

## **EPIDEMIOLOGIC STUDIES OF OCCUPATIONAL BLAST EXPOSURE**

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**Key words:** Epidemiology - Occupation - Explosives - Medical Outcomes - Risk

The study of effects associated with human exposure to repeated low level blast during training or operations of select military occupational specialties (MOS) challenges medical science because acute negative effects that might follow such exposures cannot be expected to be clear or prevalent. Any gross effects from such occupational blast exposure on health or performance should be expected to have been already identified and addressed by affected military units. Instead, effects, if any, should be expected to be incremental in nature and to vary among individuals of different susceptibilities or exposure histories. Despite the challenge, occupational blast-associated effects in humans are emerging in ongoing research. The purpose of the present studies was to examine medical records and other archival data for evidence of blast-associated effects that may have clinical significance in current standard of care.

In the work reported here, we hypothesized that populations exposed to blast by virtue of their military occupation would have poorer global medical outcomes than cohorts less likely to have been occupationally exposed.

In separate complementary studies of records from more than 275,000 service members, cohorts were compared in hospitalizations, outpatient visits, pharmacy, disability ratings, and post-deployment health assessments. Two key findings emerged. Service members in MOSs associated with occupational blast exposure were at higher risk for tinnitus across career time points and were at higher risk for blast-related neurological injury following combat theater blast than service members in comparison cohorts.

This study documents service members in occupations that likely include repeated exposure to blast are at increased risk of some conditions that present in medical evaluations. Other hypothesized risks from occupational exposure may manifest as symptomology not visible in the medical system or current standard of care. Separate studies, observational and epidemiological, are underway to evaluate further the potential for occupational risk, but the evidence presented here may indicate near term opportunities to guide efforts to reduce risk among exposed service members.