



## Introduction

As of March 2003, the United States military had already been involved in fighting the Taliban in Afghanistan under Operation Enduring Freedom (OEF) for almost one and a half years. But the start of Operation Iraqi Freedom (OIF) dramatically changed the scope of neurotrauma seen by the military medical community. As we reflect on the last 15 years since "shock and awe" started OIF, it is important to understand the lessons learned from these conflicts and how to apply these in the future.

## Methods

A military neurosurgery bibliography was created by running two search strategies in PubMed and Embase. The results were then individually reviewed for applicability and duplicates and subsequently categorized. Articles from conflicts since 9/11/01 were identified and reviewed for general themes.

## Results

Over 1200 articles were initially identified. Of these only 327 were related to military neurosurgery. 116 of which were related to military neurosurgery since 9/11/01. A review of these articles resulted in the following areas of interest: decompressive craniectomy after severe TBI and subsequent treatment issues, spine surgery, and aeromedical transport. These were further explored to determine specific lessons learned from each topic as well as to identify areas for further research and improvement.

### Summary of Lessons Learned

1. Decompressive craniectomies can save lives in a downrange environment. Further outcome based studies are needed to better understand long term effect that this treatment has.
2. Performing spine surgery downrange needs to be balanced by several factors, most importantly being chances of neurological improvement versus the mechanism of injury, operational tempo, and medical evacuation capability to higher levels of care.
3. The Critical Care Air Transport Teams (CCATT) were crucial in the safe evacuation and transport of patients out of theater. Lack of air superiority can directly impact aeromedical evacuation capability and can have a significant effect upstream on patient care.
4. The uniqueness of military neurosurgery needs to be continuously defined and be a part of training of any neurosurgeon involved with the military- active duty, reserve, or in-training status.

5. The published military neurosurgery literature needs to provide the foundation for all recommendations that supply the continuously updated Clinical Practice Guidelines (CPG's)

Neurosurgery Clinical Practice Guidelines		
JOINT TRAUMA SYSTEM CLINICAL PRACTICE GUIDELINE (JTS CPG)		
Neurosurgery and Severe Head Injury (CPG ID:30)		
JOINT TRAUMA SYSTEM CLINICAL PRACTICE GUIDELINE (JTS CPG)		
Neurosurgery and Severe Head Injury (CPG ID:30)		
JOINT TRAUMA SYSTEM CLINICAL PRACTICE GUIDELINE (JTS CPG)		
Cervical and Thoracolumbar Spine Injury Evaluation, Transport, and Surgery in the Deployed Setting (CPG ID: 15) Guidance for providing the best care to patients who suffer a spine or spinal cord injury.		
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First Public: Opinions, int endorsed by		
	First Publication Date: 01 Jul 2010	Publication Date: 05 Aug 2016
		Supersedes CPG dated 09 Mar 2010
Opinions, interpretations, conclusions, and recommendations are those of the authors and are not necessarily endorsed by the Services or DoD.		

## Conclusions

After more than 15 years of conflict, military neurosurgery has contributed significantly to the literature and has provided the foundation to extract valuable lessons that need to be utilized to improve our current care model and to shape the training for the next generation of military neurosurgeons. While aimed at the military neurosurgeon, these lessons are often applicable to anyone taking care of neurotrauma.

## Learning Objectives

- By the conclusion of this session, participants should be able to:
- 1) Describe the unique aspects of military neurosurgery.
  - 2) Discuss the role of decompressive craniectomy in severe TBI in a combat hospital setting.
  - 3) Be able to describe the challenges of treating spine and spinal cord injury in a downrange environment.
  - 4) Appreciate the role aeromedical evacuation plays in the treatment of combat casualties.
  - 5) Describe the importance of incorporating the unique aspects of military neurosurgery into training.

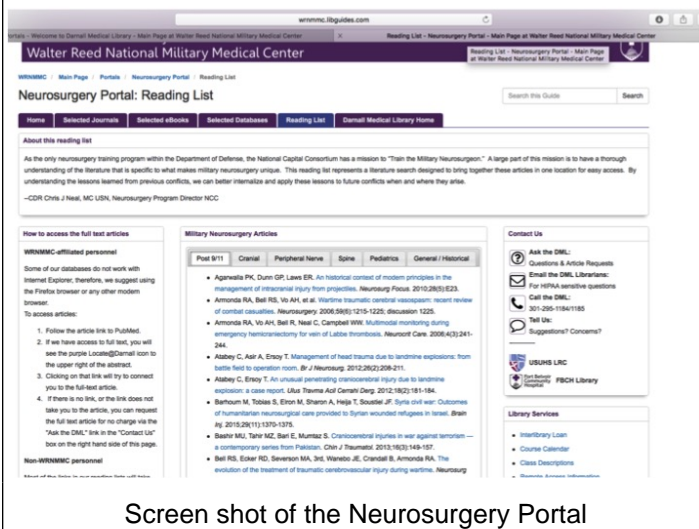
## Disclosure

The views expressed in this presentation do not represent the official policy or opinion of the United States Navy, the Defense Health Agency, the Department of Defense, or the United States Government.

## References

- <http://wrnmmc.libguides.com/neurosurgery/readinglist>  
[http://jts.amedd.army.mil/index.cfm/PI\\_CPGs/cpgs](http://jts.amedd.army.mil/index.cfm/PI_CPGs/cpgs)

## Military Neurosurgery Literature



The screenshot shows the Neurosurgery Portal website. At the top, it says "Walter Reed National Military Medical Center" and "Neurosurgery Portal: Reading List". Below this, there is a search bar and a list of articles. The articles are categorized by "Post 9/11", "Cranial", "Peripheral Nerve", "Spine", "Pediatrics", and "General / Historical". The "Post 9/11" category is selected, showing a list of articles with their titles and authors. For example, one article is "Agnew PK, Dunn GP, Laws ER. An historical context of modern principles in the management of intracranial injury from projectiles. Neurosurg Focus. 2012;28(5):E23." Another is "Ammons RA, Bell RL, Vo AH, et al. Widespread traumatic cervical vertebrae: recent review of combat casualties. Neurosurgery. 2006;59(5):1215-1220; discussion 1225." The website also includes a "Contact Us" section with options to ask the DMCL, email the DMCL, call the DMCL, or suggest concerns. There is also a "Library Services" section with links for Interlibrary Loan, Course Calendar, and Class Descriptions.

Screen shot of the Neurosurgery Portal