U.S. DEPARTMENT OF DEFENSE
Deployment Health
Support Directorate

DHSD Update to the JESWG

7 August 2006

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Agenda

- DoDI 6490.3, “Deployment Health” Status
- Embedded Metal Fragment Removal Policy
- International Agreement for Deployment OEHS Information Sharing
- Particulate Matter Health Effects Initiatives
- DoD Deployment Health Risk Communications Working Group
- DoD Biomonitoring Working Group

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DoDI 6490.3 Revision (Draft)

- APPROVED by ASD(HA) and awaiting signature by USD(P&R)
  - Dr Winkenwerder very impressed with the instruction and will hand carry to Dr. Chu for signature
  - Public Affairs roll-out events planned
  - Dr Postlewaite will deliver a presentation on the Instruction on Tuesday, 1700 in the Brazos Room

Embedded Metal Fragment Removal Policy

- In process of identifying laboratories with the capability to perform fragment analyses
- Policy under development for the submission of all metal fragments surgically removed in MTFs from wartime and terrorist related casualties
- Coordination on-going with the Joint Theater Trauma Registry (JTTR) to utilize their registry to (1) identify additional casualties who may have fragments and (2) to record fragment analysis results
- Plan is for DHCC to ensure any necessary medical follow-up occurs

International Surveillance Data Sharing Agreements (Australia, Canada, United Kingdom, United States)

- Purpose: Create common database for upload and retrieval of classified/unclassified data
- Original Agreement to be covered under the Technical Cooperation Program (TTCP) as a Project Arrangement
  - TTCP covers only ‘Strategic’ exchange of data
  - Separate agreement required for ‘Tactical’ exchange

International Surveillance Data Sharing Agreements (Cont'd)

- New option: Canada, United Kingdom, United States (CANUKUS) MOU Concerning the Research, Development and Acquisition of CBR Defense Materiel
  - Allows for exchange of OEHS data in both 'Strategic' and 'Tactical' environments
- Status:
  - Project Arrangement (PA) under the CANUKUS MOU is in draft and is being reviewed by the Partner Nations
  - Australia was signed on as a participant 07/01/06

Particulate Matter Exposure

- Peer-reviewed journals searched for studies assessing health effects in indigenous populations
  - Purpose: Determine if studies involving local populations can estimate possible chronic exposures in deployed servicemembers
  - Status:
    - Preliminary search complete (~45 articles)
    - Air Force Institute for Operational Health agreed to review articles and analyze content

Particulate Matter Exposure (Cont'd)

- DHSD submitted two research proposals as candidates for funding under the Request for Technical Studies, Analysis or Contract Support program (USD P&R)

  (1) USACHPPM: Pre-, during, and post-deployment cohort study focusing on chronic health effects

  (2) BUMED: Assessment of chemical/physical properties of respirable PM for potential use by adversaries in WMD development

DoD Deployment Health Risk Communications Working Group

- Chartered as a subject matter panel under the Force Health Protection Council
- Interfacing with the VA and HHS (DoD-VA-HSS Health Risk Communications Subcommittee)
- Redesigning the Deployment Health and Family Readiness Library
  - Facilitate navigation
  - Improve document retrieval capabilities
- Starting a media campaign to ensure our customers are aware of the products
  http://deploymenthealthlibrary.fhp.osd.mil/home.jsp

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Risk Communications Working Group Fact Sheets Under Development

- DU (for Servicemembers and for Clinicians)
- Birth Defects and Deployment Exposures
- Camel Spiders
- Q Fever
- Ionizing Radiation
- Meningococcal Meningitis
- Solvents
- Burning Trash and Human Wastes
- Hydrogen Sulfide
- Environmental and Health Concerns of Tungsten
- Larium & DU Pocket Cards for Clinicians/Veterans

DoD Biomonitoring Working Group

- Nerve agent bioassay
  - Limitations
    - Lack of a specific screening biomarker
    - Need for baselines to utilize acetylcholinesterase (AChE) results
    - Field test methods differ from fixed laboratory methods
  - Current Considerations
    - Requiring baseline AChE levels on some/all deployers
    - Recommending utilization of nerve agent reactivation test to confirm exposure

Fluoride Nerve Agent Reactivation Method

- Three possible scenarios where use of this test may be indicated:
  1. To confirm low-level nerve agent exposures in asymptomatic individuals who may have been exposed
  2. To confirm a nerve agent exposure in symptomatic personnel, especially when a covert release may have occurred without any environmental sensors
  3. To define the "geographical limits" of a population exposed to a nerve agent plume (e.g., the nerve agent release during '91 Gulf War during the Khamisiyah ammunition demolition)

Issues Requiring Resolution

- How useful is a baseline AChE for clinical management and return to duty determinations? Should it be required of all deployers?
- For which personnel should we use the fluoride nerve agent reactivation method to confirm nerve agent exposures?

Potential Biomarkers of Exposure

- RBC-ChE (AChE) levels – exposures result in depression of enzyme levels; it regenerates in RBC's at about 1% a day
- Use of AChE as a nerve agent exposure biomarker:
  - Provides similar standards of care for pesticide workers and chemical agent demilitarization workers
  - Provides an estimate of the activity of the AChE in the peripheral tissues and central nervous system
  - Does not always correlate with symptoms -- at low levels of exposure, individuals may be asymptomatic, yet AChE depressed
  - Potentially useful for return-to-duty determinations for high-risk personnel if a baseline AChE has been established

Potential Biomarkers of Exposure

- Use of AChE as a nerve agent biomarker (cont):
  - Current limitations:
    - Not useful for clinical purposes (treatment)
    - Non-specific indicator of exposure (pesticides)
    - Variation in levels among different people (inter-individual)
    - Variations can be found in same individual (intra-individual)
    - Need for established AChE baseline levels
  - Should we establish AChE baselines on all personnel or just for those at high risk of exposure?

Fluoride Nerve Agent Reactivation Method

- Used initially by the Dutch after the 1995 Tokyo sarin attack (Aum Shinriyko)
- Method: highly specific and sensitive (GD – work in progress); costly and time consuming
  - Fluoride ions are used to reactivate the nerve agent molecules bound to ACh, by displacing the ACh with flouride. Results in a “phosphoflouridate” (nerve agent) which can be detected and quantified
  - Method further refined, and validated by the US Army Medical Research Institute of Chemical Defense (USAMRICD) and the US Army Edgewood Chemical Biological Center (ECBC)

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