The ResQPOD, or an earlier version of the impedance threshold device (ITD), has been the subject of over 50 published animal and clinical studies. In 2011, *The Lancet* published the first clinical trial demonstrating improved long-term survival following cardiac arrest with device technology. In this study, when the ResQPOD was used in combination with active compression decompression cardiopulmonary resuscitation (ACD-CPR), patients had a 53% improvement in survival to hospital discharge with favorable neurologic outcome, and this survival benefit persisted to one year. An ITD carries a Class II recommendation as a CPR adjunct in the 2010 American Heart Association (AHA) guidelines.

**Human Clinical Trials**

The ResQPOD ITD has been evaluated in 18 clinical trials during both

- Conventional, standard manual CPR: 16,17,19,25,26,29, 30,31,32,33,35,38,41,51
- ACD-CPR: 4,13,14,18,26,40,46,47,48

These studies have shown that the ResQPOD:

- Improves hemodynamics:
  - Increased ETCO$_2$ (4,38,51)
  - Systolic BP during cardiac arrest improved 20 - 97% (4,17)
  - Mean coronary perfusion pressure improved 70% (4)
- Improves short- and/or long-term survival from prehospital cardiac arrest:
  - Survival to ED admission improved 50 - 71% (19,38)
  - Survival to 24 hrs in all patients improved 45 - 68% (13,14)
  - ROSC rates improved 31 - 80% (4,25)
  - Survival to hospital discharge improved 30 - 98% (25,30,41)
  - Survival to hospital discharge with favorable neurologic outcome improved 38 - 120% (30,31,35,40,41,47) even in the absence of therapeutic hypothermia (46)
  - Six-fold improvement in survival to 90 days with favorable neurologic outcome independent of therapeutic hypothermia (48)
  - Survival to one year with favorable neurologic outcome improved 49% (40)
  - Meta-analysis showed more than doubling of favorable neurologic outcome (26)
- Improves short- and/or long-term survival from inhospital cardiac arrest:
  - Survival to hospital discharge rates improved 60 - 65% with adoption of AHA guidelines (including an ITD) (32,33)
  - Provides benefit in non-V-fib cardiac arrest rhythms:
    - In PEA patients, survival to 24 hrs more than doubled (16)
    - and survival to hospital discharge improved >100% (32)
    - Survival in patients presenting in asystole tripled (19)
  - Works effectively on a variety of airway adjuncts (3,18,36 [manikin])
  - Is clinically and cost-effective (41)

Finally, the best outcomes following cardiac arrest will be achieved combining a continuum of care and therapies, not a single drug or device. ACSI supports the approach taken by the Take Heart America™ Demonstration Project, which promotes a full spectrum of optimal therapies, including public recognition, widespread CPR training, performance of high-quality CPR with an ITD, and definitive, specialized care at Level One Cardiac Arrest Centers (41) offering state-of-the-art post-resuscitation care to optimize neurologic recovery (e.g. therapeutic hypothermia). Go to www.takeheartamerica.org for more information.
47. Mahoney B et al. Use of an ITD with ACD-CPR improves survival with good neurological function following cardiac arrest from non-traumatic etiologies. Resuscitation 2011; 82(Suppl 1):S1-S2.