

## FEEDBACK TO THE FIELD (FT2F) #12:

*Tourniquet Use in Operations Enduring Freedom,  
Iraqi Freedom, and New Dawn\**

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\* RE-ISSUE: Original Released AFMES/OAFME July 2012

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

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# FEEDBACK TO THE FIELD (FT2F) #12:

## *Tourniquet Use in Operations Enduring Freedom, Iraqi Freedom, and New Dawn 2010-2012*

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# BACKGROUND:

- The importance of hemorrhage control in battlefield casualties has led to increased emphasis on tourniquet usage and efforts to field the most effective devices\*
- Since 2010, data on deployed tourniquets have been collected by AFMES/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

\* Kragh JF, O'Neil ML , Walters TJ, Dubick MA, Baer DG, Wade CE, Holcomb JB, Blackburne LH. The Military Emergency Tourniquet Program's Lessons Learned With Devices and Designs. *Military Medicine* 2011;176:1144-1152.

# BACKGROUND:

- This study focuses on the two tourniquets most commonly carried and used by US Military personnel:



## ■ CAT

Combat Action  
Tourniquet

[Composite Resources,  
Rock Hill, SC]



## ■ SOFTT

Special Operations  
Forces Tactical  
Tourniquet

[Tactical Medical Solutions,  
Anderson, SC]



# BACKGROUND:

- There are six generations of the CAT
  - Each generation evolved, improving the device
  - No recall of older generations has been required



Most CAT Gen's 5 & 6 have a *red tip*

CAT Gen 6 is longer = 37.5"  
(vs. 33" for CAT Gen 5)



# BACKGROUND:

- There are three generations of the SOFTT
  - SOFTT Gen 1 has “silver” windlass
  - SOFTT Gen 2 has black windlass
  - The newest (Gen 3) “SOFTT-W” has *black windlass & thicker (1½”) band*



## DATA:

- A total of 824 tourniquets were collected & examined between May 2010 and Feb 2012
  - 627 (76%) were CAT
  - 148 (18%) were SOFTT
  - 49 (6%) were other types
- The tourniquets were used/carried in Operation Enduring Freedom (OEF), Operation Iraqi Freedom (OIF), or Operation New Dawn (OND)



## RESULTS: BY RECOVERY SOURCE

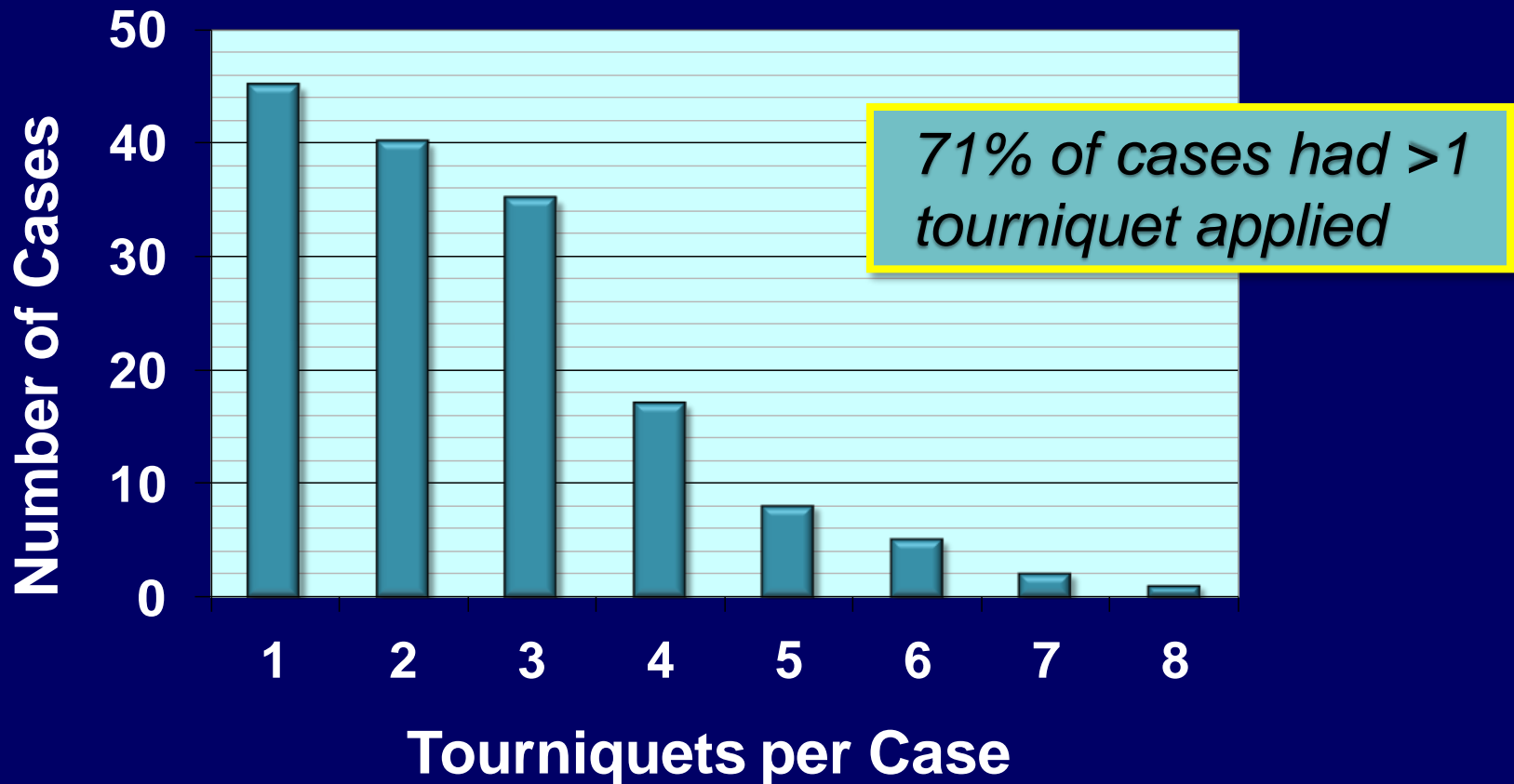
Source	CAT	SOFTT	Other
Used*	293 (75%)	77 (20%)	20 (5%)
Carried**	334 (77%)	71 (16%)	29 (7%)
Total:	627 (76%)	148 (18%)	49 (6%)

\* Used = Retrieved from body at autopsy

\*\* Carried = Retrieved from personal clothing or equipment

# RESULTS: USED TOURNIQUETS PER CASE

- 390 used tourniquets came from 153 cases, for an average of *2.55 tourniquets per case*



# RESULTS: USED TOURNIQUETS BY LOCATION

Location	Right	Left	Total:
Upper Extremity	50 (13%)	62 (17%)	112 (30%)
Lower Extremity	128 (34%)	134 (36%)	262 (70%)
Total:	178 (47%)	196 (53%)	374* (100%)

\* n= 374 because 16 of 390 had no side recorded

*Lower extremity application was most common*

# RESULTS: USED CAT GENERATION BY YEAR

CAT Generation	2010	2011-2012	Total:
1-4	45 (16%)	29 (10%)	74 (26%)
5-6	78 (27%)	136 (47%)	214 (74%)
Total:	123 (43%)	165 (57%)	288* (100%)

\* n= 288 because 5 of 293 not classifiable

*Newer Gen CATs appearing w/ greater frequency*

# RESULTS: CARRIED CAT GENERATION BY YEAR

CAT Generation	2010	2011-2012	Total:
1-4	44 (14%)	35 (11%)	79 (25%)
5-6	63 (19%)	182 (56%)	245 (75%)
Total:	107 (33%)	217 (67%)	324* (100%)

\* n= 324 because 10 of 334 not classifiable

*Newer Gen CATs carried at greater frequency*

# RESULTS: USED & CARRIED SOFTTs

SOFTT Generation	Used	Carried	Total:
1	2 (1%)	16 (11%)	18 (12%)
2	70 (48%)	54 (37%)	124 (85%)
W	5 (3%)	0 (0%)	5 (3%)
Total:	77 (52%)	70 (48%)	147* (100%)

\* n= 147 because 1 of 148 not specified

*Gen-2 was most commonly used & carried SOFTT*

# RESULTS: OTHER *USED* TOURNIQUETS

- Tourniquets other than CAT and SOFTT only represented 5% of *used* tourniquets; however, these still represent significant numbers

Type	Number
NATO	7
TQS	4
Venous	3
Raptor	2
Zimmer	2
Improvised	2
Total:	20



# RESULTS: OTHER *CARRIED* TOURNIQUETS

- Tourniquets other than CAT and SOFTT represented 7% of *carried* tourniquets. The TK4 was the most common

\* Note: No TK4 tourniquets were found in the used category



Type	Number
TK4	17*
Venous	8
Raptor	1
MET	1
ADC	1
CAV	1
Total:	29

# SUMMARY:

- The CAT is the predominant tourniquet carried/used (76%), and the SOFTT is present 18% of the time; however, *these are not the sole devices encountered on the battlefield*
  - Other tourniquets represent 6% of the total
- The types of tourniquets in the “used” and “carried” categories did not differ significantly
- Six generations of the CAT have been fielded. Generations 5 & 6 are being carried/used with increased frequency

# SUMMARY:

- Three generations of the SOFTT have been fielded. Gen 2 is currently the most commonly carried/used
- Two or more tourniquets were applied in 71% of cases (range = 2-8). On average, 2.55 tourniquets were applied per case
- Lower extremity tourniquet application was more than twice as common as upper extremity application (2.3:1 ratio)

## NOTES of CAUTION:

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

# DMMPO RECOMMENDATIONS :

- Military training centers should utilize data from this presentation to educate deploying medical personnel
- First Responders should be aware that tourniquet use on the battlefield often exceeds two per casualty
- Although CAT & SOFTT are the predominant tourniquets carried/used by warfighters, First Responders should also be familiar with other tourniquets that might be encountered

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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