

INTRODUCTION

- Military and civilian trauma centers and systems evaluate injury fatalities to identify opportunities that will optimize performance and improve outcomes.
- Both systems must continue to:
 - translate efforts from one another.
 - institutionalize advancements.
 - create enduring solutions that alleviate fatality burden, both at home and abroad and during peacetime and war.
- Military casualty and fatality reviews have:¹⁻⁵
 - guided the evolution of military trauma system performance improvement.
 - spurred development of new training and technology.
 - set priorities for research.
 - united prehospital and hospital efforts.
 - promoted injury and disease prevention.
 - improved the delivery of care.
 - ultimately decreased morbidity and mortality.
- The United States Special Operations Command (USSOCOM) has been continuously engaged in global activities since it was established in 1987.⁶
- USSOCOM organizes, trains, equips, and provides fully capable special operations forces to support US national defense through the precise and timely execution of complex special operation missions.⁶
- Training for and conducting such missions inherently involves risk of injury and death.
- As the need to complete a mission may supersede a risk assessment, mitigating morbidity and mortality during these missions must remain the priority for supporting medical and trauma systems.

OBJECTIVES

- The purpose of this study was to:
 - evaluate and describe characteristics of USSOCOM fatalities.
 - introduce more concise standard for terminology.
 - refine foundation for future epidemiological efforts.

METHODS

- A retrospective review and descriptive analysis was conducted on:
 - USSOCOM fatalities who died while performing duties.
 - Between September 11, 2001 to September 10, 2018 (n=614).
- Each fatality was reviewed individually with designations validated against medical documentation and organizational records.
- Characteristics analyzed included subcommand, military activity, operational posture, and manner of death.

RESULTS

- Of 614 USSOCOM fatalities:
 - Median age: 30 (range: 18-57)
 - Most were male (n=605; 98.5%)
 - Most were mid-grade enlisted (E5-E6) (43.3%)
- Leading causes of death was injury (97.7%) from:
 - Multiple/blunt force (34.5%)
 - Blast (30.7%)
 - Gunshot wound (GSW) (30.3%)
 - Other (4.5%)
- Most died:
 - Due to homicide (66.0%)
 - Outside the US (87.1%)
 - During combat operations (85.3%)
 - In the prehospital environment (91.5%)
 - On the same day of injury (90.4%)
- Causes of death in homicides (n=405; 66.0%):
 - GSW (43.7%)
 - Blast (42.2%)
 - Multiple/blunt force (13.8%)
 - Other (0.2%)
- Causes of death in accidents (n=187; 30.5%):
 - Multiple/blunt force (80.7%)
 - Mechanisms were mostly aircraft mishaps (62.9%), particularly rotary-wing aircrafts (68.4%)
 - Blast (6.4%)
 - GSW (0.5%)
 - Other (12.3%)
- More than half of all fatalities resulted from injuries while mounted (n=335; 54.6%), of which most were on ground vehicles (53.7%), followed by rotary wing (37.3%), and fixed wing (9.0%) aircraft.

TABLE 1. Study characteristics by subcommand for US Special Operations Command fatalities (N=614) who died from September 11, 2001 to September 10, 2018.

	Total		Subcommand				p-value*			
	n	%	AFSOC	MARSOC	NSWC	USASOC				
Fatalities	614	100.0	57	9.3	44	7.2	98	16.0	415	67.6
Age, median (range), years	30	18-57	30	21-45	28	21-39	30	19-44	30	18-57
Male	605	98.5	55	96.5	44	100.0	98	100.0	408	98.3
Grade										
Junior enlisted (E3-E4)	74	12.1	7	12.3	3	6.8	5	5.1	59	14.2
Mid-grade enlisted (E5-E6)	266	43.3	24	42.1	31	70.5	44	44.9	167	40.2
Senior enlisted (E7-E9)	171	27.9	6	10.5	6	13.6	40	40.8	119	28.7
Warrant officer (W1-W5)	24	3.9	0	0.0	0	0.0	0	0.0	24	5.8
Junior officer (O1-O3)	51	8.3	14	24.6	4	9.1	5	5.1	28	6.7
Senior officer (O4-O6)	28	4.6	6	10.5	0	0.0	4	4.1	18	4.3
Military Occupational Specialty										
Combat	468	76.2	19	33.3	39	88.6	89	90.8	321	77.3
Combat support	146	23.8	38	66.7	5	11.4	9	9.2	94	22.7
Military Activity										
Combat Operations**	524	85.3	41	71.9	30	68.2	74	75.5	379	91.3
Afghanistan	395	75.4	36	67.8	30	100.0	59	79.7	270	71.2
Iraq	129	24.6	5	12.2	0	0.0	15	20.3	109	28.8
Non-Combat Operations***	90	14.7	16	28.1	14	31.8	24	24.5	36	8.7
Manner of Death										
Accident	187	30.5	42	73.7	18	40.9	27	27.6	100	24.1
Homicide	405	66.0	15	26.3	26	59.1	65	66.3	299	72.0
Hostile, killed-in-action	330	81.5	12	80.0	16	61.5	60	62.3	242	80.9
Hostile, died-of-wounds	39	9.6	0	0.0	2	7.7	4	6.2	33	11.0
Non-hostile	36	8.9	3	20.0	8	30.8	1	1.5	24	8.0
Natural	13	2.1	0	0.0	0	0.0	3	3.1	10	2.4
Suicide	5	0.8	0	0.0	0	0.0	2	2.0	3	0.7
Undetermined	4	0.7	0	0.0	0	0.0	1	1.0	3	0.7
Mechanism of Injury or Illness										
Firearm	182	29.6	8	14.0	17	38.6	24	24.5	133	32.0
Explosive	144	23.3	4	7.0	9	20.5	11	11.2	160	38.6
Improvised explosive	40	21.7	2	50.0	2	22.2	2	18.2	34	21.3
Conventional explosive	234	38.1	45	78.9	18	40.9	60	61.2	111	26.7
Non-Explosive	152	24.6	41	91.1	14	77.8	37	61.7	80	54.1
Aircraft mishap	96	15.6	37	90.2	14	100.0	4	10.8	126	78.8
Accident	55	36.2	4	9.8	0	0.0	33	89.2	18	30.0
Homicide	1	0.7	0	0.0	0	0.0	0	0.0	1	1.7
Undetermined	36	15.4	1	2.2	1	5.6	6	10.0	28	25.2
Ground vehicle mishap	35	9.7	1	100.0	1	100.0	6	100.0	27	96.4
Accident	1	2.6	0	0.0	0	0.0	0	0.0	1	3.6
Homicide	21	4.8	0	0.0	0	0.0	8	13.3	10	9.0
Parachute mishap	12	5.1	0	0.0	0	0.0	7	11.7	5	4.5
Accident	10	83.3	0	0.0	0	0.0	5	71.4	5	100.0
Homicide	1	8.3	0	0.0	0	0.0	1	14.3	0	0.0
Undetermined	1	8.3	0	0.0	0	0.0	1	14.3	0	0.0
Other***	13	5.5	0	0.0	3	16.7	2	3.3	8	7.2
Disease	14	2.3	0	0.0	0	0.0	3	3.1	11	2.7
Cause of Death										
Injury	600	97.7	57	100.0	44	100.0	95	96.9	404	97.3
Blast injury	184	30.7	4	7.0	9	20.5	11	11.6	160	38.6
Gunshot wound	182	30.3	8	14.0	17	38.6	24	25.3	133	32.9
Multiple/Blunt force injury	207	34.5	44	77.2	15	34.1	52	54.7	96	23.8
Other	27	4.5	1	1.8	3	6.8	8	8.4	15	3.7
Disease	14	2.3	0	0.0	0	0.0	3	3.1	11	2.7
Cardiovascular	9	64.3	0	0.0	0	0.0	3	100.0	6	54.5
Other****	5	39.7	0	0.0	0	0.0	0	0.0	5	45.5
Date of Injury to Date of Death										
Same day	555	90.4	56	98.2	43	97.7	90	91.9	366	88.2
Different day	59	9.6	1	1.8	1	2.3	8	8.2	49	11.8
Different days (median (range))	2	1-56	1	1-10	2	1-3	3	1-56	2	1-40
Location of Death										
Prehospital (Role 1)	562	91.5	57	100.0	41	93.2	94	95.9	370	89.2
Hospital	52	8.5	0	0.0	3	6.8	4	4.1	45	10.8
Role 2	12	23.1	0	0.0	1	33.3	1	25.0	10	22.2
Role 3	18	34.6	0	0.0	1	33.3	2	50.0	15	33.3
Role 4	22	42.3	0	0.0	1	33.3	1	25.0	20	44.4

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Use of the Joint Trauma System's Department of Defense Trauma Registry (DoDTR) data from this presentation without expressed acknowledgment is prohibited.

CONCLUSIONS

- Most USSOCOM fatalities died from injury, outside the US, in the prehospital setting, the same day of injury or onset of acute symptoms, and during combat operations.
- Current and future efforts from the JTS and USSOCOM must focus on:
 - Optimization of prehospital capabilities
 - innovative strategies that expeditiously link injured patients to advanced resuscitative and surgical capabilities
 - contingency planning that involves trauma system support for combat and non-combat activities worldwide.
- Partnerships between the DoD and civilian sector should be leveraged for unified prehospital-hospital team opportunities.
- As accidents were second only to homicides as the most common manner of death, novel strategies to further mitigate injury on aircraft and ground vehicles should also be investigated to reduce the proportion of mounted injuries and resultant fatalities.
- Safety centers from each military Service should continue to work closely with USSOCOM, AFMES, and the JTS to develop strategies that reduce mortality from trauma incurred during combat and non-combat activities.
- Overarching injury prevention strategies should be reviewed by leadership for additional refinement, standardization, and mandate of doctrine and practices.

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