CSP 2006: Genomics of Gulf War Illness in Veterans

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CSP#2006 - the Basics

- Genome-Wide Association Study (GWAS) of Gulf War Illness among Gulf War Veterans
- Million Veteran Program
  - “re-contact” alpha-test project
- Drew Helmer (E. Orange) and Dawn Provenzale (Durham)
- Sample from MVP
  - options to expand recruitment
- Phenotyping w/ questionnaire
  - electronic record validation
- Genotyping using MVP chip
  - sequencing in future
CSP 2006- Key Attributes

- Population - US military service members on active duty during the Gulf War Era
- Sample - drawn from Million Veteran Program participants
  - Gulf War Era - estimated n=50,000
  - Estimate 7500 GWI Veterans and 7500 not-GWI Veterans
- Phenotype -
  - Gulf War Illness status (Kansas and other criteria)
  - Derived from symptoms and exclusion criteria reported on a survey
  - Survey developed from CSP 585 and original Kansas questionnaire
- Genotype -
  - MVP chip (genome wide association study)
  - Genetic analysis based on MVP standards
CSP 2006- Pilot

Field-testing of protocol:

• mail N=600 survey packets to national sample of MVP enrollees
• estimate mail return and completion rates
• ascertain adequacy of questionnaire for phenotyping
• develop algorithm to identify cases and controls from survey responses
CSP 2006- Pilot experience

Total Mailings
n = 600 (100%)

- No response/No Qx received/Opted out by phone (n=205)
- Opt out cards received at CERC (n=75)

Questionnaires Received at CERC
n = 320 (53.3%)

- Military Service after 1990 – 1991 Gulf War Era (n=23)
- Missing Military Service or Gulf War Deployment information (n=7)

Served in the Military during the 1990–1991 Gulf War Era
n = 290 (48.3%)
CSP 2006- Current Status

• Central IRB review is pending
• Office of Management & Budget review of the survey will be required
  – 6-12 months
• Writing a study design paper
• Planning analysis of the pilot data
GWAS is an initial approach to genomic analysis
- Candidate gene analysis, sequencing, gene x environment interactions
Other approaches to phenotyping
- Other conditions, specific symptoms, biomarkers, different classification systems
Building on MVP platform- great commitment, enthusiasm for figuring things out
Questions?