What Should Dentists Know About Medicine...

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Learning Outcomes

1. Medical Conditions and Their Impact on Dental Care
2. Medical Emergency & Resuscitation in the Dental Practice
3. The Special Care Needs Patient
4. Geriatrics: Dentistry and the Ageing Patient
5. Management of the Oncologic Patient
6. Oral Soft Tissue Lesions, Temporomandibular Disorders and Orofacial Pain
7. Infections, Infectious Diseases and Dentistry
8. Nutrition and Oral Health
9. Clinical & Applied Pharmacology and Dental therapeutics

Introduction

www.resus.org.uk

- Standards for Clinical Practice &Training for Dental Practitioners & DCP
- Published by Resuscitation Council UK
  - Same 'weight' as other guidance – BLS, ATLS
  - Defines their view of 'Best Practice'
  - Not legally enforceable!
  - 'Endorsed' by the GDC! – To be adopted as their view of 'best practice'

How frequent are they?

- Fortunately they are uncommon
- 0.7% per dentist per year (*Girdler, 1999*) or once every 3-4 years (*Atherton, 1999*)
- MI & cardiopulmonary arrest are rare
- Most dentists are uncomfortable & feel incapable of identifying & treating emergencies

Why bother?

- 'All dental professionals are responsible for putting patients' interests first, and acting to protect them'. *Standards for dental professionals, GDC*
- The public expects dentists to be competent in medical emergencies

What can go wrong?

- Fainting*
- Asthma*
- Hypoglycaemia*
- Hyperventilation
- Epilepsy*
- Stroke
- Angina*
- MI*
- Cardiac arrest*
- Anaphylaxis*
- Respiratory obstruction
- Respiratory depression

*most common

Medical Risk Assessment

- Any patient could have a medical emergency
- A medical/drug history will enable the dentist to identify at risk patients and take measures
- Do not delegate Medical History taking to another member of the practice

Medical Risk Assessment

- Occasionally referring the patient to a hospital setting is more appropriate
- Use a standardized risk stratification system (ASA). This will help in identifying at risk patients and modifying their treatment plan
- Make sure the drug history is up to date – call their doctor if necessary

Medical Risk Assessment – Identifying Special Risk Patients

- ANGINA – Patients with a history of 'exertional' angina may have an attack in dental practice
- Anxiety and stress can be reduced with oral anxiolytics
- Patients with 'unstable' angina, nocturnal angina and recent hospital admissions due to angina are risky to treat in a non-medically supported environment

Medical Risk Assessment – Identifying Special Risk Patients

- ASTHMA – Quality of medication is the best guide to severity
- Patients with regular hospital admissions for their asthma, on oral medication (steroids) and regular home nebulisers are at highest risk

Medical Risk Assessment – Identifying Special Risk Patients

- EPILEPSY – Patient is the best guide.
- Ask about the timing, precipitating factor and duration of the last THREE seizures
- Patients with poor seizure control and recent changes in medication are at high risk

Medical Risk Assessment – Identifying Special Risk Patients

- DIABETES – Type I DM patients are at highest risk of hypoglycaemia. But be more aware of diabetics with poor control and poor awareness
- ALLERGIES – Ask the patients and be specific (latex, antibiotics, LA reactions). Avoid allergen. If in doubt seek specialist assessment

Emergency Drugs in Dental Practice

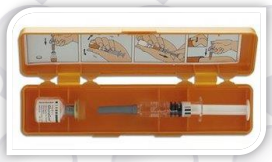
- A standardized emergency kit throughout Bahrain should be adopted
- Intravenous drugs in dental practice emergencies is discouraged
- All drugs are to be stored together and marked clearly

Emergency Drugs in Dental Practice

1. Glyceryl Trinitrate (GTN) Spray (400micro/puff)
2. Salbutamol Aerosol Inhaler (100micro/actuation)
3. Adrenaline Injection (1:1000, 1mg/ml)
4. Aspirin Dispersible (300mg)
5. Oral Glucose Solution/Tablets/Powder
6. Midazolam 5-10mg/ml (buccal or intranasal)
7. Oxygen – a full 'D' size (340litres) with a flow rate of 10litres/minute

Emergency Drugs in Dental Practice – Other Drugs

1. Glucagon
2. Chlorpheniramine (Piriton)
3. Hydrocortisone



Emergency and Resuscitation Equipment

- A standardized arrest kit – (Airway management, resuscitation drugs, AED)
- Emergency equipment should be checked weekly
- Designated responsible individual- planned replacement programme
- Single use and LATEX FREE

Emergency and Resuscitation Equipment

1. Oxygen facemask with tubing
2. Oropharyngeal airways (sizes 1-4)
3. Pocket mask with oxygen port
4. Self-inflating bag with mask (1 litre reservoir 'Ambu' bag)
5. Variety of different sized masks attaching to self-inflating bag
6. Portable suction with tubing & suction catheters (Yankauer)
7. Single use sterile syringes and needles
8. Spacer device for inhalers
9. Automated blood glucose measurement device
10. Automated External Defibrillator (AED)

Automated External Defibrillator (AED)

- AEDs reduce mortality from cardiac arrest. It enables all dental staff to attempt defibrillation safely after little training
- Planes, large cinemas, shopping malls, and all healthcare environments have AEDs; should a dental surgery be an exception?

Automated External Defibrillator (AED)

The 'ABC' approach

- Early recognition of the 'sick' patient is encouraged
- Preempt the collapse – identify the 'at risk' patient with good history taking
- Preempt the collapse – abnormal breathing pattern, abnormal colour, and abnormal pulse rate allows appropriate help to be summoned prior to a collapse

The 'ABC' approach

- **A**irway, **B**reathing, **C**irculation, **D**isability, and **E**xposure to assess AND treat
- Treat life-threatening problems as they are identified before moving on
- Continually re-assess on deterioration
- Assess treatments being given
- Use all members of the team
- Your ultimate aim is to 'buy time' by keeping the patient alive

First Steps

- Stay calm, and make sure you and your staff are safe
- Look at the patient generally; do they 'look unwell'?
- If awake ask 'how are you?' if not, shake and speak to them again
- ALWAYS
  - Assess CONSCIOUS LEVEL
  - Get PULSE
  - Get RESPIRATORY rate
  - Consider MEDICAL HISTORY

Airway 'A'

- Look for signs of complete obstruction – paradoxical chest movements, use of accessory muscles, central cyanosis, absent breath sounds
- Look for signs of partial obstruction – diminished, noisy air entry (inspiratory stridor, expiratory wheeze, gurgling, snoring)

AIRWAY OBSTRUCTION IS AN EMERGENCY

Airway 'A'

- Airway clearance maneuvers – head tilt/chin lift or jaw thrust. Remove visible foreign bodies (forceps, suction). Consider adjuncts
- Give oxygen at high-inspired concentration – 10litres, 100% oxygen with a non-rebreathing mask
- Use a pulse oximeter – aim for 97-100% saturation

Breathing 'B'

- Look, Listen and Feel
- Count respiratory rate, assess depth, and pattern/rhythm of respiration

Circulation 'C'

- Syncope is the most common cause of circulation problems in practice
- Look at the colour of the hands – blue, pink, pale, mottled
- Assess limb temperature, Measure capillary refill time, Count pulse rate (central pulse)
- Weak pulse, decreased consciousness and a slow capillary refill time suggest a low blood pressure

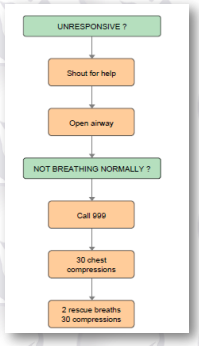
Disability 'D'

- Exclude hypoxia and low blood pressure
- Check drug record (recent administration of sedatives)
- Examine the pupils (size, quality and reaction)
- Conscious level – AVPU
- Measure glucose level
- Put in recovery position

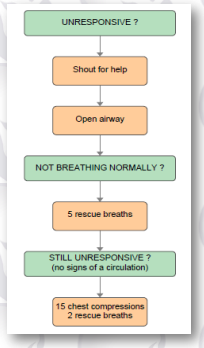
Exposure 'E'

- Loosen or remove some of patient's clothes
- Respect patient's dignity and minimize heat loss

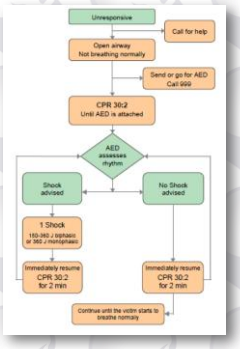
Basic Life Support (Adult)



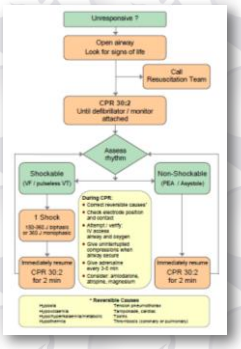
Basic Life Support (Paediatric)



AED



Advanced Life Support (ALS)



Common Medical Emergencies - SYNCOPE

- Emotional stress/pain causes vagal over-activity that drops BP thereby starving the brain of oxygen (↓cerebral perfusion) causing unconsciousness
- *Symptoms and signs*
- Feeling faint/dizzy/light headed
- Slow pulse, low blood pressure
- Pallor and sweating, nausea and vomiting
- Unconsciousness

Common Medical Emergencies - SYNCOPE

- *Treatment*
- Lay flat as soon as possible and raise legs
- Loosen tight clothing and give high flow oxygen
- ABC and start CPR in the absence of 'signs of life'
- Rule out **postural hypotension** and **hyperventilation**

Common Medical Emergencies - ASTHMA

- Most asthma attacks will respond to a few activations of the patient's short-acting beta$_2$-adrenoreceptor agonist inhaler – salbutamol 100 micrograms/actuation
- If condition deteriorates call for help

Common Medical Emergencies - ASTHMA

- *Symptoms & signs*
- Acute severe asthma – inability to complete sentences, RR > 25/minute, tachycardia (HR > 110/minute)
- Life threatening asthma – cyanosis or RR < 8/minute, bradycardia (HR < 50/minute), exhaustion, confusion, decreased consciousness

Common Medical Emergencies - ASTHMA

- *Treatment*
- Call 999
- Oxygen 10litres/minute, 4-6 activations of salbutamol using a large-volume spacer repeated every 10-minutes (nebulisers if available)
- Adrenaline IM (upper outer arm or outer thigh) 500 micrograms (0.5ml of 1:1000)
- ABC and start CPR in the absence of 'signs of life'

Common Medical Emergencies - ASTHMA

- What if the patient was going through exasperation of COPD?
- ALL sick, cyanosed patients with respiratory difficulty should be given high flow oxygen till an ambulance arrives

Common Medical Emergencies - HYPOGLYCEMIA

- Patients may recognize symptoms themselves and will respond to glucose.
- *Symptoms & signs*
- Shaking, trembling and sweating
- Headache, low concentration/vagueness
- Slurring speech, aggression and confusion
- Fitting, unconsciousness

Common Medical Emergencies - HYPOGLYCEMIA

- *Treatment*
- Confirm the diagnosis by measuring BMs
- Early stages (intact gag reflex) – give oral glucose repeated every 10-15 minutes
- Impaired consciousness/uncooperative – glucagon IM 1mg (5-10minutes) needs adequate glucose stores. Re-check BMs in 10minutes
- Once alert and can swallow give oral glucose and food with high carbohydrate
- ABC and start CPR in the absence of 'signs of life'

Common Medical Emergencies - CARDIAC EMERGENCIES

- Ask the patient for their glyceryl trinitrate spray or tablets (isosorbide dinitrate) and allow the patient to use it
- Sudden alterations in the patient's heart rate may lead to a sudden reduction in cardiac output

Common Medical Emergencies - CARDIAC EMERGENCIES

- *Symptoms & signs*
- Mycardial Infarction is similar to angina but generally more severe and prolonged
- Central progressive severe, crushing chest pain radiating to shoulders, arms, jaw, neck and through to the back
- Pale & clammy
- Nausea & vomiting
- Weak pulse and low blood pressure
- Shortness of breath

Common Medical Emergencies - CARDIAC EMERGENCIES

- *Treatment*
- Call 999
- Allow patient to rest in most comfortable position – sitting position if breathless, flat if patient looses consciousness
- Give high flow oxygen (10litres/minute)
- GTN spray sublingually
- Reassure patient to reduce anxiety
- Give aspirin 300mg orally (make paramedics aware)
- ABC and start CPR in the absence of 'signs of life

Common Medical Emergencies - EPILEPTIC SEIZURES

- Regular medications should be taken before attending dental clinic
- *Symptoms & signs*
- 'Aura' warning
- Sudden loss of consciousness – patient becomes rigid, gives a cry, become cyanosed (tonic phase)
- Starts jerking movements, and may bite tongue (clonic phase)
- Frothing, and incontinence

Common Medical Emergencies - EPILEPTIC SEIZURES

- Seizures last a few minutes then the patient becomes 'floppy' but remains unconscious
- Patient may become confused after regaining consciousness
- Check blood glucose – hypoglycemia could present as sudden fitting
- Check pulse (<40/minute) – drop in blood pressure from syncope can cause transient cerebral hypoxia, which presents as fitting

Common Medical Emergencies - EPILEPTIC SEIZURES

- *Treatment*
- During convulsions make sure patient is safe from surroundings – do not put anything in mouth and do not restrain convulsive movements
- Give high flow oxygen (10litres/minute)
- After convulsive movements have subsided place in recovery position
- ABC and start CPR in the absence of 'signs of life'
- If blood glucose <3.0mmol/litre – treat as hypoglycemia

Common Medical Emergencies - EPILEPTIC SEIZURES

- 'Post-ictal confusion' is common – give reassurance and sympathy
- If convulsions were a first episode, atypical, prolonged (repeated), or injury occurred then seek hospital transfer
- Medication should only be considered if seizures are prolonged (>5mins) or recur in succession – call 999
- These seizures respond to IV diazepam, or to nasal/buccal midazolam 10mg

Common Medical Emergencies - ANAPHYLAXIS

- In dentistry it is mostly due to a drug administration or contact with allergen (latex)
- The more rapid the onset, the more serious it will be
- Hypersensitivity reactions may also be associated with *additives* and *excipients* in medicines

Common Medical Emergencies - ANAPHYLAXIS

- *Symptoms & signs*
- Lack of consistency in manifestation & a wide range of possible presentations can cause diagnostic difficulty
  - Urticaria, rhinitis, conjunctivitis
  - Abdominal pain, vomiting, diarrhea and a 'sense of doom'
  - Flushing or pallor
  - Laryngeal oedema and bronchospasm – stridor & wheeze
  - Respiratory arrest leading to cardiac arrest
  - Vasodilation causing hypovolaemia leading to severe hypotension and collapse

Common Medical Emergencies - ANAPHYLAXIS

- *Treatment*
- Airway management, and administering high flow oxygen
- Blood pressure management – laying patient flat and raising feet
- Adrenaline IM (upper outer arm or outer thigh) 500 micrograms (0.5ml of 1:1000) – repeated if necessary every 5-minutes

Common Medical Emergencies - ANAPHYLAXIS

- ABC and start CPR in the absence of 'signs of life'
- All anaphylactic patents should be sent to hospital irrespective of any initial recovery
- What about anti-histamines and steroids?

Common Medical Emergencies - CHOKING & ASPIRATION

- Dental patients are very susceptible to choking with risk of aspiration
- *Symptoms and signs*
- Cough & splutter
- Difficulty breathing
- Noisy breathing with wheeze (aspiration) or stridor (upper airway)
- 'Paradoxical' chest movements
- Cyanosis and loss of consciousness

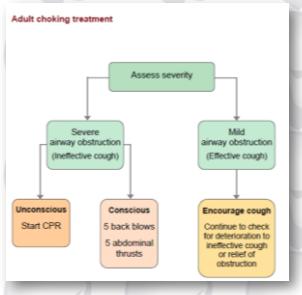
Common Medical Emergencies - CHOKING & ASPIRATION

- *Treatment*
- Allow coughing vigorously
- Remove any visible foreign bodies from mouth and pharynx
- Symptomatic treatment of wheeze with salbutamol
- Large foreign body aspiration needs an emergency hospital referral and a CXR

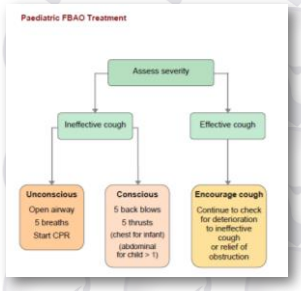
Common Medical Emergencies - CHOKING & ASPIRATION

- If not breathing encourage to cough, with sharp back blows followed by abdominal thrusts
- If patient becomes unconscious, CPR should be started

Common Medical Emergencies - CHOKING & ASPIRATION



Common Medical Emergencies - CHOKING & ASPIRATION



Common Medical Emergencies - ADRENAL INSUFFICIENCY

- Adrenal Insufficiency follows long term steroid use and persists for years after stopping therapy
- Patient becomes hypotensive when stressed physiologically
- Ask about steroid history and a steroid warning card
- Consider using steroid prophylaxis if undergoing surgical dentistry or patient is systemically unwell

End