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| **Prediction models underestimate lung cancer risk in asbestos exposed individuals** |
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| **Introduction**: Lung cancer screening is only effective when targeting high risk populations. Australia will commence nationwide lung cancer screening in July 2025. Occupational (particularly asbestos) exposures increase the risk of lung cancer but are not included in current screening eligibility criteria. This study aims to assess the performance of existing lung cancer screening criteria and risk prediction models in an asbestos exposed population.**Method**: The Western Australian Asbestos Review Program has used CT imaging for lung cancer screening for the last 11 years. Inclusion requires minimum 3 months asbestos exposure, regardless of smoking status. The performance of 5 cancer risk prediction models (PLCOm2012, PLCOasb, PLCOm2014, LLPv2 and Bach) and 2 screening criteria (Medical Services Advisory Committee, MSAC and US Preventative Services Task Force, USPSTF2021) was assessed in this cohort. Calibration was conducted via 2 methods – calibration at large, and Mean Adjusted Deaths Compared Against Predictions (MADCAP) plots.**Results**: 2,126 participants were included. 85.4% were male with a median age of 70 and median asbestos exposure 0.2 fibres/ml-year (IQR 0.005-0.864). 36.2% of the cohort were never smokers, and 8.7% were current smokers. 2.4% of participants developed lung cancer during the screening period, with 9/51(18%) cancers occurring in never smokers. The area under the receiver operating curve was highest for LLPv2 (0.675), followed by Bach (0.669), PLCOm2014 (0.623) and PLCOm2012 /PLCOasb(0.602). Both USPSTF2021 and MSAC had poor sensitivity at 0.21 (0.10-0.37) and 0.07 (0.01-0.19) respectively. All risk prediction models underestimated risk using calibration at large and MADCAP plots, except for the LLPv2 model which overestimates risk using both methods (figure 1). **Conclusion**: Current risk prediction models and screening criteria perform poorly in this high risk cohort. Future models need to account for the relative excess risk by interaction of tobacco and asbestos exposure. |
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