

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]



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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*



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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

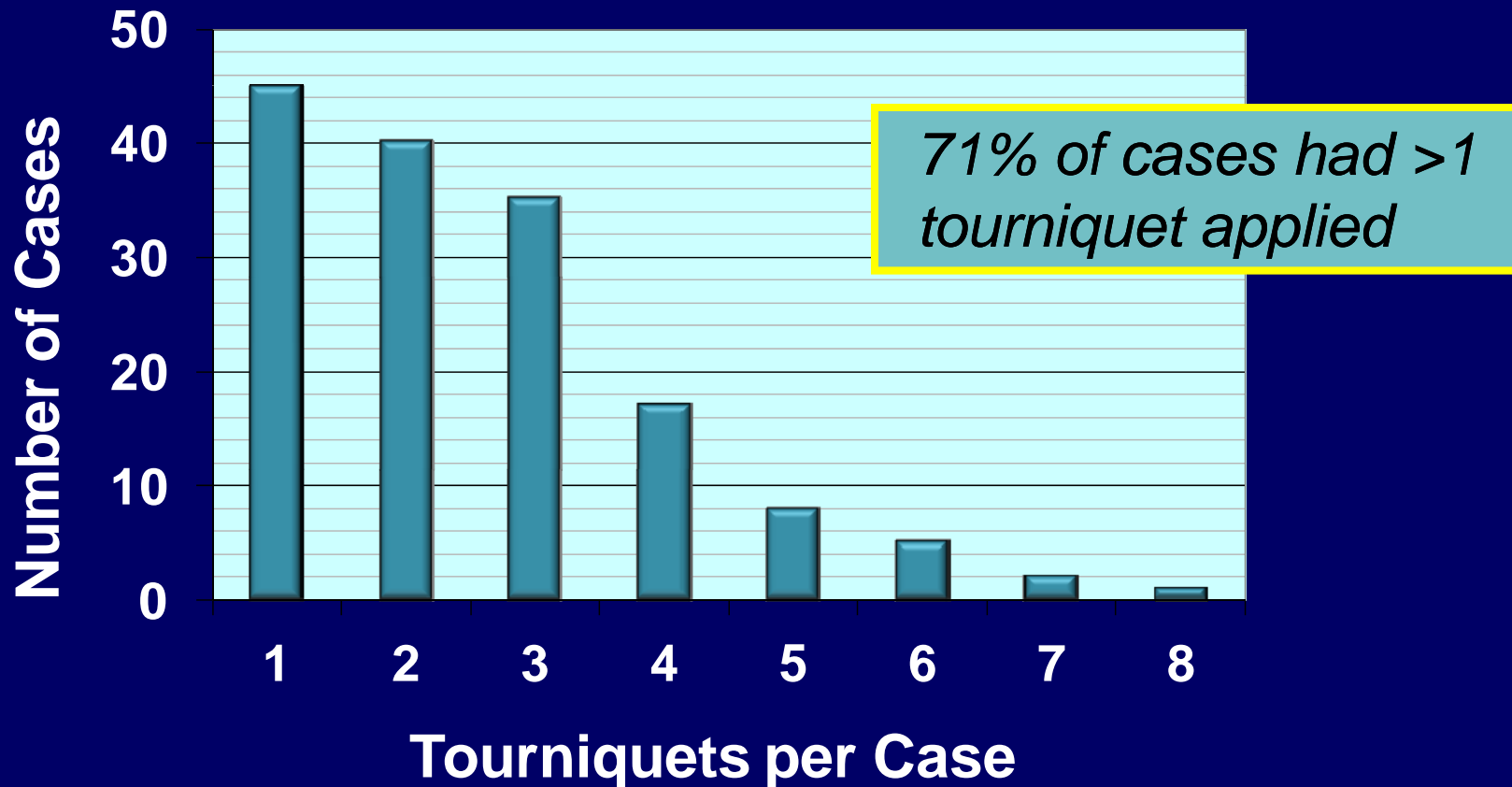
Source	CAT	SOFTT	Other
Used*	293 (75%)	77 (20%)	20 (5%)
Carried**	334 (77%)	71 (16%)	29 (7%)
Total:	627 (76%)	148 (18%)	49 (6%)

* 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



TK4

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

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