Combat-Related Polytrauma (non-live)

Course Description
"Combat-Related Polytrauma" is an online recorded video of a previously presented live CE webinar for athletic trainers. This course presents contemporary information about somatic trauma and comorbidities in combat veterans. This course includes a review of current literature relating to the pathophysiology, clinical presentation, and therapeutic management.

Course Rationale
The purpose of this course is to provide participants with contemporary information about conflict-related multiple trauma. Athletic trainers can use this information to develop and implement effective treatment programs that address the specific needs of individuals effected by these disorders.

Course Goals and Objectives
Upon completion of this course, participants will be able to:

1. List and describe common combat-related traumatic injuries and conditions.
2. Detail comorbidities contributing to polytrauma.
3. Identify and define the roles of all health care professionals providing comprehensive care to individuals with combat-related polytrauma.
4. Detail the Department of Defense Standard Case Definitions for traumatic brain injury.
5. Identify the mechanism of injury, pathophysiology, and medical management of blast related traumatic brain injury.
6. Identify the mechanism of injury and rehabilitation considerations related to dismounted complex blast injury.
7. Describe common pain syndromes associated with combat-related polytrauma.
8. Identify rehabilitation considerations for non-somatic for disorders presenting post-deployment.
9. Identify and select appropriate screening tools to assess physical and psychosocial function.
10. Identify the clinical presentation and rehabilitative management of individuals presenting with polytrauma.

Course Provider – Innovative Educational Services

Provider Conflict of Interest - None

Course Instructor - Jodi Gootkin, PT, Med, CEAS

Instructor Conflict of Interest - None

Target Audience – Athletic Trainers

Athletic Training Practice Domains – Clinical Evaluation & Diagnosis (0201, 0202, 0203, 0204, 0205); Treatment and Rehabilitation (0401 & 0404)

Level of Difficulty – Essential

Course Prerequisites – None

Method of Instruction/Availability – Recorded video available online on-demand

Criteria for Issuance of CE Credits – Completion of viewing of 3 hour recorded video, and a score of 70% correct or greater on the course post-test

Continuing Education Credits – Three (3) hours of continuing education credit.

Fees - $34.95

Refund Policy - Unrestricted 100% refund upon request. The request for a refund by the learner shall be honored in full without penalty or other consideration of any kind. The request for a refund may be made by the learner at any time without limitations before, during, or after course participation.

Course Outline & Schedule

Defining Combat-Related Trauma
Impact
Comprehensive Polytrauma Team
Role of Rehabilitation
Traumatic Brain Injury
Amputation
Spinal Cord Injuries
Pain
Non-somatic Disorders
Other Comorbidities
Discussion of Clinical Applications

Approval -

Innovative Educational Services is approved by the Board of Certification, Inc. to offer continuing education for Certified Athletic Trainers.

COMBAT RELATED POLYTRAUMA

1

Live Interactive Webinar Presented By:

Jodi Gootkin, PT, MEd, CEAS
jodiemail@comcast.net

Course Overview

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"Combat Related Polytrauma" is a live (real-time) interactive webinar for rehabilitation professionals that presents contemporary information about somatic trauma and comorbidities in combat Veterans. This course includes a review of current literature relating to the pathophysiology, clinical presentation, and therapeutic management.

Course Rationale

3

The purpose of this course is to provide participants with contemporary information about conflict-related multiple trauma. Rehabilitation professionals can use this information to develop and implement effective treatment programs that address the specific needs of individuals effected by these disorders.

Goals and Objectives

4

1. Detail comorbidities contributing to polytrauma.
2. List and describe common battlefield exposures that result in combat-related trauma injuries.
3. Identify the mechanism of injury, pathophysiology, and medical management of blast related injury.
4. Detail considerations for successful therapeutic interactions with a veteran transitioning to civilian rehabilitation settings.
5. Identify medical management and research advances for combat related amputations and spinal cord injuries.
6. Detail the Department of Defense Standard Case Definitions for traumatic brain injury.
7. Describe the clinical presentation and interaction strategies for an individual with post traumatic stress disorder.
8. Identify common pain syndromes associated with combat-related polytrauma.
9. Identify rehabilitation considerations for non-somatic disorders presenting post-deployment.
10. Identify appropriate screening tools to assess physical and psychosocial function.

Disclaimer

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Application of concepts presented in this webinar is at the discretion of the individual participant in accordance with federal, state, and professional regulations.

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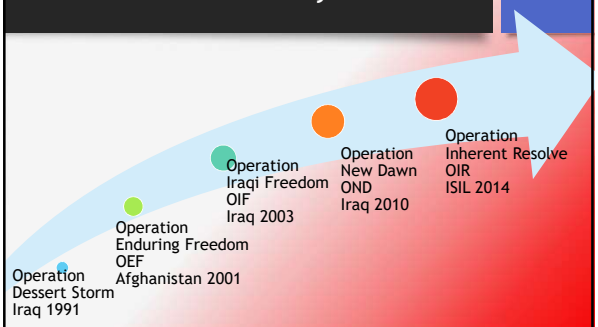
"And I will always do my duty
No matter what the price
I've counted up the cost
I know the sacrifice"

~Chuck Cannon and Toby Keith
American Soldier Lyric

United States Military Conflicts

9



https://www.va.gov/vetsinworkplace/docs/em_datesnames.asp

Impact of Military Conflicts

10

"The legacy of this conflict will not only be what we have learned, but also how rapidly we were able to disseminate, educate, and change practice on the battlefield in nearly "real-time"

Brian Eastridge, MD, FACS
Colonel, MC, US Army
Trauma Consultant, US Army Surgeon General
http://www.cs.amedd.army.mil/borden/book/ccc/UCLAFrontMatter.pdf

Survivorship

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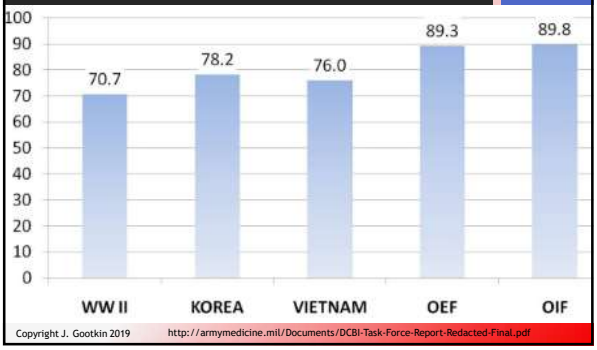
- Improved body armor, surgical care in proximity to the battlefield, and faster evacuation have contributed to a greater than 90% combat survival rate.

http://www.apta.org/TBI/WoundedWarriors/
http://specialoperationsmedicine.org/Pages/tccc.aspx

The casualty survival rate in Iraq and Afghanistan is the best in US history.

12



http://armymedicine.mil/Documents/DCBI-Task-Force-Report-Redacted-Final.pdf

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Our Veterans

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- Since 2002 1.97 million Veterans have become eligible for VA benefits.
  - 61% Former Active Duty
  - 39% Reserve and National Guard
- Most common out-patient diagnoses
  - Musculoskeletal ailments
  - Mental disorders
  - Ill defined conditions

Epidemiology Program, Post-Deployment Health Group, Office of Patient Care Services, Veterans Health Administration, Department of Veterans Affairs. (2017).Analysis of VA Health Care Utilization among Operation Enduring Freedom, Operation Iraqi Freedom, and Operation New Dawn Veterans, from 1stQtr FY 2002 through 3rd Qtr FY 2015. Washington, DC: Author

Combat Related Polytrauma Definition

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- The US Veterans Administration (VA) defines Polytrauma as injury to two or more body systems resulting in physical, cognitive, psychological, or psychosocial impairments and functional disability.
- Management requires a high level of integration and coordination of clinical care and with additional support services.

https://www.polytrauma.va.gov/news-and-resources/terminology-and-definitions.asp

Consider This

Combat Related Injuries and Conditions

15

- Injuries are sustained during active combat or duty from Explosive Weapons and Improvised Explosive Devices resulting in physical, cognitive, psychological or psychosocial impairments.
  - Traumatic Brain Injury (TBI)
  - Amputation
  - Spinal Cord Injury (SCI)
  - Visual and hearing impairment
  - Burns
  - Musculoskeletal injuries
  - Post-Traumatic Stress Disorder

VA. Polytrauma Rehabilitaiton Center Design Guide 2014 https://www.cfm.va.gov/til/dGuide/dgPRC.pdf

Consider This

Exposure Risks

- A variety of environmental and chemical exposures carry potential health risks contributing to casualties in combat.

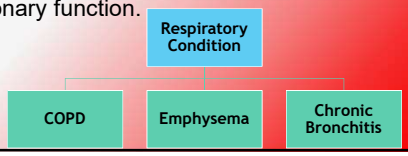
- Sand, Dust, Particulate Matter
- Burn Pits
- Infectious Diseases
- Vibration
- Noise
- Depleted Uranium
- Blast Injuries and Toxic Embedded Fragments

Exposure: Burn Pits

17

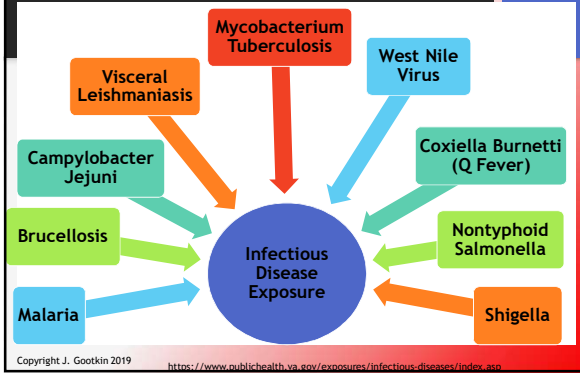
- Toxins released from burning waste may affect the skin, eyes, respiratory, cardiovascular, gastrointestinal, and other body systems.
- Effects are primarily temporary with limited evidence of association between exposure and reduced pulmonary function.

Baird, C. P. (2012). *Review of the Institute of Medicine report: long-term health consequences of exposure to burn pits in Iraq and Afghanistan.* ARMY PUBLIC HEALTH COMMAND ABERDEEN PROVING GROUND MD.



Exposure: Infectious Disease

18



https://www.publichealth.va.gov/exposures/infectious-diseases/index.asp

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Exposure: Vibration

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Hand-Arm Vibration Syndrome

Develops from continuous use of pneumatic, electric, hydraulic or gasoline powered hand tools.

Whole Body Vibration

Impacts the musculoskeletal system when operating heavy equipment, trucks, helicopters and ships.

Hand Arm Vibration Syndrome (HAVS)

20

- Vibration trauma damages the endothelial layer of hand capillaries, nerves, and tendons.
- Symptoms include
  - Blanching of one or more fingers with cold exposure
  - Tingling, numbness, decreased sensation in fingers
  - Hand pain
  - Decrease grip strength and dexterity

Whole Body Vibration

21

- Low frequency vibration is transmitted thorough the body while sitting, standing, or reclined on a surface results in amplification of the vibration.
- Voluntary and involuntary muscular contraction occurs in response inducing fatigue an musculoskeletal damage particularly in the spine.

Exposure: Noise

22

- Gunfire, explosions, rockets, heavy weapons, aircrafts, and machinery create high intensity noise and vibrations leading to hearing loss and tinnitus.
- Sound waves are directed into the cochlea and can't stop crushing the hair cells that are responsible for high-itched hearing such as voices.

Impulse Impact Noise	Less than ½ a second	Explosions, weapon fire, grenades	Sudden or gradual hearing loss
Steady State Noise	Longer than ½ a second	Tactical vehicles, generators, aircraft	Gradual loss worsening over time

Image: http://www.public.navy.mil/navsafecen/Pages/acquisition/vibration_acquisition.aspx

Exposure: Depleted Uranium

23

- Manufacturing of enriched uranium for nuclear reactors or weapons yields depleted uranium (DU) as a biproduct.
- It possesses 60% the radioactivity and same chemical toxicity as natural uranium.
- DU is utilized in tank armor and some bullets for better penetration of armored vehicles.
- When this type of projectile penetrates the vehicle some of the pieces of DU can become embedded in soft tissue, inhaled or swallowed.

Image https://www.publichealth.va.gov/exposures/toxic_fragments/index.asp

Depleted Uranium

24

- VA currently reports no health complications in Veterans.
- WHO notes that further research is needed to determine the extent, reversibility, and thresholds for organ damage with exposure.

Inhaled	Embedded Fragments
• Lung irradiation damage • Lung cancer in high doses	• Uranium detectable in urine without accompanying medical compromise • Possible kidney damage if high doses

https://www.publichealth.va.gov/docs/depleted-uranium/du_factsheet.pdf
http://www.who.int/ionizing_radiation/pub_meet/en/DU_Eng.pdf

Exposure: Blast Injury

25

- Improvised Explosive Devices create violent explosions containing metal or composite foreign material projectiles spread over a large radius.

Plastic	Ceramic	Glass	Wood
Cement	Nails	Metal	Rocks

- Heat, pressure waves, and fragments cause large zones of soft tissue injury and damage to multiple body systems.

Classifications of Blast Injury

26

Primary Injury Barotrauma Damage	• Initial shock wave damages hollow organs. • Lungs, ears, gastrointestinal tract, eyes, brain, traumatic amputation
Secondary Injury Fragmentation Injuries	• Penetrating wounds from debris propelled by shock waves. • Any region of the body, soft tissues, eyes
Tertiary Injury Impact Injuries	• Displacement of victim by blast force. • Fractures, amputation, head/neck trauma
Quaternary Injury Indirect Trauma	• Thermal burns, inhalation of gas/debris, crush injuries, exacerbation of pre-existing conditions
Quinary Injury Contamination	• Biological, chemical, radioactive contamination

Dismounted Complex Blast Injury

27

- During counter-insurgency efforts, increased use of foot patrols led to the emergence of multiple limb amputations, complex pelvic/perineal wounds, spin injuries, and multiple penetrating fragment wounds.
- By 2010, massive transfusion requiring 16 to over 25 units of bloods, major limb amputation, genitourinary injuries and traumatic brain injury rates increased drastically.

Wallace, D. (2012). Trends in traumatic limb amputation in Allied Forces in Iraq and Afghanistan. *Journal of Military and Veterans Health, 20*(2), 31. http://armymedicine.mil/Documents/DCBI-Task-Force-Report-Redacted-Final.pdf

Exposure: Toxic Embedded Fragments

28

- Improvised Explosive Device and blast shrapnel, bullets, or other projectiles cause injury where they enter the body.
- Secondary pathology results as the chemicals embedded in the fragment that has not been removed from the body dissolve traveling to distant regions through the bloodstream inducing pathology.
- According to the VA "No on knows the specific health problems that might happen because of the fragments"

https://www.publichealth.va.gov/docs/exposures/TEFSC-Veterans-fact-sheet.pdf
Image https://www.publichealth.va.gov/exposures/toxic_fragments/index.asp

Consider This

Tactical Combat Casualty Care

29

- Initial battle field treatment to manage the effects of the various exposure risks is focused on temporary measures and evacuation.
- Suppression of enemy fire and moving casualties to cover are the major concerns.

Tactical Trauma Care Setting

30

- Care is initially provided by non-medical combatant or combat lifesaver in the field.

Tourniquets Save Lives

31

WW II 1945	Vietnam 1970	Gulf War 2004	Today
• Strap and buckle rarely controlled bleeding	• 2500 deaths from preventable hemorrhage	• Still using makeshift tourniquets	• Tourniquet carried on battle gear

- Appropriate placement of a tourniquet in the field before the onset of shock has been identified as a primary factor to minimize preventable death from hemorrhage.

http://www.cs.amedd.army.mil/borden/book/ccc/UCLAFrontMatter.pdf

Modern Tourniquet

32

- Combat Application Tourniquet is now standard issue equipment.
- Removal within 6 hours saves lives without increased incidence of secondary amputation due to ischemia.

https://ia902709.us.archive.org/25/items/CombatCasualtyCare/CCCFull.pdf

Echelons of Care

33

- The Echelon structure refers to the level of command and control that is available to provide increasing levels of medical care.
- The goal is for the patient to be evacuated from the battle field and reach surgical care within one hour of injury.

Continuum of Care

34

Point of Injury

Echelon I	Care Under Fire
	Tactical Field Care
	Tactical Evacuation Care
Echelon II	Forward Surgical Team
Echelon III	Combat Support Hospital
Echelon IV	Facility Outside Combat Zone
Echelon V	Stateside (CONUS) Facilities
	VA and Civilian Rehabilitation

Level I Care Under Fire

35

In battlefield with limited resources

Level II Forward Surgical Team

36

Care facility removed from direct conflict with lab, imaging technology, surgical team.

Level III
Combat Support Hospital

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Field hospital with highly trained providers, labs, blood bank, operating rooms, imaging capabilities

Level IV
Critical Care Aeromedical Transport Team (CCAT) to Out of Combat Zone Medical Center

38

Major medical centers with capacity to diagnose and treat complex injuries. Example: Landstuhl, Germany

Level V –
US Based Medical Facility

39

Fixed military medical facility close to home base or delivering most appropriate specialty care center.

Stateside Medical Care
Veterans Administration (VA) Service Networks

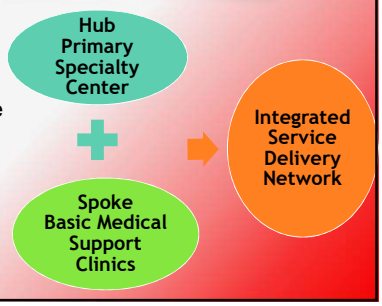
40

- For soldiers not returning to active duty, services are provided through the VA System.
- The country is subdivided into regions where various hospitals and outpatient service centers are located.

VA Hub and Spoke Model of Care

41

- This model emphasizes rehabilitation and a comprehensive continuum of care with full interdisciplinary teams of experts to manage specific chronic diagnoses.



Veterans Choice Program

42

- The Veterans Choice Program enacted in 2014 with extended funding in 2017 expands the availability of medical services for eligible Veterans with community providers as opposed to waiting for an appointment with or traveling to a VA facility.
  - VA cannot schedule appointment within 30 days
  - Veteran resides more than 40 miles from closest VA facility.

Consider becoming a provider!

Benefits of Veterans Choice Participation

43

- Veterans Choice community health providers have access to the VA electronic health record (EHR) that integrates all elements of a patient's health history, including medications, lab work, x-rays, scans, EKGs, medical diagnoses, and more to allow comprehensive coordinated care.

Healthcare Team

44

- Determine the other members of the healthcare team who are providing care for comorbidities and recognize opportunities for additional referrals.
- Case Manager is typically the primary point of contact to coordinate services resources, and communication among the patient, family, military and VA.
- Benefits Counselor identifies VA system resources to help with education, employment, health, and financial support.

Transitioning to Civilian Rehabilitation Settings

45

- Providing therapy to Veterans is a balance of managing their expectations with working through rehab ensuring clinical interactions are tailored to this unique community of patients.

Military Cultural Competency

46

- Community providers must understand basic military culture to understand the unique needs of Veterans and build a strong therapeutic alliance.

Tanielian, Terri, Coreen Farris, Caroline Batka, Carrie M. Farmer, Eric Robinson, Charles C. Engel, Michael Robbins and Lisa H. Jaycox. Ready to Serve: Community-Based Provider Capacity to Deliver Culturally Competent, Quality Mental Health Care to Veterans and Their Families. Santa Monica, CA: RAND Corporation, 2014.

Military Ethos

47

- "The overarching values of military culture set aside personal needs in favor of: teamwork, selflessness, shared goals, and perhaps most central, being of service to others - measuring one's worth by how well one serves others selflessly."

https://www.mentalhealth.va.gov/communityproviders/military_culture.asp

War Zone vs. Civilian Life Culture Influences

48

War Zone	Civilian Life
Physically unsafe	Physically safe
Act, then think	Think, then act
Unpredictable	Predictable with routines
Follow orders	Cooperation and compromise
Numb or control emotions	Express feelings
Avoid closeness	Create intimacy and trust

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Transitioning Considerations for the Clinician

49

- Military service members transitioning into work, home life, medical and social interactions are negotiating many relationships and new situations.
- Consider military identity during your interactions.

Strength	Courage
Commitment	Loyalty
Accountability	Discipline
Persistence	Punctuality
Respect	

Managing Clinical Interactions

50

- When integrating into civilian life hypervigilance, irritability, difficulty concentrating, and stress from personal relationships impacts interactions.
- Consider emotional health when determining treatment setting, scheduling, intervention selection, and home exercise program compliance.
- Building a strong therapeutic alliance fosters a relationship that encourages openness to additional resources for support.

51

Do

- Thank Veteran for their service
- Ask about branch of service
- Talk about life outside the military
- Let Veteran share their experiences when they feel ready

Don't

-Discuss politics

-Ask about deaths or killing or "how it was over there"

-Assume they experienced combat

-Act like you know about their military career and experiences

Social Services Referrals

52

- During our time with patients we have the opportunity for them to share multiple aspects of their personal circumstances that may lead to referrals for other services in addition to medical care.
  - Home Situation
  - Employment
  - Mental Health

Social Service: Mental Health

53

- Encouraging Veterans to tracking their own psychological status and response to daily events aids in understanding symptoms and directing treatment.
- Department of Defense National Center for Telehealth and Technology developed the T2 MoodTracker App for service members to track behavior changes after combat deployments.
- Maintain an open dialogue and refer to mental health providers and self-help resources.

http://t2health.dcoe.mil/apps/t2-mood-tracker

Social Services: Homelessness

54

- US Housing and Urban Development (HUD) estimates that on any single night in January 2016 40,000 Veterans were homeless and 13,000 were unsheltered or on the street.
- As of August 28, 2017
  3 states and
  50 communities
  have ended
  Veteran homelessness.

https://www.va.gov/homeless/Homeless_Programs_General_Fact_Sheet_JAN_2017.pdf
https://www.va.gov/HOMELESS/endingVetshomelessness.asp

Homelessness Resources

55

- VA provides free resources for community outreach and education.
- Consider hanging poster in your waiting room.

https://www.va.gov/HOMELESS/get_involved.asp

Social Services: Return to Employment

56

- Our interactions may highlight challenges the Veteran is experiencing in securing employment to provide for their family financially in addition to overall well being with personal satisfaction.
- Specific organizations are dedicated to assisting Veterans transition into the civilian workforce by offering career services, computer skills training, transition support, and job placements.

http://www.projecthired.org/jobseekers/Veterans

Comprehensive Screening Considerations in Rehabilitation

57

- In addition to traditional initial evaluation procedures include questions and assessments to provide additional context to current injuries, promote a stronger therapeutic relationship, increase awareness of additional health conditions that may contribute to rehabilitation outcomes.
  - Military Service History
  - Respiratory Disease
  - Acoustic Trauma
  - Visual Impairments

Consider This

Military Service History Interview

58

- The American Medical Association urges clinicians to obtaining information regarding military service that will help understand the unique medical conditions and potential concerns of Veterans.
- VA Healthcare provides guiding questions on the Military Health History Pocket Card.
  - Would it be ok if I talked with you about your military experience?
  - Were you or wounded, injured, or hospitalized?
  - Would it be ok to talk about your living situation?
  - Would it be ok if I asked about some things you may have been exposed to during your service?

Consider This

https://www.va.gov/oaa/pocketcard/Military-Health-History-Card-for-print.pdf

Military Terms

59

Awareness of some basic terminology a Veteran may use to describe their military experience will enhance communication.

Term or Acronym	Meaning
MOS Military Occupational Specialty	Job or career (infantryman, intelligence analyst, military police, etc.)
OCONUS	Outside Continental United States
CONUS	Inside Continental United States
Boots on the ground	To physically be in a location
Down range	Physically in a combat zone
In-country	Physically in a war zone
Theater	Geographic area directly involved in major operations involving combat

Medical Surveillance of Embedded Fragments

60

- Superficial fragments that may work their way out of the body should be monitored and if removed sent to the VA Toxic Embedded Fragments Registry for analysis.
- Patients with suspected toxicity from fragments and depleted uranium should be referred for urine biomonitoring to assess concentrations of metals.

Arsenic	Cadmium	Chromium	Cobalt	Copper
Iron	Lead	Manganese	Nickel	Tungsten
Uranium	Zinc	Molybdenum		

http://www.cs.amedd.army.mil/FileDownloadpublic.aspx?docId=0781f05c-f914-4600-9b98-66e52e9af4d7

Respiratory Disease Assessment

61

- Combined exposures to dust storms, burn pits, and toxic chemicals may increase post deployment respiratory illness.
  - Asthma
  - COPD
  - Interstitial Lung Disease
- Suspected Tuberculosis requires chest x-ray.
- Monitor patients for decreased endurance and functional capacity.
  - Two or Six Minute Walk Test

Pugh, M. J., Jaramillo, C. A., Leung, K. W., Faverio, P., Fleming, N., Mortensen, E., ... & Morris, M. J. (2016). Increasing Prevalence of Chronic Lung Disease in Veterans of the Wars in Iraq and Afghanistan. *Military medicine*, *181*(5), 476-483. Sharkey, J. M., Abraham, J. H., Clark, L. L., Rohrbeck, P., Ludwig, S. L., Hu, Z., & Baird, C. P. (2016). Postdeployment respiratory health care encounters following deployment to Kabul, Afghanistan: a retrospective cohort study. *Military medicine*, *181*(3), 265-271.

Asthma vs. Tuberculosis (TB)

62

Asthma	Tuberculosis
Bilateral	Unilateral
Wheezing	Rales on auscultation
Non-productive cough	Productive cough >3 weeks
Triggers	Malaise and Fever
Relief with treatment	Night sweats

Acoustic Trauma

63

- Barotrauma can rupture the tympanic membrane with small perforations healing spontaneously.
- Noise exposure or blast injury can cause vestibular impairment, otalgia, balance deficits, and hearing loss.

Distance from Blast	Primary Blast Injury	Secondary Blast Injury
0 - 50 feet	Fatal, eardrum rupture	Fatal
50 - 80 feet	Eardrum rupture	Fatal
80 - 130 feet	Temporary hearing threshold shift	Injury
130 - 1800 feet	None	Injury

https://ia902709.us.archive.org/25/items/CombatCasualtyCare/CCCFull.pdf

Auditory Impairments

64

- Assess patient for symptoms of compromise to the auditory system with referral to audiologist or otolaryngologist for additional evaluation.
  - Loss of ability to hear speech when background noise is present.
  - Diminished localization of hearing to distinguish direction sounds are coming from.
  - Tinnitus
  - Vertigo

Visual Impairments

65

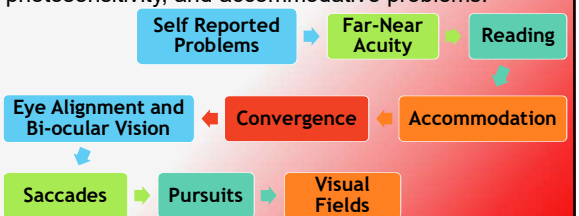
- Visual impairments range from low vision to total blindness from direct combat injuries or age-related diseases including macular degeneration, diabetic retinopathy, and glaucoma.
- Refer to VA Blind Rehabilitation Services for training in visual motor and perceptual skills, instruction in optical and electronic devises, and sensory training classes to promote safety and independence.

https://www.prosthetics.va.gov/blindrehab/BRS_Coordinated_Care.asp

Vision Assessment

66

- Common complaints include blurred vision, photosensitivity, and accommodative problems.



Radomski, M. V., Finkelstein, M., Llanos, I., Scheiman, M., & Wagener, S. G. (2014). Composition of a Vision Screen for Servicemembers With Traumatic Brain Injury: Consensus Using a Modified Nominal Group Technique. *The American*

Vision Assessment: Convergence Insufficiency Symptom Survey

67

- Patients may have difficulty describing symptoms or may not realize fatigue, poor attention, dizziness, headache, balance deficits are related to vision impairment.
- Self assessment of how eyes feel when reading and doing close work.
- Score greater than 21 can indicate impairment requiring referral to ophthalmologist or optometrist

http://www.sankaranethralaya.org/pdf/patient-care/Convergence-Insufficiency-Symptom-Survey.pdf

Vision Assessment: Snellen Eye Chart

68

- Widely used test of visual acuity.
- Patient is 20 feet away from chart
- Cover one eye
- Score is best line that they can read.
- Numbers on left side of chart indicate distance someone with normal vision an see that line at.
- Vision 20/40 or worse warrants referral to optometrist.

Vision Assessment: Chronister Pocket Acuity Chart

69

- Small packet of numbers that are viewed from close distances too assess visual acuity from 20/200 to 20/10.
- Contains conversion chart to convert to Snellen values from multiple distances.
- Pediatric version available with image targets.
- Vision 20/40 or worse warrants referral to optometrist.

Vision Assessment: Amsler Grid

70

- Tests metamorphopsia to detect alterations to central visual field requiring referral to ophthalmologist.
- Determines regions of visual field deficit by marking areas of wavy, distorted, broken or missing lines.

Low Vision Patient Education

71

- Promote safety by recommending effective lighting, removal of clutter, installation of grab bars to avoid hazards.
- Modify the activities with education, training, and adaptive equipment.
  - Use contrast to improve visibility
  - Use overhead lighting to decrease shadows
  - Sit with back toward window or lamp

https://www.aota.org/~/media/Corporate/Files/AboutOT/consumers/Adults/LowVision/Low%20Vision%20Tip%20Sheet.pdf

Technology Research to Assist Mobility for the Blind

72

- Smart Phone App - uses phone GPS, compass, accelerometers to provide highly accurate location information to locate crosswalks and building entrances
- Radiofrequency Identification (RFID) - technology may be incorporated into Braille signs to send information automatically to smartphones to read tags.
- HandSight will utilize a tiny camera embedded connected to a smartwatch to read text which is spoken out loud.

Image https://www.research.va.gov/currents/fall2014/fall2014-16.cfm

Rehabilitation from Polytrauma Conditions

73

- Therapists may be involved in the management of musculoskeletal, neurologic, and mental health conditions as a result of combat or across the lifespan of the Veteran.
  - Amputation
  - Spinal Cord Injury
  - Traumatic Brain Injury
  - Post Traumatic Stress Disorder
  - Chronic Pain

Understanding Combat Related Amputations

74

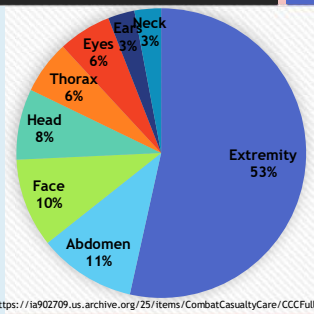
- Analysis of injury patterns and deaths during OEF and OIF indicates that most combat-related injuries occur as a result of injury from explosions, followed by gunshot wounds.
  - 78% Explosions
  - 18% Gunshot

https://ia902709.us.archive.org/25/items/CombatCasualtyCare/CCCFull.pdf

Blast Casualty Injury Patterns

75

- Because of current advances in body armor, injury distribution is primarily to the extremities



https://ia902709.us.archive.org/25/items/CombatCasualtyCare/CCCFull.pdf

Extremity Injury Resulting in Amputation

76

- Blast waves can shatter bones, avulse an extremity, cause extensive soft tissue damage, and flying debris create fragmentation or penetrating extremity injuries.

Traumatic Amputation Immediate Medical Management

77

- Managing hemorrhaging with a proximal tourniquet while in the battlefield is critical to preserve life and avoid the need for massive transfusion.
- For high injuries with pelvic fracture, application of a Junctional Emergency Treatment Tool (JETT) is used to apply direct pressure.

https://ia902709.us.archive.org/25/items/CombatCasualtyCare/CCCFull.pdf

Consider This

Battlefield Management of Amputations

78

- Procedure is to ligate vascular structures proximal to the bone resection, preserve bone length in absence of viable soft tissue, preserve atypical skin and tissue flaps, and leaving traumatic amputation wound open.
- Splints and bivalve casts stabilize the region with skin traction to avoid soft tissue retraction through the evacuation chain.

Combat Related Polytrauma
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Follow-up Medical Management of Amputation

79

- Negative Pressure Wound Therapy (NPWT) is used as a bridge to delayed closer, flap coverage, or coverage with a split thickness skin graft.
- It contributes to increased granulation rate, decreased bacterial colonization, and effective closure or the wound.

http://www.usaisr.amedd.army.mil/cpgs/Amputation_01Jul2016.pdf

Residual Limb Wound Closure Techniques

80

- After staged wound debridement suturing or vessel loops can be stapled in a zig-zag pattern across the wound with some pressure applied.
- This aids closure by keeping the skin from passively retracting while also allowing granulation and mild drainage before grafting.

Residual Limb Wound Closure Continued

81

- Scar patterns may be different and more extensive than traditional civilian amputations.

Rehabilitation Outcomes

82

- Veterans with upper extremity amputations reported lower psychosocial adjustment, physical abilities, and prosthetic satisfaction than those with lower extremity amputations.

	Upper Extremity Amputation	Lower Extremity Amputation
Agree "life is full"	80%	91%
Agree "had gotten used to wearing an artificial limb"	23%	55%
Functional Outcome	Quick DASH 36.6/100	TUG 10.5 seconds

https://www.va.gov/oig/pubs/VAOIG-11-02138-116.pdf

Upper Extremity Prosthetics Advances

83

- 2017 the VA unveiled LUKE – Life Under Kinetic Evolution -Arm that allows movement as one unit as opposed to traditional UE prosthetics where each joint is controlled individually through isolated movements.

https://www.aptcenter.research.va.gov/programs/ortho/natural-sensation-for-amputees/

Lower Extremity Prosthetics Advances

84

- Osseointegration - A titanium coated implant is firmly anchored in living bone.
- The bone of the residual limb grows into the implant, and the prosthetic is attached directly to the metal connector of the implant without the need for a socket.

Images https://www.amputation.research.va.gov/prosthetic_engineering/prosthetic_engineering_overview.asp

Lower Extremity Prosthetics Advances

85

- Powered Ankle Foot Prosthesis - ankle uses tendon like springs and an electric motor to replace lost muscle power and ankle/foot movement for propulsion during gait.
- Benefits include
  - Decreased energy expenditure
  - Improved balance
  - Decreased proximal joint damage
  - Improved gait pattern and walking speed

Au, S. K., Herr, H., Weber, J., & Martinez-Villalpando, E. C. (2007, August). Powered ankle-foot prosthesis for the improvement of amputee ambulation. In *Engineering in Medicine and Biology Society, 2007. EMBS 2007. 29th Annual International Conference of the IEEE* (pp. 3020-3026). IEEE.

Herr, H. M., & Grabowski, A. M. (2012, February). Bionic ankle-foot prosthesis normalizes walking gait for persons with leg image

https://www.research.va.gov/

Prosthetics Research

86

- Compliant Torque Adapter – located in transtibial pylon to allow easier maneuvering around obstacles.
- Stochastic Resonance – subthreshold vibration sensors in the socket may enhance peripheral sensation to improve postural stability and locomotion.
- Distributed Sensing – A flexible array built into the socket to measure moisture, temperature, pressure, and shear stress.

Images https://www.amputation.research.va.gov/prosthetic_engineering/prosthetic_engineering_overview.asp

Prosthetic Research Continued

87

- Natural Sensation feedback is being investigated where sensors in the prosthetic hand control stimulation to nerves in the residual limb for tactile perception.

https://www.aptcenter.research.va.gov/programs/ortho/natural-sensation-for-amputees/
https://www.research.va.gov/pubs/varqu/winter2016/11.cfm

Smart Cane Research

88

- A cane equipped with a microprocessor and biofeedback control can measure cane contact with ground, gait cycle, and load phasing.
- Providing the user a sound or vibration signal from the cane will help them apply the optimal amount of force on the cane to reduce pain, decrease joint loading, and improve gait.

Spinal Cord Injury (SCI)

89

- Gunfire, explosions, motor vehicle accidents and falls are the primary mechanisms of spinal cord injury in war zone.
- Spinal stabilization in the combat setting becomes challenging due to tactical considerations, body armor, and moving the injured thorough the evacuation chain.
- Main goal is spinal immobilization and spinal cord resuscitation to minimize secondary injury.
- Medial and surgical management mirrors civilian care

SCI Mobility Research

90

- Advanced Lower Extremity Neuroprosthesis (LE-IST)- involves surgical implantation of neural stimulation technology with nerve or muscle electrodes activating muscles to allow standing.
- Similar technology is aimed at improving ambulation for individuals with incomplete spinal cord injury.

https://www.aptcenter.research.va.gov/studies/standing_transfer/index.asp
https://www.aptcenter.research.va.gov/studies/walking/index.asp

SCI Mobility Research Continued

91

- Clinical trials are underway of an implanted trunk neuroprosthesis to control seated posture and balance for improved bed mobility and pulmonary function.

hImages ttps://www.aptcenter.research.va.gov/studies/trunk_control/index.asp

SCI Mobility Research Continued

92

- BrainGate -uses implanted microelectrodes in the portions of the cortex that control voluntary movement.
  - Neural signals are transmitted to an external decoder that translates the into commands for electronic or robotic devices to restore movement.

https://www.research.va.gov/currents/1015-3.cfm

SCI Mobility Research Continued

93

- Weight bearing is important for bone integrity, bowel function, and cardio-metabolic health.
- ReWalk - wearable robotic exoskeleton that provides powered hip and knee motion for standing, gait, and stair negotiation.

https://www.research.va.gov/pubs/varqu/winter2016/14.cfm

Traumatic Brain Injury

94

- "Signature Injury" of the current military conflict.

dvbic.dcoe.mil/dod-worldwide-numbers-tbi

Blast Related TBI Mechanism of Injury

95

- Kinetic energy from blast explosions create massive wave that induce atmospheric pressure changes theorized to result in shearing of the axons, air embolism, hemorrhages, chromatolysis, and impaired vascular homeostasis.
- With closed head injury coup-countercoup injuries creates shearing forces and injury to the brain in regions deep and opposite to the site of impact.

https://ia902709.us.archive.org/25/items/CombatCasualtyCare/CCCFull.pdf

Penetrating TBI Mechanism of Injury

96

- Damage can also occur from ballistic trauma where objects penetrate the skull.

https://ia902709.us.archive.org/25/items/CombatCasualtyCare/CCCFull.pdf

TBI Medical Management

97

- The immediate goal is to minimize secondary brain injury by optimizing cerebral blood flow, mitigating elevations in intracranial pressure (ICP), and addressing intracranial hemorrhage and cerebral edema.
- The goal of the first 72 hours of care is to provide clinical stability, arrest ongoing injury, preserve neurological function, and prevent secondary medical complications.
- Poor outcomes associate with systolic BP below 90 mm Hg and ICP over 25 mm Hg.

https://ia902709.us.archive.org/25/items/CombatCasualtyCare/CCCFull.pdf

Department of Defense TBI Case Definitions

98

Penetrating TBI	• Scalp, skull and dura mater are penetrated.
Severe TBI	• Confused/disoriented more than 24 hours or LOC more than 24 hours or memory loss more than 7 days.
Moderate TBI	• Confused/disoriented more than 24 hours or LOC more than 30 minutes but less than 24 hours or memory loss greater than 24 hours but less than 7 days.
Concussion/Mild TBI	• Confused/disoriented less than 24 hours or loss of consciousness up to 30 minutes or memory loss lasting less than 24 hours.

Consider This

TBI Clinical Presentation Glasgow Coma Scale (GCS)

99

- Assesses level of consciousness through eye opening, verbal response, and motor.

BEST EYE OPENING (E)		BEST VERBAL RESPONSE (V)		BEST MOTOR RESPONSE (M)	
				Follows commands	6
		Oriented, alert	5	Localizes to pain	5
Eyes open spontaneously	4	Confused, appropriate	4	Withdrawal to pain	4
Eyes open to speech	3	Disoriented, inappropriate	3	Flexor posturing	3
Eyes open to pain	2	Incomprehensible speech	2	Extensor posturing	2
No response	1	No response	1	No response	1

Mild TBI 13 or greater

Moderate TBI 9 to 12

Severe TBI 8 or less

https://ia902709.us.archive.org/25/items/CombatCasualtyCare/CCCFull.pdf

Mild TBI (mTBI) Clinical Presentation

100

Physical	• Headache,fatigue, dizziness, lethargy
Cognitive	• Easily confused/distracted, difficulty with memory, attention, concentration, and problem solving.
Sensory	• Impaired vision, hearing, taste, smell, or touch
Behavioral	• Depression anxiety, agitation, irritability, anger, sleep disturbance

mTBI Return to Activity Progression

101

Stage 1 Rest	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6 Unrestricted Activity
	Light Routine Activity 30 mins physical activity then 4 hours rest Max 30 mins cognitive activity then 60 mins rest	Light Occupation Activity 60 mins physical activity then 4 hours rest Max 30 mins cognitive activity then 60 mins rest	Moderate Activity Max 90 mins activity at 12-16 RPE 20 mins cognitive activity then 40 mins rest	Intensive Activity Resume usual exercise PRE 16+ 50 mins cognitive activity at a time	

Progress every 24 hrs if asymptomatic

Department of Defense. (2014). Progressive return to activity following acute concussion/mild TBI: guidance for the rehabilitation provider in deployed and non-deployed settings Clinical Recommendation. *Clinical Recommendation* January 2014.

mTBI Post-Concussive Syndrome

102

- Residual symptoms of headache, dizziness, irritability, decreased concentration, photosensitivity, fatigue, sleep disturbance, attention/concentration impairments and forgetfulness following mild traumatic brain injury for greater than three months.
- Management is typically symptom based with majority of individuals reporting headache as the primary persistent symptom.

TBI Rehabilitation

103

- For mTBI, treatment is symptom specific and multi-modal monitoring for various system involvement and directing referral to the appropriate medical professional for additional assessment.
  - Concussion monitoring
  - Post-traumatic headaches
  - Sensory Impairments
  - Neuroendocrine dysfunction

Rehabilitation Concussion Self Monitoring

104

- Developed by the VA National Center and National Center for Telehealth & Technology, the Concussion Coach app allows tracking of TBI symptoms and resources.
  - Self-assessment of emotional changes, cognitive issues and physical problems
  - Relaxation exercises to manage symptoms
  - Immediate access to crisis resources, personal support and professional mental health care.

http://t2health.dcoe.mil/apps/ConcussionCoach

Rehabilitation Post-traumatic Headaches

105

	Tension	Cervicogenic	Migraine
Pain	Mild -moderate Tighten, pressure	Mild -moderate Tighten. burn	Severe-debilitating Throbbing, pulsing
Location	Bilateral frontal and posterior cervical	Unilateral cervical and occipital	Unilateral frontotemporal or retro-orbital
Duration	30 mins - 7 days	Variable	4-72 hours
Phono/ photophobia	No	No	One or both
Function	Normal	Normal	Impaired
Nausea	No	No	Yes
Tenderness	Facial and neck	Posterior neck	Not typical
Medication	Abortive NSAID OTC analgesic	Abortive NSAID	Abortive or Prophylactic

Rehabilitation Sensory Impairments

106

- Visual acuity is typically intact, but ocular misalignment, and poor eye coordination are associated with patient reports of difficulty focusing, blurred or double vision impairing reading and gait.
- Despite normal audiology testing, Veterans report problems hearing speech in difficult listening environments indicating damage to the central auditory system.

https://www.research.va.gov/topics/tbi.cfm

Rehabilitation Neuroendocrine Dysfunction

107

- With brain injury vascular damage, pituitary inflammation, or a biochemical response to blast exposure may interfere with normal hormone production and regulation by the pituitary and hypothalamus.
- Example: In female symptoms may include excessive fatigue, low muscle mass, increased body fat around the waist, low blood pressure, and amenorrhea.
- Referral to endocrinologist for hormonal screening is warranted.

http://dvbic.dcoe.mil/files/resources/DCoE_TBI_NED_Training_Slides.pdf

Consider This

Traumatic Brain Injury Research

108

- Cerebellar Trauma – Repeated blast exposures ruptures part of the blood-brain barrier leading to loss of neurons and damage to the cerebellum.
- Chronic Traumatic Encephalopathy (CTE) – Similar to athletes, post-mortem analysis of Veterans who sustained repetitive concussions revealed degenerative CTE.

https://www.research.va.gov/topics/tbi.cfm

TBI Research Continued

109

- Alzheimer's Disease – Veterans 55 and older with a past diagnosis of TBI had a 60% greater risk of developing dementia.
- Brain Aging – Exposure to blasts without resulting concussion may still lead to fraying of brain white matter with premature brain aging.

https://www.research.va.gov/topics/tbi.cfm

Post-Traumatic Stress Disorder (PTSD)

110

- PTSD is a psychological condition that affects those who have experienced a traumatizing or life-threatening event such as combat, natural disasters, serious accidents, or violent personal assaults.

https://www.ptsd.va.gov/
https://ia902709.us.archive.org/25/items/CombatCasualtyCare/CCCFull.pdf

Psychological First Aid (PFA)

111

- Appropriately supporting individuals in the immediate aftermath traumatic experiences helps reduce the initial stress they are experiencing and assists in developing long and short term adaptive functioning skills.

Response	What to day and do
Concern, shame, guilt, fear	Reminders that you are not "going crazy". If feelings persist for a month seek care.
Overwhelmed by tasks	Identify priorities, make lists, rely on others
Fears of recurrence and reactions to reminders	Triggers can be sounds, smells, time of day, media coverage.

Disaster and Terrorism PFA

- The goal is to protect survivors from further harm, reduce psychological arousal, provide information and foster communication, keep families together and facilitate reunion with loved ones.

https://www.ptsd.va.gov/professional/materials/apps/pfa_mobile_app.asp

PTSD Progression

113

If the body's stress and coping systems do not manage the trauma, a complex cluster of symptoms results.

Department of Defense (2010) Clinical Practice Guideline for the Management of Post Traumatic Stress Disorder. *Guideline Summary 2010.*

PTSD Symptoms

114

- Last more than one month after trauma and lead to significant impairment in ability to interact in social, occupational, or other important areas of function.
- Individual demonstrates a combination of physical, mental, and behavioral symptoms in addition to changes in functioning.

PTSD Common Presenting Symptoms

115

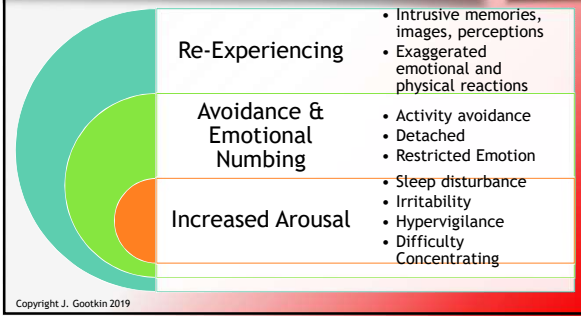
Physical
- **Chronic Pain, Migraines, Vague Somatic Complaints**

Mental
- **Poor Attention and Abstract Thinking, Anxiety, Depression**

Behavioral
- **Irritability, Guilt, Avoidance, Anger, Noncompliance, Self-risk, Aggression, Threatening Behavior**

PTSD Symptom Clusters

116



PTSD Screening Tools

117

- ❑Referral to a mental health provider may be necessary if symptoms persist and interfere with function and relationships.
- ❑Only specifically trained mental health professionals can used advance assessment tools.
  - ❑Evaluation of Lifetime Stressors (ELS)
  - ❑Life Events Checklist for DSM-5 (LEC-5)
  - ❑Combat Exposure Scale (CES)

PTSD Screening Tool Evaluation of Lifetime Stressors (ELS)

118

- ❑Self report questionnaire and interview assessing perceptions and emotional response to disaster, illness, accident, violence, combat and other trauma.
- ❑The interview provides a way to explore dimensions of each trauma including trauma type, perpetrators/victims, duration, frequency, perceptions of threats and emotional response, and others.

PTSD Screening Tool Life Events Checklist for DSM-5 (LEC-5)

119

- ❑Self-report measure designed to screen for potentially traumatic events in a respondent's lifetime.
- ❑Specifically assesses exposure to 16 events known to potentially result in PTSD or distress.

PTSD Screening Tool Combat Exposure Scale (CES)

120

- ❑7-item self-report measure that assesses wartime stressors and exposures experienced by combatants. Items are rated on a multiple scales.
- ❑Frequency
  1 = "no" or "never" to 5 = "more than 50 times"
- ❑ Duration
  1 = "never" to 5 = "more than 6 months"
- ❑Degree of loss
  1 = "no one" to 4 = "more than 50%"

PTSD Management

121

- Ensure basic physical needs are met
- Interventions to preserve life if individual is unstable or dangerous to self or others.
- Medical and Psychological Care
- Cognitive Behavioral Therapies
- Social and Spiritual Support
- Medications
- Cognitive Fitness and Psychological Resilience Strategies
- Relaxation and Stress Management

Rehabilitation Considerations for Patients with PTSD

122

- Patients diagnosed with PTSD may be participating in therapy for rehabilitation from musculoskeletal, general medical, and neurologic conditions or to promote health and wellness to manage their PTSD symptoms.
- Therapists should perform basic assessment to understand the patients status and recognize how to manage therapeutic interactions.

Screening Tool Primary Care PTSD (PC-PTSD)

123

Designed for healthcare professionals outside the mental health fields.

- ***Would it be ok to talk about stress?***

In your life, have you ever had an experience so horrible, frightening, or upsetting that, in the past month you...

- Have had nightmares about it or thought about it when you did not want to?
- Tried hard not to think about it or went out of your way to avoid situations that reminded you of it?
- Were constantly on guard, watchful, or easily startled?
- Felt numb or detached from others, activities, or your surroundings?

Veterans Crisis Line 1-800-273-8255 (Press 1)

https://www.va.gov/oaa/pocketcard/Military-Health-History-Card-for-print.pdf

PTSD Managing Interactions

124

- Do not approach the individual from behind or sneak up on them
- When interviewing the patient focus on establishing a strong therapeutic alliance.
  - Ensure privacy.
  - Make no assumptions about feelings or meaning.
  - Show interest and concern.
- If patient is resistant to referrals, emphasize value of evaluation and treatment and suggest resources they can explore first on their own.

PTSD Managing Interactions Continued

125

- Acknowledge distress offering empathy and validating patient's feelings.
- Example statements include:
  - "I am so sorry that you are struggling with this."
  - "I can appreciate how difficult this is for you."
  - "You are not the only patient I have who is struggling with this."
  - "It's not easy, is it?"

PTSD Managing Interactions Continued

126

- If the patient experiences PTSD symptoms during therapy, the clinician should speak in a calm, matter of fact voice.
- Reassure the patient that everything is okay.
- Remind the patient that they are in a safe place and their care and well being are a top priority.
- Explain medical procedures and check with the patient (e.g., "Are you ok?").
- Ask (or remind) the patient where he or she is right now.
- If the patient is experiencing flashbacks, remind him or her that they are in XYZ office at a specific time in a specific place (grounding).
- Offer the patient something that will make them feel more like their usual self.

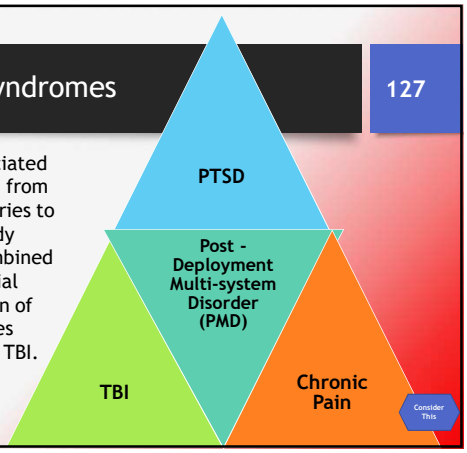
Consider This

 https://www.ptsd.va.gov/professional/manuals/manual-pdf/iwcg/irag_clinician_guide_ch_7.pdf

Pain Syndromes

127

Pain is associated with trauma from combat injuries to multiple body systems combined with potential amplification of comorbidities of PTSD and TBI.

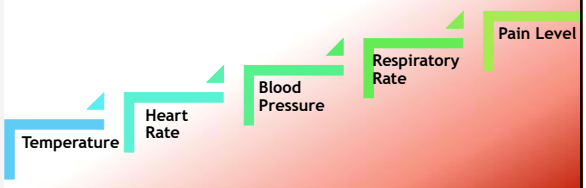


Consider This

Pain Patterns

128

- Some sources view Pain Level as the Fifth Vital Sign
- The most commonly reported pain is due to arthritis, back pain, neuropathic pain, and headaches.



Chronic Pain

129

- Following combat-related injuries, increased incidence of chronic pain greater than three months is associated with:
  - Ongoing sleep disturbance
  - Emotional distress
  - Residual traumatic brain injury symptoms
- Low pain self-efficacy, maladaptive coping strategies, reluctance to access mental health care may contribute to the cycle of pain.

Enhancing Veteran-centered care: a guide for nurses in non-VA settings.Johnson BS, Boudiab LD, Freundl M, Anthony M, Gmerek GB, Carter J Am J Nurs. 2013 Jul; 113(7):24-39; quiz 54, 40.

Consider This

Pain Screening Tools

130

- Standard musculoskeletal assessments should determine if a physiologic etiology for the pain exists.
- When diffuse somatic, cognitive, and emotional complaints are associated with pain multiple system polytrauma assessments should be utilized.

Pain Screening Tool
Defense and Veterans Pain Rating Scale (DVPRS)

131

- Visual analog scale (VAS) with functional clarifiers and supplemental pain questions to evaluate biopsychosocial impact of pain.

https://www.va.gov/PAINMANAGEMENT/docs/DVPRS_2slides_and_references.pdf

Pain Screening Tool
DVPRS Clarifying Questions

132

- Circle one number that describes how, during the past 24 hours pain has:
  - interfered with you usual ACTIVITY
  - interfered with you SLEEP
  - affected your MOOD
  - contributed to your STRESS

Does not — Completely

Pain
Pharmaceutical Management

133

- Condition specific non-opioid agents should be optimized before opiates are considered for short durations.
  - Risk of dependence, addiction, and death.
- Narcotics and muscle relaxants can slow cognition and executive functions.
- Complexity in symptom relief from narcotics needs to be recognized as reduction of psychological anxiety may be confused with diminished pain intensity.

Howell, P., Capehart, B. P., & Hoenig, H. (2015). Rehabilitation of combat-related injuries in the Veterans Administration A web of support. *North Carolina Medical Journal*, *76*(5), 323-327. https://www.healthquality.va.gov/guidelines/Pain/cot/VADoDOTCPGProviderSummary022817.pdf

Adverse Effects of Opioids

134

Respiratory Depression	• Drowsiness, slow shallow breathing, loud or unusual snoring
Mental Status Changes	• Confusion, hallucinations, restlessness, dysphoria, seizures, agitation
Opioid Induced Endocrinopathy	• Loss of libido, fatigue, mood alterations, loss of muscle mass/strength, abnormal menses
Sleep Apnea	• Loud snoring, morning headaches, irregular pauses in breathing depression/emotional instability

 https://www.healthquality.va.gov/guidelines/Pain/cot/ManagingSideEffectsFactSheetFINAL2017.pdf

Pain
Non-Pharmaceutical Management

135

- Comprehensive management must address biological, psychological, and psychosocial aspects of pain.
- Distinguish pain from musculoskeletal dysfunction or neurologic alterations in tone.
- Biofeedback, exercise, thermal modalities
- Relaxation exercises and meditation
- Good sleep hygiene
- Patient education

Pain
Cognitive Behavioral Therapy

136

- Encouraging increasing activity by setting goals
- Correcting false and unrealistic beliefs/concerns about pain
- Teaching cognitive and behavioral coping skills (e.g., activity pacing)
- Practicing and consolidation of coping skills and reinforcement of use.

Non-Somatic Disorders

137

- Post deployment individuals experience a variety of physical conditions (somatic) in addition to presenting with less tangible non-somatic mental health conditions that contribute to the complex management of polytrauma.
  - Anxiety
  - Drug Use
  - Sleep Disturbance

Anxiety Assessment
Beck Anxiety Inventory (BAI)

138

- The 21-item self-report measures emotional, physiological, and cognitive symptoms of anxiety.
- Respondents rank how bothered they are by each of the symptoms.

Combat Related Polytrauma
Copyright Jodi Gootkin 2019

Anxiety Assessment in Polytrauma BAI Continued

139

- Symptoms can be aligned to specific factors associated with anxiety measured with the BAI.
- Safety threat component provides information regarding the mental health of combat Veterans.

Palmer, G. A., Happe, M. C., Paxson, J. M., Jurek, B. K., & Olson, S. A. (2016). Dimensionality of the Beck Anxiety Inventory in a polytrauma sample of OEF/OIF/OND Veterans: Findings from exploratory and confirmatory factor analysis. *Military Psychology*, *28*(5), 296.

Stress, Trauma, Alcohol, and Drug Use Assessment

140

- Drug and alcohol use is commons to self medicate.
- Common statements attempting to self-assure there is not a problem with dependency or overuse of drugs or alcohol.
  - "I just drink beer (wine)"
  - "I don't use hard drugs"
  - "I'm not an alcoholic"
  - "I gave it up for 3 weeks last year"
  - "I don't drink every day"
  - "I've never missed a day of work"
  - "I don't need help, I can handle it myself"

https://www.ptsd.va.gov/professional/manuals/manual-pdf/iwcg/iraq_clinician_guide_app_j4.pdf

Traumatic Stress in Female Veterans

141

- As of 2015, women are being integrated into military combat positions and receiving the specialized training that they did not receive in prior years.
- Changing theaters of operation may contribute to feeling along compounded by worrying about family at home during long deployments.
- High social and emotional support after war has been shown to contribute to lower stress levels.

https://www.defense.gov/News/Article/Article/648766/officials-describe-plans-to-integrate-women-into-combat-roles/
https://www.ptsd.va.gov/professional/trauma/war/traumatic_stress_in_female_Veterans.asp

Sleep Disturbance

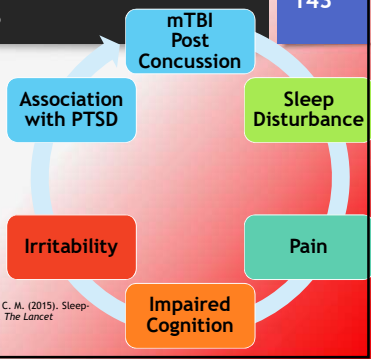
142

- Difficulty initiating or maintaining sleep and non-restful sleep may be related to experiences during deployment for combat or peacekeeping missions.
  - Nightmares result in waking up feeling terrified.
  - Saying awake to "stand guard" rather than sleep.
  - Irregular sleep-wake cycles from shifts and loud noise exposure.

Sleep Disturbance and Comorbidities

143

Theories:
- Altered hypothalamus neuropeptide
- Altered melatonin production by pineal gland
- Intrusive chronic headaches



Ouellet, M. C., Beaulieu-Bonneau, S., & Morin, C. M. (2015). Sleep-wake disturbances after traumatic brain injury. *The Lancet Neurology*, *14*(7), 746-757.

Sleep Disturbance Assessment

144

- Defense Centers of Excellence recommends including an interview question regarding sleep:
  - Are you experiencing frequent difficulty falling or staying asleep, excessive daytime sleepiness or unusual events during sleep?
- Pittsburg Sleep Quality Index (PSQI) is a self-report with higher global score on the 0-21 scale indicating worse sleep quality.
  - Validated on TBI patients with >5 indicating sleep disturbance

Department of Defense. (2014). **Management of sleep disturbance following concussion/mild TBI: guidance for primary care management in deployed and non-deployed settings.** *Clinical Recommendation* June 2014.
http://www.psychiatry.pitt.edu/research/tools-research/assessment-instruments/pittsburgh-sleep-quality-

Sleep Hygiene and Stimulus Control

145

- Keep bed only for sleep
- Decrease stimulants and alcohol
- Have a regular bedtime and rising time
- Get exposure to sunlight every morning
- Increase regular exercise
- If you don't fall asleep within 30 minutes, get up
- Wind down before bedtime
- Remove electronics your bedroom
- Go to bed only when sleepy

Compassion Fatigue

146

- Providing care and support to service members and Veterans can lead to burnout and secondary traumatic stress for the healthcare provider.
- The Provider Resilience app created by National Center for Telehealth & Technology includes tools for monitoring to avoid compassion fatigue.
  - Self assessments
  - Inspirational videos
  - Tools for restful breaks

http://t2health.dcoe.mil/apps/provider-resilience

Conclusion

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- Remember all that our men and women in uniform have selflessly sacrificed.
- Analyze their conditions from every perspective and be an advocate to help them access the extensive VA resources available to foster the independence and recovery they deserve.

https://www.polytrauma.va.gov/

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Combat-Related Polytrauma
Resource Links

Veterans Administration Medical Services

Veterans Administration Medical and Benefits Center Locations
https://www.va.gov/landing2_locations.htm

State Veterans Affairs Offices https://www.va.gov/statedva.htm

Veterans Choice Program: Information to become a provider
https://www.va.gov/opa/choiceact/documents/How_to_Become_VA_Provider_05242017_508.pdf

VA Polytrauma/TBI System of Care: Resources and Services https://www.polytrauma.va.gov/

VA Amputation System of Care https://www.prosthetics.va.gov/asoc/index.asp

VA Spinal Cord Injuries and Disorders System of Care https://www.sci.va.gov/

VA Substance Abuse Programs https://www.mentalhealth.va.gov/res-vatreatmentprograms.aspVA

Embedded Fragments Surveillance Center: Urine Biomonitoring for potential toxicity
https://www.publichealth.va.gov/exposures/toxic_fragments/surv_center.asp

VA Blind Rehabilitation Services: Low vision care, inpatient rehabilitation, and blind services
https://www.prosthetics.va.gov/blindrehab/BRS_Coordinated_Care.asp

Veterans Administration Social Services

Homeless Veterans Resources and Referral Information https://www.va.gov/HOMELESS/index.asp

Homeless Veterans Outreach & Education Tools https://www.va.gov/HOMELESS/get_involved.asp

Project Hired Wounded Warrior Workforce: Career Exploration, Job Placement, and Transition Support http://www.projecthired.org/jobseekers/veterans

Veterans Service Organizations: Resources for Personnel, Veterans, and Families
https://www.ptsd.va.gov/professional/materials/web-resources/military-resources.asp

Veterans Administration Mental Health

Veterans Crisis Line: 1-800-273-8655 Press 1 https://www.veteranscrisisline.net/

VA Mental Health Self-Help Resources: https://www.mentalhealth.va.gov/self_help.asp

VA National Center for PTSD: https://www.ptsd.va.gov/

VA Mental Health Community Provider Toolkit: Multiple resources and free consultation service for clinicians managing patients with PTSD
https://www.mentalhealth.va.gov/communityproviders/index.asp

Smartphone Apps

VA Psychological Frist Aid Mobile: Resources and tips on applying Psychological Frist Aid http://t2health.dcoe.mil/apps/PFAMobile

National Center for Telehealth & Technology T2 Provider Resilience: Tools to monitor and guard against burnout and compassion fatigue http://t2health.dcoe.mil/apps/provider-resilience

National Center for Telehealth & Technology T2 Mood Tracker: Track Emotional Health http://t2health.dcoe.mil/apps/t2-mood-tracker

National Center for Telehealth & Technology T2 Concussion Tracker: Self Assessment of Symptoms and Access to Crisis Resources http://t2health.dcoe.mil/apps/ConcussionCoach

Screening Tools

VA Military Trauma Iran War Clinical Guide https://www.ptsd.va.gov/professional/materials/manuals/iraq-war-clinician-guide.asp

Department of Defense Dictionary of Military and Associated Terms: http://www.dtic.mil/doctrine/dod_dictionary

VA Military Culture Training for Health Care Professionals https://health.mil/Training-Center/DoD/Military-Culture-Training-for-Health-Care-Professionals--Introduction-and-Self-Awareness-Exercise

VA Military Health History Card: Patient Interview Questions https://www.va.gov/oaa/pocketcard/Military-Health-History-Card-for-print.pdf

VA Psychological First Aid Manual Field Guide https://www.ptsd.va.gov/professional/materials/manuals/psych-first-aid.asp

Beck Anxiety Inventory http://www.pearsonclinical.com/psychology/products/100000251/beck-anxiety-inventory-bai.html?Pid=015-8018-400&Mode=summary

Vision Screening: Convergence Insufficiency Symptom Survey http://www.sankaranethralaya.org/pdf/patient-care/Convergence-Insufficiency-Symptom-Survey.pdf

Defense and Veterans Pain Rating Scale https://www.va.gov/PAINMANAGEMENT/docs/DVPRS_2slides_and_references.pdf

Primary Care PTSD Screen https://www.mentalhealth.va.gov/communityproviders/docs/PCPTSD_Screen.pdf

Pittsburgh Sleep Quality Index http://www.psychiatry.pitt.edu/research/tools-research/assessment-instruments/pittsburgh-sleep-quality-index-psqi