Baby in need of CPR - Accidental Drowning

# Curricular information

**Target group**: Healthcare providers working in EMS **Number of participants**: 2-3 including the role of the mother **Simulation time**: 10 minutes **Debriefing time**: 25 minutes

## Learning objectives:

* Uses a systematic approach in evaluating an infant
* Demonstrates basic airway management and the use of a relevant airway device as appropriate
* Applies the local Pediatric Cardiac Arrest Algorithm
* Performs high-quality CPR

## Scenario progression

A 10-month-old baby is reported to be in respiratory arrest after her mother found her face down in a bath tub filled with only 15 centimetres of water. When EMS arrive at the scene, the crying mother is holding the baby in her arms, wrapped in towels.

The baby appears limp, cyanotic, and apneic. She has a purple mark on her forehead from a face-down fall in the tub. The heart rhythm is non-shockable with PEA at 58/min. Oxygen saturation is 72%.

The participants should recognize cardiac arrest, release the baby from her mother, and put her on the floor. They should immediately start high-quality CPR, apply AED, analyze heart rhythm, and recognize an unshockable heart rhythm (PEA). They should continue CPR following local guidelines on ABC, intubate the child, obtain IV/IO access and administer epinephrine.

1 minute after administration of epinephrine, return of spontaneous circulation occurs. After ROSC, the participants should continue to support ventilation with oxygen above room air, consider targeted temperature management (TTM,) and prepare the baby for transport.

## 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:

* Signs and symptoms of cardiac arrest
* Evaluation of the CPR quality and a discussion on how to improve CPR performance
* Immediate pediatric treatment after ROSC

## References

Ian K. Maconochie, Allan R. de Caen, Richard Aickin1, 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) or AED trainer
* 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
* Ventilator

Medications and fluids:

* Adenosine
* Amiodarone
* Atropine
* Epinephrine
* Lactated Ringer’s
* Lidocaine
* Normal saline
* Procainamide
* Rapid sequence intubation medications
* Sedatives/analgesics

Props:

* Door mat and similar items to make the room look like an entrance hall
* Make-up for making a purple mark on the baby's forehead.
* Towels

## Preparation before simulation

* Set up the room to look as an entrance hall of a private home
* Use make-up to create a small, purple mark on the forehead of the simulator
* Carefully, apply a little moist on the simulator’s head to simulate a wet baby
* Wrap the simulator in a big towel and place the simulator in the arms of the mother

## learner Brief

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

Private home, 19:10

You have been dispatched to a private home where a 10-month-old baby is reported to be in respiratory arrest after her mother found her face down in a bath tub filled with 15 centimetres of water. When you arrive at the scene, the crying mother is holding the baby in her arms, wrapped in towels.

**Additional information delivered by mother:**

If asked, the mother informs that she was bathing her daughter, Hannah, when she went to answer the door bell. She was only away for 1-2 minutes but when she came back, the girl was lying face down in the bath tub without any movement. She did not hear her scream or making any noise. The girl is usually very good at sitting by herself, and her mother did not think that anything could happen to her in so little water.

# 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 delivering shock | The cardiac arrest could be changed to a shockable rhythm to train interventions on safety and use of AED. Remember to change programming and scenario progression to match the new scenario. |
| Include learning objectives on repeated treatment with vasopressor | The scenario could be changed to make a bigger emphasis on the high-quality CPR management with addition of several needed doses of epinephrine to gain ROSC. Remember to change programming and scenario progression to match the new scenario. |