

XVIII. ANNEX 2 - COMPARISON GROUP INELIGIBILITY

A central element of epidemiologic research is study population ascertainment. Incomplete population ascertainment always carries with it the possibility of serious selection bias which cannot be corrected using statistical procedures. Complete ascertainment of the exposed and comparison populations occurred through a manual review of military personnel records from 1962-1964, combined with a computer tape generated by the Air Force Human Resources Laboratory (AFHRL). This computer tape was based on retrieval parameters identified to AFHRL by the United States Air Force School of Aerospace Medicine (USAFSAM) principal investigators. The retrieval process required computer searches of multiple Air Force Military Personnel Center tapes spanning the time period of January 1965 through December 1971. In November of 1980, AFHRL delivered to USAFSAM a tape that was thought to contain the total eligible study population. The study match was completed and the selected individuals were contacted to participate in the study. In December of 1981, Louis Harris and Associates, the questionnaire administration contractor, notified the USAFSAM investigators that several of the participants had reported no experience in Southeast Asia, suggesting that there had been overselection. Review of these participants' military personnel records clearly revealed that they were comparison subjects who had not had Southeast Asia experience. In order to maintain the integrity of the questionnaire implementation and the physical examination contract, it was necessary to implement a modification of the replacement strategy which had been originally designed for use with control subjects who refused to participate in the study. It had been intended that the noncompliance questionnaire be given to both the replacement and the refusing subjects, and that they would be matched for equivalent health perception prior to implementing this strategy. However, the early requirement to replace these ineligible individuals did not allow the use of the noncompliant instrument. The eligibility of replacement candidates was verified and these valid subjects were entered into the study. Inappropriate subjects were informed of this selection error and excluded from further participation in the effort. Two hundred eleven inappropriate subjects had been interviewed, and 26 had been examined.

This situation also necessitated an immediate manual review of the personnel records of all individuals for the comparison group. The review of records was completed in March of 1982 and the verification of this process was initiated. The objective of this quality control effort was to verify the eligibility of the comparison group by subsampling techniques and to insure that errors in excess of one percent ineligibility did not exist. The estimated error rate was found to be 0.00748% with confidence bounds of 0.00340% and 0.0312%. To further reduce this error rate, each replacement candidate's personnel records were re-evaluated prior to forwarding his name to the questionnaire contractor, thereby assuring that all replacements were absolutely eligible for the study. The overall review demonstrated that 18% of the 12,193 individuals in the original control population were erroneously included. These ineligible subjects were randomly distributed throughout the C1-C10 matrix. Two percent of this error was due to inaccurate data on the USAF personnel tape and 16% due to incorrect cohort selection specification and/or computer search implementation. All errors were in the direction of overselection, due to the inclusion of non-Southeast Asia C-130 units in the specifications.

Following the removal of the ineligible subjects from the cohort matrix, the empty positions were then filled by valid comparison subjects with higher cohort numbers, thus constituting a leftward shift of the matrix. This process was reviewed by the subcommittee of the Advisory Committee on Special Studies Relating to the Possible Long-Term Health Effects of Phenoxy Herbicides and Contaminants and members of one of the other peer review groups prior to implementation, and its use was found to be totally acceptable. Its use resulted in a reduction of the study from 1:10 to a 1:8 design. Monte Carlo studies using current physical examination compliance rates showed this collapse to have not significant impact on statistical power in the followup phase of the study. Although the shift-left process constituted an unplanned use of the replacement strategy, it permitted the continuation of both the questionnaire and physical examination contracts without disruption and with total validity.