B-0959 Breast cancer prediction modelling based on common mammographic findings in screening

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Purpose: To develop a prediction model for breast cancer (nomogram) based on common mammographic findings on screening mammograms. The model is designed to reduce interobserver variation in assigning BI-RADS in the Dutch breast cancer screening programme.

Methods and Materials: We retrospectively reviewed 352 positive (digital) screening mammograms of women participating in the Nijmegen region of the Dutch screening programme (December 2006-November 2008). The following mammographic findings were assessed by consensus reading of 3 expert radiologists: masses and features of masses, calcifications, parenchymal deformity, asymmetric density and mammographic density and BI-RADS. Data on age, diagnostic work-up, final diagnosis and surgical procedures were collected from patient records. Multivariable logistic regression analyses were used to build our breast cancer prediction model, presented as a nomogram.

Results: Breast cancer was diagnosed in 108 cases (31%). The highest positive predictive value (PPV) was reported for spiculated masses (96%) and the lowest for well-defined masses (9%). Characteristics included in the nomogram based on statistical significance and clinical relevance are: age, mass, calcifications, parenchymal deformity and asymmetric density.

Conclusion: With our nomogram we developed a tool to assist screening radiologists in determining the chance of malignancy based on mammographic findings. We propose cut-off values for assigning BI-RADS categories in the Dutch screening setting based on our nomogram which will need to be validated in future research. These values can easily be adapted for use in other screening programmes.