

# FEEDBACK TO THE FIELD (FT2F) #13:

## *Improper Preparation of the Combat Application Tourniquet (CAT) \**

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\*\* American Registry of Pathology in support of AFMES

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## *Original Issue*

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#### *Improper Preparation of the Combat Application Tourniquet (CAT)*

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# INTRODUCTION:

- Since 2010, data on deployed tourniquets have been collected by the Armed Forces Medical Examiner System (AFMES) and the Defense Medical Materiel Program Office (DMMPO). These data are based on tourniquets recovered from deceased service members autopsied by AFMES at Dover AFB, as well as from the equipment they carried.
- Recent evaluations have revealed new, potentially life-threatening issues dealing with improper preparation of unused Combat Application Tourniquets (CATs):
  - (1) Double routing of the band through the buckle
  - (2) Clipping or shortening of the windlass
  - (3) Red tip removal (by cutting or scraping)

## CASE SERIES 1 BACKGROUND:

- The CAT's self-adhering band can be routed through the buckle in 3 possible ways...



Inside Slit

Outside Slit

*1 Slit (Inside)*



*1 Slit (Outside)*



*2 Slits*



## CASE SERIES 1 – BACKGROUND:

- The manufacturer ships the CAT with the band routed through only one slit (inside)
  - This is the “*Ready to Go*” position...
    - The recommended storage configuration
    - Immediately ready for one-handed applications
    - Band can be quickly routed through the second slit (for two-handed or lower extremity applications)



## CASE SERIES 1:

- In Sep 2012, AFMES and DMMPO evaluated 136 CATs that were carried (unused)
  - Eleven (8.1%) had *double routed* bands (i.e., the band was routed through *both* slits)





## CASE SERIES 1 – IMPACT:

- Double routing is meant to secure the band *ONCE THE TOURNIQUET IS APPLIED*. If prepared and carried in this configuration, the band must be loosened before the CAT can be used. This takes time and may delay hemorrhage control, especially in one-handed applications.
- The CAT should only be prepared in the “*Ready to Go*” position (i.e., band routed through one slit (inner))

***Ready to Go...  
Is Good to Go!***



## CASE SERIES 2:

- Of the 136 carried (unused) CATs that were evaluated, 6 (4.4%) had been “modified” by warfighters:
  - Clipping or shortening of the windlass: 2 (1.5%)
  - Red tip removal (by cutting or scraping): 4 (2.9%)



Shortened windlass



Red tip scraped off



Entire tip cut off

## CASE SERIES 2 – IMPACT:

- *Windlass length* is designed by the manufacturer
  - If shortened, the tourniquet windlass has:
    - Less torque to control bleeding (i.e., a shorter moment arm)
    - Less security when locked into the windlass clip
- The *red tip* makes the band end quicker & easier to see and locate, especially under poor visual conditions
  - Tip removal or band shortening:
    - May fray the end, create snags, and make it difficult to route the band through the buckle
    - May eliminate or damage spot-welds that are necessary for the CAT to tighten properly; lost welds may render the tourniquet useless (due to separation of the band's internal layers)

## SUMMARY:

- In this sample, 11 of 136 (8%) carried (unused) CATs were improperly prepared with double slit routing



- In addition, 6 of the 136 tourniquets (4%) had been “modified” to shorten the windlass or remove the red tip



## DMMPO RECOMMENDATIONS / ACTIONS:

- Ensure carried CATs are in the “Ready to Go” configuration
- Tourniquets are purposefully-designed and precisely engineered lifesaving devices. They should not be altered for any reason.
- Services should review tourniquet training techniques. Units should inspect devices, detect issues, and reinforce proper tourniquet preparation
- If any characteristic of any tourniquet presents a mission or tactical problem (e.g., windlass length, band length, red tip, etc.), inform the DMMPO POC for action

This material is intended for educational and training purposes. If portions are extracted, the following statement must be included:

“Source: Armed Forces Medical Examiner System and DHA Medical Logistics Division”

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### **NOTES of CAUTION:**

- The clinical circumstances and details surrounding emergency treatment in these cases is unknown
- This presentation makes no association between device placement and outcome of treatment
- This case series is drawn from cases with fatal injuries, which may skew data

**For FT2F Comments / Questions / Requests:**  
Contact the Armed Forces Medical  
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