



# QinFlow Warrior

A high performance modular system that uniquely meets blood and IV fluid warming needs across the entire continuum of emergency care

**NO MORE COLD BLOOD**



Photo by El Duke

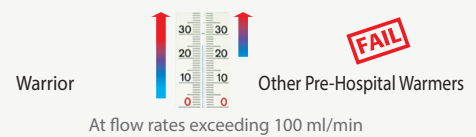
Trauma and hypothermia is a lethal combination that is associated with 20% mortality in trauma patients<sup>[1]</sup> as well as multiple complications that hinder recovery and burden health care systems. Hypothermia is a life threatening situation that occurs in up to 67% of trauma patients. Hypothermia occurs when body temperature drops below 35°C. "Hypothermia in an adult trauma victim with a core temperature less than 32°C is associated with 100% mortality, independent of the presence of shock, injury severity score, or volume of fluid resuscitation"; "Hypothermia increases fluid requirements and independently increases acute mortality after major trauma"<sup>[2]</sup>. "Both civilian and military patients suffering traumatic injury have significantly increased mortality if they arrive at the hospital with lowered body temperatures compared to normal"<sup>[3]</sup>. Hypothermia increases the risk of coagulopathy in trauma patients, leading to (i) 8x increase death risk within first 24 hours, (ii) longer ICU stays, (iii) longer mechanical ventilation requirements, and (iv) larger volume of blood transfusions. **Hypothermia patients should be re-warmed immediately.**

Administering Blood/IV fluids to trauma patients at body temperature is complicated in both the pre-hospital and hospital settings. The most advanced blood and IV fluid warmers in the prehospital space struggle or simply fail to perform below 20°C / 68°F fluid input temperature (especially in the intense flow rate requirements demanded by trauma blood resuscitation protocols), leaving frontend rescue and transport teams significantly under-equipped to deal with the challenge. Similarly, hospital solutions are often too complex to setup, require prolonged warm up time and can not warm fluids when transporting patients within various hospital's emergency settings. **These shortfalls have lethal implications for trauma patients.**

Introducing the Warrior: a high performance modular system that uniquely meets blood and IV fluid warming needs across the entire continuum of emergency care. Leveraging QinFlow's unique (patented) technology, the Warrior is the only portable device capable of meeting the key performance parameters expected from modern fluid warmers, namely: warming range, warming speed, warming capacity, flow rates, power source flexibility, and simplicity. The Warrior is a high performance, modular (battery- and AC<sup>[4]</sup>-operable) system that uniquely meets blood and IV fluid warming needs across the entire continuum of emergency care, including points of injury (first responders, combat medics, search and rescue), critical care transport platforms (EMS, HEMS), and hospital settings (ER, trauma, OR, ICU). The Warrior warms high flows of extremely cold fluids unprecedentedly fast (within seconds), with unmatched volume of warmed fluids per single battery. **The Warrior fulfills QinFlow's "NO-MORE-COLD-BLOOD" vision across the entire continuum of emergency care.**

## Not all fluid warmers are created equal

### Fluid Input Warming Range



### Max Flow Rate

Warrior	Other Pre-Hospital Warmers
200/290 ml/min (battery/AC)	30-50 ml/min

For the full warming range (4-38°C / 39-100°F)

### Energy Weight Required to Warm 3 Liters

Warrior	Other Pre-Hospital Warmers
0.5 Kg	2 Kg

At 100-180 ml/minute

### Single Battery Warming Capacity

Warrior	Other Pre-Hospital Warmers
5 Liter	1-1.5 Liter

At 170ml/min, 20°C / 68°F fluid input temperature and 22°C / 71.6°F ambient temperature

### Warm up Time

Warrior	Other Pre-Hospital Warmers
Up to 11 sec	45-260 sec
	For High End Hospital Warmers
	5-7 min Setup Time

<sup>[1]</sup> Safi Sahid; "Journal of Trauma-Injury & Critical Care"; 2005  
<sup>[2]</sup> Ann Surg. 1997 October; 226(4): 439-449. Is hypothermia in the victim of major trauma protective or harmful? A randomized, prospective study. L. M. Gentilello, G. J. Jurkovich, M. S. Stark, S. A. Hassantash, and G E O'Keefe  
<sup>[3]</sup> <http://www.ems1.com/trauma/articles/1189729-Hypothermia-and-trauma-A-deadly-combination/> [December 01, 2011]  
<sup>[4]</sup> General Availability of AC Power Supply Module in the US: 2H 2017 (estimated)



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## About Us:

Since 2008 QinFlow (short for Quality in Flow) has worked to develop and perfect a proprietary fluid warming technology (patented) that delivers unparalleled levels of warming efficiency. The company's flagship product – the Warrior – provides front end rescue teams, first response teams, critical care transport teams, and emergency care professionals within various hospital settings with a high performance, reliable, simple to operate, and completely portable blood and IV fluid warming device that operates flawlessly in all environmental conditions in order to fight hypothermia and save lives.

## Our Vision:

In an environment where every second counts, our vision is to completely eliminate the challenge of warming blood and IV fluids from the entire continuum of emergency care in order to allow emergency care professionals to focus on what they do best – saving lives.

## Unique Value Proposition:

- **Unmatched performance:** the only portable solution capable of warming fluids from practically any fluid input temperature and flow rate requirements to body temperature. The Warrior will achieve set temperature of 38°C / 100.4°F within seconds
- **Unmatched capacity:** provides three to five times the amount of warmed fluids per single battery than any alternative solution
- **Flexible power sources:** battery- and AC-operable
- **Simple to operate:** no setup; single button; simple assembly; simple trouble-shooting; no calibration

## Management Team:

- **Dov Nachshon**, Chief Executive Officer
- **Dr. Ron Elazari Volcani**, Co-Founder Chief Technology Officer
- **Ariel Katz**, Executive Director, Commercial Affairs

## Advisory Board:

- **Prof. Uri Martinowitz**, Director of the National Hemophilia Center, Sheiba Medical Center, Tel Hashomer, Israel
- **Prof. Eilat Shinar**, Director of National Blood Services, Magen David Adom (MDA), Israel
- **Col. (Ret.), Warner Dahlgren Farr**, B.S.M.T., M.D., M.P.H., FACP, FasMA. Active on DOD TCCC Committee and an instructor and senior mentor at the Joint Special Operations University (JSOU) at MacDill Air Force Base, Florida (USA)
- **Col. (Ret.), Alan Moloff**, D.O., MPH. Educator and consultant for private industry and government organizations. Faculty of Rocky Vista University, College of Osteopathic Medicine in Parker, CO (USA)
- **Prof. Dr. Marc Maegle**, Department for Trauma and Orthopedic Surgery, Cologne-Merheim Medical Center (CMMC), Germany

## SOLUTION

A modular system that uniquely addresses the blood & fluid warming needs of the entire continuum of emergency care.

### The QinFlow Core

#### Base

Hosts the control module and user indications (audio, visual). Connects with the energy source



### Energy Sources

#### Enhanced Battery

Li-ion, 22.2V (nominal), 4,600mAh



### Energy Sources

#### Lite Battery

Li-ion, 18V (nominal), 3,000mAh (US: 2H 2017)



### Energy Sources

#### AC Module

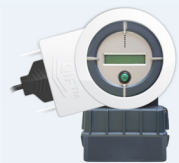
Medical Grade Power Supply Module in a dedicated case



### Disposable Adapters

#### Robust

Standard sterile disposable unit (DU); hosts the warming apparatus



### Disposable Adapters

#### Compact

Compact sterile disposable unit design for space-constraints (US: 2H 2017)



## The QinFlow Modular Warrior System

