Moderate Viral Croup

# Curricular information

**Target group**: Healthcare providers working in Emergency Department **Number of Participants**: 2-3 participants including a parent role **Simulation time**: 15 minutes **Debriefing time**: 30 minutes

## Learning Objectives

* Recognizes signs and symptoms of viral croup
* Demonstrate correct treatment of febrile seizures
* Demonstrate correct treatment of a moderate upper airway obstruction
* Demonstrates correct administration of epinephrine and corticosteroids

## Scenario outline

This scenario presents a 12-month-old boy with moderate viral croup and febrile seizure secondary to influenza. The boy is brought to the emergency room at 02:15 am by his father after developing a fever with onset of increasing barking cough, hoarseness and stridor during the evening. The baby is in respiratory distress, with mild inspiratory retractions, and a runny nose, and a temperature of 38.6o C. SpO2 is at 96%, heart rate of 149/min, and a respiration rate of 48/min. His blood pressure is 83/48 mm Hg.

3 minutes into the scenario, the boy will have a febrile seizure which will last for 2 minutes.

The participants are expected to use a systematic pediatric approach in assessing for upper airway obstruction, to recognize a febrile seizure and communicate therapeutically with the parent. They should recognize signs and symptoms of moderate croup with slightly decreased oxygen saturation, and treat the condition with oxygen therapy, adrenalin and corticosteroids. Vital signs will improve over 5 minutes after the correct treatment has been applied.

The participants should keep the child for observation and communicate the condition and treatment to the parent.

## Debriefing

When the simulation is over, it is recommended that a facilitator-led debriefing be completed to discuss topics related to the learning objectives. The Event Log in Session Viewer provides suggested debriefing questions. Central discussion points could be:

* Different stages of viral croup
* Febrile seizures in pediatric care
* Treatment of viral croup per severity

## References

Ian K. Maconochie, Allan R. de Caen, Richard Aickin, Dianne L. Atkins,Dominique Biarent, Anne-Marie Guerguerian, Monica E. Kleinman, David A. Kloeck,Peter A. Meaney, Vinay M. Nadkarni, Kee-Chong Ng, Gabrielle Nuthall, Ameila G. Reis,Naoki Shimizu, James Tibballs, Remigio Veliz Pintos, on behalf of the Pediatric Basic Life Support and Pediatric Advanced Life Support Chapter Collaborators: 2015 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations Part 6: Pediatric basic life support and pediatric advanced life support, in *Resuscitation*, 95 (2015) e147–e168, at <http://dx.doi.org/10.1016/j.resuscitation.2015.07.044>

# Setup and preparation

## Equipment

Medical supplies

* Advanced airway equipment
* Airway adjuncts (oropharyngeal airways, nasopharyngeal airways)
* Bag-mask device
* Blood pressure cuff
* Color-coded length-based resuscitation tape
* Continuous waveform capnography
* Defibrillation pads
* Defibrillator/automated external defibrillator (AED)
* ECG electrode cables
* General medication administration supplies
* Glucometer
* Infusion pump and tubing
* IV/IO start supplies
* Oxygen delivery devices
* Oxygen supply source
* Pulse oximeter probe
* Respiratory nebulizer
* Stethoscope
* Suction device, tubing, catheter (tonsil tip), and canister
* Thermometer
* Universal precautions equipment

Medications and fluids:

* Albuterol
* Antibiotics
* Corticosteroids
* Epinephrine
* Hypertonic saline
* Ipratropium
* Lactated Ringer’s
* Magnesium sulfate
* Mannitol
* Naloxone
* Normal saline
* Racemic epinephrine
* Terbutaline
* Rapid sequence intubation medications
* Sedatives/analgesics

Props:

* Bassinet
* Clothes and diaper for an infant

## Preparation before simulation

* Set up the room to look as a normal emergency room with all equipment ready and a patient monitor connected to LLEAP or SimPad
* Dress the simulator in clothes and a dry diaper and place the simulator in the arms of the parent.

## learner brief

*The learner brief should be read out loud to the learners before the simulation starts.*

Emergency Room, 02:15 am

A 12-month-old boy has arrived with his father after developing a fever with unset of increasing barking cough, and hoarseness during the evening. He developed a cold with a slight fever and a running nose yesterday. His older sister at 6 years has influenza at home, but the parents got nervous when he developed a noisy sound when breathing, and he seemed to be getting increasingly worse. At home, he had a temperature around 38o C. Please go and see this patient.

Before the simulation starts, please orient yourself to the simulation room and the available equipment.

# Customization of the Scenario

The scenario may form the basis for creating new scenarios with other or additional learning objectives. Making changes to an existing scenario requires careful consideration of what interventions you expect the learners to demonstrate, and what changes you will need to make to learning objectives, progression of scenario, programming and support material. It is, however, a quick way to increase your pool of scenarios because you can reuse much of the patient information and several elements in the scenario programming and support material.

For inspiration, here are some suggestions to how this scenario can be customized:

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| **New learning objectives** | **Changes to the scenario** |
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| Include learning objectives on team training  | This scenario could also focus on team dynamics and communication. Remember to add your additional events in the programming for logging team-related actions. |
| Include learning objectives on treatment of hypoxemia | The scenario can be moderated to a severe case of viral croup leading to hypoxemia and impending respiratory arrest if timely treatment is not performed. Remember to change programming and scenario progression to match the new scenario. |
| Include learning objectives on the utilization of airway adjuncts | The choice of adjuncts for airway support can be trained by decreasing the baby’s level of consciousness and oxygen saturation to indicate need for insertion of an advanced airway. Remember to change programming and scenario progression to match the new scenario. |