

New and Improved

QuikClot®

The Evolution of Combat Gauze: A Hemorrhage Control System



 **CardiacLife™**
empowering you to save lives

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Life is unpredictable



Between 2000-2013, 160 Active Shooter Incidents occurred, killing 486 people.

That's more than one incident per month.

With Mass Casualty Incidents on the rise, bleeding injuries can occur at any time, anywhere and without warning.

Are you prepared to save lives?

What is QuikClot®?

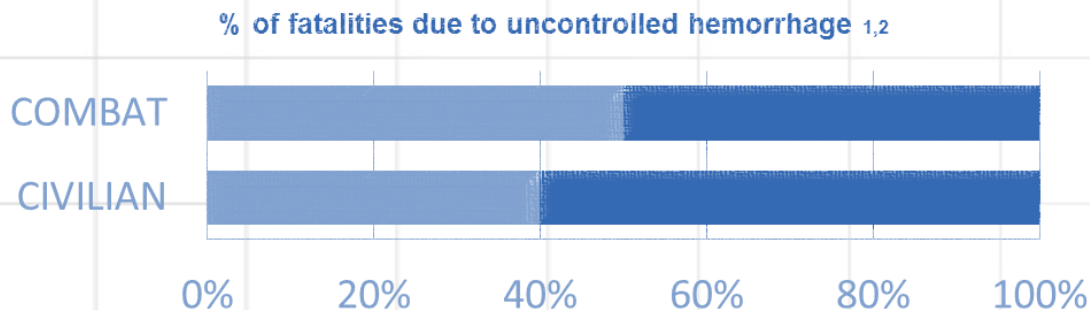
QuikClot® is a hemostatic gauze that is part of a modular bleeding control platform, designed for use in any situation where there is potential for a bleeding injury or Mass Casualty Situation to occur.

Mass Casualty Incident

A Mass Casualty Incident is when the number and severity of casualties overwhelm the emergency medical personnel as well as their available resources and equipment.

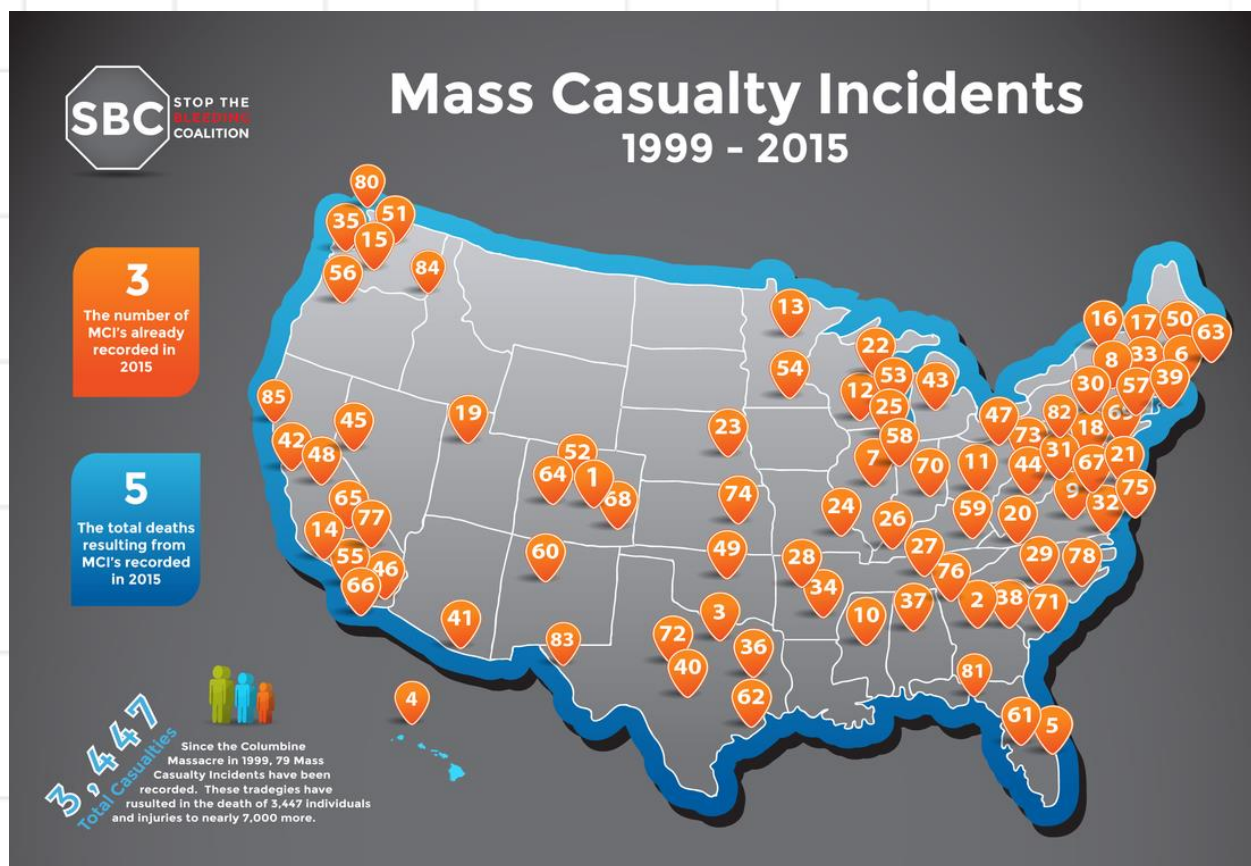
Know The Facts

Uncontrolled hemorrhaging due to traumatic injury is the leading cause of death among combat casualties (50%). Severe hemorrhaging is responsible for over 35% of civilian pre-hospital deaths and over 40% of deaths within the first 24 hours.¹



¹ Kauvar, D.S., Lefering, R., and Wade, C.E. 2006 Impact of Hemorrhage on Trauma Outcome: an overview of epidemiology, clinical presentations, and therapeutic considerations. J Trauma 60, S3-11.

² Curry N., Hopewell S., Dorée C., Hyde C., Brohi K., Stanworth S. 2011 The Acute Management of Trauma Hemorrhage: a systematic review of randomized controlled trials. Critical Care. 15:R92.



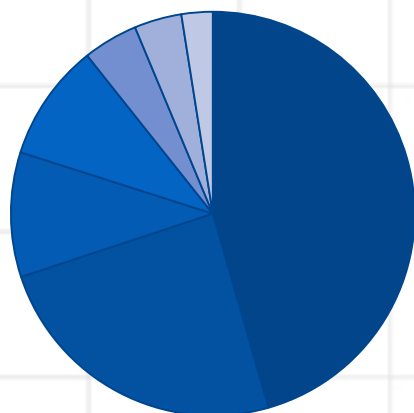
Since 1999, 79 Mass Casualty Incidents (MCI) have been recorded resulting in:

- 3,447 individual deaths
- Almost 7,000 injuries³
- 3 MCIs in 2015
- 5 deaths from MCIs in 2015

³"Mass Casualty Incidents 1999 - 2015 Infographic." Get the Facts. Stop the Bleeding Coalition, 2015. Web. 16 June 2015.
stopthebleedingcoalition.com/get-the-facts.html.

Locations of Active Shooter Events

160 Events Occurred between 2000-2013



- Commerce (73) : 45.6%
- Education (39) : 24.4%
- Government (16) : 10%
- Open Space (15) : 9.4%
- Residences (7) : 4.4%
- Houses of Worship (6) : 3.8%
- Health Care Facilities (4) : 2.5%

Education

Schools (pre-K to 12) (27) 16.9%



Institutions of Higher Learning (12) 7.5%

Government

Military (5) 3.1%



Other Government Properties (11) 6.9%

Commerce

Businesses open to pedestrian traffic (44) 27.5%

Malls (6) 3.8%



Businesses closed to pedestrian traffic (23) 14.4%

Origin of QuikClot®

It can be argued that hundreds, even thousands of people are alive today because of one fateful mishap. In the mid 1980s, veteran of the Apollo Space Program and inventor of QuikClot®, Frank Hursey, cut himself shaving. His scientific work with absorptive materials led him to have a sample of volcanic Zeolite on hand. Using this sample, he attempted to clot his bleeding wound. The result: Zeolite was incredibly effective at stopping the bleeding and an idea was born.



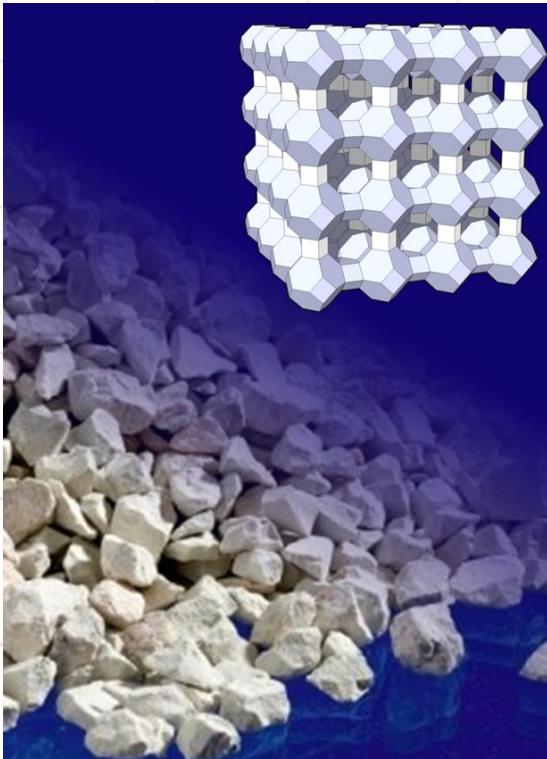
Frank Hursey: Inventor of QuikClot®



In 2002, after years of research and development, Frank Hursey created the first generation of QuikClot®. It was a powder substance meant to be poured into a bleeding wound, commonly referred to as combat sand. Clinical studies proved the product to be highly effective at stopping blood loss. It was quickly implemented by the United States Armed Services and put to use saving soldiers' lives on the front lines.

Evolution of QuikClot®

Although QuikClot® powder played a pivotal role in saving the lives of many front line soldiers, the first generation products were not without fault. Early front line field use quickly revealed a serious side effect: QuikClot® powder effectively stopped bleeding, but also released intense heat.



First and second generation QuikClot® products were made using the volcanic mineral Zeolite. The term comes from the Greek word zēō meaning “to boil” and líthos meaning “stone.” Zeolite is capable of absorbing large quantities of water, which can cause second and third degree burns during the evaporation process. Due to the loose nature of the powder, and the burns it was capable of causing, it often caused complications for surgeons when treating major wounds. It was difficult to irrigate and clean these wounds causing increased time in surgery.

Zeolite in molecular form and rock form

Evolution of QuikClot®



Second generation QuikClot® products solved the heat issue in a variety of ways. The majority of the heat produced in the Zeolite-water reaction occurred with the absorption of the first small amounts of water. By optimizing the water content in QuikClot®'s second generation products using partially hydrated Zeolite beads, the temperature could be controlled, reducing burn risk while maintaining efficacy. The absorption temperature is further controlled by adjusting the ratio of sodium to calcium. The weaker sodium-water bonds created less heat than those formed by stronger calcium-water bonds. The addition of silver ions not only helped to cool the clotting process, but also had the added benefit of antibiotic properties.

Early QuikClot® products used Zeolite as their main ingredient. However, due to the intense heat reaction and burn risk, research and development began on a third generation, in 2006. This time, using the naturally occurring, inorganic mineral kaolin, which is a heat free product.

Evolution of QuikClot®



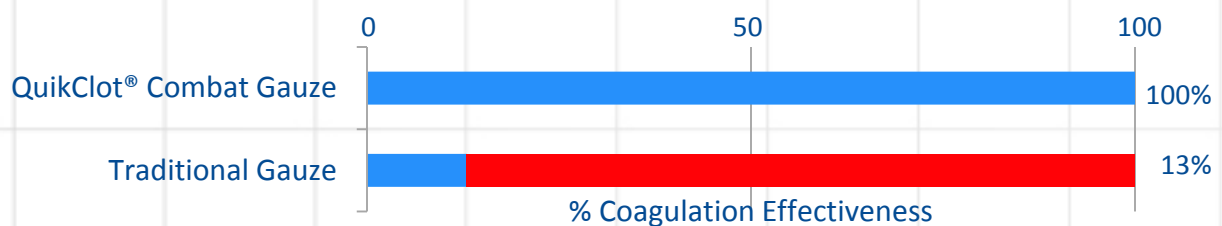
The clotting ability of kaolin, an aluminum silicate clay powder, has been known since the 1920s. When kaolin comes in contact with blood, it immediately initiates the clotting process, accelerating the body's natural clotting cascade.

The third generation of QuikClot®, commonly referred to as QuikClot Combat Gauze®, is a heat-free, polyester-rayon gauze, impregnated with a proprietary Kaolin based clotting agent. The new and improved product was released in 2008. In the same year, the Committee on Tactical Combat Casualty Care (CoTCCC) selected QuikClot Combat Gauze® as the only hemostatic dressing used by all branches of the United States Military. In addition, the Department of Defense has funded research exploring additional bleeding control applications for QuikClot® products.

Save More Lives with QuikClot®

Occurrences of Active Shooter and Mass Casualty Incidents are increasing. Centers of education and commerce areas account for approximately 70% of Active Shooter Incidents. When an Active Shooter Incident or Mass Casualty Incident occurs, the safety of emergency medical personnel is of utmost importance. Securing a scene before allowing responders to safely enter takes valuable time.

It only takes a matter of minutes for a victim to bleed to death. QuikClot® stops bleeding fast by depositing clotting factors that work immediately, helping accelerate the body's natural clotting ability. When compared to traditional gauze, QuikClot® is 87-89% more effective at coagulating blood.



QuikClot® is an easy to use product that provides the functionality and familiarity of traditional gauze by readily conforming to the wound site. This allows anyone to quickly dress a bleeding wound, in a timely manner, which reduces blood loss. Shorter treatment times result in rescuers being able to save multiple victims.

New and improved QuikClot® allows for easy treatment in the hospital setting. It should stay in the body until the injured person is transported to a medical facility for additional care.

Additional Facts:

- Inorganic, containing no botanical, shellfish, human or animal proteins
- Chemically and biologically inert
- Carries no inherent risk of disease transmission
- Non-allergenic
- Low-to-no risk of adverse reactions
- 5 year shelf life
- Remains viable in extreme temperatures



QuikClot® Hemorrhage Control System ready for deployment

Your Hemorrhage Control Plan



QuikClot® Hemorrhage Control Systems are completely modular, and can be customized to meet the requirements of any organization or public event.

Being prepared with a QuikClot® system puts life-saving technology in your hands, giving you the power to control onsite bleeding when injuries occur.

For a site evaluation and/or a QuikClot® product recommendation, contact a Cardiac Life® specialist at (866)-710-1970.

Potential product applications include:

- Corporate
- Federal
- Industrial
- Municipal
- Outdoor Events
- EMS
- Hospitals
- Police
- Remote Areas
- Schools
- Sports
- Transportation
- Areas of Public Gathering

Hemorrhage Control System

The core of the QuikClot® Hemorrhage Control System is the QuikClot Combat Gauze® utilized in three main products:

- **Belt Trauma Kit (BTK)**
- **Bleeding Control Kit (BCK)**
- **Bleeding Control Bag (BCB)**

In conjunction with an Emergency Response Plan, these three products provide effective hemorrhage control.

BTK



Belt Trauma Kit

CTK



Bleeding Control Kit

BCB



Bleeding Control Bag

BTK



Belt Trauma Kit (BTK)

The Belt Trauma Kit is used to control bleeding of one injury, perfect for police and first responders

- Fits up to a 2" belt
- Lightweight
- Black nylon
- Two internal pockets
- Worn horizontally or vertically
- Velcro closure



Inside the BTK



BTK

- (1) QuikClot Combat Gauze® LE
- (1) Nitrile gloves
- (1) SWAT Tourniquet
- (1) CPR Shield

BCK



Bleeding Control Kit (BTK)

Contents of the Bleeding Control Kit may be used to treat up to four injuries

- Small and portable
- Lightweight
- High-visibility orange
- Zip closure
- Can hang conveniently in an accessible location
- Lies flat when open for ease of use



Inside the BCK

BCK

- (3) QuikClot Combat Gauze® LE
- (3) Compression bandages/pressure dressings
- (4 pairs) Nitrile gloves
- (1) CAT Tourniquet
- (1) CPR Shield
- (1) Mini EMS Shear



BCB



Bleeding Control Bag (BCB)

The QuikClot® Bleeding Control Bag is used to control bleeding for up to 12 injuries.

- High-visibility orange
- Two main sections with several individual mesh storage compartments
- Three front pockets
- Two side pockets
- Pack lies flat
- Shoulder straps
- Carry handle
- Less than ten pounds



Inside the BCB



All products are sterilized and individually wrapped.

Customizable to meet your needs.

Large Front Compartment

- (25 pairs) Nitrile gloves

Compartment 1

- (2) EMS style shears
- (2 pairs) Nitrile gloves
- (4) CAT Tourniquets **or** (10) SWAT Tourniquets
- (10) QuikClot Combat Gauze® LE

Compartment 2

- (10) Pressure dressings
- (1) QuikClot® EMS Rolled Gauze
- (3) QuikClot® EMS 4x4 dressings

2 Side Pockets

- for optional equipment



BCB Wall Mount



Store your BCB in an optional wall-mounted cabinet for easy access

CTK



Case Trauma Kit (CTK)

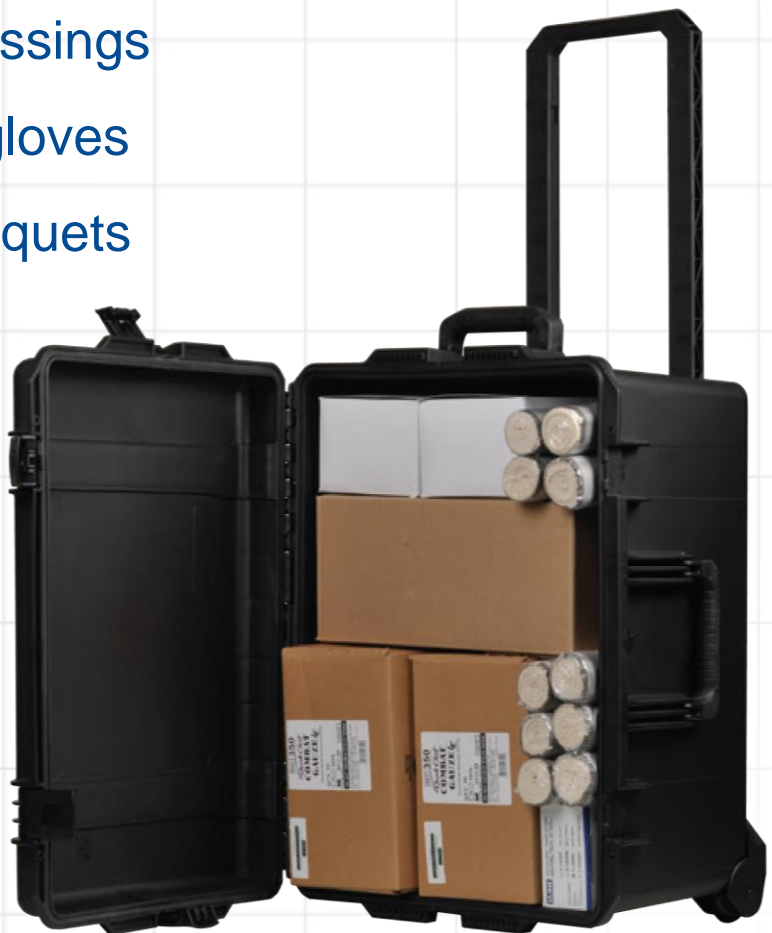
The QuikClot® Case Trauma Kit is used as a resupply or standalone unit treating up to 100 injuries.

- Robust and secure unit
- Convenient side handles
- Waterproof and lockable
- Pull handle and wheels



Inside the CTK

- (100) QuikClot Combat Gauze® LE
- (10) Pairs of shears
- (30) EMS 4x4 dressing
- (10) EMS rolled gauze
- (40) Pressure dressings
- (50 pairs) Nitrile gloves
- (50) SWAT Tourniquets



LEK



Large Event Kit (LEK)



The **QuikClot®** Large Event Kit provides bleeding control coverage for large events.

Cardiac Life® will analyze your needs and recommend a bleeding control package that is right for your location or event.

LEK Options



Kit #1

- (4) Bleeding Control Bags (BCB)
- (1) Case Trauma Kit (CTK)
- Treats up to 48 bleeding injuries
- 100 injury replenish capacity



Kit #2

- (25) Belt Trauma Kits (BTK)
- (4) Bleeding Control Bags (BCB)
- (1) Case Trauma Kit (CTK)
- Treats up to 73 bleeding injuries
- 100 injury replenish capacity



Order



To order **QuikClot®** products, contact **Cardiac Life®**:

349 West Commercial St.
Training Center, Suite 1400
East Rochester, NY 14445

www.cardiaclife.net/quikclot

Phone: 866-710-1970

Fax: 585-267-5218