

# Hemostat for General Hemorrhage Control

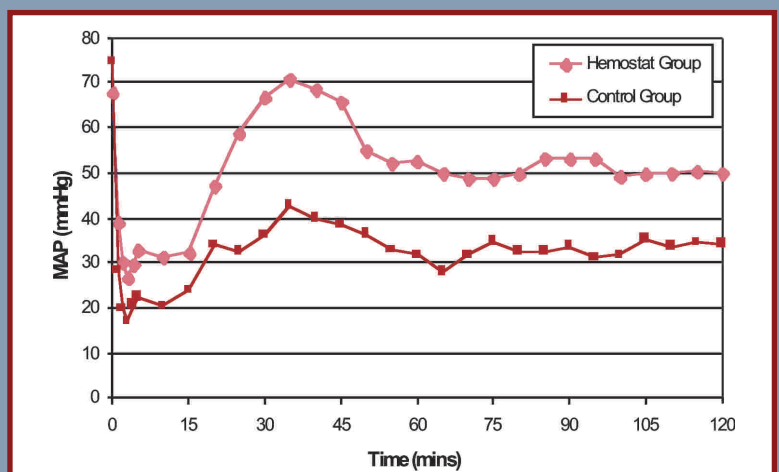
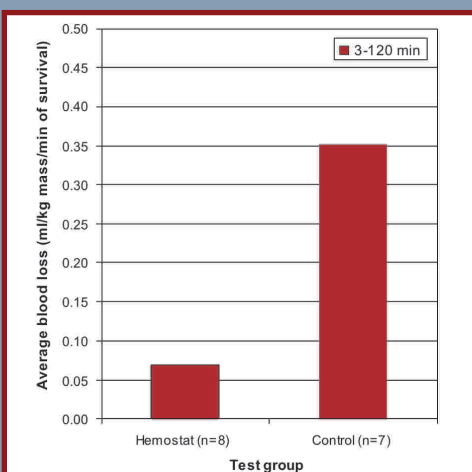
**T**he Swelling Hemostat represents a new and unique approach to hemorrhage control in civilian as well as military applications. This innovative device takes a significant step forward from the current state of the art because of its ability to control hemorrhage through three distinct mechanisms:

1. The ability to swell by absorbing the aqueous component of blood present in the wound and independently exert sufficient pressure to maintain contact with the bleeding site;
2. the dehydration of the blood in the wound during absorption that accelerates the clotting cascade; and
3. the mechanical fluid blocking effect achieved by the swelling polymer.

This combination of physiological and mechanical actions makes it functionally unique and increases the probability

of successful hemorrhage control even with coagulopathic victims.

The Hemostat, which in its current version consists of a 4" by 4" polymer containment bag filled with a proprietary superabsorbent material, has been tested successfully at Massachusetts General Hospital, Boston, USA, in a series of large animal tests using a proven swine model of fatal groin injury with complete transection of the femoral vessels. The device has achieved a survival rate of 100% versus 43% for the control models, with an 80% comparative reduction in post-treatment blood loss. The figures below highlight the Hemostat's efficacy in reducing the amount of post treatment blood loss in controlling hemorrhage and its ability to seal the wound and enable the body to regain and maintain a satisfactory level of blood pressure (MAP). In these experiments the control group was treated with a standard US Army issue gauze roll. In both groups the treatment included the application of manual compression for five minutes.



In a limited number of concept tests carried out in parallel with our principal testing program, it was determined that this Hemostat can address hemorrhage control in some non-compressible types of wounds as well. Our preliminary tests confirm that external pressure is not a requirement for the device to function, opening up the possibility for application to wounds that cannot be compressed, such as injuries to the abdomen and organs. Since effective treatment of non-compressible injuries remains a major problem, to which a comprehensive solution does not exist, the Hemostat's potential to spawn a series of new devices and treatments for injuries that have so far been untreatable in the field cannot be understated.

These results and observations come together to give this Hemostat a number of significant advantages over the more established competition:

1. It is designed to be able to treat a wide array of extremity injuries with little or no training;
2. it works with or without the application of external pressure;
3. it has shown none of the thermal side effects or geometric limitations that plague other devices currently in use;
4. it has shown potential for use in the treatment of non-compressible abdominal wounds; and
5. it is simple to manufacture and is affordable.

It is easy to imagine how variants of this first version, initially intended for military use, could eventually be introduced into every first aid kit in the home, place of business or school.

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