MS SYNERGY collaboration – occupational factors in lung cancer

LUNG CANCER RISK AMONG MEN BY OCCUPATION AND INDUSTRY IN SYNERGY – POOLED ANALYSIS OF CASE-CONTROL STUDIES ON THE JOINT EFFECTS OF OCCUPATIONAL CARCINOGENS IN THE DEVELOPMENT OF LUNG CANCER

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Objectives Exploratory analyses by occupation or industry are commonly conducted in case-control studies. However, cancer risks limited to certain jobs within an industry, or to a job within a given industry, become undetectable in the overall industry or job odds-ratio. Using the SYNERGY dataset we conducted an analysis based on occupations and industries combined.

Methods Data included 10 917 male cases and 13 154 male controls. Industries and jobs were coded according to ISIC Revision 2 and ISCO 1968, respectively. Odds-ratios were computed for ISCO-ISIC combinations with ≥10 study subjects, adjusting for study, age, and smoking. To allow for multiple comparisons we applied a semi-Bayes approach, shrinking towards a group mean the estimate for each ISCO-ISIC combination, previously classified as: occupation known or suspected to entail lung cancer risk, other manual workers, other non-manual workers.

Results Out of 1187 evaluated ISCO-ISIC combinations, 50 had an increased odds-ratio ($p<0.05$). For 26 combinations the risk remained elevated after semi-Bayes shrinkage. As an example, painters in car repair, but not in other industries like car building, had an increased risk (odds-ratio after shrinkage: 1.79, 95% CI 1.04 to 3.07). Likewise, only 8 jobs had increased risk among 63 analysed within the construction industry: miners (2.05, 1.18 to 3.55), bricklayers (1.57, 1.37 to 1.80), welders (1.57, 1.08 to 2.28), earth-moving operators (1.36, 1.05 to 1.76), carpenters (1.30, 1.08 to 1.57), other workers (1.24, 1.06 to 1.44), plumbers (1.23, 1.02 to 1.49) and labourers (1.20, 1.05 to 1.36).

Conclusions The use of ISCO-SIC combinations and a semi-Bayes approach identified specific jobs within specific industries with an increased lung cancer risk.