| NOR-CAL EMS | 1110 | Impedance Threshold Device |
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| Nor-Cal EMS Policy & Procedure Manual | | Treatment Guidelines |
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| Approval: Jeffrey Kepple MD – MEDICAL DIRECTOR | | SIGNATURE ON FILE |

# Authority

Health and Safety Code Division 2.5, California Code of Regulations, Title 22, Division 9.

# Introduction

The ResQPOD is an impedance threshold device (ITD) that enhances the vacuum in the chest that forms during the recoil phase of CPR. Studies have shown that this process draws more blood back to the heart (increases preload) and increases cardiac output, blood flow/pressure, perfusion to vital organs and increases survival rates.

## *Warnings*

1. Contraindicated in patients where cardiopulmonary resuscitation (CPR) is not indicated.
2. Never use on patients with a pulse or spontaneous breathing.
3. Remove immediately from ventilation circuit once CPR is discontinued.

## *Clinical Indications*

1. To be used on all patients equal to or greater than 12 years of age in cardiac arrest.
2. The device can only be utilized with patients who are receiving CPR (manual or mechanical).

## *Contraindications*

1. Patients under the age of 12.
2. Flail chest due to trauma.
3. The ITD should never be used with patients that are breathing spontaneously.
4. The ITD must be removed from the endotracheal tube, BVM, and/or SGA once spontaneous respirations have returned.

# Procedure

The ResQPOD can be used for either BLS or ALS care during cardiac arrest, with a bag-valve-mask attached to a face mask, an endotracheal tube, or supraglottic airway device.

1. Ensure an adequate airway and select the airway adjunct.
2. Take the necessary steps to obtain a good seal with the mask (two handed technique).
3. When appropriate during the resuscitation apply the ITD to an endotracheal tube or supraglottic airway device.
    A. Never stop chest compressions to insert an advanced airway.
4. Attach bag-valve to the air intake port on the ResQPOD.
5. Slide the ventilation timing assist light switch to the “on” position when using the ResQPOD in an intubated patient (endotracheal or supraglottic airway).
    A. Note: the timing light ensures that ventilations do not exceed 8 to 10 per minute.
    B. Provide the minimal tidal volume breath (just enough to see the chest rise) after each flash on the LED timing lights.
6. Perform chest compressions (CPR) according to the protocols and AHA guidelines.
7. Once there is return of spontaneous circulation (ROSC) and the $ETCO_2$ climbs above 40 mm Hg, remove the ITD.
    A. This should coincide with the return of spontaneous respirations.
    B. Allow the $ETCO_2$ value to guide your respiratory rate.
    C. If the $ETCO_2$ is greater than 50 mm Hg then bag minimally faster, ensuring not to over inflate the lungs, just enough to see the chest rise.
    D. If the $ETCO_2$ is less than 30 mm Hg then bag minimally slower.
8. Again, the ITD should not be used in patients that have spontaneous respirations.
9. Carefully monitor the placement of the endotracheal tube or supraglottic airway after every movement of the patient, placement of the ITD and/or removal of the ITD.

10. Begin CPR, see appropriate protocol.
11. Allow for complete chest release/recoil after each compression.
12. Follow the recommended ventilation rates.

    ***Do Not Hyperventilate***

13. Use 30:2 compressions: ventilation ratio (15:2 for infants and children with 2 rescuers) for basic life support when using a facemask. Ventilate intubated patients 8 to 10 breaths/minute with each breath lasting 1.5 seconds maximum to optimize CPR and ResQPOD efficacy. Excessive ventilation rates will reduce the effectiveness of the ResQPOD.
14. Clean or suction vomit or secretions from the ResQPOD by removing from airway adjunct and shaking or blowing out debris using the ventilation source.

## *Notes*

1. Discontinue use if correct function cannot be assured.
2. After pulse and/or spontaneous respirations have been restored, immediately remove the ResQPOD from the ventilation circuit and help patient breathe as needed.
3. Use the ITD-16 only with the ACD (Active Compression Decompression) Device.
4. The ITD cannot be applied/put into the ventilation circuit by EMRs only EMT and above.
5. However, EMRs can ventilate patients with the ITD once in place.