

73rd MORSS CD Cover Page

UNCLASSIFIED DISCLOSURE FORM CD Presentation

712CD

For office use only 41205

21-23 June 2005, at US Military Academy, West Point, NY

Please complete this form 712CD as your cover page to your electronic briefing submission to the MORSS CD. Do not fax to the MORS office.

Author Request (To be completed by applicant) - The following author(s) request authority to disclose the following presentation in the MORSS Final Report, for inclusion on the MORSS CD and/or posting on the MORS web site.

Name of Principal Author and all other author(s):

Jay Walker, Mike Galarneau

Principal Author's Organization and address:

Naval Health Research Center

PO Box 85122

San Diego, CA 92186-5122

Phone: 619-553-8393

Fax: 619-553-8607

Email: walker@nhrc.navy.mil

Original title on 712 A/B: Preliminary Results from the Navy-Marine Corps Combat Trauma Registry During Operation Iraqi Freedom

Revised title: Selected Results from the Navy-Marine Corps Combat Trauma Registry During Operation Iraqi Freedom

Presented in (input and Bold one): (**WG23** , CG___, Special Session ___, Poster, Demo, or Tutorial):

This presentation is believed to be:
UNCLASSIFIED AND APPROVED FOR PUBLIC RELEASE

Report Documentation Page

*Form Approved
OMB No. 0704-0188*

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE 22 JUN 2005	2. REPORT TYPE N/A	3. DATES COVERED -	
4. TITLE AND SUBTITLE Selected Results from the Navy-Marine Corps Combat Trauma Registry During Operation Iraqi Freedom		5a. CONTRACT NUMBER	
		5b. GRANT NUMBER	
		5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)		5d. PROJECT NUMBER	
		5e. TASK NUMBER	
		5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Health Research Center PO Box 85122 San Diego, CA 92186-5122		8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)	
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release, distribution unlimited			
13. SUPPLEMENTARY NOTES See also ADM201946, Military Operations Research Society Symposium (73rd) Held in West Point, NY on 21-23 June 2005. , The original document contains color images.			
14. ABSTRACT			
15. SUBJECT TERMS			
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified	UU
			18. NUMBER OF PAGES 23
			19a. NAME OF RESPONSIBLE PERSON



Selected Results from the Navy-Marine Corps Combat Trauma Registry During Operation Iraqi Freedom

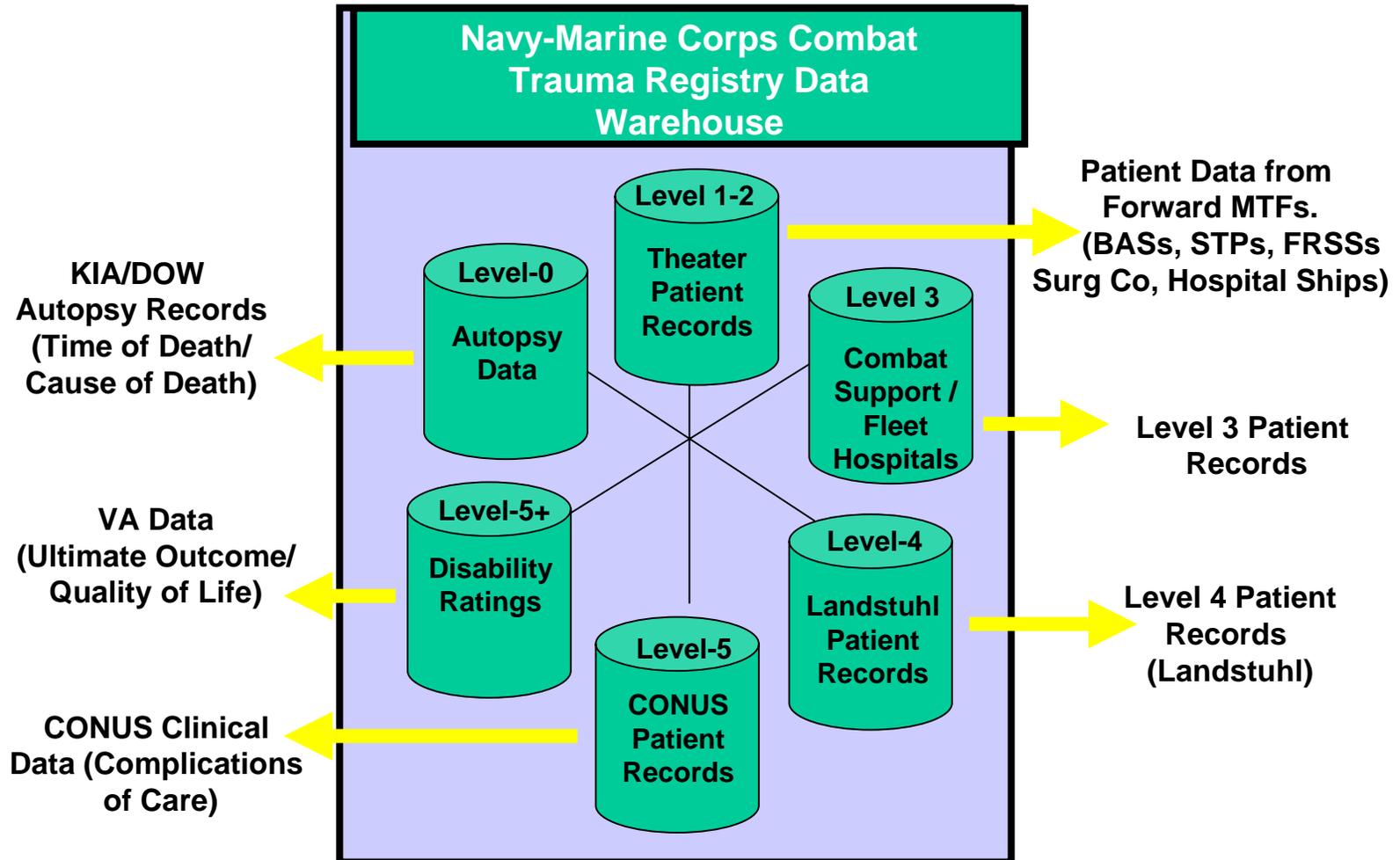
Jay Walker – Mike Galarneau
Naval Health Research Center



Navy-Marine Corps COMBAT TRAUMA REGISTRY
Naval Health Research Center San Diego, CA

23 June 05
Sponsored by:
Office of Naval Research
Marine Corps Systems Command &
Marine Corps Warfighting Lab

Navy – Marine Corps Combat Trauma Registry



Theater Medical Registry Record – Demographic Information

**Bravo Surgical Co.,
FRSS3/STP7,
2/2 BAS, etc.**

Facility Type: Base-X
 GP CBPS Hard Bldg

**Al Asad, Korean
Village, Blue Diamond,**

Doe, John B.
123 45 6789

Theater Medical Registry Record					
MTF Designation: [Redacted]	Location: [Redacted]	Facility Type: <input type="checkbox"/> Base-X <input type="checkbox"/> GP <input type="checkbox"/> CBPS <input type="checkbox"/> Hard Bldg	Casualty Name (Last, First MI): [Redacted]	Casualty SSN: [Redacted] - [Redacted] - [Redacted]	
MTF Casualty Received From: [Redacted]		Rank: [Redacted]	Date of Birth: [Redacted]	Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female	Unit: [Redacted]
Date/Time of Injury: [Redacted] DDMMYY/TIME	Date/Time Arrived: [Redacted] DDMMYY/TIME	Prefer Military Rank vice Paygrade: 1st LT, Tech Sgt, Airman, PO4, etc.		22 JUN 1988 <input checked="" type="checkbox"/> Male <input type="checkbox"/> Female	3/10, 2D Recon Bn, MWSS-273, etc.

**Field, 2D LAR BAS,
FRSS2/STP4, etc.**

**11NOV04/1520,
27 APR 04/1945**

Theater Medical Registry Record – Protective Gear

Protection:	Not Worn	Worn	Struck	Penetrated
<input type="checkbox"/> UNK				
Helmet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eye Wear: Wiley-X <input type="checkbox"/> / ESS <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flak Vest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceramic Plate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Axillary/Deltoid protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lower extremity protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other: _____ (Face, Ears, etc...)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Identify any additional protective equipment worn by patient in this section.

Theater Medical Registry Record – Vitals / Treatments

Vitals:			
Time	<input type="text"/>	<input type="text"/>	<input type="text"/>
Pulse	<input type="text"/>	<input type="text"/>	<input type="text"/>
Temp	<input type="text"/>	<input type="text"/>	<input type="text"/>
B/P	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>
Resp	<input type="text"/>	<input type="text"/>	<input type="text"/>
SpO2	<input type="text"/> %	<input type="text"/> %	<input type="text"/> %
Tx & Procedures:			
Sedated	<input type="text"/>		
Chem Paralyzed	<input type="text"/>		
Intubated	<input type="text"/>		
CRIC	<input type="text"/>		
Needle Decomp	<input type="text"/>		
Chest Tube	<input type="checkbox"/> L side <input type="checkbox"/> R side <input type="checkbox"/> Blood <input type="checkbox"/> Air		
I/O Line	<input type="text"/>		
Colloid (HTS/Albumin)	<input type="text"/> ml		

Since only 3 ()
somewhere n

Crystalloid (LR/NS) Other: <input type="text"/>	<input type="text"/> ml
Tourniquet	Time on <input type="text"/> Time off <input type="text"/>
Collar/C-Spine	<input type="text"/>
Hemostat (e.g. Quick Clot)	<input type="text"/>
Oxygen	<input type="text"/> Liters/min.
RBC	<input type="text"/> units
FFP	<input type="text"/> units
CRYO	<input type="text"/> units
Plts	<input type="text"/> Packs
HBOC	<input type="text"/> ml
Walking Blood Bank	<input type="text"/> units
EXT Fixation (location)	<input type="text"/>
Long Bone Splint	<input type="text"/>

initial,

Theater Medical Registry Record – Injury Descripton, OR/Vent/ICU

Illustrate injuries by drawing.

INJURY Description (Location, nature and size in cm.) Be specific – Enter free text type in gray box, 500 character maximum

Use standard medical abbreviations and terms

- AB Abrasion
- AMP Amputation
- AV Avulsion
- BL Bleeding
- B Burn
- Deform Deformity
- ECC Ecchymosis
- FB Foreign Body
- H Hematoma
- LAC Laceration
- PW Puncture Wound
- P Pain
- FX Fracture
- SS Seatbelt Sign
- SW Stab Wound
- GSW Gun Shot Wound

Date and Start/Stop times

OR Start <input type="text"/> DDMMYY/TIME Stop <input type="text"/> DDMMYY/TIME	vent On <input type="text"/> DDMMYY/TIME Off <input type="text"/> DDMMYY/TIME	CU In <input type="text"/> DDMMYY/TIME Out <input type="text"/> DDMMYY/TIME
Provider: <input type="text"/>	Specialty: <input type="text"/>	Date: <input type="text"/> DDMMYY/TIME
Medical Visit: <input type="checkbox"/> Sick Call <input type="checkbox"/> Trauma		Treatment: <input type="checkbox"/> Initial <input type="checkbox"/> Follow-Up

Specify Sick Call or Trauma

Specify Initial or Follow-up

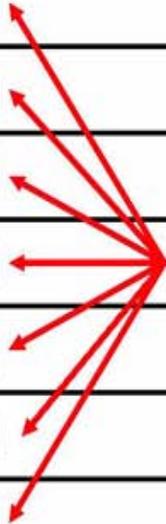
Theater Medical Registry Record – Discharge Summary Information

Region	<input type="checkbox"/> Discharge Summary Information (Diagnosis, Procedures and Complications)
Head & Neck (incl. C-Spine)	<input type="checkbox"/>
Chest (incl. T-Spine)	<input type="checkbox"/>
Abdomen (incl. L-Spine)	<input type="checkbox"/>
Upper Extremities	<input type="checkbox"/>
Pelvis	<input type="checkbox"/>
Lower Extremities	<input type="checkbox"/>
Skin	<input type="checkbox"/>
Damage Control Procedure? <input type="checkbox"/> Y <input type="checkbox"/> N Hypothermic? <input type="checkbox"/> Y <input type="checkbox"/> N Coagulopathy? <input type="checkbox"/> Y <input type="checkbox"/> N Class of Hemorrhage: I <input type="checkbox"/> II <input type="checkbox"/> III <input type="checkbox"/> IV <input type="checkbox"/> Shock? <input type="checkbox"/> Y <input type="checkbox"/> N	

Damage Control Procedures: Emergent, non-definitive surgical procedure generally performed at an FRSS or Surgical Company

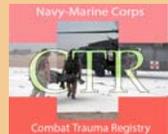
Short explanation of diagnosis, procedures performed, and/or complications.

Each field has 350 character limit in Word document format



**Wounded in Action (WIA)
Length of Stay by Disposition
Bravo Surgical Co. April 3 – May 11, 2003**

Length of Stay	Return to Duty	Air Evac	Ground Evac	Morgue *	Total	%
1 Hour or Less	1	6	-	-	7	3.5%
1 to 6 Hours	2	59	4	2	67	33.8%
6 to 12 Hours	-	40	-	1	41	20.7%
12 to 24 Hours	3	68	-	1	72	36.4%
24 to 48 Hours	-	8	-	1	9	4.5%
Unknown Duration	2	-	-	-	2	1.0%
Total	8	181	4	5	198	100%



**Non-Battle Injury Patients (NBI)
Length of Stay by Disposition
Bravo Surgical Co. April 3 – May 11, 2003**

Length of Stay	Return to Duty	Air Evac	Ground Evac	Total	%
1 Hour or Less	34	6	5	45	20.3%
1 to 6 Hours	35	34	1	70	31.5%
6 to 12 Hours	-	35	-	35	15.8%
12 to 24 Hours	4	43	-	47	21.2%
24 to 48 Hours	5	14	-	19	8.6%
48 to 72 Hours	1	1	-	2	0.9%
72 to 96 Hours	2	-	-	2	0.9%
Unknown Duration	2	-	-	2	0.9%
Total	83	133	6	222	100%



Disease Patients (DIS)
Length of Stay by Disposition
Bravo Surgical Co. April 3 – May 11, 2003

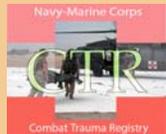
Length of Stay	Return to Duty	Air Evac	Ground Evac	Total	%
1 Hour or Less	53	2	-	55	24.7
1 to 6 Hours	61	16	1	78	35.0%
6 to 12 Hours	5	11	-	16	7.2%
12 to 24 Hours	24	24	1	48	21.5%
24 to 48 Hours	13	8	-	21	9.4%
48 to 72 Hours	2	2	-	4	1.8%
72 to 96 Hours	1	-	-	1	0.4%
Total	159	63	1	223	100%



**US Navy, Marine Corps and Army
Primary Mechanism for Wounded in Action (WIA) Personnel
Sample of April 2004 – May 2005**

Primary Mechanism of Injury	WIA	Percent
IED	457	37.5 %
Fragments (Unspecified)	189	15.5%
Gunshot Wounds (GSW)	183	15.0%
Blast	106	8.7 %
Mortar	102	8.4 %
RPG	48	3.9 %
Mine	17	1.4 %
Motor Vehicle	14	1.1 %
Blunt Trauma	13	1.1 %
Grenade	12	1.0%
Fall	10	0.8%
Burns	9	0.7%
Aircraft Accident	5	0.4%
Other/Not Stated	53	4.3%
Total	1218	100.0 %

Service	WIA	%
Marines	933	76.6%
Army	183	15.0%
Navy	48	3.9%
Air Force	1	0.1%
Not Recorded	53	4.4%
Total	1218	100.0%



Anatomical Location of Injury

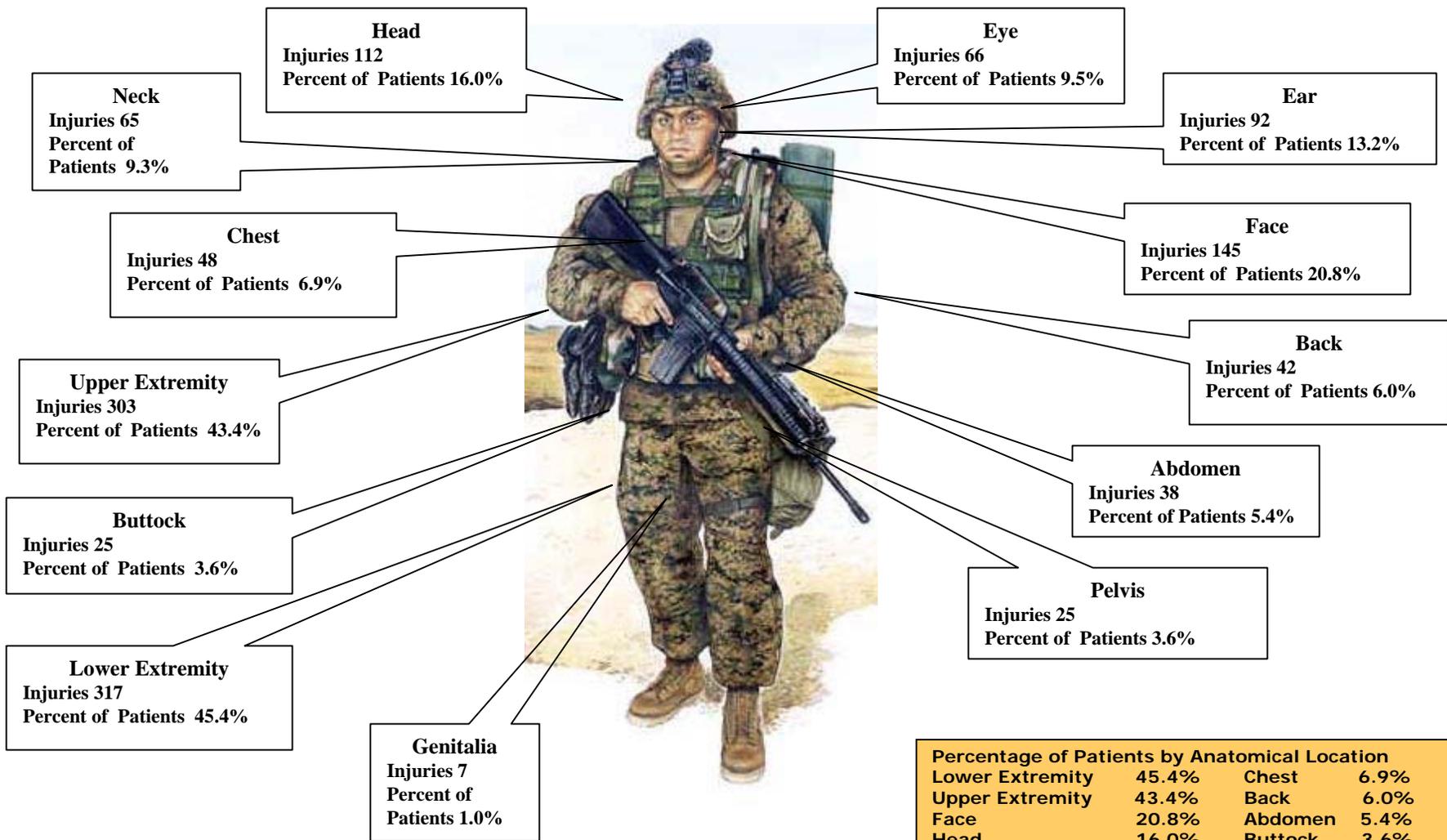


Naval Health Research Center

Sponsored by the Office of Naval Research
Marine Corps Systems Command and
Marine Corps Warfighting Lab

**US Navy, Marine Corps and
Army - WIA only**
Sample of April 2004-May 2005

Total Patients* 698 / Total Injuries 1285



Lower Extremity	45.4%	Chest	6.9%
Upper Extremity	43.4%	Back	6.0%
Face	20.8%	Abdomen	5.4%
Head	16.0%	Buttock	3.6%
Ear	13.2%	Pelvis	3.6%
Eye	9.5%	Genitalia	1.0%
Neck	9.3%		

*Number of clinically assessed patients

**US Navy, Marines and Army
Wounded in Action
Primary Mechanism of Injury by
Anatomical Location
Sample of April 2004– May 2005**

*Percentages below will not add up to 100% due to injuries to multiple anatomical locations.

Primary Mechanism of Injury	Clinical Assess.
IED	278
Fragments (Unspec.)	105
Gunshot Wounds	111
Blast	38
Mortar	73
RPG	37
Mine	8
Motor Vehicle	10
Blunt Trauma	0
Grenade	7
Fall	9
Burns	4
Aircraft Accident	4
Other/Not Stated	14
Totals	698

IED - 278 Patients, 601 Locations (2.16 Locations/Patient)

Head 60 21.6% of IED Patients		Chest 15 5.4%		Back 17 6.1%		Buttock 11 4.0%	
<u>Face</u> 88 31.7%	Upper 135 48.6%	Pelvis 6 2.2%	Genitalia 2 0.7%				
<u>Eye</u> 46 16.5%	Lower 111 39.9%	<u>Neck</u> 31 11.2%	Abdomen 14 5.0%				
<u>Ear</u> 65 23.4%							

Fragments - 105 Patients, 159 Locations (1.51 Locations/Patient)

Head 7 6.7% of Fragment Patients		Chest 7 6.7%		Back 5 4.8%		Buttock 3 2.9%	
Face 11 10.5%	Upper 52 49.5%	Pelvis 5 4.8%	Genitalia 0 0.0%				
Eye 3 2.9%	Lower 48 45.7%	Neck 11 10.5%	Abdomen 4 3.8%				
Ear 3 2.9%							

GSW 111 Patients 151 Locations (1.36 Locations/Patient)

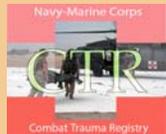
Head 5 4.5% of Gunshot Wound Patients		Chest 9 8.1%		<u>Back 8 7.2%</u>		Buttock 5 4.5%	
Face 13 11.7%	Upper 35 31.5%	Pelvis 5 4.5%	Genitalia 1 0.9%				
Eye 2 1.8%	Lower 52 46.8%	Neck 4 3.6%	<u>Abdomen 9 8.1%</u>				
Ear 3 2.7%							

Mortar 73 Patients 135 Locations (1.85 Locations/Patient)

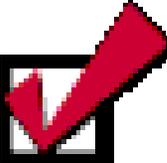
Head 20 27.4% of Mortar Patients		<u>Chest 9 12.3%</u>		Back 5 6.8%		Buttock 3 4.1%	
Face 8 11.0%	Upper 25 34.2%	Pelvis 3 4.1%	Genitalia 1 1.4%				
Eye 2 2.7%	<u>Lower 43 58.9%</u>	Neck 7 9.6%	Abdomen 4 5.5%				
Ear 5 6.8%							

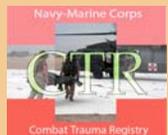
RPG 37 Patients 78 Locations (2.11 Locations/Patient)

Head 3 8.1% of RPG Patients		Chest 1 2.7%		Back 1 2.7%		<u>Buttock 2 5.4%</u>	
Face 8 21.6%	Upper 24 64.9%	<u>Pelvis 5 13.5%</u>	<u>Genitalia 1 2.7%</u>				
Eye 2 5.4%	Lower 20 54.1%	Neck 4 10.8%	Abdomen 2 5.4%				
Ear 5 13.5%							



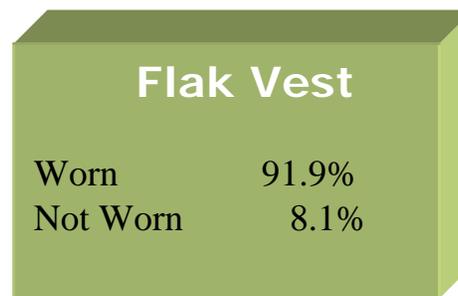
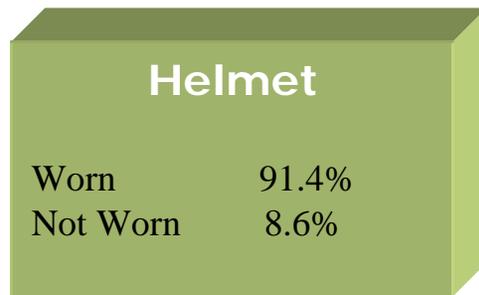
Protective Gear Status Captured by the Combat Trauma Registry

	Worn	Not Worn
Hit and killed	X	X
Hit and wounded		
Hit and not wounded (protected)	X	
Not Hit	X	X



US Navy, Marine Corps and Army WIA Casualties Wearing Protective Equipment at Time of Injury

Sample of April 2004- May 2005



Patients = 1218



Primary Mechanism of Injury by Use of Protective Gear (Helmets, Flak Vests, Ceramic Plates) for US WIA

Mechanism of Injury	Not Wearing	Wearing
Mortar/Rocket	30.1%	4.9%
Blast (unspec)	25.2%	7.5%
Fragment	17.5%	15.5%
IED	7.8%	41.9%
RPG	4.9%	4.1%
Fall	2.9%	0.7%
Gunshot Wound	1.9%	16.3%
Other	9.7%	9.1%
Total	100.0%	100.0%
n-size	103	937

Surgical Procedures by Casualty Type

Sample of WIA and NBI Patients April 2004 – May 2005

Wounded in Action (WIA) Surgical Patients n=334		
Level II Surgical Procedures	# of Procedures	% of Surgical Patients*
Irrigation & Debridement	236	70.7%
Exploratory Laparotomy	49	14.7%
Tissue Exploration	48	14.4%
External Fixation	37	11.1 %
Orthopedic Exploration	32	9.6 %
Chest Tube	26	7.8%
Fasciotomy	22	6.6 %
Vascular Ligation	22	6.6 %
Fracture Reduction	15	4.5 %
Amputation	13	3.9 %
Vascular Shunt	12	3.6 %
Colon Resection	11	3.3 %
Thoracotomy	8	2.4 %
Surgical Airway	3	0.9%
Other	5	1.5%
Total Procedures	539	

Non-Battle Injury (NBI) Surgical Patients n=29		
Level II Surgical Procedures	# of Procedures	% of Surgical Patients*
Irrigation & Debridement	17	58.6 %
Fracture Reduction	11	37.9%
Tissue Exploration	4	13.8%
Orthopedic Exploration	3	10.3%
External Fixation	1	3.4%
Amputation	1	3.4%
Chest Tube	1	3.4%
Exploratory Laparotomy	1	3.4 %
Vascular Repair	1	3.4 %
Total Procedures	40	

***Percentages will not add up to 100% due to multiple surgical procedures per patient.**



Theater Data Collection Resources

Iraq CTR Registrars

In contact with all theater MTFs & providers.
Copies X-rays from theater digital radiography units.
Troubleshoots data collection issues & provide training.

Iraq CTR Help-Desk

ctr@nhrc.navy.mil

Provides immediate contact between providers, Iraq registrars
and the Naval Health Research Center

Web-Based Navy-Marine Corps CTR Form

<https://fieldmedical.mtstech.com/jsf-ctrform/ctrf/ctr.jsp>



Secondary Data Sources

Marine Corps Personnel Casualty Reports (PCRs)

Provide event details not available from Clinical Records

Digital Radiography Images

Identified in I & II MEF FRAGO that all films go to NHRC

Over 2000 films received from OIF-2

Radiologist interpreting images for incorporation into CTR

Current Initiatives

Head/Neck/Face Injury Study

Extremity Injury Study

Injury Scoring

Injury Severity Score (ISS)
Abbreviated Injury Scale (AIS-2005)
ICD-9.

Scaling Systems for Organ Specific Injuries

To be Used in Addition to Injury Severity Scoring Systems.
Will Provide Clinical Frames of Reference for Comparing Injury Levels.
Selected Scaling Systems for Navy-Marine Corps CTR

Liver Injury Scale.
Eye Injury Scale.
Mangled Extremity Severity Score.
Colon Injury Scale.
Kidney Injury Scale.

Navy-Marine Corps CTR Clinical Advisory Board

Dr. John Perciballi -	Chief Clinical Advisor
Dr. HR Bohman	ABD/Colon/Rectal Clinical Advisor
Dr. Peter Rhee	General Trauma Surgery Clinical Advisor
Dr. John Labanc	Oral, Maxillofacial Clinical Advisor
Dr. Marlene DiMaio-	Orthopedics Clinical Advisor
Dr. Mike Mazurek	Orthopedic Surgery Clinical Advisor
Pending	Anesthesia Clinical Advisor
Pending	Emergency Medicine Clinical Advisor
Pending	Neuro Surgery Clinical Advisor
Pending	Ear, Nose, Throat Clinical Advisor
Pending	Psychology Clinical Advisor
Pending	Ob/Gyn Clinical Advisor