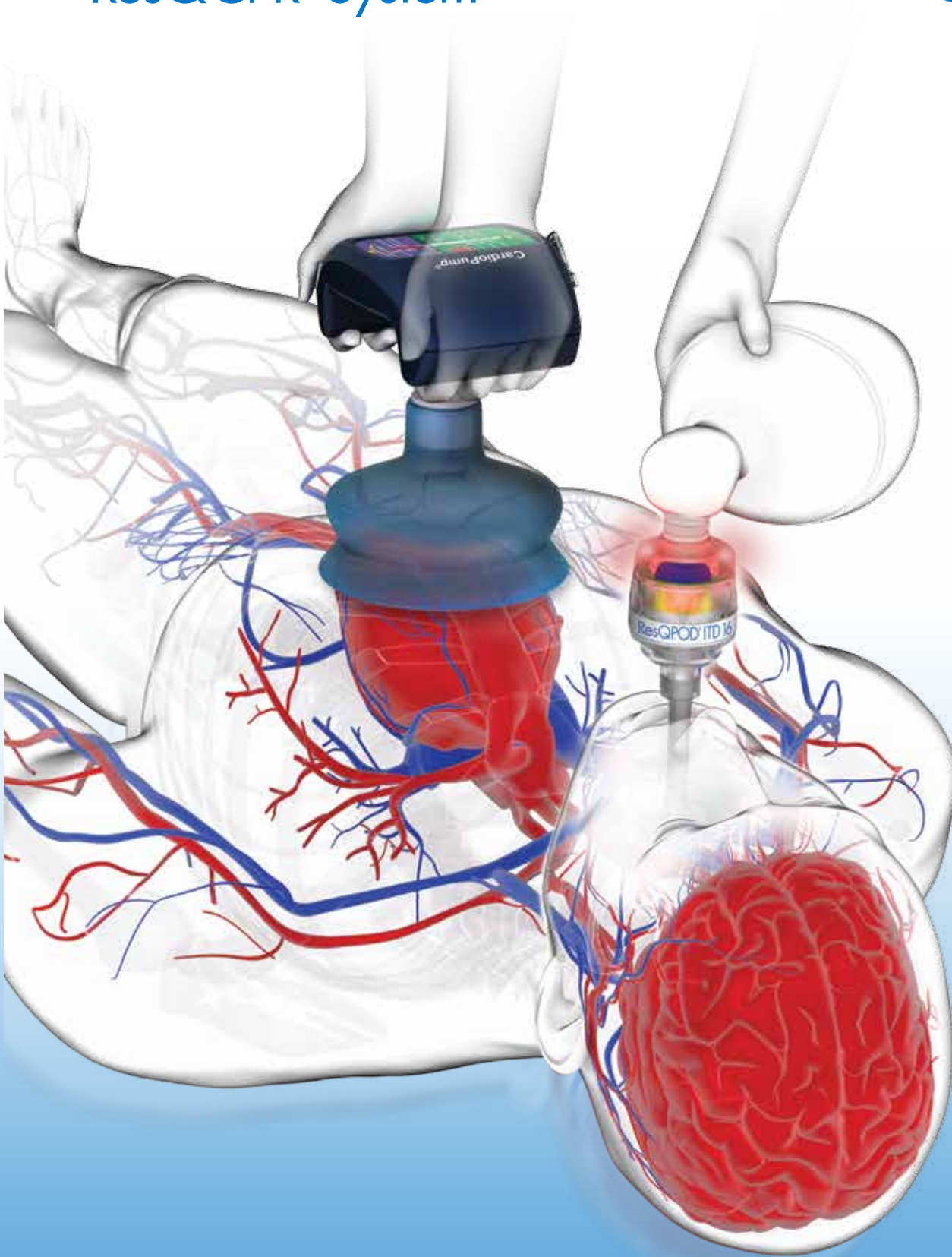


ResQCPR™ System

**ZOLL**®



Better Blood Flow. Improved Survival.





## ResQCPR System

A major clinical study showed a

**53%** increase

in long-term, functional survival from cardiac arrest when the ResQCPR System was compared to conventional manual CPR.<sup>1</sup>

The ResQCPR™ System consists of two devices—the ResQPOD ITD 16, an impedance threshold device, and the CardioPump® ACD-CPR Device, used to perform active compression-decompression CPR (ACD-CPR). Used together to optimize the decompression phase of CPR, these devices improve blood flow to the brain and vital organs, and have been shown to increase neurologically-intact survival.<sup>1-3</sup>

### Better Blood Flow

The ResQCPR System provided near-normal blood flow to the brain during cardiac arrest in a pre-clinical study.<sup>4</sup> And in a randomized clinical trial, this device combination provided near-normal systolic and diastolic blood pressures during cardiac arrest.<sup>5</sup>

### Improved Survival

The ResQCPR System increased long-term, neurologically-intact survival by 53% compared to conventional manual CPR alone in a multicenter trial that randomized more than 1,600 patients.<sup>1</sup>





## Unique Device Synergy—Improved Survival

The ResQPOD ITD 16 and the CardioPump ACD-CPR Device work synergistically to optimize the decompression phase of CPR. The ResQPOD is an impedance threshold device (ITD) that regulates airflow during the chest wall recoil phase of CPR to enhance the vacuum in the patient's chest. This results in more blood returning to the heart (preload) and a lowering of intracranial pressure (ICP).<sup>3</sup> The CardioPump allows the rescuer to perform active compression-decompression CPR (ACD-CPR) with up to 10 kg of lift. This active re-expansion further enhances the negative pressure to improve blood flow even more.

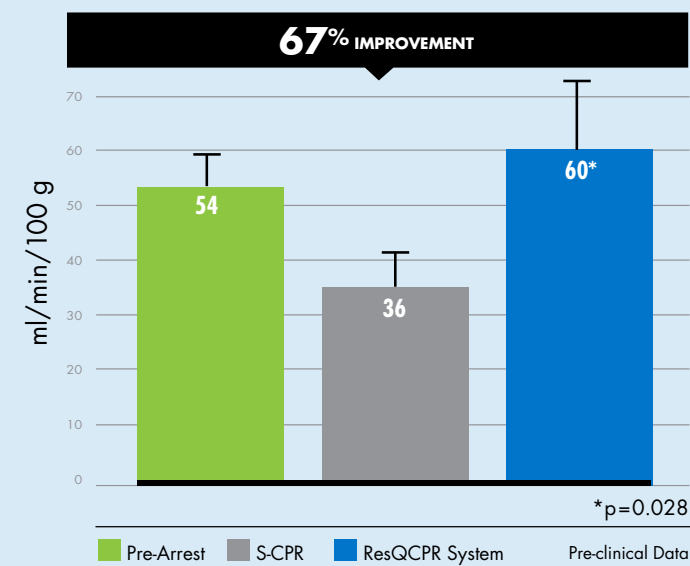


*The combination of ACD-CPR with an ITD enhances the vacuum in the chest, resulting in increased preload and cardiac output, as well as lowered intracranial pressure. The net result is better hemodynamics and vital organ blood flow than either device provides individually.*

## Backed by Research

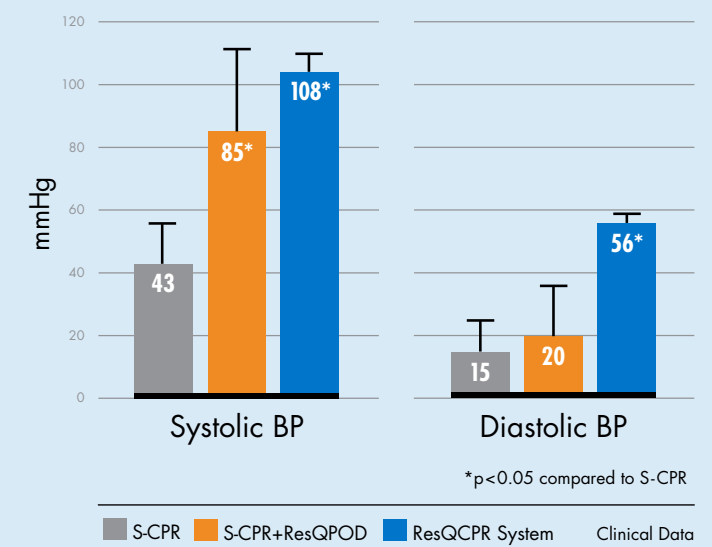
The combination of ACD-CPR with an ITD (ResQCPR) has been studied in 5 clinical trials and more than 35 pre-clinical studies. A summary of data from these studies is provided below.

### Near-Normal Blood Flow to the Brain with ResQCPR



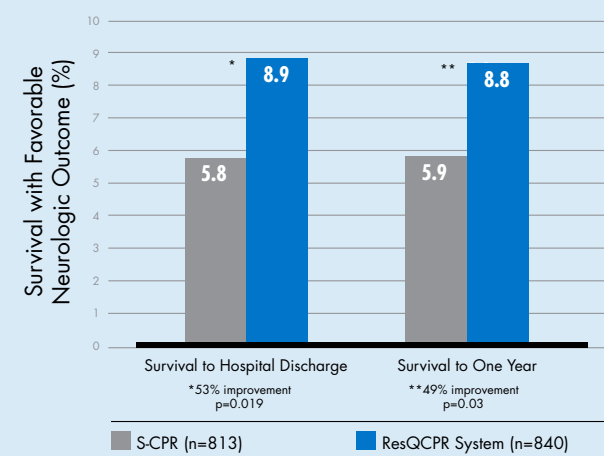
S-CPR: standard CPR  
<sup>4</sup>Voelckel, et al. *Pediatr Res.* 2002;51:523-527.

### Near-Normal Blood Pressure with ResQCPR



S-CPR: standard CPR  
<sup>5</sup>Plaisance, P, et al. *Circulation.* 2000;101:989-994.  
<sup>6</sup>Pirrallo, WG, et al. *Resuscitation.* 2005;66:13-20.

### Increased One-Year Functional Survival with ResQCPR



S-CPR: standard CPR  
<sup>7</sup>Aufderheide, et al. *Lancet.* 2011;377(9762):301-311.

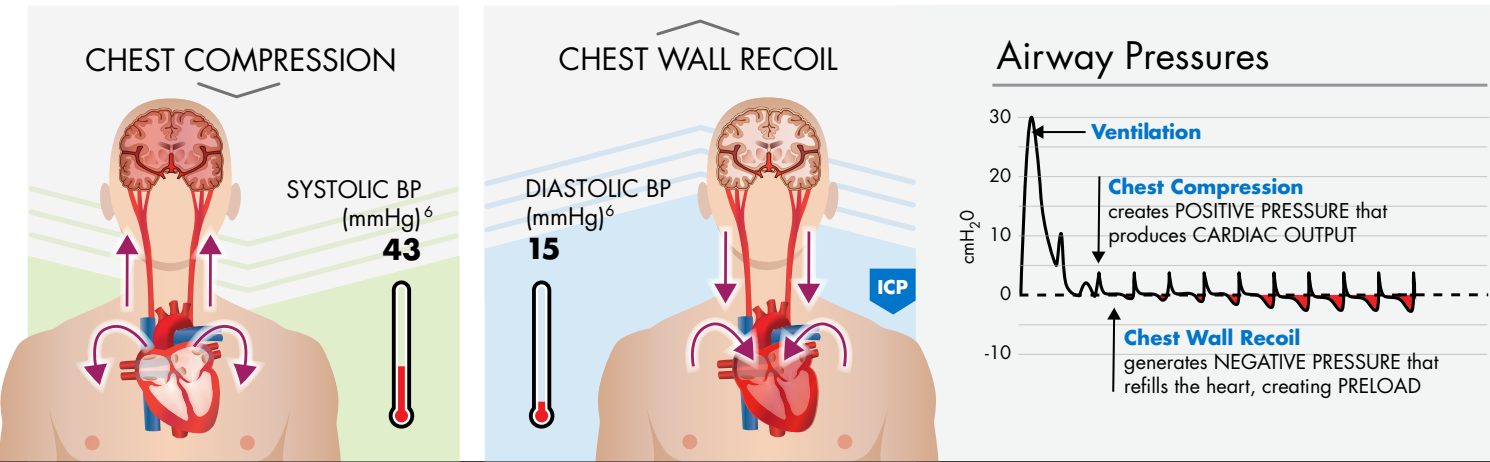
Based on study results, the ResQCPR System could save thousands of lives each year if widely implemented.<sup>7</sup>

# The Novel Physiology of IPR Therapy

**Intrathoracic pressure regulation (IPR) therapy** involves enhancing the negative pressure in the chest to optimize blood flow to vital organs when perfusion is compromised. During cardiac arrest, IPR therapy is provided by the ResQPOD ITD and the CardioPump ACD-CPR Device. These devices are uniquely designed to leverage the body's own physiology to provide high-perfusion CPR.

Conventional CPR – Limited Blood Flow

FIGURE 1



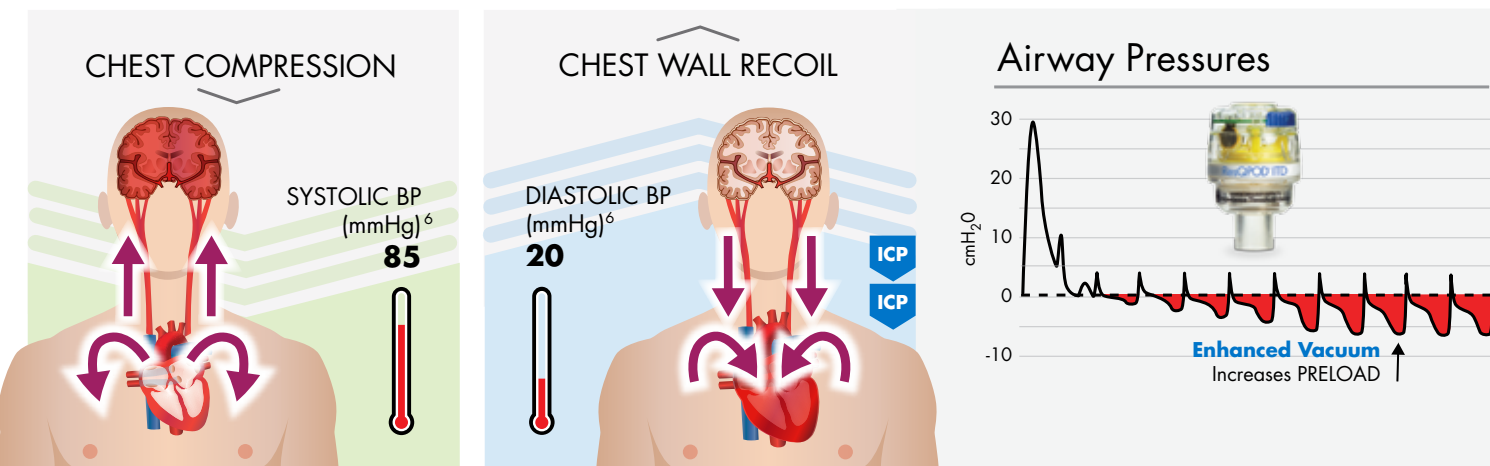
## Conventional CPR—Limited Blood Flow

Even though high-quality CPR has been shown to increase survival, it only provides 25–40% of normal blood flow to the heart and brain.<sup>8</sup> Limited blood flow is due in part to the open airway. During chest wall recoil, air is drawn in and eliminates the vacuum (negative pressure) that is needed to fill the heart. This limits cardiac output and blood circulated with compressions.



CPR with ResQPOD ITD – More Blood Circulated

FIGURE 2



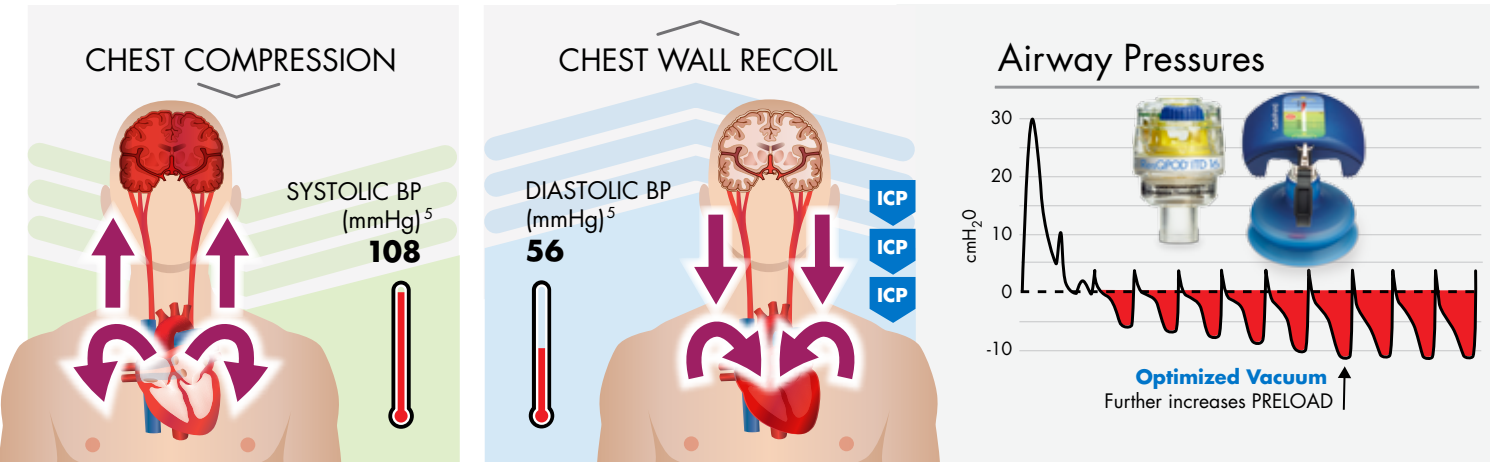
## CPR with the ResQPOD ITD—More Blood Circulated

Attached to a facemask or other airway adjunct, the ResQPOD is an impedance threshold device (ITD) that selectively prevents air from entering the lungs during the chest wall recoil phase (except when intended during ventilations). This enhances the vacuum, which pulls more blood back into the heart and lowers intracranial pressure (ICP).<sup>3</sup>



ResQCPR System – High Perfusion and Near-Normal Circulation

FIGURE 3



## ResQCPR System—Near-Normal Circulation for High-Perfusion CPR

The CardioPump allows the rescuer to perform active compression-decompression CPR (ACD-CPR), which promotes complete and active chest recoil with up to 10 kg of lifting force. When the ResQPOD ITD 16 is combined with ACD-CPR, the result is a synergy that provides an even greater vacuum in the chest, lowering ICP and improving preload and cardiac output.<sup>3</sup> A multi-center trial that randomized over 1,600 patients showed a 53% increase in long-term, functional survival with ResQCPR versus standard CPR alone.<sup>1</sup>














# Key Features and Benefits

- Suction cup allows chest re-expansion with up to 10 kg of force
- CPR quality features provide guidance on key quality parameters (e.g., compression and lifting forces, compression and ventilation rates)
- Compact, lightweight design that allows for easy transport and storage

## The ResQCPR System is

- Easy to learn and simple to use
- Appropriate for both basic and advanced life support personnel
- An ideal first-line therapy that complements automated CPR for transport
- Cost effective

PRODUCT	ORDER #
 <p>ResQCPR System includes: CardioPump ACD-CPR Device (1 ea) ResQPOD ITD 16 (2 ea)</p>	12-2393-000
REPLACEMENT COMPONENTS	
 <p>ResQPOD ITD 16 Replacement Component</p>	12-0247-000
 <p>CardioPump ACD-CPR Device</p>	12-0582-000
 <p>Suction Cup for ACD-CPR Device Replacement Component</p>	12-0586-000
ACCESSORIES/TRAINING AIDS	
 <p>ResQCPR Carrying Case</p>	12-0935-000
 <p>ResQCPR Demo Kit</p>	12-0869-000
 <p>ManiKIT</p>	12-2116-000

## ADVANCING RESUSCITATION. TODAY.®

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<sup>1</sup>Aufderheide TP, et al. *Lancet*. 2011;377(9762):301-311.

<sup>2</sup>Frascone RJ, et al. *Resuscitation*. 2013;84:1214-1222.

<sup>3</sup>Metzger AK, et al. *Crit Care Med*. 2012;40(6):1851-1856.

<sup>4</sup>Voelckel WG, et al. *Pediatr Res*. 2002;51:523-527.

<sup>5</sup>Plaisance P, et al. *Circulation*. 2000;101:989-994.

<sup>6</sup>Pirrallo RG, et al. *Resuscitation*. 2005;66:13-20.

<sup>7</sup>Calculated based upon survival benefit applied to existing national survival outcomes in Cardiac Arrest Registry to Enhance Survival (CARES); www.myCARES.net.

<sup>8</sup>Andreka P, et al. *Curr Opin Crit Care*. 2006;12:198-203.