

# PEDIATRIC ASTHMA

Estimated Time: 20 minutes • Debriefing Time: 15 minutes



Scan to Begin



Patient Name: Patrick Armstrong

## SCENARIO OVERVIEW

Patrick Armstrong is a 16 year old patient who has known asthma. Today while experiencing an asthma attack, he attempted to drive himself to the hospital. His breathing worsened on the way, so he pulled over and called 911.

Level 3 requires a “Scene Size-Up,” “Primary Survey,” and “Secondary Assessment” based on the National Registry of Emergency Technicians Advanced Level Psychomotor Exam.

**Note:** To emphasize the clinical criteria of a 15 minute time limit, timers are in place so that if a student does not make a Transport decision within 10 minutes, they receive a warning. If they do not make a Transport decision within 15 minutes, they will automatically be exited from the scenario.

## LEARNING OBJECTIVES

1. Gather information related to dispatch
2. Perform a “Scene size-up”
3. Perform a “Primary Survey”
4. Make transport decision
5. Perform “History Taking” and “Secondary Assessment”
6. Interpret vital signs
7. Verbalize proper interventions/treatment per protocol

## CURRICULUM MAPPING

### WTCS EMT-P PROGRAM OUTCOMES

- Prepare for incident response and EMS operations
- Integrate pathophysiological principles and assessment findings to provide appropriate patient care.
- Communicate effectively with others
- Demonstrate professional behavior
- Meet state and national competencies listed for EMT- paramedic certification(s).

## SIMULATION LEARNING ENVIRONMENT & SET-UP

### PATIENT PROFILE

Name: Patrick Armstrong

Weight: 109 kg (240 lbs)

DOB: 11/16/20xx

Code Status: Full code

Age: 16

Primary Language spoken: English

Gender: Male

Allergies: NKDA

Height: 177.5 cm (5 ft 11 in)

**EQUIPMENT/SUPPLIES/SETTINGS****Patient**

- Street clothes, ball cap, phone, jewelry can be present
  - Has his cigarettes and his inhalers with him in the car

Monitor Settings: none

**QR CODES**

<p>DISPATCH</p> 	<p>SCENE</p> 	<p>PATIENT</p> 	<p>DUONEB</p> 
<p>EPINEPHRINE</p> 	<p>METHYL- PREDNISOLONE IV</p> 	<p>MAGNESIUM IV</p> 	

# TEACHING PLAN

## PREBRIEF

The facilitator should lead this portion of the simulation. The following steps will guide you through Prebrief.

- Scan the **QR code: “Scan to Begin”** while students are in Prebrief
- “Meet Your Patient” (on iPad) and explain how the iPad works in the simulated learning environment including:
  - Facilitator note: This scenario has been designed to flow without scanning additional QR codes for convenience in the classroom. For added flexibility, you may elect to use the QR codes provided above to design your own scenario flow.
- Discuss the simulation “Learning Objective(s)” (on iPad) as well as any other Prebrief materials

## STATE 1

# RECEIVE DISPATCH

- Play “Dispatch” (on iPad): “ARISE EMS, you’re dispatched for a 16 year old male patient in respiratory distress, pulled over in his car at 100 North Main Street. He states he is having an asthma attack.”
- Possible Facilitator Question:
  - “What are your plans based on the dispatch you received?”
- View “En Route” plaque
- View the “zoomable” NREMT Advanced Level Psychomotor Examination: Patient Assessment –Medical form on the iPad. This will also be available under the “Medical Assessment” tab for later use.

## STATE 2

# SURVEY THE SCENE

- Play “Arrival On Scene” video
- View the plaque with the reminder “Your transport decision must be made within 15 minutes.”
- View the “Scene Size-Up” plaque with the following questions:
  - Verbalize appropriate body substance isolation precautions
  - Verbalize how you will perform a “scene size-up”
  - Facilitator note: Students may also replay the Scene video
- View the “Patient” video
- View the plaque entitled “Primary Survey” with the following questions:
  - Verbalize how you would perform a Primary Survey for this patient
  - What is your transport decision?
  - Facilitator note: Students may also replay the Patient video
- View the plaque entitled “Indicate Transport Decision” with text stating “Indicate your transport decision by tapping the Transport tab.”
  - Students should then tap the menu icon at the top of the Emergency Home Screen, then Transport Tab and indicate their decision (see instructions under the Transport Tab below.)
- Tabbed iPad Content

## EMERGENCY HOME SCREEN

This is the home screen. In the top left corner is the “menu” icon where the tabs described below can be accessed.

## MEDICAL ASSESSMENT FORM

The National Registry of Emergency Medical Technicians, Advanced Level Psychomotor Examination: Patient Assessment –Medical form is displayed here. (It is also attached in Appendix A so that it can be printed out if desired.)

## PATIENT PROFILE

Patient demographic information is displayed here

## SCENE SURVEY

Tap here to replay the Scene Survey video if desired

## PATIENT

Tap here to replay the Patient video if desired

## TRANSPORT

Students are asked, “Have you made your transport decision?”

- If they select “Yes”: they will receive another question: “Will you transport?”
  - If they select “Yes” then then will receive a message “Prepare to transport.”
  - If they select “No” then they will receive a message “Communicate your decision to dispatch” then a message “Discuss your transport decision with your facilitator.” Note: students may re-tap Transport Decision tab to indicate a different decision.
- If they select “No”: they will see an image of a clock timer with the message “Your transport decision must be made within 15 minutes.”

Note: Students have 15 minutes to indicate a Transport decision or they are automatically exited from the scenario. Students will receive a 10 minute warning.

## LEVEL 2

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Level 2 is displayed. In order to progress to State 3, students must indicate “Yes” that they have made their transport decision using the Transport tab.

## EXIT

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If the student taps the Exit tab at this point, the iPad reads, “Are you sure you want to exit? All data will be lost.”

- If “No” is selected, the iPad will return to the tabbed content.
- If “Yes” is selected, the iPad will let the student(s) exit and prompt them to complete an embedded 3-5 minute survey.

When ALL of the objectives of the program HAVE been met at the end of the scenario, and this tab is tapped, the iPad reads, “All scenario objectives have been completed. Would you like to exit the scenario?”

- If “No” is selected, the iPad will return to the tabbed content.
- If “Yes” is selected, the iPad will let the student(s) exit and prompt them to complete an embedded 3-5 minute survey.



## STATE 3

# SECONDARY ASSESSMENT

- View the plaque entitled “History Taking” with the following questions:
  - Verbalize the questions you would ask to obtain “History of Present Illness”
  - Verbalize questions you would ask to obtain “Past Medical History”
- View plaque entitled “Secondary Assessment” with the following question:
  - Verbalize how you would assess the affected body part(s)
- View the plaque entitled “Respiratory Assessment: Anterior” with instructions to “tap on anatomical location(s) to listen to lung sounds.”
  - An image of the patient’s chest appears with “hot spots” located over each anatomical location of the chest. When each “hot spot” is tapped, lung sounds can be heard
- View the plaque entitled “Respiratory Assessment: Posterior” with instructions to “tap on anatomical location(s) to listen to lung sounds.”
  - Students can listen to posterior lung sounds by tapping on appropriate hot spots.
- View plaque entitled “Verbalize Interventions” and answer the question:
  - Interpret Patrick’s vital signs: Pulse 120, RR 35, BP 148/92, O2 saturation 88%, End tidal CO2:32
- View plaque entitled “Treatment Plan” with the following questions:
  - What is your field impression of the patient?
  - Verbalize your treatment plan per the protocol provided
  - Re-evaluate and verbalize your current transport decision
- Student should then tap on Protocol tab to view the respiratory distress protocol and verbalize the treatment plan.
- **Tabbed iPad Content changes:**

## PROTOCOL

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See Appendix A for the Protocol.

Facilitator note: Students may tap on hyperlinked medications within the protocol to view medication information. Students may also use the Scanner to scan the associated medication QR codes to view medication labels.

After the Protocol tab is tapped, students will receive a message “You may exit the game after verbalizing your treatment plan and current transport decision.”

## VITAL SIGNS

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Vital signs are displayed here.

## LEVEL 3

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Level 3 is displayed until Protocol tab is tapped.

## SCANNER

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Use this to scan optional medication QR Codes.

## DEBRIEF

Nothing needed from the iPad.

## QUESTIONS

1. How did you feel this scenario went?
2. Review understanding of scenario learning objectives.
  - a. Was the scene safe? Explain.
  - b. What actions are required when a patient is in a car?
  - c. What body isolation precautions were appropriate?
  - d. What is the nature of the patient's illness?
  - e. What did you discover during your Primary Survey?
  - f. What information did you gather while performing History Taking?
  - g. What was your transport decision? Why?
  - h. What information did you gather during your Secondary Assessment and vital signs interpretation?
  - i. Interpret the diagnostic results you obtained.
  - j. What treatments did you initiate per protocol?
  - k. If you could "do over," would you do anything differently?
3. Summary/Take Away Points:
  - a. "Today you analyzed the scene and performed a Scene Sizeup, Primary Survey, and Secondary Assessment for a 16 year old patient in his car in a parking lot experiencing an asthma attack. What is one thing you learned from participating in this scenario that you will take with you into your EMS practice?" (Each student must share something different from what the others' share.)

NOTE: Debriefing technique is based on INASCL Standards for Debriefing

## SURVEY

Print this page and provide to students.

Students, please complete a brief (2-3 minute) survey regarding your experience with this ARISE simulation. There are two options:

1. Use QR Code: Survey
  - a. Note: You will need to download a QR Code reader/scanner onto your own device (smartphone or tablet). There are multiple free scanner apps available for both Android and Apple devices from the app store.
  - b. This QR Code will not work in the ARIS app.



2. Copy and paste the following survey link into your browser.
  - a. [https://ircvtc.co1.qualtrics.com/SE/?SID=SV\\_6Mwfv98ShBfRnBX](https://ircvtc.co1.qualtrics.com/SE/?SID=SV_6Mwfv98ShBfRnBX)

## APPENDIX A: RESPIRATORY DISTRESS PROTOCOL

**ARISE EMERGENCY MEDICAL PROTOCOLS****RESPIRATORY DISTRESS***COPD / Emphysema / Asthma / Chronic Bronchitis***Emergency Medical Responder**

- Initial Medical Care
- Position patient upright or in position of comfort
- If bronchospasm or wheezing present:
  - **Albuterol: 2.5 mg** via nebulizer
    - May repeat as needed every 5-10 minutes

**Emergency Medical Technician**

- Consider CPAP (See CPAP Procedure)
- If bronchospasm or wheezing present:
  - **Duoneb** 3 ml (Ipratropium Bromide 0.5 mg/Albuterol 3 mg) via nebulizer
  - May repeat as needed every 5-10 minutes
- Monitor **End-Tidal CO<sub>2</sub>** via nasal prongs for severely ill patients
- Respiratory distress continues despite the above interventions:
  - If patient age <50, HR <130, AND no significant cardiac history may give **Epinephrine** (1mg/mL): 0.3 mg/ 0.3 mL IM
  - If patient age >50, HR >130, OR significant cardiac history:

**Per MCPO:**

- **Epinephrine** (1mg/mL): 0.3 mg / 0.3 mL Sub Q / IM

**Advanced EMT****Intermediate**

## Paramedic

- Consider [Methylprednisolone \(Solumedrol\)](#): 125 mg IV

### Per MCPO:

- [Magnesium Sulfate](#): 2g in 250cc D<sub>5</sub>W (Infuse over 20 min)

- Consider **Drug Facilitated Airway Management (DFAM)** protocol if patient worsens despite above treatment.

## DRUG FACILITATED AIRWAY MANAGEMENT (DFAM)

### PRE-OXYGENATE:

- High-flow oxygen for 3 - 5 minutes prior to intubation
  - If patient is breathing and pulse oximetry is above 90%, apply non-rebreather at 15 lpm. If patient is **NOT** breathing adequately or pulse oximetry is below 90%, ventilate slowly and easily with bag valve mask hooked up to high flow oxygen. Best practice is to place a nasal cannula at 4-6 lpm in addition to NRB or BVM ventilations to maximize PO<sub>2</sub> level as well as CO<sub>2</sub> washout. This nasal cannula should remain in place while airway management is performed.
- Continuous pulse oximetry and capnography is required

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**Standard Protocol:**  
for Respiratory distress/failure, trauma patient (not including potential head injury), need to protect airway (not including potential head injury)

**INDUCE:**

Adults	
<ul style="list-style-type: none"> <li>• <b><u>Ketamine</u></b>: 2 mg/kg IV/IO (OR)</li> <li>• <b><u>Etomidate</u></b>: 0.3 mg/kg IVP (Max: 30 mg)</li> </ul>	

Use caution with Ketamine if HR>140bpm or SBP>180

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**PARALYZE:**

- **Succinylcholine**: 2 mg/kg IV/IO (Max: 200 mg)
  - **Alternate if contraindication for Succinylcholine:**
    - **Rocuronium** 1 mg/kg IV/IO
  - **DO NOT paralyze the patient without administering sedation first**
- 

**PLACE AIRWAY:**

- ETT (preferred – max of two (2) attempts) or non-visualized airway (iGel Airway) or Cricothyrotomy
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**POST MANAGEMENT:**

- Confirm airway placement: (Minimum of 3 means)
    - Visualize
    - Check Lungs / Epigastric Sounds
    - Capnography
-

**POST INTUBATION PLAN:**

Optimize sedation and pain control post-intubation. This will allow proper ventilation for the vast majority of intubated patients.

	Sedation (PRN)	Pain (PRN)
	<p><b><u>Ketamine</u></b>: 1 mg/kg IV/IO May repeat x1 <b>(or)</b> <b><u>Midazolam</u></b>:</p> <ul style="list-style-type: none"> <li>○ 0.05 mg/kg IV/IO</li> <li>○ <b>Max: 10 mg/dose</b></li> </ul>	<p><b><u>Fentanyl</u></b>: 1 mcg/kg IV/IO May repeat every 10 min as needed</p>

**\*\*\*PARALYTIC AGENTS ARE NOT TO BE ADMINISTERED UNLESS SEDATION AND PAIN CONTROL MEDICATIONS ARE USED TO THEIR MAXIMUM DOSES!!!\*\*\***

**Rocuronium** 1mg/kg IV/IO

Please note: if **Rocuronium** is utilized for initial intubation, there should be minimum 30min before post-intubation dose is administered.

- Continuous monitoring of ECG, Pulse Oximetry, and Capnography is required

**Special Note:**

**Succinylcholine** is **NOT** to be used in patients with: suspected renal failure, suspected rhabdomyolysis/prolonged down time, ocular trauma, myopathy or neuro-muscular disease, suspected hyperkalemia, hx of malignant hyperthermia, recent crush injury or major burn (>48 hrs after the injury) and recent spinal cord injury (72 hrs – 6 months). In lieu of **Succinylcholine**, use **Rocuronium**: 1 mg/kg IV/IO **Max: 140 mg/dose**

**Potential Head injury patient:****3:2:1 protocol**

This includes suspected head trauma patients as well as potential Stroke/spontaneous brain bleed patients

Administer the following medications in this order:

1. **Fentanyl** 3mcg/kg IV/IO
2. **Ketamine** 2mg/kg IV/IO
3. **Rocuronium** 1mg/kg IV/IO



See table below for dosing

- DO NOT paralyze the patient without administering sedation first

3:2:1 -- Rapid Sequence Intubation				
Lbs.	Kg.	<u>Fentanyl</u> <b>3mcg/kg</b>  50mcg/mL	<u>Ketamine</u> <b>2mg/kg</b>  50mg/mL	<u>Rocuronium</u> <b>1mg/kg</b>  10mg/mL
		<b>ADMINISTRATION RATE: 60 seconds.</b>  Rapid IV push may cause chest wall rigidity	<b>ADMINISTRATION RATE: 60 seconds.</b>  Rapid IV push may cause respiratory depression and increased catatonia	<b>ADMINISTRATION RATE: 30 seconds.</b>

*If patient with allergy, then revert to standard protocol and utilize alternative medications*

### PLACE AIRWAY:

- ETT (preferred – max of two (2) attempts) or non-visualized airway (iGel Airway)  
or  
Cricothyrotomy

### POST MANAGEMENT:

- Confirm airway placement: (Minimum of 3 means)
  - Visualize
  - Check Lungs / Epigastric Sounds
  - Capnography

**POST INTUBATION PLAN:**

Optimize sedation and pain control post-intubation. This will allow proper ventilation for the vast majority of intubated patients.

	Sedation (PRN)	Pain (PRN)
	<p><b><u>Ketamine:</u> 1 mg/kg IV/IO</b> May repeat x1 <b>(or)</b> <b><u>Midazolam:</u></b></p> <ul style="list-style-type: none"> <li>○ <b>0.05 mg/kg IV/IO</b></li> <li>○ <b>Max: 10 mg/dose</b></li> </ul>	<p><b><u>Fentanyl:</u> 1 mcg/kg IV/IO</b> May repeat every 10 min as needed</p>

**\*\*\*PARALYTIC AGENTS ARE NOT TO BE ADMINISTERED UNLESS SEDATION AND PAIN CONTROL BOTH ARE OPTIMIZED!!!\*\*\***

**Rocuronium 1mg/kg IV/IO may be administered 30 min after intubation of patient only if sedation and pain control are both optimized**

Chippewa Valley Regional Emergency Medical Services Protocols (2016). Medical Protocols.

## CREDITS

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## REFERENCES

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