

<b>Алматы</b> (7273)495-231	<b>Иваново</b> (4932)77-34-06	<b>Магнитогорск</b> (3519)55-03-13	<b>Пермь</b> (342)205-81-47	<b>Тверь</b> (4822)63-31-35
<b>Ангарск</b> (3955)60-70-56	<b>Ижевск</b> (3412)26-03-58	<b>Москва</b> (495)268-04-70	<b>Ростов-на-Дону</b> (863)308-18-15	<b>Тольятти</b> (8482)63-91-07
<b>Архангельск</b> (8182)63-90-72	<b>Иркутск</b> (395)279-98-46	<b>Мурманск</b> (8152)59-64-93	<b>Рязань</b> (4912)46-61-64	<b>Томск</b> (3822)98-41-53
<b>Астрахань</b> (8512)99-46-04	<b>Казань</b> (843)206-01-48	<b>Набережные Челны</b> (8552)20-53-41	<b>Самара</b> (846)206-03-16	<b>Тула</b> (4872)33-79-87
<b>Барнаул</b> (3852)73-04-60	<b>Калининград</b> (4012)72-03-81	<b>Нижний Новгород</b> (831)429-08-12	<b>Саранск</b> (8342)22-96-24	<b>Тюмень</b> (3452)66-21-18
<b>Белгород</b> (4722)40-23-64	<b>Калуга</b> (4842)92-23-67	<b>Новокузнецк</b> (3843)20-46-81	<b>Санкт-Петербург</b> (812)309-46-40	<b>Ульяновск</b> (8422)24-23-59
<b>Благовещенск</b> (4162)22-76-07	<b>Кемерово</b> (3842)65-04-62	<b>Ноябрьск</b> (3496)41-32-12	<b>Саратов</b> (845)249-38-78	<b>Улан-Удэ</b> (3012)59-97-51
<b>Брянск</b> (4832)59-03-52	<b>Киров</b> (8332)68-02-04	<b>Новосибирск</b> (383)227-86-73	<b>Севастополь</b> (8692)22-31-93	<b>Уфа</b> (347)229-48-12
<b>Владивосток</b> (423)249-28-31	<b>Коломна</b> (4966)23-41-49	<b>Омск</b> (3812)21-46-40	<b>Симферополь</b> (3652)67-13-56	<b>Хабаровск</b> (4212)92-98-04
<b>Владикавказ</b> (8672)28-90-48	<b>Кострома</b> (4942)77-07-48	<b>Орел</b> (4862)44-53-42	<b>Смоленск</b> (4812)29-41-54	<b>Чебоксары</b> (8352)28-53-07
<b>Владимир</b> (4922)49-43-18	<b>Краснодар</b> (861)203-40-90	<b>Оренбург</b> (3532)37-68-04	<b>Сочи</b> (862)225-72-31	<b>Челябинск</b> (351)202-03-61
<b>Волгоград</b> (844)278-03-48	<b>Красноярск</b> (391)204-63-61	<b>Пенза</b> (8412)22-31-16	<b>Ставрополь</b> (8652)20-65-13	<b>Череповец</b> (8202)49-02-64
<b>Вологда</b> (8172)26-41-59	<b>Курск</b> (4712)77-13-04	<b>Петрозаводск</b> (8142)55-98-37	<b>Сургут</b> (3462)77-98-35	<b>Чита</b> (3022)38-34-83
<b>Воронеж</b> (473)204-51-73	<b>Курган</b> (3522)50-90-47	<b>Псков</b> (8112)59-10-37	<b>Сыктывкар</b> (8212)25-95-17	<b>Якутск</b> (4112)23-90-97
<b>Екатеринбург</b> (343)384-55-89	<b>Липецк</b> (4742)52-20-81		<b>Тамбов</b> (4752)50-40-97	<b>Ярославль</b> (4852)69-52-93

Россия +7(495)268-04-70

Казахстан +7(7172)727-132

Киргизия +996(312)96-26-47

[www.zoll.nt-rt.ru](http://www.zoll.nt-rt.ru) | | [zof@nt-rt.ru](mailto:zof@nt-rt.ru)

**Технические характеристики на  
системы для сердечно-легочной реанимации ResQCPR,  
устройства компрессии-декомпрессии ResQPOD ITD,  
инспираторные пороговые устройства импеданса  
CardioPump ACD-CPR, ResQGARD  
компании ZOLL**

**Виды аксессуаров:** чемоданы для переноски, демонстрационные комплекты, присоски для аппарата, коробки и др.



ResQCPR™ System

## What is the ResQCPR System?

The performance of ResQCPR relies on the use of two devices: the **ResQPOD® ITD 16**, an impedance threshold device (ITD), in combination with active compression-decompression cardiopulmonary resuscitation (ACD-CPR), performed with the **CardioPump® ACD-CPR Device**. No other device on the market delivers true ACD-CPR with 10 kilograms (kg) of lift, which increases the chances of survival after cardiac arrest.

Even though high-quality manual or automated CPR has been shown to increase survival, it provides only about 25%–40% of normal blood flow to the heart and brain.<sup>1</sup>

The ResQCPR devices work synergistically to deliver improved blood flow during cardiac arrest. By increasing the amount of blood returned to the heart (preload), and lowering intracranial pressure (ICP) during CPR, the ResQCPR System has been shown in human trials to deliver near-normal blood pressure.<sup>2,3</sup>

More importantly, a large clinical trial comparing conventional manual CPR to ResQCPR showed a **53% increase in neurologically intact survival** to hospital discharge, and a survival benefit that persisted out to one year.<sup>4</sup>

### Conventional CPR Limited Blood Flow

Chest compression forces air out of the lungs and blood out of the heart. During chest wall recoil, air is drawn in and eliminates the vacuum (negative pressure) that is needed to fill the heart. Intracranial pressure (ICP) is also slightly lowered during this phase.

#### Blood flow may be limited due to:

1. Air rushing back into the lungs during chest wall recoil, minimizing the critical vacuum and resulting in suboptimal preload and cardiac output.
2. Incomplete chest wall recoil, which compromises preload.
3. CPR quality issues (e.g., ventilating and compressing too fast or too slow).

### ResQCPR Improved Perfusion and Near-Normal Circulation

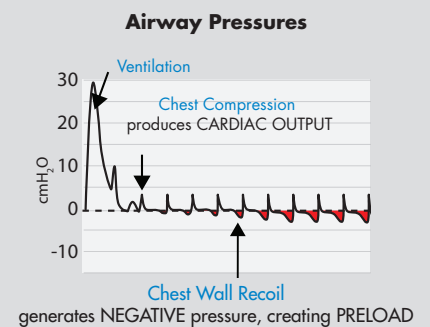
The ResQCPR devices work together to optimize perfusion:

#### ResQPOD ITD 16

1. Regulates airflow into the lungs during chest wall recoil (except when intended during ventilation), enhancing the vacuum that generates preload and further lowering ICP.
2. Timing lights promote proper ventilation rate.

#### CardioPump ACD-CPR Device

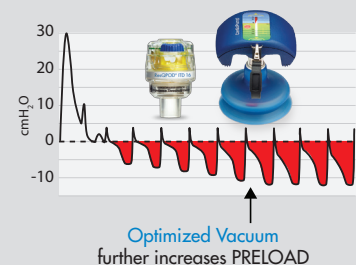
1. Allows the user to perform ACTIVE decompression, which further enhances the vacuum.
2. Gauge displays compression and lift forces.
3. Metronome promotes proper compression rate.



#### Hemodynamics



#### Airway Pressure Impact



#### Hemodynamic Impact





The ResQGARD<sup>®</sup> is an impedance threshold device (ITD) that provides a rapid, safe, and noninvasive way to improve perfusion in spontaneously breathing hypotensive patients. The ResQGARD provides therapeutic benefit as soon as a patient begins to breathe through it, and it is easy to discontinue (“ON/OFF” therapy). The ResQGARD increases blood pressure during hypotension from a variety of causes,<sup>1-6</sup> for example:

- Early sepsis
- Orthostatic intolerance
- Trauma/hypovolemia
- Heat shock
- Dialysis
- Blood donation

Clinical and pre-clinical studies have shown that the ResQGARD ITD:

- Increases systolic and diastolic blood pressure by up to 30%<sup>1</sup>
- Improves cerebral blood flow<sup>2</sup>
- Increases blood pressure in hypovolemic hypotension but not to levels typically associated with "popping the clot"<sup>3</sup>

ResQPOD® ITD 10

**ZOLL**®



Enhanced Perfusion **During CPR**

# Improve Perfusion During CPR

Over the past 15 years, we've seen little improvement in survival-to-discharge rates among patients experiencing in-hospital cardiac arrest. But today, a focus on high-quality CPR and adoption of new technologies are helping many systems improve their outcomes. ZOLL's resuscitation platform is designed to help hospitals achieve the highest level of CPR quality, improving overall outcomes.

## ZOLL's ResQPOD® ITD 10 Increases Perfusion During High-Quality CPR

The ResQPOD impedance threshold device (ITD) is a simple, non-invasive device that delivers intrathoracic pressure regulation (IPR) therapy during basic or advanced life support CPR to improve perfusion. The ITD lowers intrathoracic pressure during the recoil phase of CPR by selectively restricting unnecessary airflow into the chest. This vacuum increases preload, lowers intracranial pressure, and improves blood flow to the brain and vital organs. Pre-clinical studies have shown that the ResQPOD ITD 10:

- Doubles blood flow to the heart<sup>1</sup>
- Increases blood flow to the brain by 50%<sup>2</sup>
- Doubles EtCO<sub>2</sub><sup>3</sup>

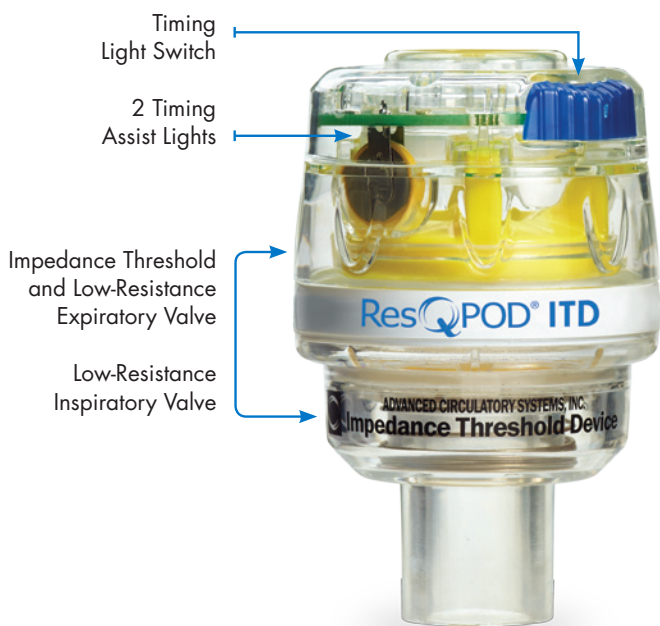
*When used with high-quality CPR, the ITD has been shown in clinical studies to improve survival by 25% or more.<sup>4</sup>*







## A Simple Solution for More Effective Resuscitation



ResQPOD® ITD 10

Attached to a facemask or other airway adjunct, the ResQPOD ITD contains airway pressure-sensing valves to selectively prevent air from entering the chest during chest wall recoil. This enhances the vacuum that pulls blood back to the heart, increasing preload. Patient ventilation and exhalation are not restricted. When used with an advanced airway, timing lights flash at 10 per minute and guide ventilations at the Guidelines-recommended rate to discourage hyperventilation.

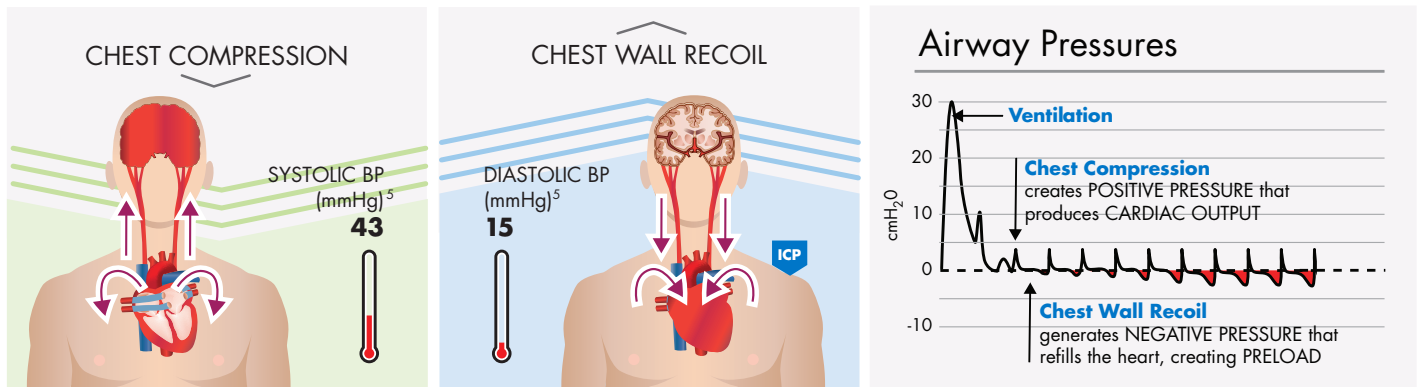
### ResQPOD Features and Benefits

- Easy to integrate into resuscitation protocols
- Can be used during BLS and ALS care
- Compatible with all airway adjuncts and ventilation sources
- Timing lights guide ventilations at 10/minute
- Compatible with automated CPR devices
- Cost effective

# Enhancing Perfusion During CPR

The ResQPOD ITD enhances circulation during basic or advanced life support CPR. This simple, non-invasive device regulates pressures in the chest and improves blood flow to the heart and brain.

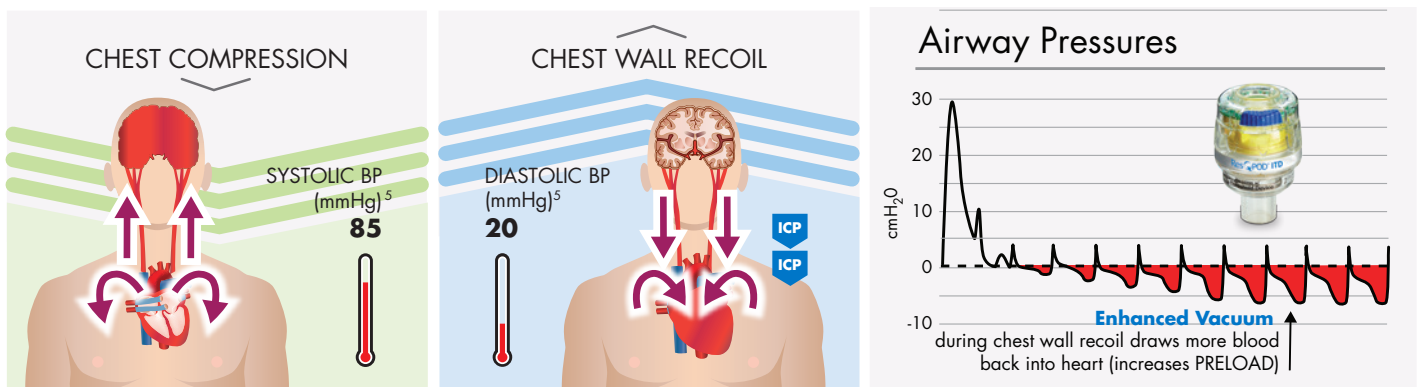
## Conventional CPR



## 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>6</sup> Limited blood flow is due, in part, to the open airway. During chest wall recoil in and depletes the vacuum (negative pressure) that is needed to fill the heart. This limits cardiac output and blood circulated with compressions.

## CPR with the ResQPOD® ITD 10



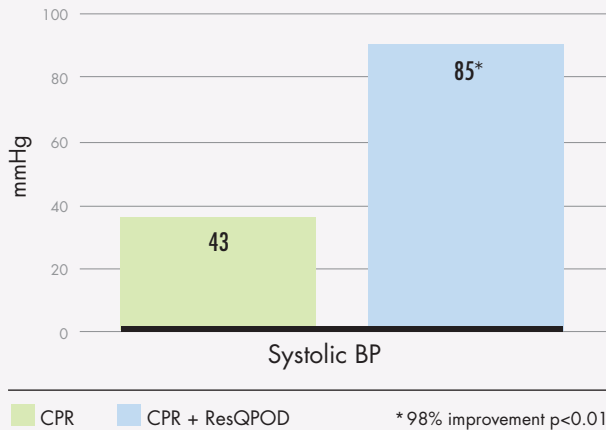
## CPR with the ResQPOD ITD—More Blood Circulated

Attached to a facemask or other airway adjunct, the ResQPOD selectively prevents air from entering the lungs during the chest wall recoil phase (except when intended with ventilations). This enhances the vacuum, which pulls more blood back into the heart and lowers intracranial pressure (ICP).<sup>7</sup> As a result, more blood is circulated to the brain and vital organs until the heart can be restarted. When used with high-quality CPR, the ITD has been shown in clinical studies to improve survival by 25% or more.<sup>4</sup>

# Studies Support Use of the ResQPOD ITD

## Improved Blood Pressure with an ITD

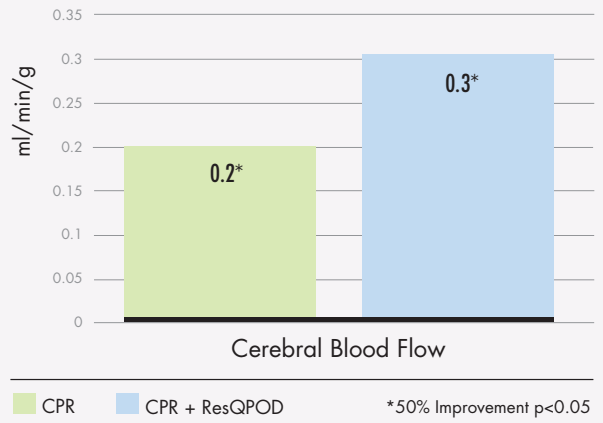
**A CLINICAL STUDY SHOWED A 98% INCREASE IN SYSTOLIC BP WHEN AN ITD IS USED.**



Pirrallo RG, et al. *Resuscitation*. 2005;66:13-20.

## Improved Blood Flow to the Brain with an ITD

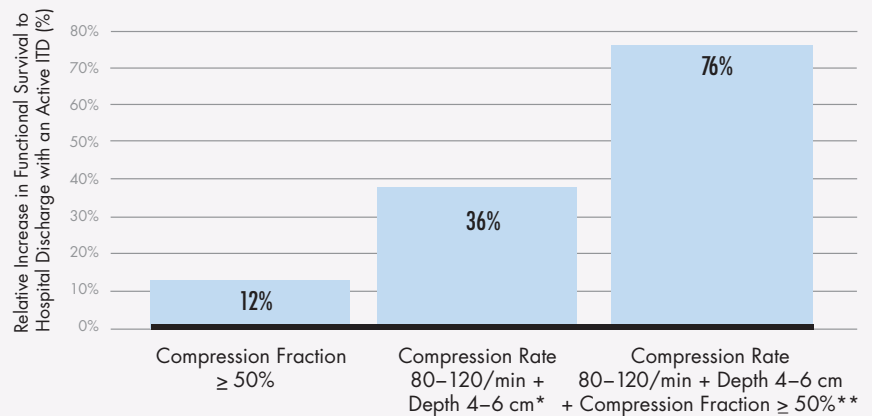
**PRE-CLINICAL DATA SHOWED A 50% INCREASE IN BLOOD FLOW TO THE BRAIN AFTER 9 MINUTES OF CPR WHEN AN ITD IS USED.**



Lurie KG, et al. *Chest*. 1998;113:1084-1090.

## Relative Increase in Survival with an ITD

**A POST HOC ANALYSIS OF 6,199 PATIENTS SHOWED AN INCREASE IN SURVIVAL AS THE QUALITY OF CPR IMPROVED.**



Yannopoulos D, et al. *Resuscitation*. 2015;94:106-113.

\*p=0.05  
\*\*p=0.001

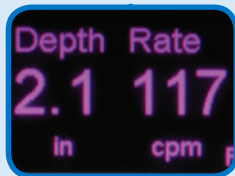
## Significant Increase in Chance of Survival

A post hoc analysis of the ROC PRIMED data by Yannopoulos, et al. showed that less than 50% of the patients in the ROC study actually received acceptable-quality CPR, defined as a rate of 80–120 compressions/min, a compression depth of 4–6 cm, with a compression fraction of  $\geq 50\%$ .<sup>8</sup> However, as the quality of CPR improved, so did the survival impact of the ResQPOD ITD. And when acceptable-quality CPR was performed, patients who received the ResQPOD ITD had a significantly higher (76%) chance of survival compared to those who received high-quality CPR alone. This analysis demonstrates the importance of utilizing tools to help monitor CPR quality since it appears to have a dose-related impact on the ResQPOD ITD's effectiveness. The better the CPR quality, the more impact the ITD has on survival.



# ZOLL Resuscitation Platform

ZOLL's resuscitation platform is designed to promote consistent, high-quality, high-perfusion CPR and high-current defibrillation for adults and pediatrics. Its technologies include Real CPR Help® to provide real-time feedback on compression quality, See-Thru CPR® to help reduce pause time by filtering the CPR artifact, and EtCO<sub>2</sub> to signal the earliest changes in patient condition. Utilizing these technologies to help achieve the highest quality CPR will ensure that you recognize the full benefit of the ResQPOD ITD.



Real-time depth and rate are displayed with each compression.



The release indicator shows rescuers whether they are releasing fully and fast enough to support cardiac refilling. A "Release Fully" prompt reminds rescuers not to lean on the chest ensuring proper recoil.



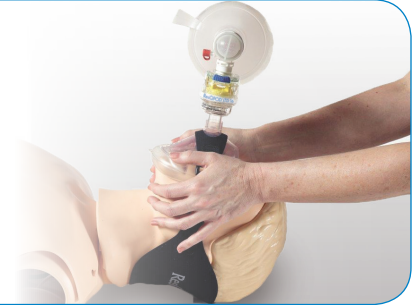
See-Thru CPR reduces pause time by filtering out CPR artifact and allowing clinicians to see if an organized rhythm is developing.

## ResQPOD® ITD 16

The ResQPOD regulates airflow during the chest wall recoil phase of CPR to enhance the vacuum in the patient's chest. This increases preload and lowers intracranial pressure (ICP).

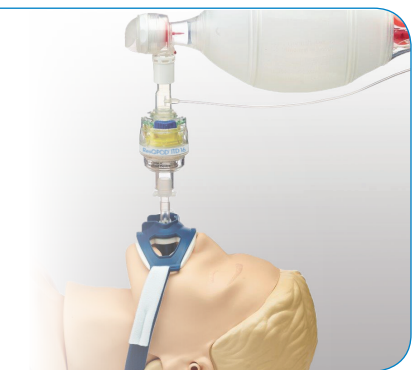
### Using the ResQPOD on a Facemask

1. Connect the ResQPOD to a facemask.
2. Open the airway, lifting the jaw to facemask. Establish and maintain tight face seal with mask throughout chest compressions; a head strap and two-handed technique are recommended.
3. Connect the ventilation source to the top of the ResQPOD.



### Using the ResQPOD on an Endotracheal (ET) Tube

1. Confirm ET tube placement and secure with a commercial tube restraint.
2. Connect ResQPOD to ET tube.
3. Place EtCO<sub>2</sub> detector between ResQPOD and ventilation source (preferred).
4. Connect ventilation source to top of EtCO<sub>2</sub> detector.
5. Turn on timing assist lights. Ventilate during active decompression phase (preferred) at timing light flash rate of 10/min.



### Additional Information for Caregiver

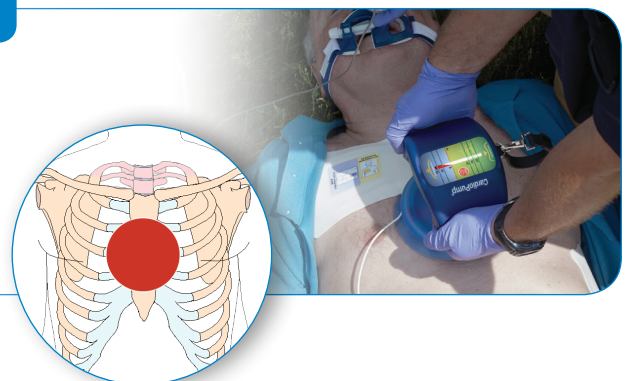
- Perform CPR at recommended compression-to-ventilation ratios.
- Ventilate over 1 second until chest rises.
- Do not hyperventilate!
- Clear secretions from the ResQPOD by blowing out using the ventilation source.

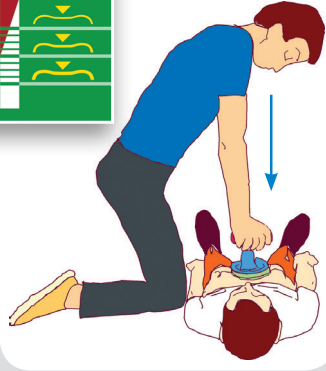
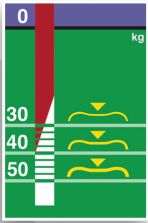
## CardioPump® ACD-CPR Device

The CardioPump further enhances the effect of the ResQPOD by actively re-expanding the chest, rather than relying on it to passively recoil. It also promotes proper ResQCPR compression rates (80/minute), and helps guide compression and lifting forces.

### Rescuer and CardioPump Positioning

Kneel close to the patient's side with shoulders directly over the patient's chest. Place the CardioPump in the middle of the chest, between the nipples but above the xiphoid process. Shaving may be needed to achieve good suction.





## Compress

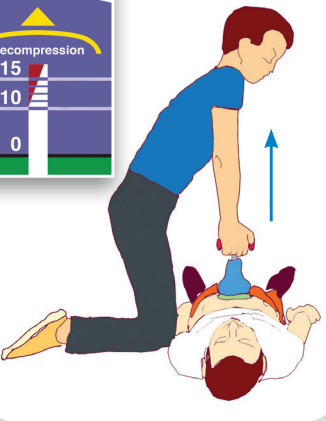
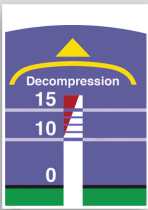
Compress to recommended depth (e.g., 2 inches or 5 centimeters). Observe the force required to achieve that depth, as it will vary according to how compliant the chest is. The tip of the red arrow indicates the force being applied.

**The approximate amount of force required to compress the chest 2 inches/5 centimeters is:**

- 30 kg: soft/supple chest
- 40 kg: chest of average compliance
- 50 kg: stiff/rigid chest

Once the amount of force required is known, use that target as a guide for continued compressions.

Arms should be straight with shoulders directly over the sternum. Bend at the waist and compress, using the entire upper body and large thigh muscles. Compress at a rate of 80/minute using the metronome (push button) as a guide. This rate allows for more filling time. Compress on one tone, lift on the other tone.








## Lift

To fully achieve the benefits of ACD-CPR, attempt to actively pull up until the tip of the red arrow on the force gauge registers  $\approx 10$  kg. Lift using the upper body and large thigh muscles, and bending at the waist. If the suction cup dislodges, pull up slightly less. It is not necessary to lift with more than 10 kg of force. The CardioPump is the only device that allows rescuers to deliver true ACD-CPR.

## Performing High-Quality ResQCPR

1. Confirm absence of pulse and send for an AED.
2. Begin chest compressions with the CardioPump.
3. Attach the ResQPOD to a facemask, using a two-handed technique to maintain a tight facemask seal and airway position. Move it to the advanced airway once intubated, and turn on lights to guide ventilations.
4. Begin using both devices as soon as possible so that the patient receives the benefit of ResQCPR at the earliest opportunity.
5. Perform chest compressions at the recommended compression-to-ventilation ratio. Use a 50% duty cycle, spending equal time compressing and lifting. Avoid interruptions.
6. Use the force gauge to monitor forces and rescuer fatigue. Rotate ACD-CPR duties every two minutes (or more often) to avoid fatigue.
7. If the patient has a return of spontaneous circulation (ROSC), use of both devices should be discontinued. If the patient re-arrests, resume ResQCPR immediately.
8. **NOTE:** Signs and symptoms of improved cerebral blood flow (e.g., eye opening, gagging, spontaneous breathing, limb or body movement) have been reported in patients without a pulse who are undergoing ResQCPR. If these occur, check quickly to see if a pulse has returned. If the patient remains in cardiac arrest, continue ResQCPR and contact your medical control authority for guidance on managing these signs and symptoms in an arrested patient. If ROSC occurs, discontinue ResQCPR and support ventilations as indicated.

PRODUCT	ORDER #
 <p>ResQCPR Carrying Case</p>	12-0935-000
 <p>ResQCPR Demo Kit</p>	12-0869-000
 <p>ManiKIT™ with ResQPAD™</p>	12-2116-000
 <p>Suction Cup for ACD-CPR Device</p>	12-0586-000
 <p>ResQPAD (box of 2)</p>	12-2394-000

Алматы (7273)495-231  
 Ангарск (3955)60-70-56  
 Архангельск (8182)63-90-72  
 Астрахань (8512)99-46-04  
 Барнаул (3852)73-04-60  
 Белгород (4722)40-23-64  
 Благовещенск (4162)22-76-07  
 Брянск (4832)59-03-52  
 Владивосток (423)249-28-31  
 Владикавказ (8672)28-90-48  
 Владимир (4922)49-43-18  
 Волгоград (844)278-03-48  
 Вологда (8172)26-41-59  
 Воронеж (473)204-51-73  
 Екатеринбург (343)384-55-89

Иваново (4932)77-34-06  
 Ижевск (3412)26-03-58  
 Иркутск (395)279-98-46  
 Казань (843)206-01-48  
 Калининград (4012)72-03-81  
 Калуга (4842)92-23-67  
 Кемерово (3842)65-04-62  
 Киров (8332)68-02-04  
 Коломна (4966)23-41-49  
 Кострома (4942)77-07-48  
 Краснодар (861)203-40-90  
 Красноярск (391)204-63-61  
 Курск (4712)77-13-04  
 Курган (3522)50-90-47  
 Липецк (4742)52-20-81

Магнитогорск (3519)55-03-13  
 Москва (495)268-04-70  
 Мурманск (8152)59-64-93  
 Набережные Челны (8552)20-53-41  
 Нижний Новгород (831)429-08-12  
 Новокузнецк (3843)20-46-81  
 Ноябрьск (3496)41-32-12  
 Киров (8332)227-86-73  
 Омск (3812)21-46-40  
 Орел (4862)44-53-42  
 Оренбург (3532)37-68-04  
 Пенза (8412)22-31-16  
 Петрозаводск (8142)55-98-37  
 Псков (8112)59-10-37

Пермь (342)205-81-47  
 Ростов-на-Дону (863)308-18-15  
 Рязань (4912)46-61-64  
 Самара (846)206-03-16  
 Саранск (8342)22-96-24  
 Санкт-Петербург (812)309-46-40  
 Саратов (845)249-38-78  
 Севастополь (8692)22-31-93  
 Симферополь (3652)67-13-56  
 Смоленск (4812)29-41-54  
 Сочи (862)225-72-31  
 Ставрополь (8652)20-65-13  
 Сургут (3462)77-98-35  
 Сыктывкар (8212)25-95-17  
 Тамбов (4752)50-40-97

Тверь (4822)63-31-35  
 Тольятти (8482)63-91-07  
 Томск (3822)98-41-53  
 Тула (4872)33-79-87  
 Тюмень (3452)66-21-18  
 Ульяновск (8422)24-23-59  
 Улан-Удэ (3012)59-97-51  
 Уфа (347)229-48-12  
 Хабаровск (4212)92-98-04  
 Чебоксары (8352)28-53-07  
 Челябинск (351)202-03-61  
 Череповец (8202)49-02-64  
 Чита (3022)38-34-83  
 Якутск (4112)23-90-97  
 Ярославль (4852)69-52-93

Россия +7(495)268-04-70

Казахстан +7(7172)727-132

Киргизия +996(312)96-26-47

www.zoll.nt-rt.ru | | zof@nt-rt.ru