of these emergencies and training with these checklists, teams can create order and structure when mental bandwidth is tested. Figure 2 shows an example of a medical emergency trolley with pouches created for each medical emergency, which include checklists (including: identification, assessment, management and appropriate dugs, with dosages) associated with that condition.

4.0 Logistics

Create space

Considering that not all patients collapse on the floor in the centre of a room, it is important to plan for the eventuality that a patient may need to be moved in order to optimise care. This may require a certain amount of assertive movement of both the patient and furniture to create 360-degree access to the patient. It is important for the dental team to 'own and control the environment' in an emergency. Training and simulation are useful for this and can often be a fun, but effective way for the team to plan for medical events that occur in unusual locations within their surgery.

Create a plan for ambulance service: access and egress

An appropriate and early call to the ambulance service is important. An ambulance may take a long time to arrive and planning ahead is essential. When the ambulance team arrive, in order to expedite care, it is important to consider where they can park, how they will get in (with a trolley) and quickly gain access to the patient. Much of this can be planned ahead of the incident and the extent of consideration to the logistics of this will vary depending on the individual challenges of each dental surgery. The importance of the consideration to logistics cannot be over emphasised; given the relief you will feel when the paramedics arrive, expediting this in planning is key.

5.0 Leadership

Create a team leader

The first moments of any emergency will be chaotic as the patient is identified, accessed and assessed. But as the situation evolves it is recommended that someone takes responsibility for acting as the team leader for the event. It is likely to be the most senior person on site but can be any team member. If it is a complex case the medical lead may well be focused on the patient so might not be the most appropriate person. The team leader who emerges should be recognised as such by the team and act as conduit between the team treating the patient and the team organising logistics, patient notes and liaising with emergency services. The team leader should have the role of oversight of the whole medical scenario and ensure an effective plan is made, communicated and understood by the whole team.

Be assertive

True medical emergencies are challenging in every respect and will require all team members to step outside their comfort zone. This may require the team to remove patients' garments as appropriate, confirm a cardiac arrest (which is quite a considerable decision), bodily handling of a patient and potentially managing distressed relatives. Dental teams should consider this when training and mentally prepare themselves to perform tasks and procedures which are far outside their normal scope of practice. Leadership of these teams will often require someone to be assertive and motivate their teams to perform these tasks with reassurance they are doing the right thing. First responders are rarely criticised for being over assertive but often fail to do tasks (such as removing a bra in cardiac arrest) due to lack of confidence and mental preparedness. Planning and training can help avoid this lack of assertion.

Share the mental model: include the team in decision making

Communication with the whole team is key. Checklists are really useful to optimise this and practical training should include them. The team leader should ensure that their thoughts and decisions are communicated with the team and encourage the team members to share their thoughts before making the final decision. Often the quiet team members will have a great idea but the team dynamics make it difficult for them to share this with the team leader.

6.0 Take notes

Whilst this may not be required, or may not be possible in the first few minutes, try and start taking notes that can be handed over as early as possible. These include timings and patients' previous medical history and medications. It is invaluable to ambulance teams to know what happened before and during the event as it will help guide their treatment and help decide on the appropriate patient pathway of care. The paramedics are part of the team, and facilitating their care of the patient is a sure way of improving outcomes.

7.0 Debriefing

Debrief and create honest feedback

When training medical professionals for medical emergencies and cardiopulmonary resuscitation it is advisable to use an experienced and credible instructor to deliver the training. It is known that significant cardiopulmonary resuscitation quality deficits exist among healthcare providers.[10] Credible trainers can offer realistic simulations with useful feedback and debriefing, improving team performance. Effective debriefing of simulation has been shown to serve as a powerful tool to improve rescuer training and care for cardiac arrest patients.[10]

A true medical emergency is stressful for all concerned. A good plan should consider the mental health of the medical team at all times. The Resuscitation Council UK advise that serious events, including cardiac arrests, should always include a full 'debriefing' of staff. This allows them to reflect on the treatment given and permits discussion of whether anything might have been done differently.[5] There are many guidelines on how best to do this but it is generally advisable that immediately post incident all staff are gathered together and given the opportunity to discuss the events and vocalise any issues or concerns they have as soon as possible. A more formal, structured debrief later may be required and learning points identified. Dealing with a medical emergency will affect all staff members differently, and as with any such stressful situation it is always good to discuss our feelings in a non-judgemental manner.

8.0 Sedation

Specialist emergency medical training is essential

When a dental surgery offers more advanced care options, such as sedation, the RCUK recommends that a more advanced trainer, or attendance at a designated course may be appropriate.[5] Intravenous sedation specifically includes the administration of anxiolytic drugs that may have complex, potentially serious, side effects. A specialist trainer, experienced in sedation (inhalation and IV), can offer training to manage these side effects and improve the confidence and ability of staff to help manage these events. The planning for dental emergencies will have to be modified to acknowledge these risks.

Conclusion

Medical emergencies may arise when least expected. By utilising these tips the dental team will be in the best position to deal with such events effectively and efficiently, optimising outcomes for patients.

This article was originally published in the BDJ *on 12 January 2024 in Volume 236 pages 14 to 17.*

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https://doi.org/10.1038/s41407-024-2589-z