

# New Hampshire Board of Dental Examiners

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## **PEDIATRIC EMERGENCY SCENARIOS**

### **CRITICAL PERFORMANCE POINTS MODERATE SEDATION / UNRESTRICTED GENERAL ANESTHESIA PERMIT HOLDERS- PEDIATRIC**

#### **Introduction**

**The objective of this exercise is to assess the capability of the office team, both clinical staff and administrative staff, to respond appropriately for the best outcome for the patient in an urgent/emergent condition.**

**Technical skills are the skills involved in the procedural response to the emergency, including but not limited to knowledge of the BLS-HCP algorithms, ACLS algorithms, treatment algorithms of other clinical presentations.**

**Non-technical skills include but are not limited to team performance, closed loop communication, understanding pre-assigned roles and responsibilities of team members, interaction and efficiency between administrative staff, clinical staff and the team leader, usually the doctor, use of scripted communication for infrequently performed events , i.e., EMS activation and management of persons in the office not immediately involved with the emergency.**

**General performance points include but are not limited to the use of checklists and scripts, use of cognitive aids and assistance, performance of differential diagnosis of clinical presentation, primary assessment, correct intervention, correct performance of that intervention, reassessment of efficacy of treatment/intervention with reassessment of original diagnosis and intervention based on patient condition.**

**Clinical Scenarios to be Evaluated / Moderate Sedation Unrestricted Pediatric**  
(See Evaluation Form for complete office evaluation process)

Syncope	<b>Pass</b>	<b>Fail</b>
Upper / Lower Airway Obstruction	<b>Pass</b>	<b>Fail</b>
Emesis & Aspiration	<b>Pass</b>	<b>Fail</b>
Foreign Body in Airway	<b>Pass</b>	<b>Fail</b>
Cardiac Arrest (BLS-HCP)	<b>Pass</b>	<b>Fail</b>
Allergic Reaction/Anaphylaxis	<b>Pass</b>	<b>Fail</b>
Hyperventilation	<b>Pass</b>	<b>Fail</b>
Seizure/Convulsions	<b>Pass</b>	<b>Fail</b>

**SYNCOPE (The staff must manage this emergency)**

**Scenario:**

A 12 year old ♀ patient presents for restorative work. Anesthesia treatment plan is doctor's choice.

**PMH Negative, NKDA She was extremely apprehensive during her consultation**

**Baseline vitals: BP: 120/77 P: 102**

**Ht: 60" Wt: 100# 45 kg BMI: 17 (Normal)**

**The patient checks in for her appointment, NPO status confirmed. She turns to be seated, in very distressed condition. She proceeds to slump over in the chair, or to slide to the floor.**

**Syncope Technical Skills**

ABC's Airway Breathing Circulation assessment

Call for help

Position in Trendelenberg with feet 15 degrees above head

Obtain current vital signs with BP and pulse assessment in situ. Need to obtain manual BP cuff, stethoscope

O2 portable to waiting room

Cool towel to forehead, Ammonia vaporole

Anticipate tonic-clonic activity

Consider isotonic fluid bolus of 250-500 mL + according to medical history

Consider atropine or ephedrine IV

Continue procedure or not? Probably ok if healthy without co-morbidities

Concern and consider transfer if elderly, prolonged recovery, headache or chest pain present, incontinence

**Questions for staff**

How long should it take for patient to regain consciousness? Less than a minute.

What reasons other than anxiety can be responsible for symptomatic hypotension/ loss of consciousness? (MI, CVA, Hypoglycemia hypoxia, hypovolemia, OD, allergy/anaphylaxis, drug interaction, arrhythmia, PE)

Consider Vasopressor for symptomatic hypotension

Ephedrine (indirect  $\alpha$  and  $\beta$ ) normal HR 5 mg increments

Phenylephrine (direct  $\alpha$ ) tachycardia 0.1 mg increments

## UPPER AND LOWER AIRWAY OBSTRUCTION

### Scenario:

A 3 year old ♂ presents for planned procedure using the doctor's preferred sedation/general anesthesia regimen.

PMH: Mild exercise-induced asthma. Albuterol used prior to work outs. NKDA

VS: BP: 135/78 P: 78

Wt: 33# 14.9 kg

### Upper Airway Obstruction

The procedure begins, and the patient is comfortable. He begins to snore. His SpO<sub>2</sub> drops from 99 to 89 over 1 minute. Doctor and staff should manage this with airway maneuver and OP or NP airway, and articulate the indications for positive pressure ventilation (apnea, hypopnea, bradypnea).

### Upper Airway Obstruction Technical Skills

Suction and tongue grasp with protraction

Triple/quadruple airway maneuver (head tilt, chin lift, jaw thrust, turning head to one side)

Indications, Sizing and insertion of oral airway, nasopharyngeal airway

Bag Valve Mask ventilation with emphasis on mask seal with 2 person ventilation for positive pressure ventilation

Consideration of reversal agent (Proper drug, dose and route, using closed loop communication)

Reassess ABC after intervention. If no or insufficient improvement, assess effectiveness of intervention and expand differential diagnosis

### Lower Airway Obstruction

The initial measures are ineffective. Ventilation remains difficult SpO<sub>2</sub> is 91. Consider differential diagnosis of level of obstruction (Upper airway, glottis, lower airway) and clinical evaluation to confirm diagnosis (Airway sounds, auscultation of lungs). If upper airway obstruction remains, LMA/ETT insertion should be considered. If lower airway obstruction is diagnosed, treatment of bronchospasm should ensue.

### Lower Airway Obstruction Technical Skills

Auscultate lungs

Recognize need for medical intervention: Albuterol 2 puffs if patient non-obtunded and cooperative, if patient non-responsive or non-cooperative, IM epinephrine with epi-pen junior or 0.15 mg/0.15 mL of 1:1000 epinephrine in deltoid or vastus lateralis

Discuss timing of 911 call

## **EMESIS AND ASPIRATION**

**(Scenario: continue from previous scenario)**

### **Emesis and Aspiration Technical Skills**

Reassess ABC, recognizing that positive pressure aspiration can lead to gastric insufflation, and increased risk for emesis

Position patient in Trendelenberg (if obtunded, bring emesis to nasopharynx, away from hypopharynx)

Roll patient to right side to soil right lung, due to obtuse angle of right main stem bronchus, and likelihood of aspiration into the right lung, trying to spare the left lung

Aggressive high speed suctioning

Auscultate lungs

Immediate 911 for transfer to acute care facility for diagnosis and treatment if evidence of aspiration (auscultate lungs for wheezing or rales, evaluate oxygenation)

Supplement oxygen: nonrebreather full face mask, assisted with Ambu, LMA

Bronchospasm Consider albuterol or IM epinephrine

## **FOREIGN BODY IN AIRWAY**

### **Scenario:**

**A healthy 5 year ♀ old presents for restorative/routine extractions using doctor's preferred sedation/general anesthesia regimen. Normal size and Weight.**

**PMH Negative NKDA**

**The case is proceeding well. During the extraction, the tooth falls behind the throat pack or drape and is visible in the posterior oropharynx. How is this managed?**

**The tooth is not recovered, and disappears from sight. How is this managed?**

### **Foreign Body in Airway Technical Skills**

FB Visible in awake or obtunded patient

Delicate directed strong suction to retrieve foreign body OR McGill forceps or other instrument to grasp foreign body.

FB Not visible in awake patient

No sign of airway distress,

possibly assume FB in stomach? Instructions to patient to include airway distress instructions to present to ER

Airway distress

Use Heimlich maneuver

FB Not visible in obtunded patient

No sign of airway distress

Use laryngoscope to explore hypopharynx

Airway distress in obtunded patient

Use abdominal thrusts, laryngoscope, suction, McGill forceps

## CARDIAC ARREST

### Scenario:

**A 4 year old ♂ presents for care with doctor's sedation/general anesthesia regimen.**

**PMH significant for ADD + overweight. VS 98/70 P: 110 SpO2 RA 98%.**

**What monitors does the doctor use?**

**Intervention is performed, and VS reassessed.**

**How would you proceed?**

**The patient becomes unresponsive. ABC's done. Patient is apneic and pulseless.**

**How would you proceed?**

### Shockable

Give 1 shock

Resume CPR immediately x 2 minutes

Give second shock

ACLS protocol (Epi/Vasopressin)

Pulseless Patient NonTechnical Skills

Doctor demonstrates team leadership skills

Staff shows coordination of patient care and record keeping, using appropriate emergency forms

Staff and doctor show capability of smooth transfer to EMS with proper hand-off reports and emergency forms available for first responders.

### Nonshockable

Resume CPR immediately x 2 minutes

Check rhythm q 2" or ACLS protocol followed

## ALLERGY / ANAPHYLAXIS

### Scenario:

**A 4 1/2 year old ♂ presents for routine restorative care using doctor's sedation/general anesthesia regimen He is otherwise healthy and has NKDA. While waiting, he develops pruritis and rash on his chest and arms. How would you proceed?**

**Diphenhydramine (0.5mg/kg IM/IV)**

**This intervention is performed, but the patient begins to complain of dyspnea and throat constriction. He becomes agitated and confused. How would you proceed?**

### Allergy/Anaphylaxis Technical Skills

Cutaneous signs and symptoms: Benadryl IV/po 0.5 mg/kg

Anaphylaxis Early and aggressive IM epinephrine 0.15 mg/0.15 mL 1:1000 vastus lateralis EpiPen Junior if patient is not obese. Preparation for second dose

Recognize tongue, airway edema, bronchospasm, and circulatory collapse (profound hypotension) of anaphylaxis and intervene early and aggressively with epinephrine.

Early 911 call

Supplemental oxygen with full face mask

Trendelenberg, legs elevated, IV fluids

Repeat epinephrine as needed q 3-5 min

Epi pen Junior or Epi 0.15 mg/ 0.15ml IM vastus lateralis

## **HYPERVENTILATION**

### **Scenario:**

**A 10 year old ♀ presents for routine care with the doctor's routine sedation/general anesthesia regimen.**

**PMH Negative NKDA**

**VS 140/86 P: 120.**

**Prior to the procedure, she increases her respiratory rate from 20 to 40 breaths per minute, and begins to complain of cramping of her fingers and toes. What do you do?**

### **Hyperventilation Technical Skills**

Efforts to maintain oxygenation and decrease CO<sub>2</sub> elimination can include O<sub>2</sub> 6L via full face mask, rebreathing into paper bag or open circuit reservoir bag at a rate of 6-10 times a minute

Verbal coaching and reassurance

Consider sedation

## **SEIZURES**

### **Scenario:**

**A 6 year ♂ old presents for routine care with the doctor's routine sedation anesthesia regimen.**

**PMH: Epilepsy Meds: Keppra® (levetiracetam). VS are all WNL.**

**The patient is seated in the chair, and as you begin the procedure, she loses consciousness, eyes roll back, and begins thrashing about and shaking uncontrollably. What do you do?**

### **Seizure Technical Skills**

Activate EMS

Position the patient to prevent injury

Loosen clothing around neck

Place a pillow under the head

Consider a padded tongue blade placed between dental arches if the tongue is being traumatized

Consider cause: hypoglycemia, hypo/hyponatremia, hypomagnesemia, local anesthesia toxicity, allergic reaction with circulatory and respiratory inadequacy, hypotension

Consider IV anticonvulsants, diazepam, midazolam, cardiovascular support, airway and oxygenation

Epileptic seizures tonic- clonic phase will cease spontaneously 2-5 minutes

## Appendix 1

**Table 3.** Blood Pressure Values and Clinical Action in Asymptomatic Hypertension

<b>SBP, Mm Hg</b>	<b>DBP, mm Hg</b>	<b>Recommendation</b>
<120	<80	Normal
120-139	80-89	High normal
140-159	90-99	Regular care, PCP follow-up
160-179	100-109	Proceed with definitive emergency care
		Proceed with noninvasive elective care
		PCP referral within 30 days
≥180	≥110	Proceed with noninvasive emergency care
		PCP referral within 7 days
≥220	≥120	Immediate referral, PCP or ED

Abbreviations: DBP, diastolic blood pressure; ED, emergency department; PCP, primary care physician; SBP, systolic blood pressure.