



Medical Emergencies for Dental Providers

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Objectives

1. Recognize the signs, symptoms, and risk factors associated with the most common medical emergencies encountered in the dental office setting.
2. Demonstrate appropriate emergency response procedures, including patient assessment, airway management, and use of emergency equipment and medications.
3. Apply prevention and preparedness strategies, including medical risk assessment, stress reduction protocols, team coordination, and emergency training, to improve patient safety and outcomes in the dental practice.



Overview

Emergency Preparedness
Protocols

Staff Training

Recognize Leading Medical Emergencies

Emergency Response Sequence

Emergency Drugs and Equipment

Risk Assessment for Sedation & Anesthesia

Medical History Review

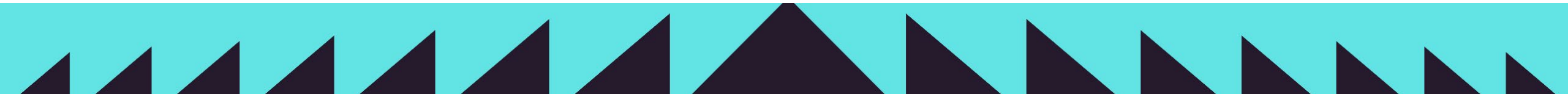
Scenario

Patient Mr. RC Cola, age 62, presented for a routine crown preparation on tooth #19. His medical history indicates:

- Hypertension-controlled with lisinopril 20 mg QD
- DMT2 (taking metformin 1000 mg BID)
- Former smoker (quit 5 years ago)
- BMI 31
- Allergies: PCN (rash)

Last meal: light breakfast 3 hours ago

Reports feeling “a little anxious” but declines nitrous oxide



Scenario continues

Local anesthesia (2% lidocaine with 1:100,000 epinephrine, 1.5 cartridges) has been administered. Crown preparation is underway. Five minutes into the procedure, Mr. RC Cola becomes pale and diaphoretic. He says, “I feel dizzy and lightheaded...I think I need to sit up.”

What do you do?

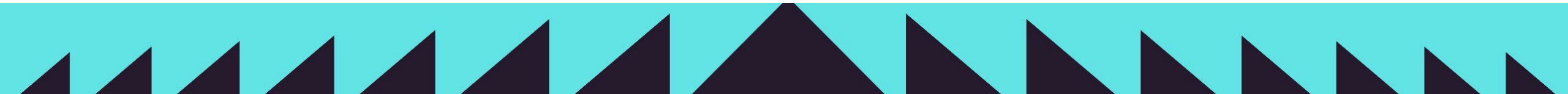
Vital Signs:

BP-88/52, HR-52, SpO2-96%, BG-110 mg/dL

Patient is conscious, cold and clammy

What is your working diagnosis?

What are you concerned about (differential diagnosis)?



Scenario continues

After two minutes in the supine position, Mr. RC Cola briefly regains color and says he feels a little better. You continue to monitor. Suddenly, he clutches his chest and says, “something is wrong...my chest feels tight....it’s hard to breathe.”

He appears distressed and is now diaphoretic again!

Repeat Vital Signs:

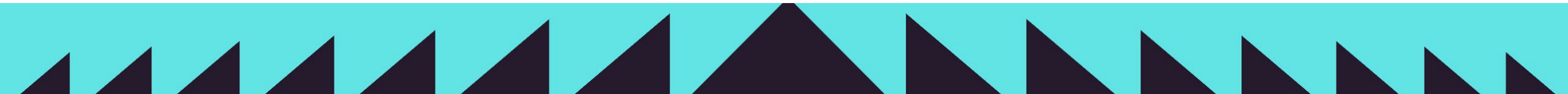
BP: 102/68

HR: 110 bpm, irregular

SpO2: 93%

Patient is conscious, anxious, chest pain rated 7/10, radiating to left jaw

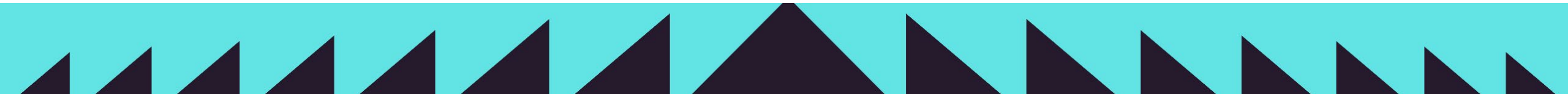
What are your next actions?



Scenario continues

Mr. RC Cola suddenly becomes unresponsive. He stops speaking, his eyes close, and he slumps in the chair. You shake his shoulders and call his name – no response. You check for breathing – he is not breathing normally (occasionally gasping breaths only). You check for pulse at the carotid artery –no pulse detected within 10 seconds.

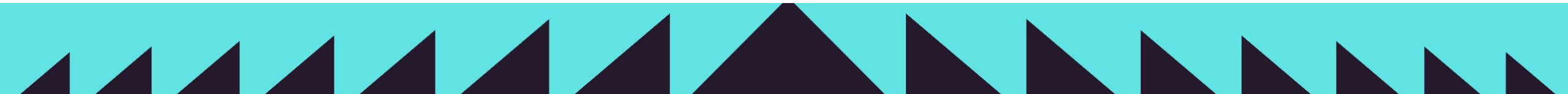
What are you next actions?



Scenario continues

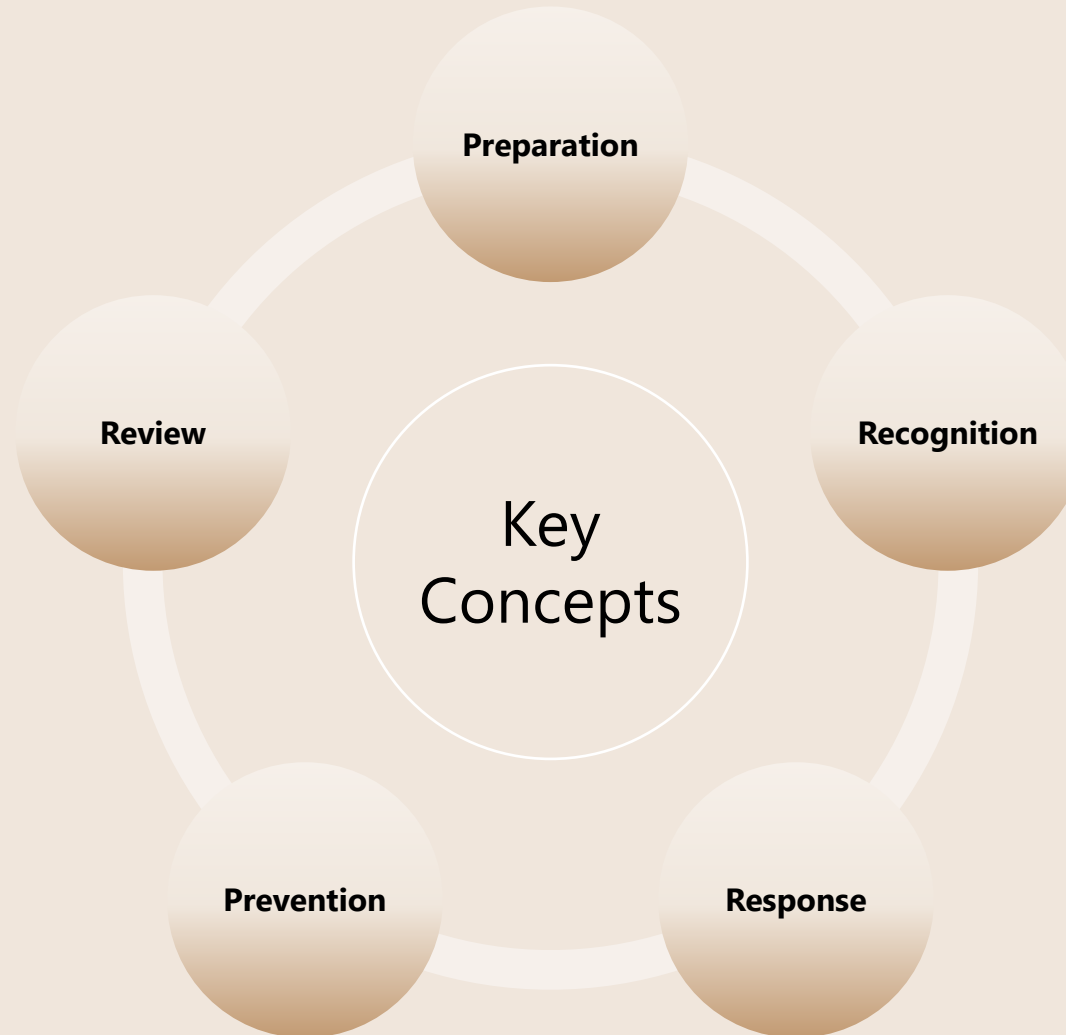
EMS arrives in 8 minutes after the 911 call. The paramedics enter the operatory.

What are your next actions?

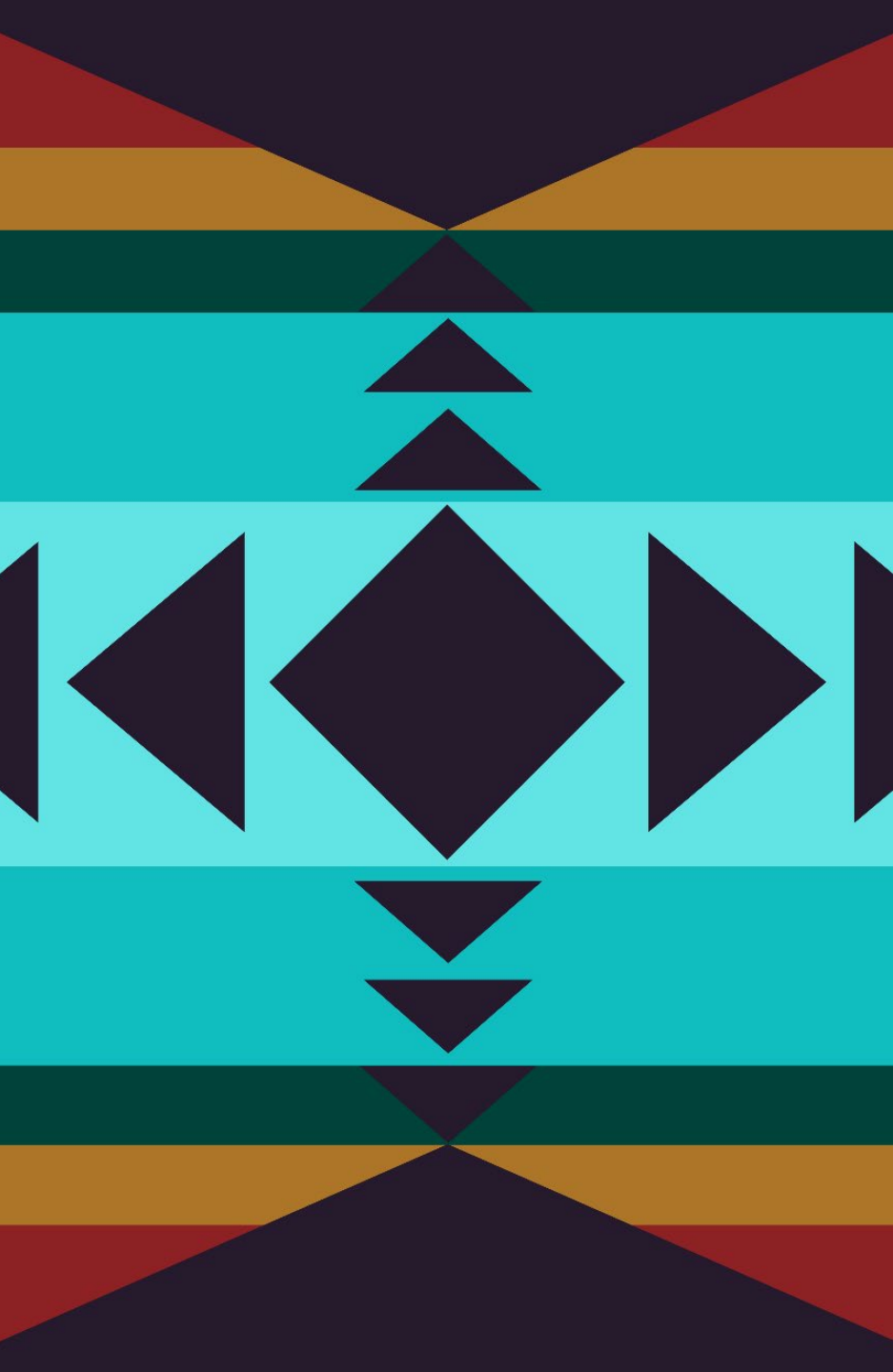


Keys to Managing Medical Emergencies

Prompt recognition, effective response, and continuous preparedness can save lives and improve outcomes.



Preparation

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Preparation

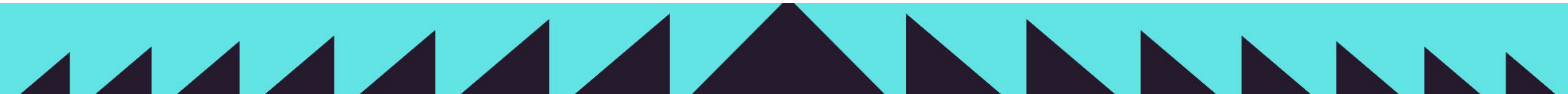
Why Emergency Preparedness Matters

- Medical emergencies can occur in any dental setting
- Stress, anxiety, medications, and underlying medical conditions can increase risk
- Rapid recognition and response improve outcomes
- Regular training and preparation reduce panic and errors

Preparation: Emergency Readiness

How to Prepare:

1. Emergency Readiness Checklist
2. Essential Emergency Equipment
3. Recommended Emergency Medicine/Drugs
4. Staff Training



Preparation: Emergency Readiness

1. Readiness Checklist

Maintain a current action plan

Assign roles & responsibilities to each team member

Ensure emergency contact numbers are readily available

Verify emergency equipment is accessible & functional

Readiness maintenance schedule

Conduct regular drills

Preparation: 2. Recommended Essential Emergency Equipment



**AUTOMATED
EXTERNAL
DEFIBRILLATOR**



**OXYGEN
DELIVERY
SYSTEM**



SUCTION



OXIMETER



**CLINIC VITAL
MACHINE**

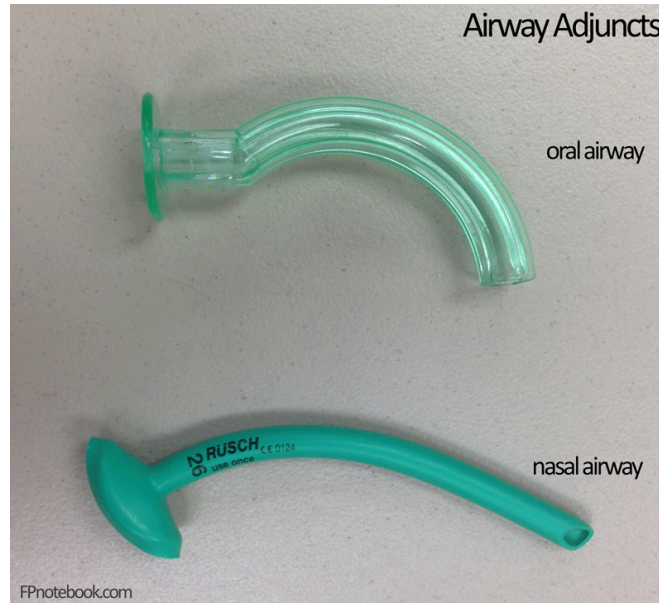


**EMERGENCY
MEDICATION
PER POLICY &
PROCEDURE**

Don't forget about pediatric sizes

Preparation: 2. Additional Emergency Equipment

- Oropharyngeal/nasopharyngeal airways
- 15 blade or Quicktrach kit *if trained*
- ACLS/PALS drugs and supplies *if certified*
- CPR Mask



Preparation: 3. Recommended Tier 1 Emergency Drugs

Epinephrine (Epi-Pen)

Aspirin

Nitroglycerin (tabs or spray)

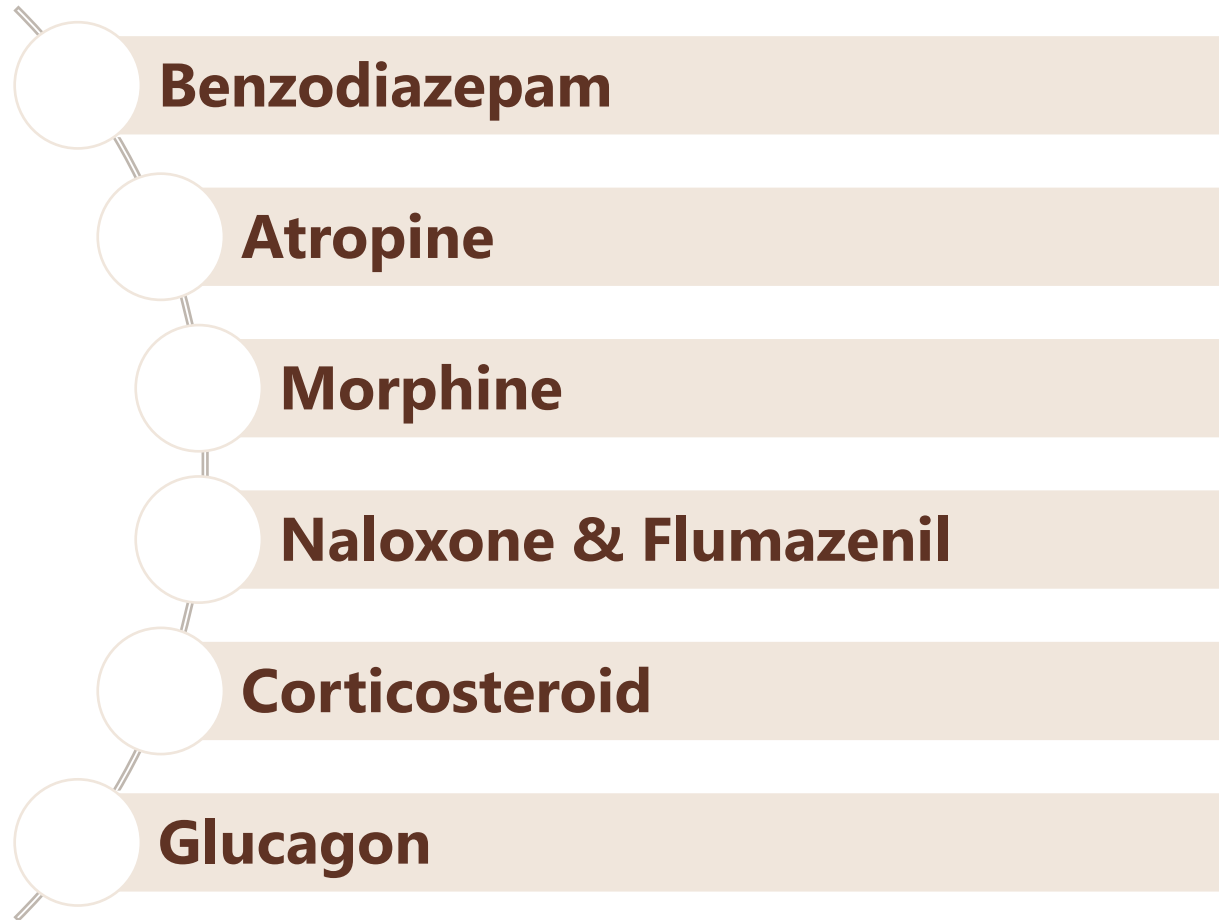
Albuterol Inhaler

Diphenhydramine

Oral Glucose



Preparation: 3. Tier 2 Drugs to Consider



Preparation: Emergency Readiness

4. Staff Training

Basic Life Support (BLS) certification for all clinical staff are kept current

Regular training and mock simulations

Annual review of emergency protocols

Recognition

Recognition – Common Medical Emergencies

- Syncope
- Hypoglycemia
- Orthostatic hypotension
- Hyperventilation
- Allergic Reactions
- Anaphylaxis
- Cardiac Events (angina, myocardial infarction)
- Seizures
- Asthma/Bronchospasm
- Stroke



Recognition: Syncope (fainting)

Most common medical emergency reported.

Signs & Symptoms:

Pre-Syncope:

- Pale skin
- Lightheadedness
- Nausea
- Dizziness
- Sweating (may be cold, clammy)

Syncope:

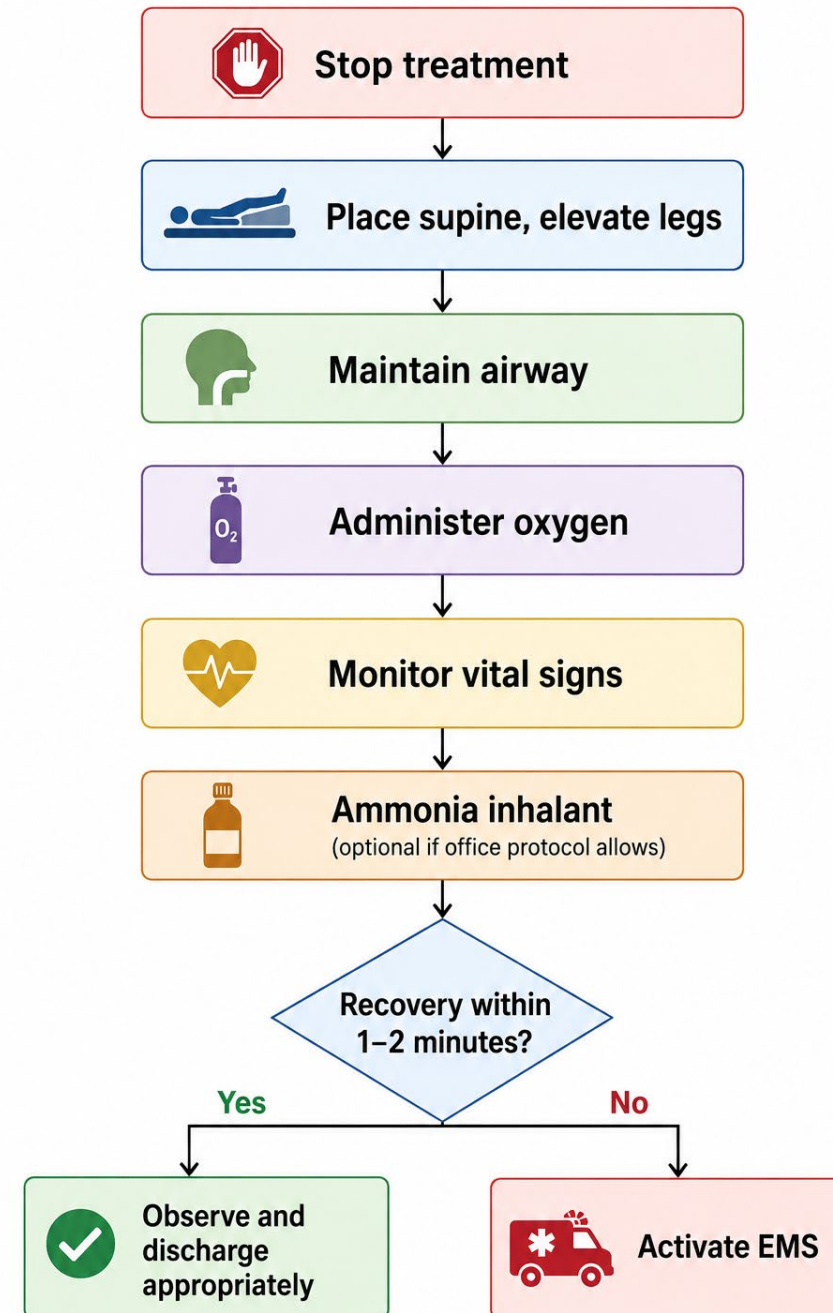
- Brief loss of consciousness
- A slow or weak pulse

Response: see algorithm

Prevention:

- Reduce patient anxiety
- Avoid sudden position changes
- Ensure adequate hydration

Response to Syncope



Recognition: Hypoglycemia

Signs & Symptoms:

- Shakiness/tremor
- Sweating
- Confusion/altered mental status
- Lethargy
- Irritability
- Loss of consciousness in severe cases

Response: see algorithm

- Check glucose level if possible

Caution:

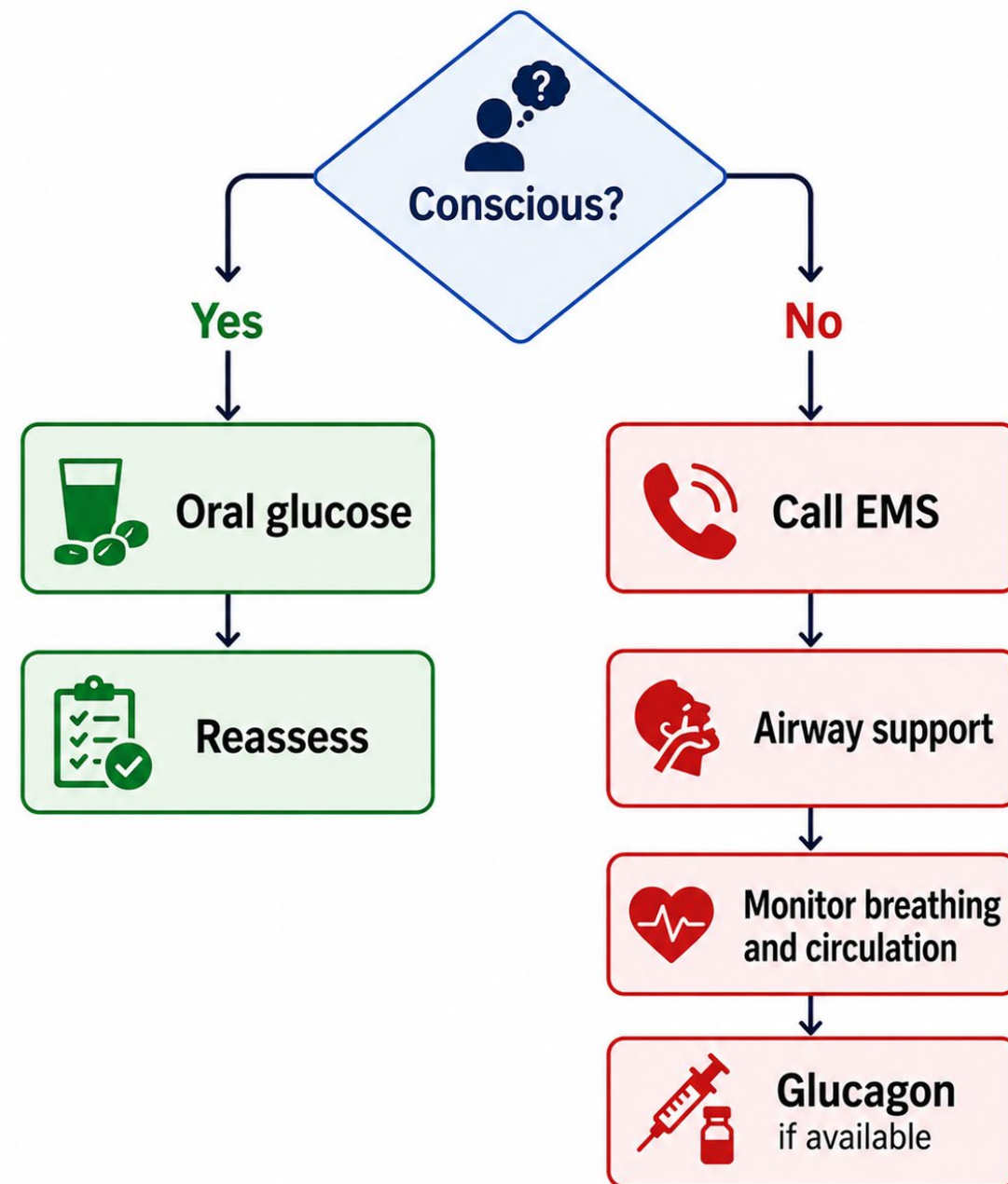
Can quickly deteriorate

Never administer insulin

Prevention:

- Verify DM patients have eaten prior to appointment
- Schedule appointments appropriately
- Review medications and glucose control history

Response for Hypoglycemia



Recognition: Orthostatic Hypotension

Signs & Symptoms:

- Syncope after rapid change from recline to upright position

Predisposing Factors:

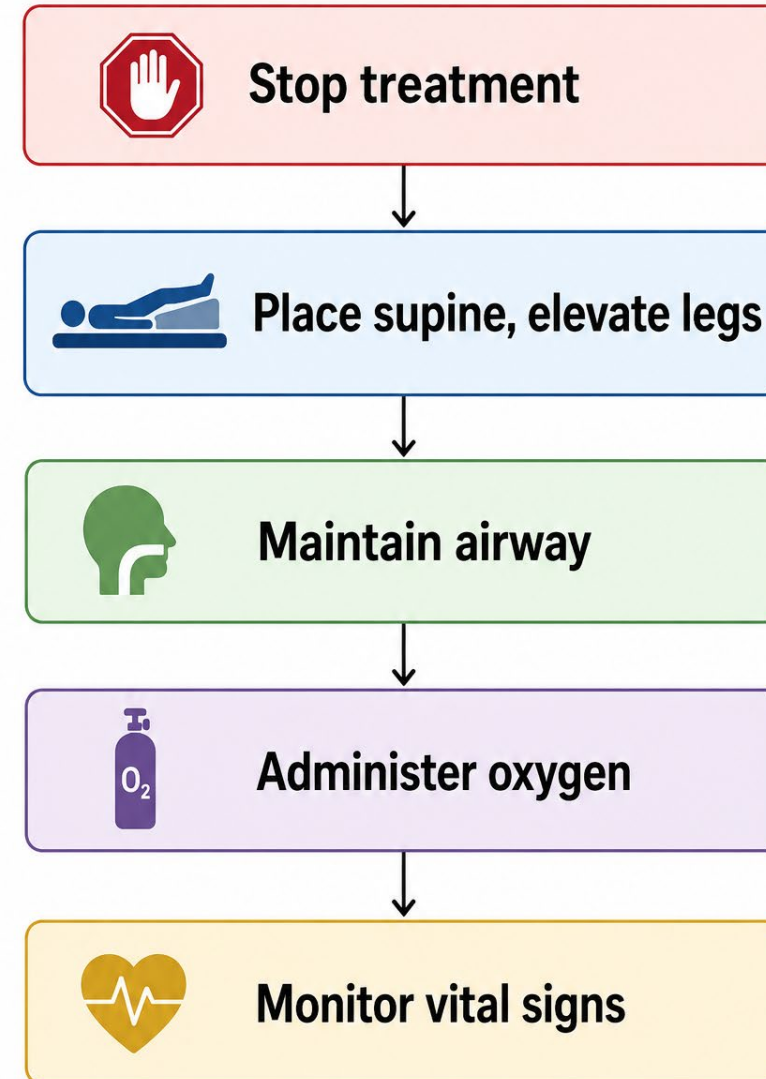
- HTN meds
- Late pregnancy
- Age
- Addison's disease
- Venous defects in legs

Response: see algorithm

Prevention:

- Slow bring patient upright
- Stand by patient as they stand up

Response to Hypotension



Recognition: Hyperventilation

Signs & Symptoms:

- Tachypnea
- Dizziness, lightheadedness, altered vision
- Numbness in extremities (hands, feet, lips)
- Extreme anxiety
- Palpitations, tachycardia
- Chest discomfort/tightness
- Upper abdominal pain

Response: see algorithm

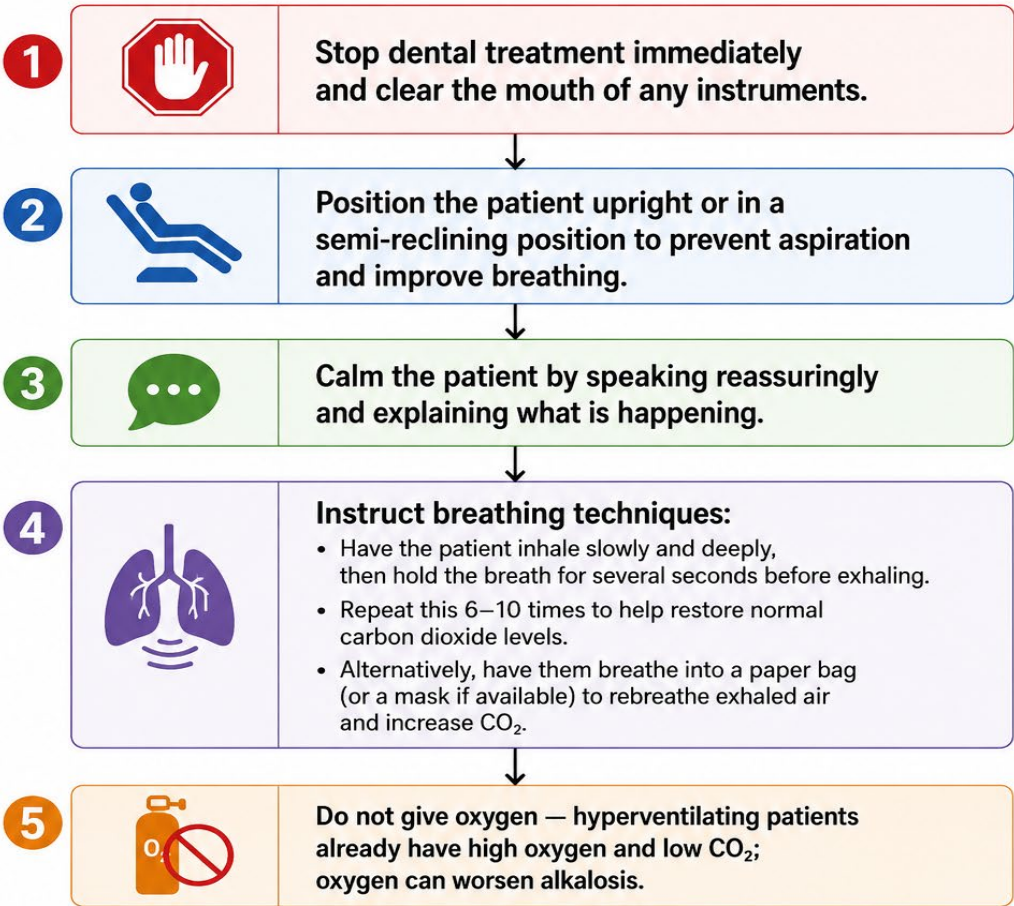
Caution:

Never give oxygen to a hyperventilating patient

Prevention:

- Identify at-risk patients
- Use stress-reduction techniques (pre-op sedation, distraction, nitrous oxide)

Response to Hyperventilation



MONITORING AND SUPPORT	
	Monitor vital signs (pulse, blood pressure, respiratory rate) until symptoms resolve.
	If the patient is unresponsive, not breathing, or has no pulse, treat as cardiac arrest and initiate CPR/defibrillation per current guidelines.
	If symptoms persist or worsen, notify EMS and consider anxiolytic medication (e.g., diazepam) only if trained and authorized, as a last resort.

Recognition: Allergic Reaction

Can occur at any time to any substance without prior history

Common dental allergens: latex, acrylic, metals, and antibiotics; local anesthetics, sedatives, NSAIDs

Mild to Moderate Signs & Symptoms:

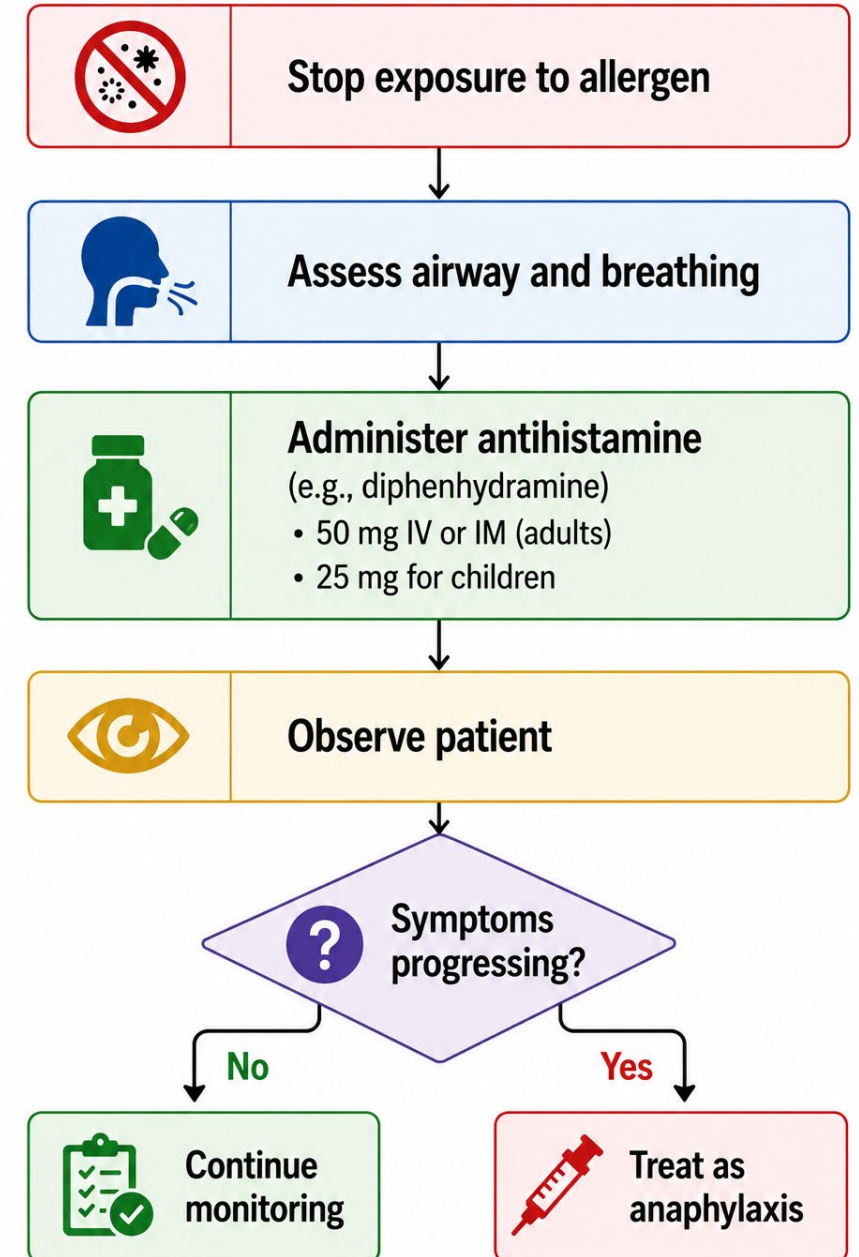
- Rash
- Itching
- Hives

Response: see algorithm

Prevention:

- Thorough allergy history
- Confirm medication and latex sensitivities
- Document allergies clearly

Response to Allergic Reaction



Recognition: Anaphylaxis

Rapid onset after allergen exposure

Life threatening allergic reaction

Signs & Symptoms:

- Skin: rash, hives, itching, angioedema
- Airway: swelling of mouth, throat, or tongue, wheezing, tachypnea
- Cardiac: tachycardia, hypotension, dizziness
- GI: nausea, vomiting, diarrhea

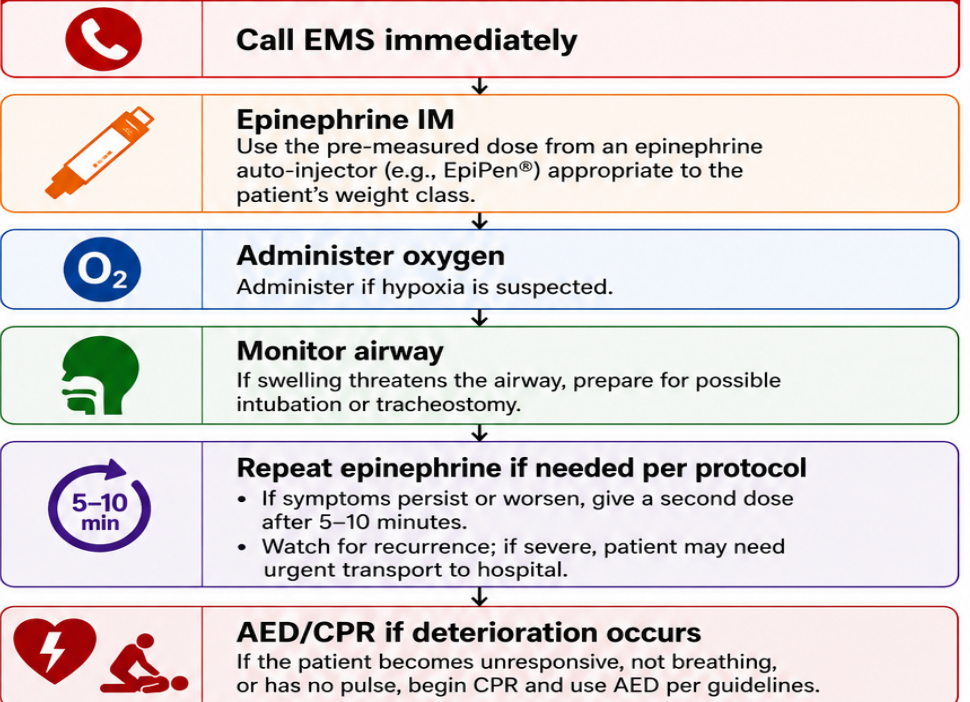
Response: see algorithm

Prevention:

- Keep epi auto-injectors on hand
- Ensure staff are trained to use them
- Maintain an allergic emergency plan
- Review patient allergy history before treatment
- Avoid known triggers when possible
- Use alternate medications or materials

Response to Anaphylaxis

FIRST-LINE ACTIONS (IMMEDIATE RESPONSE)



ADMINISTRATION PROTOCOL (KEY POINTS)

	Act immediately — do not wait for full symptoms.
	Route: Intramuscular (IM) injection is preferred for rapid, reliable delivery.
	Dose: Use the pre-measured dose from an epinephrine auto-injector (e.g., EpiPen®) appropriate to the patient's weight class.
	Repeat: If symptoms persist or worsen, give a second dose after 5–10 minutes.
	Monitor: Watch for recurrence; if severe, patient may need urgent transport to hospital.

ADDITIONAL SUPPORTIVE MEASURES

	Airway management: If swelling threatens the airway, prepare for possible intubation or tracheostomy.
	IV access: For possible fluid resuscitation and medications if needed in hospital.

 **Continue to communicate with EMS and prepare for transport.**

Recognition: Cardiac Events

Angina and Myocardial Infarction

Mild to Moderate Signs & Symptoms:

- Persistent chest pain/pressure
- Pain radiating to arm, jaw, neck, or back
- Shortness of breath
- Sweating
- Nausea

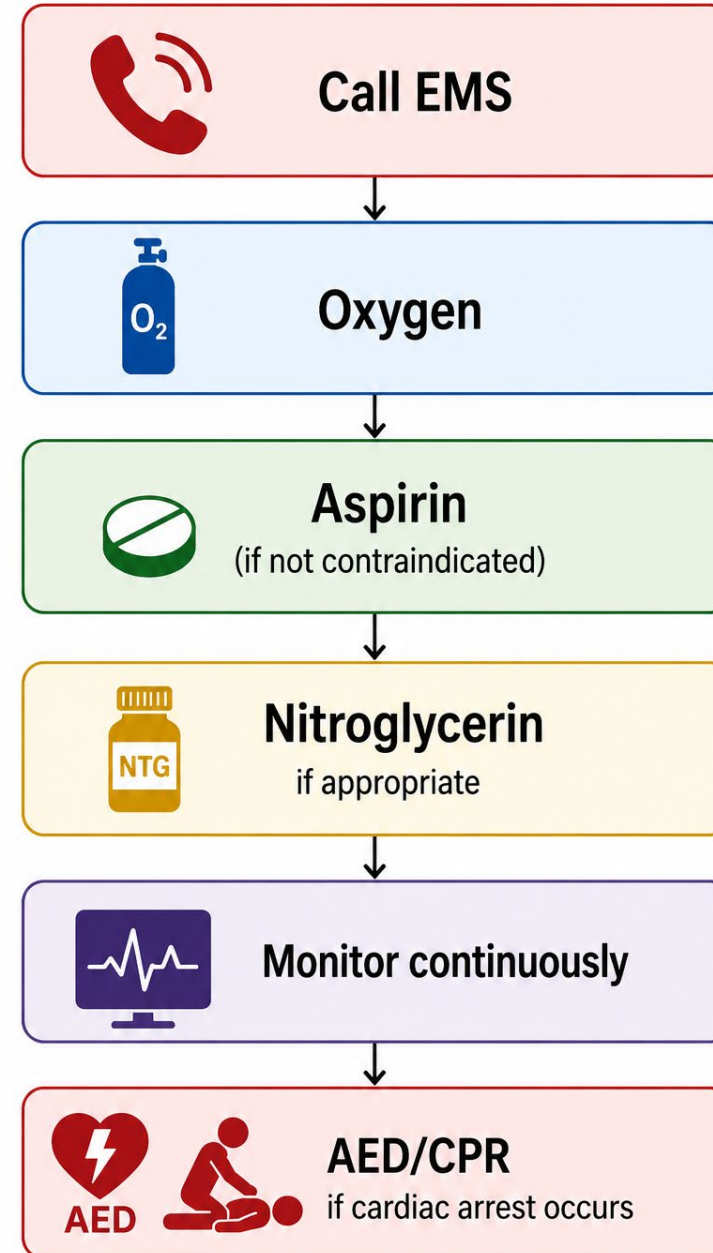
Response: see algorithm

- Stop treatment
- Position patient comfortably

Prevention:

- Review cardiac history
- Consult with PCP
- Reduce procedural stress
- Monitor vital signs

Response to Cardiac Event



Recognition: Cardiac Arrest

Mild to Moderate Signs & Symptoms:

- Unresponsive
- Not normal breathing (only gasping)
- No pulse

Response: see algorithm

- Stop treatment
- Position patient

Tips:

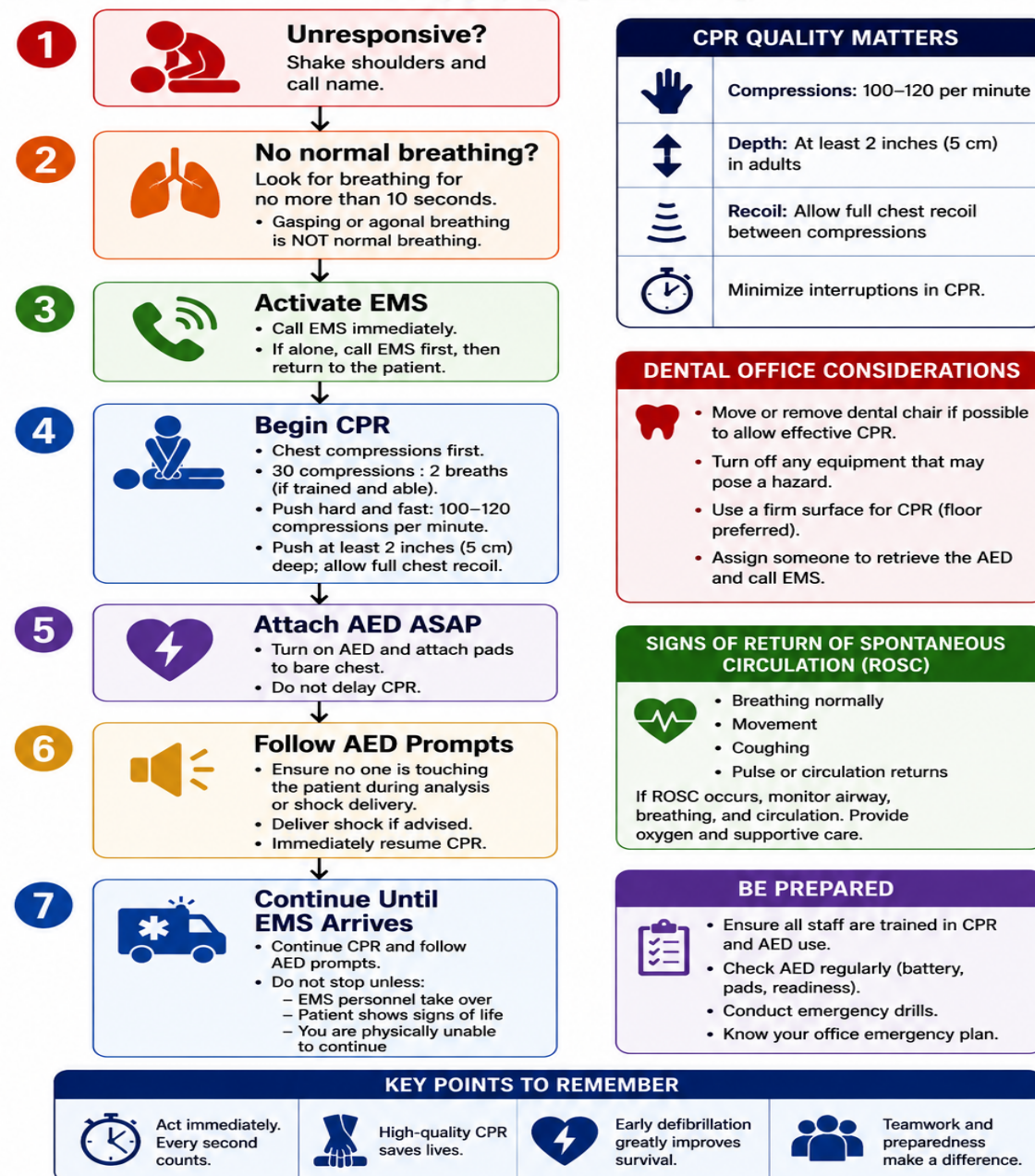
- Use CPR protocol
- Use a firm surface for CPR

Prevention:

- Identify high-risk patients
- Nitroglycerin tabs available
- Maintain emergency preparedness and staff training

Response to Cardiac Arrest

Suspected cardiac arrest = Unresponsive + No normal breathing or only gasping (agonal breathing)



Recognition: Seizures

Causes: epilepsy, hypoglycemia, local anesthetic overdose, hyperventilation, stroke, syncope

Mild to Moderate Signs & Symptoms:

- Aura
- Sudden loss of awareness
- Muscle jerking

Response: see algorithm

Prevention:

- Have patient signal if aura is felt
- Identify potential triggers
 - Sleep deprivation
 - Missed medication
 - Physical-bright or flickering light, prolonged supine position
- Minimize stress and anxiety
- Environmental modifications

Response to Seizures



Providing dental care to patients with epilepsy requires careful planning, appropriate modifications, and robust emergency protocols. By understanding the unique challenges associated with epilepsy and implementing patient-specific management strategies, dental professionals can deliver safe, effective treatment while minimizing risks.

PREPARATION



Maintain clear emergency protocols visible to all staff



Ensure adequate space around the dental chair for emergency access



Have suction equipment readily available



Document emergency contacts in patient records

DURING A SEIZURE



Recognize early warning signs (aura):

Some patients experience sensory symptoms, visual disturbances, or unusual feelings before seizure onset.



Immediate actions:

- Stop treatment immediately
- Remove dental instruments from the patient's mouth
- Clear the area around the patient
- Position the patient safely to prevent injury
- Never force objects between the teeth
- Place patient in recovery position when possible



Monitoring:

- Time the seizure duration
- Maintain airway with gentle positioning
- Provide oxygen if available and needed
- Monitor vital signs



When to seek emergency medical assistance:

- Seizure lasting >5 minutes
- Repeated seizures without recovery
- Injury during seizure
- First-time seizure
- Respiratory compromise
- Failure to regain consciousness

POST-SEIZURE CARE



Allow the patient to rest in a quiet environment



Document the event thoroughly in patient records



Reschedule remaining treatment as appropriate



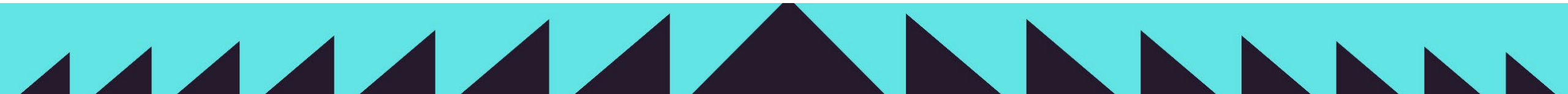
Follow up with patient and neurologist as needed



KEY REMINDER: Stay calm, ensure safety, and prioritize airway, breathing, and circulation. Know your patient's seizure history and follow their individualized emergency plan.

Recognition: Type of Seizures

Seizure Type	Consciousness	Key Features	Dental Relevance
Tonic-Clonic	Lost	Stiffening + jerking, aura	Most common emergency
Absence	Briefly impaired	Staring spell	Often mistaken for distraction
Focal Aware	Preserved	Sensory symptoms, twitching	May precede larger seizure
Focal Impaired Awareness	Altered	Automatisms, confusion, aura	Remove hazards
Myoclonic	Usually preserved	Sudden jerks	Risk during procedures
Atonic	Variable	Sudden loss of tone	Fall/injury risk



Recognition: Asthma/Bronchospasm

Exacerbations can be triggered by stress, allergens, or irritants in the dental environment

Mild to Moderate Signs & Symptoms:

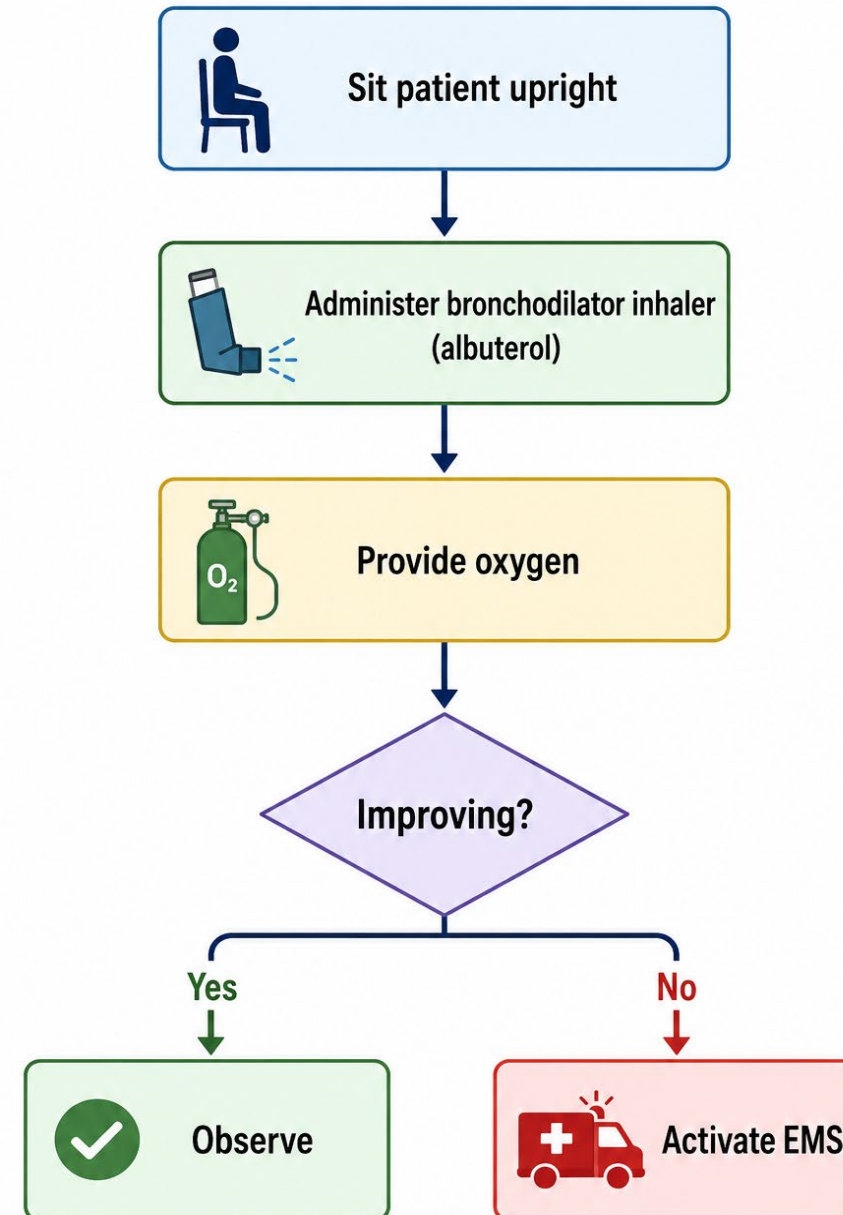
- Wheezing
- Dyspnea
- Chest tightness
- Persistent coughing
- Difficulty breathing

Response: see algorithm

Prevention:

- Ask patients to bring inhalers
- Identify triggers
- Minimize stress and anxiety

Response to Asthma/Bronchospams



Recognition: Cerebral Vascular Accident (Stroke)

Mild to Moderate Signs & Symptoms:

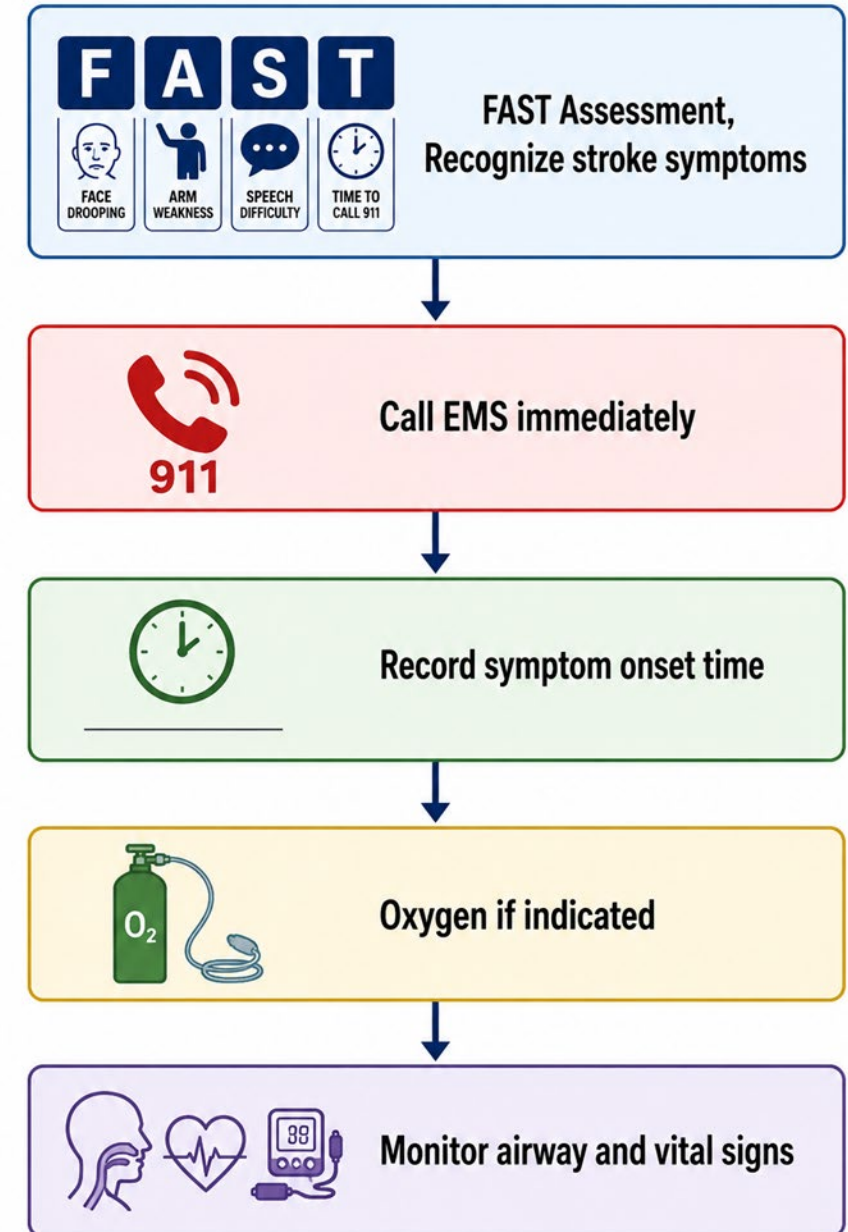
- F-A-S-T (Facial droop, Arm drift, Speech, Time)
- Sudden numbness, weakness (face, arm, leg) on one side of the body
- Confusion or loss of consciousness
- Blurred vision
- Difficulty walking or loss of balance

Response: see algorithm

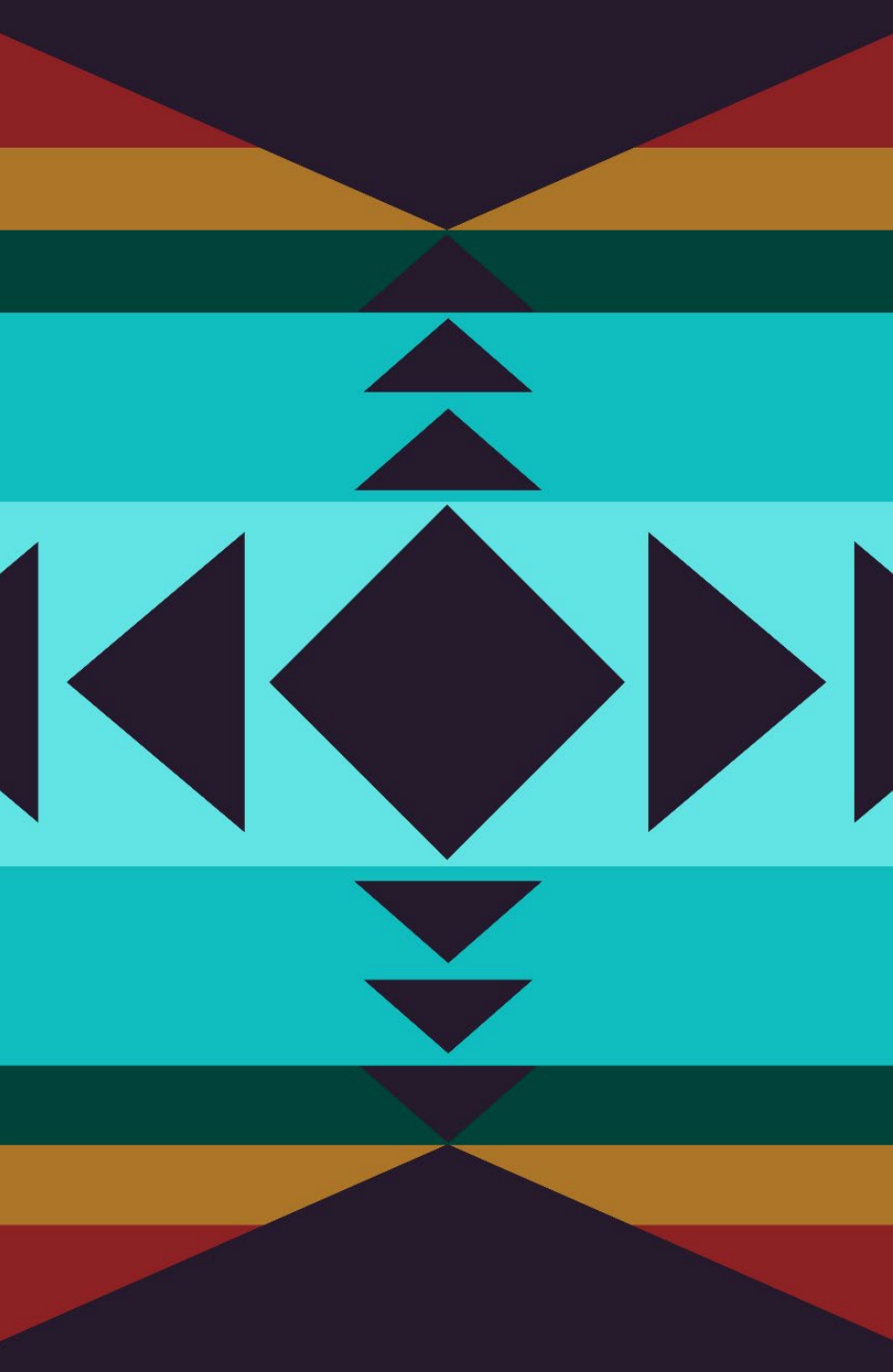
Prevention:

- Identify patients with stroke risk factors
- Monitor blood pressure

Response to Stroke



Response

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Response

- Stop procedure/treatment
- Emergency Response Sequence: P-A-B-C-D.
Be consistent for every emergency
- Team Response
- Provide appropriate intervention
- Active EMS when indicated

Initial Response—P-A-B-C-D



P

POSITION

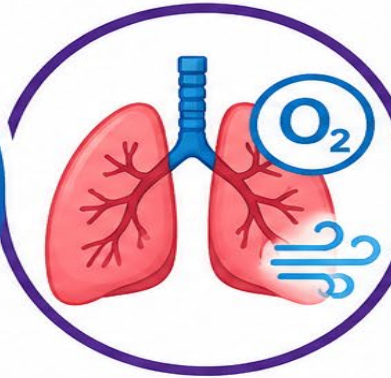
Position the patient appropriately



A

AIRWAY

Open and maintain the airway



B

BREATHING

Assess breathing and provide oxygen as needed



C

CIRCULATION

Assess circulation (pulse, BP) and control bleeding



D

DEFINITIVE CARE

Provide definitive treatment and activate EMS if needed

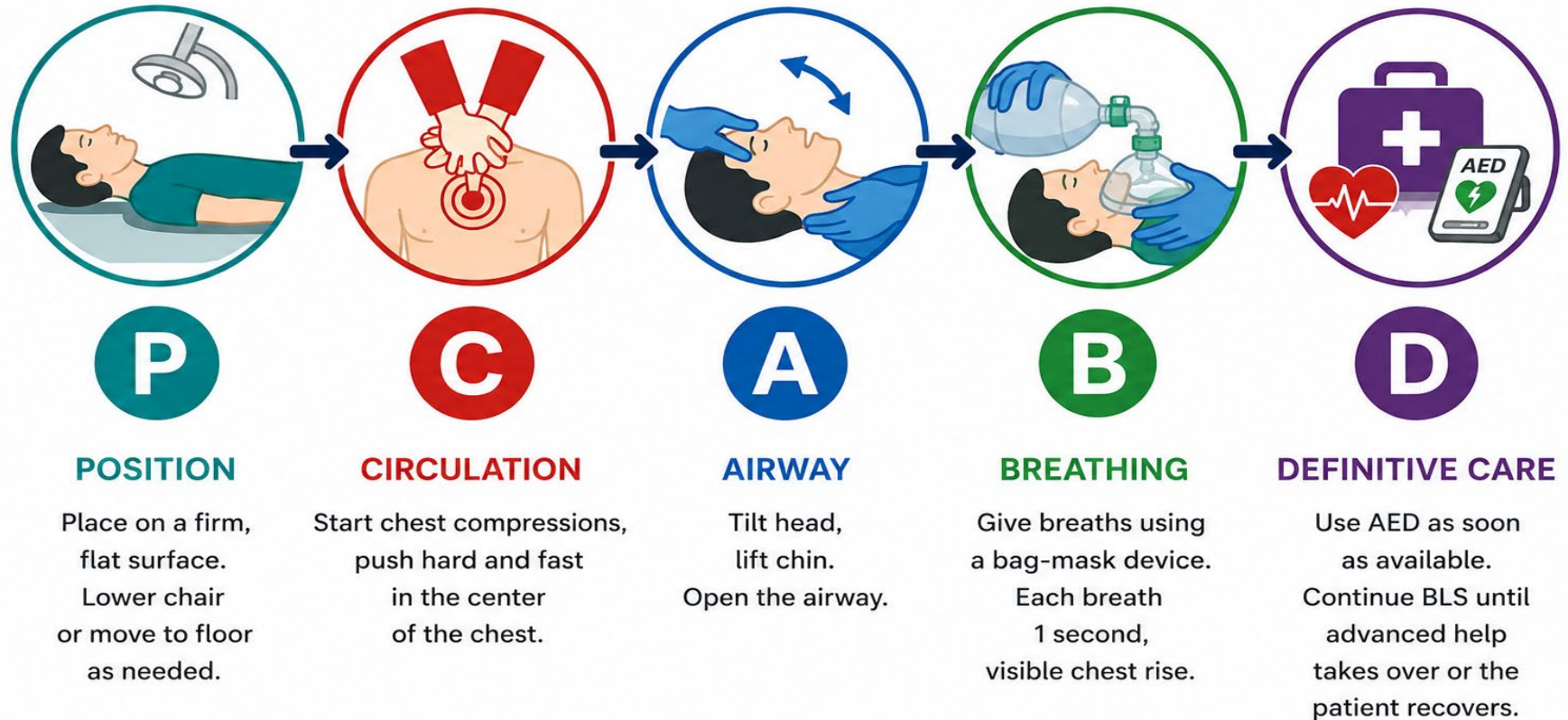
Initial Response for Cardiac Arrest—P-C-A-B-D

P-C-A-B-D BLS PROTOCOL

1. Assess Responsiveness:

- Unresponsive
- Not breathing normally or only gasping
- No pulse

2. Call CODE
BLUE, Active
EMS, Get AED



Response: Team & Roles

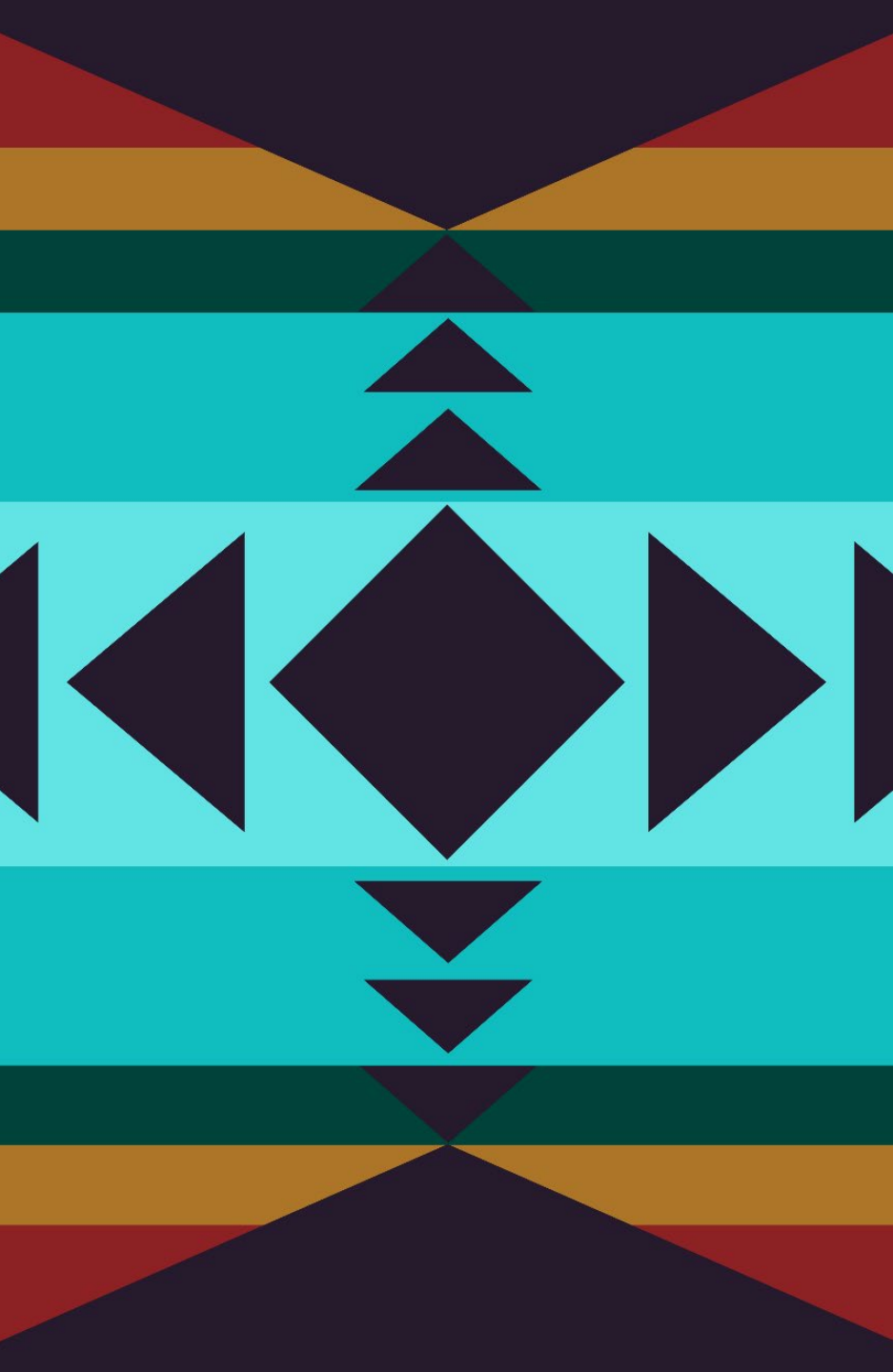
8 Member Team

Role	Primary Responsibilities
Team Leader (Dentist)	Direct response, assess patient, EMS handoff
Airway/BLS Provider	Airway, oxygen, ventilation
AED/Equipment Manager	AED and emergency kit
EMS Communicator	Call 911, escort EMS
Recorder	Document timeline and interventions
Compressor #1	CPR compressions
Compressor #2	CPR rotation
Compressor #3	Backup CPR

4 Member Team

Role	Primary Responsibilities
Team Leader (Dentist)	Direct response, assess patient, positions the patient, performs ABCs of CPR, states instructions directly and clearly, fosters open exchange among teammembers, EMS handoff
Team Member 2	AED and emergency kit, O2 delivery system, assists with ABCs of CPR, including monitoring vital signs, rechecks O2 tank regularly, prepares drugs
Team Member 3	Call 911, escort EMS, keeps chronological log of events/Document timeline and interventions, assists with ABCs of CPR
Team Member 4	Assists with ABCs of CPR, assists with other duties as needed

Prevention

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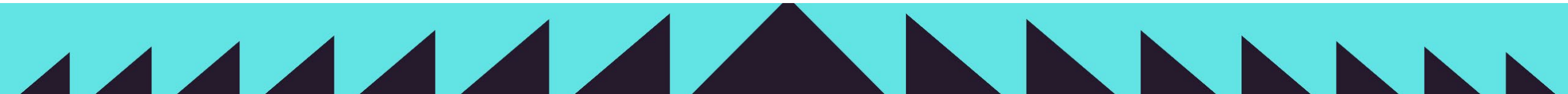
Prevention

- Comprehensive medical history review
- Risk assessment-identify high-risk patients
- Reduce anxiety through communication and environment
- Monitor vital signs when indicated

Prevention

Comprehensive Medical History Review

- Update a patient's medical history, medications, allergies, and vital signs to help identify risks before treatment
- Discuss medical history changes at each appointment
- Physical Examination
 - Vital signs, including baseline, pre-op, peri-operative, and post-operative
 - Level of monitoring increases with medical and/or procedural complexity

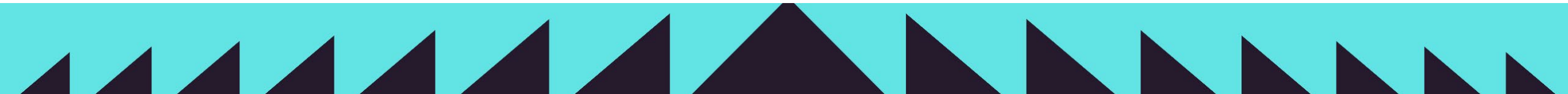


Prevention

Comprehensive Medical History Review

If using Dentrix

- Have assistants open the patient's medical history prior to seating them, serving as a visual reminder for the dentist's review
- Review the history with patient and update any changes
- Consider creating patient alerts or medical alerts in Dentrix or EHR for more serious medical conditions or list the ASA classification (e.g. ASA III, IV)



Prevention: Risk Assessment for Anesthesia

ASA CLASSIFICATION

American Society of Anesthesiologists Physical Status Classification System

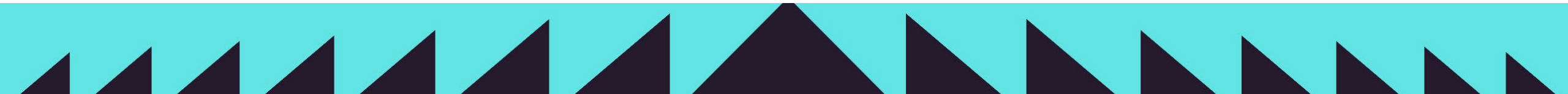


ASA CLASS		DESCRIPTION	EXAMPLES
ASA I		A NORMAL HEALTHY PATIENT A patient with no systemic disease.	• Healthy individual, non-smoker, no or minimal alcohol use
ASA II		A PATIENT WITH MILD SYSTEMIC DISEASE A patient with mild systemic disease with no substantive functional limitations.	• Well-controlled hypertension • Mild asthma • Well-controlled diabetes (oral meds)
ASA III		A PATIENT WITH SEVERE SYSTEMIC DISEASE A patient with severe systemic disease that limits activity but is not incapacitating.	• Uncontrolled hypertension • COPD • Poorly controlled diabetes • Morbid obesity (BMI ≥ 40)
ASA IV		A PATIENT WITH SEVERE SYSTEMIC DISEASE THAT IS A CONSTANT THREAT TO LIFE A patient with severe systemic disease that is a constant threat to life.	• Recent MI • Severe heart failure • Renal failure on dialysis • Severe COPD
ASA V		A MORIBUND PATIENT WHO IS NOT EXPECTED TO SURVIVE WITHOUT THE OPERATION A moribund patient who is not expected to survive without the operation.	• Ruptured abdominal aortic aneurysm • Massive trauma • Intracranial hemorrhage with herniation
ASA VI		A DECLARED BRAIN-DEAD PATIENT A declared brain-dead patient whose organs are being removed for donor purposes.	• Organ donor

Prevention

Anxiety Reduction Strategies

- Implement stress reduction protocols
 - Incorporate mindfulness and relaxation exercises
- Create a positive work environment
- Manage patient expectations by addressing patient's anxiety
- Adequate pain control
 - Relaxation techniques
 - Amenities such as music, aromatherapy
 - Nitrous oxide and local anesthetic use
 - Sedative during treatment
- Post-operative pain control planning
 - Referral if needed
 - Written recommendations
 - Medications: OTC and prescription
 - Follow up telephone call



Review

Post-Emergency Review

- Document event thoroughly
- Debrief staff
- Restock supplies and medications
- Identify opportunities for improvement



Post-Emergency Review

Questions to Ask

- What happened?
- What went well?
- What challenges occurred?
- Were protocols followed?
- Was equipment available and functioning?
- What improvements are needed?

Documentation

- Timeliness of events
- Patient condition
- Treatments provided
- Staff involved
- EMS activation details
- Outcome and follow-up



Take Aways

Confidence during a medical emergency comes from preparation, practice, and teamwork

- Be prepared before an emergency occurs
- Practice emergency drills regularly
- Early recognition saves lives
- Respond according to protocol
- Know your role and act quickly
- Focus on prevention
- Review and learn from every emergency event to improve further performance

Thank you

Questions & Answers

References

American Dental Association. (2024). *Medical emergencies in the dental office*.

<https://www.ada.org>

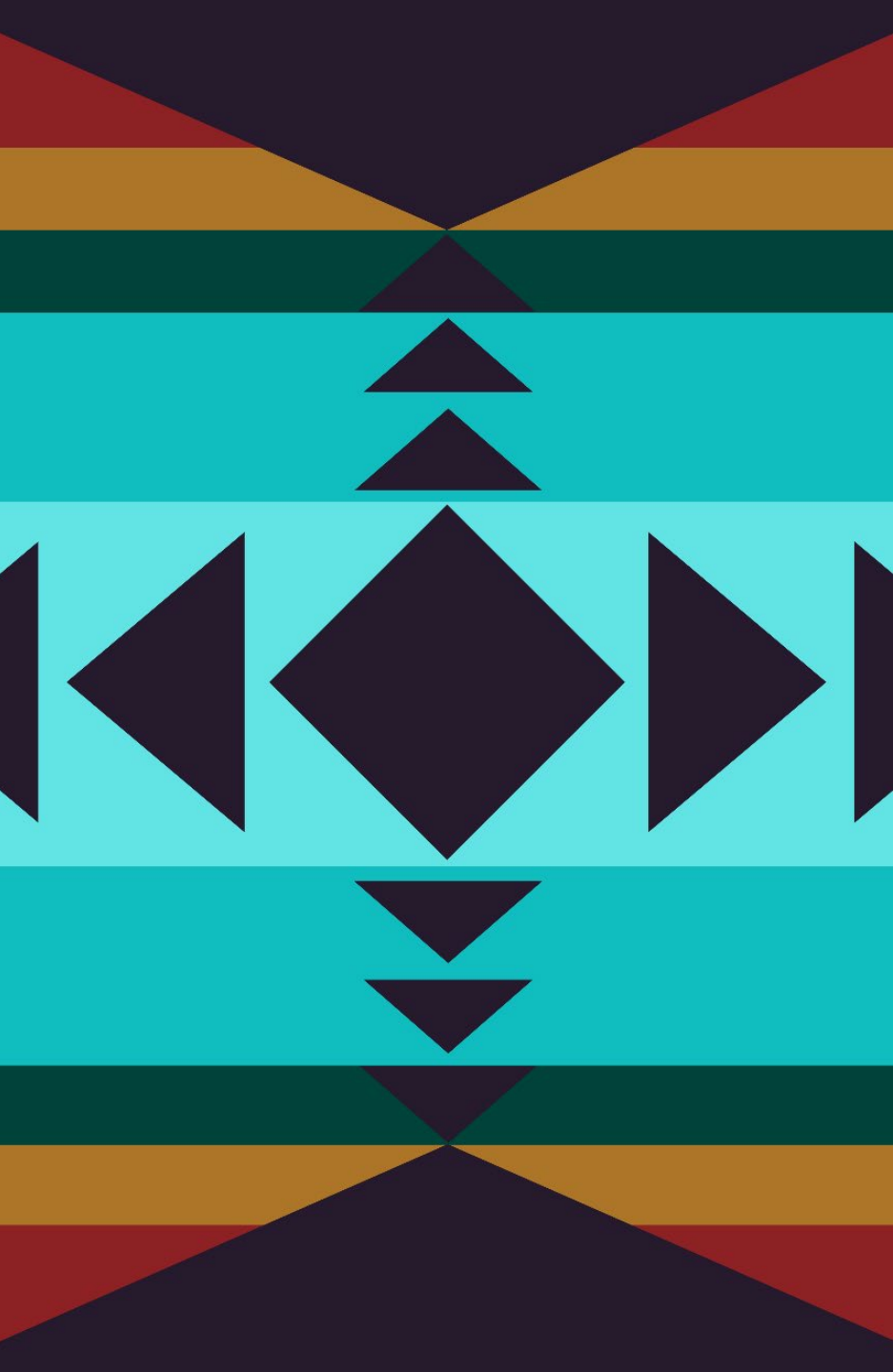
American Heart Association. (2020). *Guidelines for cardiopulmonary resuscitation and emergency cardiovascular care*.

Council on Scientific Affairs, American Dental Association. (2002). Office emergencies and emergency kits. *Journal of the American Dental Association*, 133(3), 364–365.

Greenwood, M. (2010). Basic management of medical emergencies: Recognizing a patient's distress. *Journal of the American Dental Association*, 141(Suppl 1), S20–S24.

Malamed, S. F. (2019). *Medical Emergencies in the Dental Office: Response Guide*. American Dental Association.

Occupational Safety and Health Administration. (2024). *Emergency Action Plans*. U.S. Department of Labor.

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Contact Information

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