What Do I Do with this Hemostatic Gauze?

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Questions:

- What does the hemorrhage control evidence-based guideline say about hemostatic gauze?
- How do I use it properly?
AN EVIDENCE-BASED PREHOSPITAL GUIDELINE FOR EXTERNAL HEMORRHAGE CONTROL: AMERICAN COLLEGE OF SURGEONS COMMITTEE ON TRAUMA

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Prehospital External Hemorrhage Control Protocol

Apply direct pressure/pressure dressing to injury

Direct pressure effective (hemorrhage controlled)  Direct pressure ineffective or impractical (hemorrhage not controlled)

Wound amenable to tourniquet placement (e.g. extremity injury)  Wound not amenable to tourniquet placement (e.g. junctional injury)

Apply a tourniquet*  Apply a topical hemostatic agent with direct pressure#

Strength of Recommendation: Weak  Quality of Evidence: Low
Remarks: The panel discussed the military experience with varying types of tourniquets and felt that tourniquet selection should be based on proven effectiveness at arterial occlusion. Tourniquets that impede venous return without adequate arterial occlusion may only worsen hemorrhage and increase complications.

Recommendation 4: We suggest that improvised tourniquets be applied only if no commercial device is available.

Strength of Recommendation: Weak  Quality of Evidence: Low
Remarks: The panel discussed the military experience with varying types of tourniquets and felt that tourniquet selection should be based on proven effectiveness at arterial occlusion. Tourniquets that impede venous return without adequate arterial occlusion may only worsen hemorrhage and increase complications. Commercially available tourniquets are favored over improvised tourniquets unless there is no other option.

Recommendation 5: We suggest against releasing a tourniquet that has been properly applied in the prehospital setting until the patient has reached definitive care.

Strength of Recommendation: Weak  Quality of Evidence: Low
Remarks: Given the relatively short transport times for most civilian EMS agencies, the committee felt the safest option was to leave a tourniquet that had been placed in the field in place until the patient can be assessed in the hospital. There may be exceptions to this approach for prolonged transport times or austere environments. In these circumstances, prehospital providers should consult direct (online) physician medical direction.

Regarding the questions related to junctional hemorrhage devices, we believe this is an important area for further study.
Topical Hemostatic Agents

Recommendation 1: We suggest the use of topical hemostatic agents, in combination with direct pressure, for the control of significant hemorrhage in the prehospital setting in anatomic areas where tourniquets cannot be applied and where sustained direct pressure alone is ineffective or impractical.

Strength of Recommendation: Weak
Quality of Evidence: Low
Remarks: While the evidence was low, there are consistent data from animal models, suggesting reduced hemorrhage with these agents compared to standard gauze and the committee felt that junctional hemorrhage and torso wounds may benefit from the combination of direct pressure and hemostatic dressings.

Recommendation 2: We suggest that topical hemostatic agents be delivered in a gauze format that supports wound packing.

Strength of Recommendation: Weak
Quality of Evidence: Low
Remarks: This recommendation was based on the military experience and the animal studies suggesting that products that allow packing of the wound have superior hemorrhage control.
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Well, That’s Nice, But No One Taught Me How to Pack a Wound!
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Step 1: Stop the Bleeding! *Now*!

**Direct Pressure:**
- Hand
- Gauze
- Rag
- Knee
- Whatever it takes!

Now: Take a breath and get out your supplies
Step 2: Put Your Finger/Hand in the Wound and Push Hard

Gloves recommended!
Mask/Eye protection: smart!
Step 3: Pack the Gauze in...Keep Packing

Pack it in around your finger...tight!
Keep Packing
Keep Packing
Keep Packing
Keep Packing...till no more gauze goes in.
Then:
Step 3: Pack the Gauze in...Keep Packing

Pack it in around your finger...tight!
Keep Packing
Keep Packing
Keep Packing
Keep Packing
Keep Packing...till no more gauze goes in.

Then:

Keep Packing
Be Brave...
Keep Packing

Till you really can’t cram anymore in there!
Step 4: Apply Very Firm Pressure for 3 minutes

Use the rest of the roll as a lumpy bolster to help apply pressure.
Step 5: Is it Still Bleeding?

If no: Sweet!
Start rolling to the trauma center.
Put some IVs in.
Splint/immobilize area, if possible.
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**If no:** Sweet!
Start rolling to the trauma center.
Put some IVs in.
Splint/immobilize area, if possible.

**If yes:** Packing soaked and oozing
Pack some more, if you can.
Put your knee back on it and haul ass to the surgeon!
By the Way, Do I Need Expensive Hemostatic Gauze?

Maybe not...
By the Way, Do I Need Expensive Hemostatic Gauze?

Comparison of ChitoFlex®, CELOX™, and QuikClot® in control of hemorrhage.

CONCLUSION:
In our study of limited-access extremity bleeding, ChitoFlex® performed equally well in mitigating blood loss and promoting survival. The ChitoFlex® dressing is an equally effective alternative to currently available hemostatic agents. However, no agents were superior to standard gauze in our model of limited access.
By the Way, Do I Need Expensive Hemostatic Gauze?

Advanced hemostatic dressings are not superior to gauze for care under fire scenarios.


CONCLUSIONS:

Advanced hemostatic dressings do not perform better than conventional gauze in an injury and application model similar to a care under fire scenario.
Wound Packing Training Video

https://youtu.be/IQmsYOid7xY
The Future

- Wound packing incorporated into initial and ongoing paramedic training
- Wound packing included in NREMT required skill set
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