

P189

ASSESSMENT OF EXPOSURE TO SARIN IN MILITARY VETERANS AT PORTON DOWN

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Objectives Mortality and cancer incidence was recently examined in a cohort of >18 000 veterans of tests at Porton Down, 1941–89. Here we describe exposures to the nerve agent, sarin, and document the use of exposure or effect modifiers.

Methods Data were abstracted from the Porton Down historical archive. Specific chemical names and the test dates were abstracted. For nerve agents information was also abstracted on modifiers (eg, respirators or protective chemicals). Pre-test and maximum change in cholinesterase (ChE) was calculated for unspecified, whole blood, plasma, and/or red blood cell (RBC) ChE.

Results A total 3597 veterans were recorded in 4299 nerve agent tests 1945–87. Sarin was the most commonly-tested nerve agent (2980 veterans; 3511 tests). Most sarin tests were by the inhalation route (85%), 8% were dermal, 3% ocular. 53% of sarin tests were unprotected. Of the remainder, 30% involved physical protection (eg, respirator), 21% a chemical modifier (eg, pyridostigmine). Median exposure intensity was 12 mg.min/m³ for unprotected inhalation tests (IQR 5.1–14.8 mg.min/m³), 10.7 mg.min/m³ for tests with physical protection (IQR 7.4–13.9 mg.min/m³). The median unprotected dermal exposure was 0.49 mg (IQR 0.2–8 mg) and 250 mg for protected dermal exposures (IQR 200–300 mg). Median RBC ChE activity decreased with increasing sarin exposure (n = 712 tests); this decrease was of a similar magnitude irrespective of protection status.

Conclusions Sarin was the nerve agent most frequently tested on veterans at Porton Down. Availability of data on exposure intensity has allowed quantitative assessment of the effect of physical and chemical modifiers.