Abstract Title: Amyotrophic Lateral Sclerosis and Exposure to Diesel Exhaust in Denmark

Press Release Title: Study Suggests Risk of ALS Increases with More Exposure to Diesel Exhaust

Objective: To investigate the association between occupational exposures to DE and odds of ALS.

Authors: Aisha Dickerson, Johnni Hansen, Ole Gredal, Marc Weisskopf

Background: Previous studies have suggested an increased risk of ALS and other motor neuron diseases for those in occupations commonly exposed to diesel exhaust (DE), but no studies specifically of DE exposure have been conducted.

Design/Methods: ALS cases were identified from the Danish National Patient Registry 1982 to 2013. For each case, 100 birth year- and sex-matched controls were selected using the Danish Central Person Registry. We acquired employment history since 1964 from the nationwide Danish Pension Fund. Cumulative DE exposures prior to index dates (date of ALS diagnosis in the ALS case) were estimated using a job exposure matrix. Cumulative exposure was calculated considering different lag periods, i.e. excluding any exposure in the 5 or 10 years prior to the index date. We excluded study subjects who were older than 25 years of age in 1964 to diminish exposure misclassification. Adjusted odds ratios (aOR) and 95% confidence intervals (CI) for quartiles of exposure were obtained using conditional logistic regression analyses and stratified by sex.

Results: The OR for ALS among men with any occupational DE exposure increased with increasing lag periods and was significant using a 10-year lag (aOR: 1.20; 95% CI: 1.05, 1.38). Results were stronger for men with >50% probability of DE exposure. Additionally in these analyses, for both the 5-year and 10-year lag periods, men in the highest quartile of exposure had higher odds of ALS compared to those with no exposure (aOR: 1.34; 95% CI: 1.06, 1.69 and aOR: 1.46; 95% CI: 1.14, 1.86, respectively).

Conclusions: Our study suggests an association between consistently higher occupational exposures to DE and ALS. These findings support those of previously reported associations between occupations that involve DE exposure and ALS.

Study Supported By: This work was supported by the National Institute of Environmental Health Sciences (grants R01 ES019188 and P30 ES000002 to MW). Aisha Dickerson was supported in part by an NIH training grant (grant T32 ES007069).