

# Importance of systemic diseases, medical emergencies and first aid in the dental office

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# Dental management of medically compromised patients

- Detailed history, **anamnesis**
  - Previous and current medical conditions
  - Hospital treatments, surgeries
  - Medications (previous ones and current as well!  
i.e. bisphosphonates, chemotherapy)
  - Allergies
- If necessary, modify the treatment plan for the patient's safety



# Dental aspects of common health conditions



# Hypertension

- Blood pressure consistently above 140/90 mmHg
- Should be controlled by physician before elective dental and surgical treatments
- Avoid anxiety and pain
- No rapid posture changes
- Aspiration before injection of anaesthetic solution
  - Intravenous epinephrine → dysrhythmia, hypertension

Blood pressure	Management
140/90-160/100	Recheck BP before treatment
160/100-180/110	Max. 0,04 mg epinephrine during a single session,
180/110<	Only emergency care, recheck BP after 10 min. rest, refer to physician



# Angina pectoris

- Myocardial blood supply cannot meet the increased oxygen demand because of coronary artery disease
- Ischaemia in the myocardium → heavy pressure/ squeezing sensation in the substernal region

	Management
Stable angina	minimize stress, effective local anaesthesia, avoid long treatments
Unstable angina	Postpone elective treatments, consult physician Ready access to nitroglycerine, oxygen and emergency medical help Constant monitoring Increased risk of infarction!

# Myocardial infarction

- Cellular death of the myocardium due to ischaemia
- Previous MI, medical history
  - When? Anticoagulants?
    - No elective treatment for 6 months
  - Emergency procedures before that 6 month might require hospitalisation
- Surgeries and dental procedures have increased risk of new MI in the first 12 months
  - Clearance from physician
  - Access to nitroglycerine, oxygen and medical help
- Minimize stress, use proper anaesthesia
- Stop all treatment immediately and ask for emergency assistance in case of:
  - Chest pain
  - Shortness of breath (Dyspnoea)
  - Elevated heart rate and blood pressure, dysrhythmia



# Infective endocarditis

- Infection of the endocardium and heart valves
- Growths on the valves, lining of heart or blood vessels  
→ if they dislodge, embolism
- Many dental procedures cause bacteraemia
- Prophylactic antibiotics must be prescribed for patients with degenerative cardiac or atherosclerotic valvular defects
- Aim is to prevent colonisation of bacteria

# Diabetes mellitus

- Type I: Insulin dependent, Type II: Non-insulin dependent
- Insulin/medication and diet control → Eat before the procedure
- Avoid long waiting before treatment, give morning appointments
- Acute complication: **Hypoglycaemia**
- Wound healing is impaired (lack of proper blood supply and immune response)

Steps	Hypoglycaemia management
Recognition	Weakness, dizziness, pale moist skin, shallow breathing, altered consciousness
	Terminate dental procedure
Examination	Last meal? Insulin/medication? Check blood sugar level
Treatment	Administer oral carbohydrates
Monitoring	If patient is recovering, can be discharged after an hour
Ask for help	No signs of recovering/ unconscious → summon medical assistance





# Asthma bronchiale

- Narrowing of smaller airways, wheezing, dyspnoea
- Bring bronchodilator inhaler to dental treatments
- Postpone elective treatments in serious phases
- Stop treatment immediately when symptoms appear → Beta2-agonist

# Epilepsy

- Disorder of brain function causing episodic disturbances of consciousness and motor function
- Causes:
  - Flashing lights, stress, alcohol, drugs
  - Missed meal, infection, withdrawal of anticonvulsant medication
- Dental treatment only if the patient is under proper control with no recent episodes.
- Stress reduction, proper anaesthesia

# Renal disorders

- Antibiotics
  - Lower amoxicillin dosage according to renal function
    - creatinin clearance 50 mL/min: 66% of normal dose
    - creatinin clearance 10 mL/min: 33% or normal dose
- Bleeding
  - Invasive treatments on the day after dialysis
  - Careful haemostasis



# Hyperthyroidism

- Elevated thyroid hormone levels, hypermetabolic syndrome
- Symptoms: Tremor, eyelid lag, warm moist hyperpigmented skin, weight loss, palpitation, tachycardia, sweating, exophthalmos
- Management: Avoid thyroid crisis
  - No epinephrine in uncontrolled cases
  - Avoid iodine
  - Stress control



# Pregnancy

- No X-ray
- 1st and 3rd trimester: only emergency dental treatments
- Avoid teratogenic drugs
- If necessary, it's safe to use:
  - Lidocain, Articain
  - Amoxicillin
  - Iodine
  - Paracetamol



# Infectious diseases

- TBC, HIV, Hepatitis, etc.
- Universal precautions
  - last patient at the end of the day
  - wear double gloves, mask, hat, protective eyewear/shield, disposable clinical attire
  - careful manipulation with needle and other sharp instruments
  - avoid contamination by touching clean surfaces
  - handwash, disinfection



# Medical emergencies and their management



1. Due to anxiety
  - Vasovagal syncope
  - Hyperventilation
2. Due to prior medical condition of the patient
  - Asthma
  - Cardiac emergencies
  - Epilepsy
  - Hypoglycaemia
3. Due to the anaesthetic/drugs used by the doctor
  - Anaphylaxis
4. Accident during the procedure
  - Needle breakage
  - Choking and aspiration





# Vasovagal syncope

- Transient loss of consciousness caused by reduction in blood supply to the brain.
- Vasodilatation in peripheries, vagal stimulation slows down the heart → falling blood pressure
- Cause: anxiety, pain, rapid posture change
- Signs: feeling of warmth, increased heart rate, paleness, short rapid breathing, perspiration, dizziness
- Management:
  - Stop treatment
  - Loosen tight clothing, open windows
  - Trendelenburg position
- Monitoring



# Hyperventilation

- Arterial CO<sub>2</sub> concentration decreases → cerebral vasoconstriction and respiratory alkalosis → loss of consciousness, short period of apnoe
- Cause: anxiety
- Signs: tingling of fingertips, muscular tremor, dizziness, weakness, increased rate and depth of breathing, xerostomia
- As the CO<sub>2</sub> level rises, the patients starts to breath and regains consciousness
- Management:
  - Stop treatment when noticing signs
  - Reassure patient, breath into a paper bag
  - If unconscious, maintain airways
  - In cases of extreme anxiety, give 10-15 iv. diazepam



# Asthma

- Clinical features: Respiratory distress, audible wheezing, coughing, dyspnoea
- In severe cases: Cyanotic patient, hypoxia, loss of consciousness
- Management:
  - Stop treatment, sitting position
  - Use patient's antiasthmatic drug
  - If no response for 2-3 min, give hydrocortisone, oxygen, salbutamol, epinephrine
  - Ask for emergency assistance



# Angina pectoris/Myocardial infarction

- Signs: Pressing, squeezing retrosternal pain, radiating into left arm, cold sweat, dyspnoea, nausea, light-headedness, elevated heart rate
- Management:
  - Stop all treatment
  - Give glyceryl-trinitrate spray or tablets sublingually
  - Call emergency



# Epilepsy

- Signs: Sudden spasms of muscles, jerky movements of head and extremities, unconsciousness, salivation, urinary incontinence
- Management:
  - Stop all dental treatment
  - Supine position, loosen tight clothes
  - Mouth should not be forced open, do not insert any objects into it
  - Stable side position
  - After seizure stopped, clear airways
  - If still unconscious, call for help, start life support if necessary

If seizure lasts for more than 5 min., give iv. diazepam (5mg/min)



# Anaphylaxis

- Clinical syndrome of severe hypersensitivity reaction. Cardiovascular collapse, respiratory system depression, skin reactions, smooth muscle contractions
- Signs
  - Skin: urticaria, erythema, angio-oedema
  - Respiratory: wheezing, coughing, stridor, dyspnoea, laryngeal oedema
  - Cardiovascular: tachycardia, shock, hypotension, dysrhythmia, cardiac arrest
  - Gastrointestinal: nausea, vomiting, abdominal cramps, urinary incontinence, diarrhoea



- **Treatment:**

- Stop dental treatment
- Skin reaction only - Antihistamine (iv. or im.)
- Respiratory reaction - call ambulance
  - epinephrine (0,5 ml 1:1000 im.)
  - oxygen (5 L/min)
  - antihistamine (i.e. chlorpheniramine 10 mg iv.)
  - hydrocortisone 20 mg iv.
  - salbutamol (in case of bronchospasm)
  - Repeat every 5 min., if no changes
  - Start BLS, consider cricothyrotomy if laryngospasm is not relieved



# Needle breakage

- Cause: Sudden movement by the patient when anaesthetising
- Management:
  - If visible, remove the broken part with a thin haemostat
  - If not visible, make x-rays/CBCT and refer to maxillofacial or oral surgeon





# Foreign body aspiration

- Airway obstruction
- Signs: Coughing, choking sensation, dyspnoea, stridor, cyanosis
- Treatment:
  - Ask patient to cough
  - If unsuccessful, use Heimlich manoeuvre
  - If unconscious, use finger sweep in pharynx to remove object



James R. Hupp, Edward Ellis, Myron Tucker: Contemporary Oral and Maxillofacial Surgery 6th Edition  
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Part I, Chapter 2

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