(17.3 yrs) for ALS mortality through linkage with Statistics Netherlands. Information on occupational history and potential confounders such as sex, age, smoking, alcohol use, BMI, physical activity and educational level were collected at baseline through a self-administered questionnaire.

Occupations were coded using the International Standard Classification of Occupations (ISCO-88). Occupational exposures were assigned through several job-exposure matrices (JEMs): ALOHA-JEM (solvents, pesticides), DOM-JEM (diesel exhaust, metals), an extremely low frequency magnetic fields (ELF-MF)-JEM and an electrical shock-JEM. Assigned exposure levels were ordinal (background or no exposure, low exposure, high exposure). Exposure measures included 'ever exposure' (ever had a job with high or low exposure) and cumulative exposure. Associations between occupational exposures and ALS mortality were analysed separately for men and women, using Cox-regression. Hazard ratios (HR) and 95% confidence intervals (CI) were estimated using attained age as underlying time scale.

Results 79 cases of ALS were identified in men and 62 in women. In men, ever a job with ELF-MF exposure versus background showed an association with ALS-mortality (ever low HR: 1.51 (95% CI 0.93 - 2.45); ever high HR: 1.95 (95% CI 0.92 - 4.16), and an exposure-response relationship in cumulative exposure (HR third tertile of exposed: 1.87 (95% CI 1.04 - 3.33). Exposure to solvents also showed some significant associations, but no clear exposure-response relationship. Including exposure to electrical shocks or chlorinated solvents into the model only marginally changed the association between ELF-MF and ALS mortality.

Conclusions Of the occupational exposures analysed in this study, only occupational ELF-MF exposure showed a consistent association with ALS mortality.

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288 RULE-BASED EXPOSURE ASSESSMENT VERSUS CASE-BY-CASE EXPERT ASSESSMENT USING THE SAME INFORMATION IN A COMMUNITY-BASED STUDY

[1]S Peters, [2]Glass, [1]L Fritschi. *[1]UWA, Perth, Australia; [2]Monash University, Melbourne, Australia*

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Objectives Retrospective exposure assessment in community-based studies is largely reliant on questionnaire information. Expert assessment is often used to assess lifetime occupational exposures, but these assessments generally lack transparency and are highly time-consuming. A recent study assessing occupational exposure to diesel exhaust suggested that applying an algorithm may improve efficiency, consistency and transparency of the exposure assessment process. It is however unknown whether the observed advantages are generalisable to other occupational exposures. We explored the agreement between a rule-based assessment approach and the original case-by-case expert assessment of occupational exposure to diesel exhaust, pesticides and solvents in a community-based study.

Methods We used data from a case-control study of childhood acute lymphoblastic leukaemia in which parental occupational exposures were originally assigned by expert assessment. From the available questionnaires, we have now identified key questions and subsequently rules were written to assign exposure levels to diesel exhaust, pesticides, and solvents. We estimated exposure prevalence for control parents, separately for men and women, and used Kappa statistics to describe the agreement between the two exposure assessment methods.

Results For men, the agreement between the exposures assessed by algorithm and by expert was good to excellent for all three agents at a job level (= 0.60–0.83) and person level (= 0.65–0.86). Overall, exposure prevalence was much lower among women. Agreement was good for diesel exhaust and solvents at both job (= 0.67 and = 0.69) and person level (= 0.70 and = 0.72). Lower agreement was observed for pesticide exposure (= 0.40 for jobs, = 0.48 at person level).

Conclusions The rule-based assessment approach appeared to be an efficient way to assign occupational exposure levels in a community-based case-control study for a range of occupational exposures. It has been successfully applied in a recent study on childhood brain tumours to assess parental occupational exposures to diesel exhaust and pesticides.

289 USING HIERARCHICAL CLUSTERING METHODS TO IDENTIFY JOBS WITH SIMILAR RESPONSE PATTERNS IN A POPULATION-BASED CASE-CONTROL STUDY

[1]M C Friesen, [2]Shortreed, [3]Wheeler, [4]Stewart,[5]Burstyn, [6]Vermeulen, [7]Pronk, [1]Colt, [1]Baris, [8]Karagas, [9]Schwenn, [10]McCoy, [1]Silverman, [1]Yu. *[1]National Cancer Institute, North Bethesda, United States of America; [2]Group Health Research Institute, Seattle, United States of America; [3]Virginia Commonwealth University, Richmond, United States of America; [4]Stewart Exposure Assessments, Arlington, United States of America; [5]Drexel University, Philadelphia, United States of America; [6]Utrecht University, Utrecht, The Netherlands; [7]TNO, Zeist, The Netherlands; [8]Dartmouth Medical School, Hanover, United States of America; [9]Maine Cancer Registry, Augusta, United States of America; [10]Vermont Cancer Registry, Burlington, United States of America*

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Objectives Studies have demonstrated the utility of developing expert-based decision rules based on questionnaire response patterns to assign exposure in population-based studies. However, each expert may identify different response patterns to represent exposure scenarios. To improve the reproducibility of identifying these patterns and increase the efficiency of assigning exposures, we used hierarchical clustering methods to identify groups of jobs (clusters) with similar response patterns.

Methods For each job module in the New England Bladder Cancer Case-Control Study, we applied Ward's average linkage hierarchical cluster models to the questionnaire responses related to occupational diesel exhaust exposure to identify the most distinct 25 and 50 clusters of jobs per module. We assessed the clusters' homogeneity based on the proportion of jobs assigned the same probability category (<50% vs. ≥50% probability of occupational diesel exhaust exposure) from a previous expert-based assessment of each job. A cluster was 'homogeneous' if ≥75% of the jobs were assigned the same probability category. Here we present the results for three modules: carpenter (357 jobs, 17% exposed, 52 unique response patterns), office professional (3,328 jobs, 22% exposed, 87 unique response patterns), and truck driver (508 jobs, 74% exposed, 404 unique response patterns).

Results For carpenters, 76% and 90% of the groups were homogeneous based on 25 and 50 clusters, respectively. For office professionals, 84% and 78% of the groups were homogeneous based on 25 and 50 clusters, respectively. For truck drivers, 76% and 70% of the groups were homogeneous based on 25 and 50 clusters, respectively. b