Appendix
Presentation 4 – Steele

Research Advisory Committee on Gulf War Veterans' Illnesses

Update on Published Research
Lea Steele, Ph.D.

Update on Published Research

Medical: ALS Studies

- Occurrence of ALS among Gulf War veterans
  - R. Brown et al., *Neurology* 2002; 59:79
  - Identified 40 ALS cases in Gulf vets, 67 cases in nondeployed vets
  - ALS in all Gulf War vs. era veterans: RR = 1.92 (1.29-1.82)
    - Air Force veterans only: RR = 2.68 (1.24-5.78)
  - Using self-reported deployment status
    - ALS in Gulf War vs. era veterans: RR = 2.74 (1.07 - 4.01)
    - Air Force veterans only: RR = 5.36 (2.67 - 10.86)

Update on Published Research

Medical: ALS Studies

- Excess Incidence of ALS in Young Gulf War veterans
  - Identified 26 ALS cases, 17 had onset before age 46
  - No access to cases identified by VA records and ALS Association
  - Compared number of diagnosed ALS cases in Gulf vets to expected number
    (based on ALS mortality rates in U.S. males)
  - Found:
    - 1991-1994: Number of Gulf veteran ALS cases similar to expected
    - 1995-1996: Ratio observed/expected = 2.27 (1.27 - 3.88)
    - 1998 only: Ratio observed/expected = 3.19 (1.03 - 7.43)
Update on Published Research
Medical: Paraoxonase

- **Paraoxonase in Persian Gulf War veterans**

- **Measured serum PON1 in:**
  - healthy Gulf War veterans
  - symptomatic Gulf War veterans
  - symptomatic nondeployed veterans

- **Found:** PON1 activity did not differ in healthy vs ill Gulf vets veterans

  PON1 activity was lower in Gulf cohort than other 2 cohorts

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Update on Published Research
Exposures: Chemical Agents

- **Chemical Warfare and the Gulf War: A Review of the Impact on Gulf Veterans' Health**
  - Hinkle, H Brown, I Smith, E Rhodes, K Bric, J Ramano
  - Military Medicine 2004; 60:12

  - Restored evidence that nerve agents had adverse effects on Gulf veterans' health
  - No reports of chemical nerve agent detection during the war
  - No signs of symptoms consistent with nerve agent exposure during the war
  - No evidence that nerve agents were used during the war
  - No documented exposure without immediate symptoms did not produce lasting health effects
  - No increase in posterior hospitalizations or disease mortality in Gulf War vets
  - Signed exposure to chemical weapons associated with illness

CONCLUSIONS: "Chemical warfare nerve agent exposure is a very unlikely cause of the postulated 'Gulf War syndrome' or any illness among Gulf War veterans."

More research needed to understand the adverse health effects that result from a belief in chemical weapons exposure.

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Update on Published Research
Exposures: DU

**Estimate of Time Zero Lung Burden of DU in Persian Gulf War Veterans by the 24-hour urinary excretion and Exponential Decay Analysis**


  In 11 Gulf vets, used 24-hour urine levels of uranium isotopes to estimate DU levels veterans experienced at time of exposure

  No mention of association of DU levels with health

**Undiagnosed Illnesses and Radioactive Warfare**


  Risk history of sar-related radiological exposures and their impact on military and civilian populations

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Update on Published Research
Consensus Statement

- **Unexplained Symptoms After Terrorism and War: An Expert Consensus Statement**

  Expert panel found that divergent overlapping unexplained symptoms occur after wars and terrorist acts

The consensus development project resulted from the work of an international planning committee that included representatives of federal agencies, veterans' service organization, and academia
Update on Published Research: Health Effects of Bosnia Deployment

- The Health Effects of Peacekeeping (Bosnia, 1992-1995): a cross-sectional study—comparison with nondeployed military personnel

  Comparison of health status and symptoms between U.K. Bosnia and nondeployed Bosnia-era veterans

- Found:
  - Bosnia veterans similar to nondeployed era veterans on almost all health measures
  - Bosnia veterans reported slightly better physical function than era veterans
  - Deployed veterans reported more heavy use of alcohol
  - Health of both groups generally good
  - Bosnia veterans who had also served in the Gulf War had significantly worse health outcomes than those who had not.

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Update on Published Research: Consensus Statement

- Unexplained Symptoms After Terrorism and War: An Expert Consensus Statement

  Focused on 3 questions:
  1. What is the strength of evidence that war/terrorism/catastrophes cause unexplained symptoms?
     - A. Consistent evidence
  2. What scientific evidence is needed to conclude that an exposed population is suffering from a unique illness?
     - A. New conditions rare, better to use existing case definitions for CFS, FM/S
  3. What is evidence that postwar conditions can be prevented or mitigated?
     - A. Little research available. Additional research needed.