control group was never invited to screening, while in the ten youngest (born 1923–32, 45–54 years at entry) the control group was invited after 1990. Incident breast cancer cases for the period 1987–2001 were identified through record linkage with the Swedish Cancer Register.

Results: At the end of the period of randomised design there was an excess of 24% (150 cases). In women aged 55–69 years at randomisation the excess was 32% and in women aged 45–54 it was16%. An excess number of cases of 10% (115 cases) remained in the former invited group at the end of follow-up in 2001. This includes invasive as well as in situ carcinoma. If only invasive carcinoma is considered, the over diagnosis reached a level of 7%.

Conclusion: Screening by mammography is associated with over diagnosis. The rate of over-diagnosis was greater in older than in younger women and it was mainly caused by invasive breast cancer. Women opting to continue screening after 70 years of age, should be informed of a substantial risk of over diagnosis.

35 Poster

German pathologists in preparation for population based mammography screening: Results of a nation-wide training course series

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Introduction: In 2005, a population based mammography screening program for Germany based on the European guidelines has been started. Without improving the pathology service, the benefit of screening may be reduced or even lost. Especially specimens from minimal invasive diagnosis (MIB) of screened women provide pathologists with problems. To prepare pathologists who intend to participate in the German screening project the authors give courses on breast screening pathology as the first feature within an external quality assurance scheme.

Aims: 1. to evaluate the effect of the training courses on diagnostic performance, 2. to assess the performance of German pathologists interested in breast cancer screening, and 3. to identify the diagnostic problems.

Methods: From February to November 2005, 297 pathologists participated in 15 diagnostic courses, each for maximum 20 participants. Each course included 4 microscopic tutorials and 8 presentations. It started and ended with a diagnostic test using the same set of 11 slides of MIB specimens selected within broad diagnostic categories by two of us (T.D. and W.B.) with complete agreement. Participants reading the slides used a form planned as standard reporting form for the German Screening Project including the B category according to the EU Guidelines. Kappa statistics were calculated separately for the entry and the closing test. The advantage of these statistics is that kappa values are independent of the diagnosis; they simply reflect the consistency of ratings by the participants. The following limits were used for interpretation: <0.0: none, 0.0–0.2: poor, 0.21–0.4: slight, 0.41–0.6: fair, 0.61–0.8: good, 0.81–0.92: very good, and 0.93–1.0: excellent.

Results: 1. After the course the rate of cases with "good" and better consistency increased from 7 to 9/11 cases. 2. The overall consistency of the participants' B-categories is 0.62. 3. There are 4 features with poor to fair agreement: columnar cell change, columnar cell hyperplasia, DCIS low grade, and phyllodes tumor.

Conclusions: 1. The training course improved the consistency of the test results in MIB. 2. The consistence of attending German pathologists in MIB diagnosis is in general at least substantial (kappa >0.6) 3. To improve the performance, further education should focus on differential diagnosis of columnar cell lesions and non-high nuclear grade DCIS/ductal hyperplasia, respectively.

36 Poster

Mammographic density and the size of breast cancers detected by programmatic screening

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We assess the effect of mammographic density on tumour size at detection in the Australian mammographic screening program, in order to examine the relative mortality benefits of mammographic screening.

Brief description: Firstly we examine descriptive statistics of tumour size according to density (threshold percent density or dense area) and mode of detection (screening or interval). We then use regression analyses to adjust for potential confounders and assess whether there is effect modification by mode of detection.

Summary: The median and mean size of cancers detected by screening generally increased with density at first and subsequent rounds. No such effect was apparent in interval cancers.

Histograms of tumour size quintile groups by density quintile groups revealed a shift in size distribution towards larger cancers with increasing density, at first (Figure 1) and subsequent rounds. Cancers detected in women with lower density tended to be smaller and screen-detected, whereas cancers detected in women with higher density tended to be larger and more often interval-detected. These differences appeared to be incremental across the five density groups.

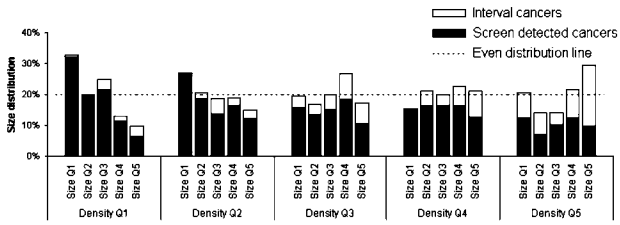

Figure 1. Distribution of tumour size by density at first round screening.

Regression showed that cancers detected in women with very high mammographic density were significantly larger than those detected in women with very low mammographic density. This effect was graded across the range of densities and was apparent both before and after adjustment for age, hormone replacement therapy (HRT) use, family history, symptomatic status and detection, however the trend was less clear in the middle range of densities after adjustment for effect modification by mode of detection. Of the factors that are potential targets for program improvement (such as age and family history), only density and HRT use were significantly associated with tumour size in the fully adjusted model. The effects at subsequent round were less clear.

Figure 2 shows the expected mean tumour size at first round screening according to density, for a 50-year-old asymptomatic woman who was not using HRT at the time of screening and had no family history of breast cancer.

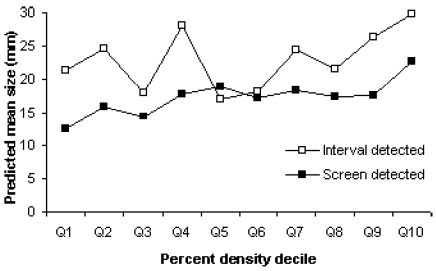

Figure 2. Expected mean tumour size at first round screening, by density.

Conclusion: Tumours detected in women with higher density are larger than those detected in women with lower density, and this effect is somewhat graded across the range of densities at first round screening.

37 Poster

A multidisciplinary team approach to family history risk assessment reduced clinic attendance by half

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The aim of this study was to accurately assess the breast cancer risk of family history surveillance patients at 2 breast units in Glasgow utilising a multidisciplinary team approach and national guidelines. In our practise most women had been attending for family history surveillance before the introduction of Scottish guidelines that have increased awareness about the importance of accurate risk assessment in this group of women. Many had therefore never undergone a formal risk assessment or verification of their family histories and had only ever been seen by the surgical team.

Women attending for surveillance between November 2003 and February 2005 were included in this study. Genetics staff attended family history clinics and used Scottish guidelines in a 15 minute consultation to classify women already attending for annual follow up as being at low, moderate, or high risk of breast cancer. Where possible family members had their diagnoses verified through a national cancer registry. A surgical team that included specialist nurses examined all women and post consultation a summary letter including confirmation of the risk level was sent to the individual.