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ABSTRACT BOOK

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Symposium Mammographicum 2014 Meeting Abstracts

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Oral abstracts

14.55 – 15.05
4.3 Preoperative MRI for invasive lobular cancer: not a panacea

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[1]Guys and St Thomas NHS Foundation Trust, UK; [2]Division of Imaging Sciences and Biomedical Engineering Kings College, UK

Purpose: An audit to determine the accuracy of preoperative MRI in assessing the extent of disease for invasive lobular carcinomas (ILCA).

Method: Preoperative MRI has been performed on all cases of histologically conformed ILCA at our institution since 2007. A retrospective audit from January 2008–2013 identified 164 cases. Final surgical histopathology was available in 87% (n=143), 65% (n=93) of whom had preoperative MRI.

Results: The accuracy of imaging versus final histopathology is shown below:

- Overestimation by >5mm: mammography 18%, ultrasound 8%, MRI 25%
- Underestimation by >5mm: mammography 56%, ultrasound 61%, MRI 40%
- Accuracy to within 5mm: mammography 26%, ultrasound 31%, MRI 35%

A change to the surgical plan (conversion to mastectomy) was seen in 25%, in 20% this was deemed correct, in 5% not. A change to the surgical plan was not made in 5%, who underwent wide local excision, followed by mastectomy. Overall the correct change to surgical plan was made in 81% and incorrect change in 38%.

Conclusions: Preoperative MRI does not confer a significant advantage over conventional imaging with mammography and ultrasound in all cases of ILCA (Houssami et al 2013). We advocate using it on a case by case basis following MDT review and discussion.

15.05 – 15.15
4.4 Preoperative Role of Breast MRI in High Grade Ductal Cancer In Situ

M Hajaj
Bedford Hospital NHS Trust, UK

Background: Mammographic imaging for high grade (HG) ductal carcinoma in situ (DCIS) can underestimate disease extent in the absence of calcification resulting in incomplete surgical excision margins[1,2]. This study aimed to evaluate the sensitivity of MRI and to define its preoperative role.

Methods: Prospective MRI analysis of 55 patients attending the Breast Service at Kettering General Hospital, U between year 2011 and 2013 with HG DCIS proven on biopsy following mammographic assessment. Breast MRI utilizing standard protocol: axial T2 weighted fast spin echo and high resolution T1 dynamic fat saturation images were obtained with contrast. Correlation with histopathological size and surgical margin re-excision rates with MRI were compared to control group data from the 3 years prior to MRI (2008–2010) use at the same centre.

Results: The sensitivity of MRI was 74.5% (41/55 patients). MRI overestimated the size in 15 patients by a mean of 14.9mm (range 2–36mm) and underestimated in 16 patients by a mean of 12.1mm (range 2–40mm) compared to histopathological size. MRI and histopathological sizes were concordant in 10 patients (18.2%). 6/55 patients (11%) required re-excision for incomplete margins compared to 15/49 (30.6%) in the control group.

Conclusions: Breast MRI appears to have an important preoperative role imaging HG DCIS and the results suggest a reduction in re-excision rates.

16.50 – 17.00
5a.1 Incidental Uptake of FDG in the breast detected on 18F FDG PET/CT Imaging

R Sinha[1], T Suaris[2], T,Szyszko[3]
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Background: The aim of this study was to identify the incidence of incidental FDG uptake within the breast

tissue in patients who had undergone PET/CT for non breast malignancies and correlate with histology. Limited research has been done on this.

Methods: We looked at the reports of n=3079 patients who had undergone PET/CT from January 2010 to April 2013. In those patients with incidental uptake, the PET/CT was visually assessed. Semiquantative analysis was performed my measuring the standardised uptake value (SUVmax) of the lesion as well as the liver, as a measure of background activity. A ratio of lesion/liver SUVmax was then calculated.

Results: Incidental breast uptake was noted in n=32. Histology was available for n=14. 3 of 14 patients had bilateral lesions, therefore 17 lesions were evaluated further. 11/17 were found to be malignant and 6/17 were benign. The mean SUVmax in the benign lesions was 1.8 and the mean SUV max in malignant lesions was 5.1. The SUVmax/liver ratio in the benign lesions was 0.77 and for malignant lesions was 1.85.

Conclusion: Although it is uncommon to find incidental breast lesions in patients who undergo PETCT, these lesions are commonly malignant and further evaluation is essential.

17.00 – 17.10
5a.2 Is Automated Breast Volume Sonography (ABVS) a viable tool for breast cancer screening?

T Seaton, S Pandya, E Hughes, V Stewart, N Zaman, N Gupta, N Comitis, N Barrett, N Svenson, N Cunningham, G Ralleigh, A Lim
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Purpose: Automated Breast Volumetric Sonography (ABVS) has been proposed as a screening tool for breast cancers (1–3). ABVS overcomes the problem of operator dependency and gives reproducible, standardized imaging. We present our experience and discuss its potential role in breast screening.

Methods: In this prospective study, standard coronal, longitudinal, and transverse views were obtained and reconstructed volume datasets were analysed by a radiologist blinded to the patient's conventional imaging. Data collated included image quality, number of lesions, BI-RADS classification, reading time and recall rate (poor image quality necessitating further evaluation).

Results: 86 patients recruited over 26 months with 38 malignancies, 52 benign cases and 9 cases with no lesion. Average reading time = 5.5 minutes. Recallrate was 25%. ABVS exhibited good sensitivity (84%) and specificity (95%) for malignant lesions. Three cancers were missed (1/3 detected after the examiner was un-blinded) and two not detectable. When comparing the concordance of ABVS with hand-held ultrasound (HHUS), Cohen's Kappa value = 0.57, indicating a moderate agreement.

Conclusions: ABVS demonstrates good sensitivity and specificity for detecting malignant lesions and moderate agreement in BI-RADs classification when compared to HHUS. However, lengthy scanning and reading times with a high recall rate questions the suitability of ABVS as a screening tool.

References:

1. Kotsianos-Hermle D, Hiltawsky KM, Wirth S, Fischer T, Friese K, Reiser M. Analysis of 107 breast lesions with automated 3D ultrasound and comparison with mammography and manual ultrasound. Eur J Radiol 2009;71:109–15.
2. Kelly KM, Dean J, Comulada WS, Lee SJ. Breast cancer detection using automated whole breast ultrasound and mammography in radiographically dense breasts. Eur Radiol 2010;20:734–42.
3. Maturo VG, Zusmer NR, Gilson AJ, Smoak WM, Janowitz WR, Bear BE, et al. Ultrasound of the whole breast utilizing a dedicated automated breast scanner. Radiology 1980;137:457–63.

17.10 – 17.20
5a.3 Digital compared to screen-film mammography: Combined effects of mammographic density, and hormone therapy use on breast cancer detection within an organized screening program

A M Chiarelli[1], M V Prummel[2], D Muradali[3], R S Shumak[3], V Majpruz[2], P Brown[1], H Jiang[2], S Done[4], M Yaffe[5]
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Background: Most studies that have examined the independent effects of mammographic density (MD) and hormone therapy (HT) use on breast cancer detection have included screen film mammography (SFM) only. This study examines this association further in women screened by digital mammography (DM).

Methods: Approved by the University of Toronto Research Ethics Board, this study identified concurrent cohorts of post-menopausal women aged 50-74 screened with DM or SFM from 2008-2009 from the Ontario Breast Screening Program. Of 2868 eligible women with invasive breast cancer, 2325 were contacted and 1438 participated (1109 screen-detected; 329 interval cancers). Polytomous logistic regression evaluated associations between factors and detection method by mammography type.

Results: Compared to women with <25% radiologist-measured BI-RADs breast density, those with >75% were more likely to present with interval cancers than screen-detected; the difference being greater for women screened with SFM (OR=5.75, 95%CI=1.91-17.35) than DM (OR=2.47, 95%CI=0.66-9.22). After adjusting for MD, there was no difference in the risk of having an interval cancer for current HT users versus never users, however former users had increased risk (SFM, OR=1.41, 95%CI=0.91-2.18; DM, OR=1.83, 95%CI=1.14-2.92).

Conclusion: Breast screening using DM can lower the risk of having an interval cancer for postmenopausal women with >75% density.

17.20 – 17.30
5a.4 Higher risk surveillance in the NHS Breast Screening Programme – Leeds Experience

D Manuel, B Dall, N Sharma
Leeds Teaching Hospital Trust, UK

Background: The cancer reform strategy incorporated higher risk surveillance into NHSBSP to standardise surveillance across the UK.
In 2010, Leeds was one of three pilot sites selected to ensure implementation of the referral pathway and to address workflow, incorporating MRI for the first time.

Method: The higher risk screening category, imaging modality and outcomes were recorded from all eligible patients.

Results: 59 invited. 44 registered. 2 declined. 9 non-responders. 4 bilateral mastectomies.
Age distribution: 30–39 years n=21, 40–49 n=22, 50–59 n=1.
Screening category: n=7 supradiaphragmatic radiotherapy, n=1 TP53, n=36 BRCA or equivalent.
Imaging modality: MRI and mammography n=21, MRI only n=22, mammography only n=2 (patient choice).
Patients recalled: 7/44 (16%).
5/7 had biopsies: ultrasound-guided n=2, X-ray-guided Vacuum-assisted biopsy (VAB) n=1, MRI-guided VAB n=2.
Two Malignant cases: 1 Mantle radiotherapy – 7mm G1 Tubular cancer.
1 BRCA 2: 100mm HG DCIS + 2.5mm G2 Ductal cancer
2 Benign cases following MR-guided biopsy
3 routine recalls after further assessment, of which 1/7 early recall MRI 6months
1 interval breast cancer despite surveillance.

Conclusion: Introduction of higher risk surveillance within the NHSBSP has been complex, which involves communication with multiple disciplines. The recall rate is disproportionately higher due to the raised level of concern.

References:

1. Cancer Reform Strategy, Author DH, 03 Dec 2007.
2. Technical Guidelines for Magnetic Resonance Imaging for the Surveillance of Women at Higher Risk of Developing Breast Cancer – NHSBSP 6 December 2012.
3. NHS BSP-Protocols for the surveillance of women at higher risk of developing breast cancer Policy/ document type Numbered series 74, June 2013-National office
4. NICE Clinical guidelines, CG164 – Issued: June 2013 Familial breast cancer – Classification and care of people at risk of familial breast cancer and management of breast cancer and related risks in people with a family history of breast cancer.

16.50 – 17.00
5b.1 What makes a case truly difficult to report correctly in the PERFORMS scheme?

Y Chen, A Gale
Loughborough University, UK

Purpose: To determine the underlying reasons why some mammographic cases are more difficult to interpret correctly than others.

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Method: In 2013 some 726 UK screening personnel examined a PERFORMS set of challenging recent screening FFDM cases comprising 120 normal, benign and malignant exemplars. Their overall data were analysed and then the responses to specific cases were examined in detail.

Results: Overall, the participants correctly identified 85% of the malignant cases with an ROC Az score of 0.92 Sensitivity was 86.3% and specificity 85.6%; indicating that the mean performance levels were very high However, malignant cases were significantly better identified than were normal cases (One-way ANOVA, post hoc, $p<0.01$). When the data were then examined on a case-by-case basis it was found that some 16.7% of the known malignant cases were only correctly reported by 11.4% to 49.7% of participants. Likewise, 25.6% of normal cases were only correctly reported by 24.6% to 49.8% of the participants Examination of participants' raw data indicated that both over and under-reading errors were generally due to specific areas on the cases being incorrectly identified.

Conclusions: An understanding of screeners' reporting difficulties can be achieved by a case-based analysis of their PERFORMS data.

17.00 – 17.10

5b.2 Staging pre neo-adjuvant therapy for breast cancer may not be indicated for all patients

S Hallam, Z Rayter, A Valencia, R Ainsworth
North Bristol NHS Trust, UK

Background: NICE guidance[1] recommends patients with locally advanced, inflammatory or recurrent breast cancer are staged with CT and bone scan prior to neo-adjuvant therapy. Neo-adjuvant therapies are additionally used to downsize tumours, allowing breast conservation. In our unit both groups undergo full staging.
We aim to determine the value of staging in the breast conservation group (group A), by comparing the incidence of metastasis with those staged for NICE indications (group B).
We hypothesise that staging in Group A detects a smaller proportion of metastasis and is not indicated.

Methods: Two year, (2011–2013) retrospective audit of all patients undergoing staging prior to neo-adjuvant therapy was performed.

The incidence of metastases was recorded for both groups. Fisher's exact test was applied to assess for statistical significance.

Results: In group A, (n22), 0% of patients had metastasis detected by staging compared with 18% of patients in group B (n39), 18%, p=0.036.

Conclusions: This suggests that staging prior to neo-adjuvant therapy primarily to downsize tumours is not indicated.
Cessation of staging in this group would reduce ionizing radiation exposure and treatment delay whilst awaiting investigations. In addition this would reduce the economic cost to the NHS.

Reference:

1. National Institute for Health and Clinical Excellence (2009) Breast cancer (early and locally advanced) Clinical Guideline 80. London: National Institute of Health and Clinical Excellence.

17.10 – 17.20

5b.3 Breast cancer in patients with B3 breast lesions: a 13 year retrospective review

N McAllister, P Hamilton, N Forester
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Introduction: B3 lesions have a risk of subsequent malignancy.[1] Large-volume biopsy and 5-yearly mammographic follow-up is replacing surgical excision.[2] Malignancies associated with B3 lesions were evaluated, to assess whether surveillance programmes are appropriately targeted.

Methods: Retrospective, single centre review of all screen detected B3 lesions between 1995–2008.

Results: 188 B3 lesions identified (Radial Scar/ Complex Sclerosing Lesions 40%, Atypical Ductal Hyperplasia 28%, Papillomas 39%, Atypical Lobular Hyperplasia 4%, LCIS 3%, others 4%). Average age was 55 years (range 48–74), with median of 6 follow-up mammograms (range 0–9). 16 cases (9%) subsequently developed breast cancer (12 invasive, 3 high-grade DCIS, 1 metastatic axillary node). 11/16 cases were mammographically detected. Median time-to-diagnosis was 5 years (range 1–18yrs). 4 patients were diagnosed after 1 year (all at original site). 4 cancers were contralateral, and 12 ipsilateral, of which 7 were at the index site.

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Conclusions: 9% of patients with previous B3 lesion subsequently develop breast cancer. Subsequent cancer occurred early at original site, or much later, often elsewhere in the breasts, confirming that B3 lesions carry a risk of subsequent malignancy.[1] An appropriate and cost-effective follow-up strategy could comprise mammographic review at one year with return to the routine NHS breast screening programme.

References:

1. Heywang-Köbrunner SH, Nährig J, Hacker A, Sedlacek S, Höfler H. B3 Lesions: Radiological Assessment and Multi-Disciplinary Aspects. Breast Care (Basel) 2010: Aug;5(4):209–217.
2. Rajan S, Shaaban AM, Dall BJG, Sharma N. New patient pathway using vacuum-assisted biopsy reduces diagnostic surgery for B3 lesions. Clin Radiol 2012: Mar;67(3):244–9.

17.20 – 17.30

5b.4 A preliminary retrospective study to determine how early Tamoxifen acts on breast density

T Suaris[1], L Leong[2], L Metaxa[1]
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Introduction: Tamoxifen is known to reduce breast density. However, it is not clear how early it acts on the breast density.

Methods: All diagnostic and subsequent mammograms in a cohort of patients diagnosed with breast cancers from January 2008 to December 2008 were reviewed. Breast density was assessed visually and scored on an 11 point scale from 0 to 10 (corresponding to 0–100%). Density data were analysed for changes in the score between successive mammograms.The incidences of breast density reduction before 12 months and after a prolonged follow-up were compared against tamoxifen therapy and non-tamoxifen therapy. Significance was assessed using the chi-squared test.

Results: There were 226 patients found of which 181 had valid data. 40 (22%) patients showed a reduction in breast density. Of the 56 patients receiving tamoxifen, 22 (39%) showed a reduction in breast density, compared to 14% (18/125) for patients not receiving tamoxifen ($p < 0.001$). For the 135 patients with follow-up mammograms within 12 months of starting therapy (or surgery or baseline mammogram for those not receiving endocrine therapy), 22% (9/40) of patients on tamoxifen showed a density reduction compared to 5% (5/95) in the non-tamoxifen group (p=0.003).

Conclusion: This preliminary study confirms the reduction in breast density with tamoxifen treatment and shows that the effects of tamoxifen on reduction of breast density can occur well within 1 year of starting therapy.

17.30 – 17.40

5b.5 Digital breast tomosynthesis (DBT) guided wire localisation; an important skill for the breast radiologist

O Abeyakoon, J Golligher, D Evans, R Rahim, A Iqbal, A Morel, A Wasan, A Satchithananda, A Peacock, M Michell
King's College Hospital, UK

Purpose: DBT increases the sensitivity and specificity of detecting invasive breast carcinoma, and lesions with malignant potential.[1–4] Some abnormalities can only be visualized on DBT.
The purpose of our study was to establish the radiological appearance and histopathology of lesions only seen on DBT.

Methods: At our institution DBT has been integrated into clinical practice since 2009. M3–M5 abnormalities seen only on DBT are reviewed in our MDM and the need to proceed with DBT guided localization is assessed.
We retrospectively reviewed all wire localizations from 2009 to date. Histopathology records were reviewed and correlated.

Results: In a busy screening unit only 10 cases required DBT guided wire localisation.
The pathology results were:

- 3 complex sclerosing lesions (CSL) without atypia
- 2 cases of high grade DCIS
- 1 focal flat epithelial cells with atypia
- 1 CSL with low grade DCIS and atypia
- 1 columnar cell hyperplasia with atypia
- 1 LCIS
- 1 invasive grade 2 IDC

(We include a pictorial review of the technique, radiology and histopathology findings.)

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Conclusion: Typically malignancy occurs at the periphery of distorsions/CSLs. DBT guided wire localisation has the potential to increase diagnostic accuracy an facilitate a combined diagnostic and therapeutic excision.

References:

1. Ciatto et al Integration of 3D digital mammography with tomosynthesis for population based breast cancer screening (STORM): a prospective comparison study. Lancet Oncol. 2013 Jun;14(7).
2. Michell et al A comparison of the accuracy of film screen mammography, full field digital mammography, and digital tomosynthesis. Clin Rad 2012 Oct;67(10)976–81.
3. Rafferty et al Assessing radiologist performance using combined digital mammography and breast tomosynthesis compared with digital mammography alone: results of a multicentre, multireader trial Radiology 2013 Jan 266(1):104–13.
4. Houssami et al Overview of the evidence on digital breast tomosynthesis in breast cancer detection. Breast 2013 Apr;22(2):101–8.
5. Zuley et al Digital Breast tomosynthesis versus supplemental diagnostic mammographic views for evaluation of non calcified breast lesions. Radiology 2013. Jan; 266(1);89–95.

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Poster abstracts

P.1

Prevalent round audit – cancers do look like cancers

S Khan, N Sharma, B Dall, M McMahon, I Haigh
Leeds Teaching Hospitals Trust, UK

Purpose/background/objectives: Cancer reform strategy has resulted in 2 prevalent recall rounds. The prevalent recall rate nationally is increasing and in our unit was 9%.
Initial audit undertaken (2008–2009) with new recall criteria established. New recall criteria: benign masses, physiological asymmetries and bilateral benign calcifications. Current audit completes audit cycle and determines any effect on recall rate.

Methods: Retrospective data collected from NBSS database regarding prevalent round patients recalled to screening assessment clinic. Data recorded included mammography, ultrasound. clinical findings and histology.

Results: 5752 women attended screening in 2011–2012.
366 recalled – 4 cases excluded as information incomplete and 7 were clinical recalls. 355 lesions identified in 330 women. 26 ladies recalled for 2 lesions. The results are in Table 1.
Cancer detection rate was 12.6% (34/330) in 2011–2012, compared with 8.9% (40/451) in 2008–2009.

Table 1 Cancer data in current audit 2011–12 and 2008–09

	no of lesions recalled 2011-12	no of cancers 2011-12	no of lesions recalled 2008-09	no of cancers 2008-09
assymetry	110	1.8% (2/110)	140	0.7% (1/140)
stromal deformities	14	21.4% (3/14)	27	22% (6/27)
masses	146	8.9% (13/146)	215	10.2% (22/215)
calcification	85	18% (16/85)	69	15.6% (11/69)

All cancers presenting as asymmetries/stromal deformities and masses were classified as RS/RM. All asymmetries/stromal deformities and masses classified as RB were found to be benign.

Conclusions: Implementing new recall criteria has reduced recall rate without compromising overall cancer detection rate. With increasing numbers and workload due to age extension, it is important to maintain lower recall rate. Practice needs to be regularly audited to maintain and refine recall criteria.

References:

1. NHSBSP 60 Consolidated Guidance on standards for Breast Screening Programme April 2005.
2. Cancer Reform Strategy 2007 www.nhs.uk/NHSEngland/NSF/…/Cancer%20Reform%20Strategy.pdf.

P.2

Retrospective review of stereotactic core biopsies performed by two Advanced Practitioners over 33 months, incorporating the introduction of digital mammography.

D Black, C Mcguire, N Forester
Breast Screening and Assessment Unit, RVI, UK

Objectives: To analyse trends in workload and biopsy outcome over time, including introduction of digital mammography and use of various stereotactic devices.

Methods: Review of biopsies performed between April 2011 and December 2013. Device used, needle gauge and outcome recorded. Analysis of number/proportion of lesions identified. Digital imaging began April 2012. Biopsies were performed with a 10G Vacora/Encore, then 7G Encore from July 2013.

Results: 525 first-line stereotactic breast biopsies were performed by two advanced practitioners. Over time, the absolute number of stereotactic biopsies increased. Proportion of B3 lesions identified remained stable, despite biopsy changes. Comparing pre and post-digital phases, the proportion of B5 lesions identified by stereotactic biopsy significantly decreased (46% pre compared to 29% post-digital, p=0.001), with corresponding increase in the B2 rate. However, in absolute terms, there were more B5 lesions diagnosed by stereo-biopsy following the introduction of digital mammography.

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Conclusions: Digital mammography increased stereotactic biopsy workload. Though more malignancies were diagnosed stereotactically, the proportion of malignancies diagnosed by this technique reduced. Attempts to decrease the B3 lesion rate using first-line 7G biopsy were unsuccessful, and the unit reverted back to 10G biopsy. Age expansion and increased detection of calcification with digital imaging are important factors.

P.3
Review of current practice – A study to determine if there are any merits of performing routine USS follow up in cases of histological diagnosis of a Benign Phylloides Tumour

A Karuppiah, A Turnbull
Royal Derby Hospital, UK

Background: The standard surgical management of benign Phylloides is removal of the mass with 1–2 cm of clear margin.
In our unit, it is current practice to arrange routine 6 and 12 month clinical and USS imaging of cases diagnosed as phylloides tumour on surgical excision histology. It is felt that there is no definite literature evidence to prove that this practice is beneficial in detecting recurrence if any.

Methods: The histology database was searched for the code for Phylloides tumour of the breast and excision /mastectomy specimens were identified for the years 2010 to 2012.
These cases were then cross referenced on CRIS system using patient hospital number and data with regards to the patient name, age, date sample taken, site (hospital), previous h/o excision, pre op USS, biopsy if any with biopsy result, final histological diagnosis including margins, type of sample, F/U if any and it's result was recorded for each case.
Patient breast unit packets were also reviewed specifically for record of margin excision and subsequent MDT discussion.

Results: A total of 29 cases were identified. 8 were from other hospitals were excluded.
In 9/20 cases the excision margins were not clear.
16/20, had USS and clinical follow up, 2/20, abnormal USS.
In case 1, symptomatic post op USS showed another lesion same breast which was fibro adenoma on USS BX and subsequently was a Phylloides on excision. Biopsy was B2, underwent VAB excision which was a phylloides on subsequent histology. Advised surgical re-excision at MDT as unable to comment on margins but declined by patient, elected for f/u. Further 6, 12 month f/u was clear.
In case 2, there was a palpable nodule in the surgical scar, which was biopsied under USS guidance and was proven benign. No further f/u has been done.

Conclusions: There was no documented case of recurrence from a benign phylloides tumour diagnosed and excised in our hospital in the last 3.

References:

1. M Mulla, J Yeung, Y Lau, D Sibbering. Management of Phyllodes Tumours of the Breast. The Internet Journal of Surgery. 2008 Volume 19 Number 2.
2. Franceschini G, D'Ugo D, Masetti R, Palumbo F, D'Alba PF, Mulè A, Costantini M, Belli P, Picciocchi A. Surgical treatment and MRI in phyllodes tumors of the breast: our experience and review of the literature.

P.4
Programme evaluation: Technical recall and image blur within a breast screening service

J O'Rourke, C Mercer, L Starr
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Purpose: At a local level, a small increase had been noted in the number of technical recalls (TRs) for image blur. This evaluation was undertaken to identify any key factors linking the blurred images.

Methods: Breast screening within this service is carried out within 2 static and 4 mobile units (MBSU's). Data was collected retrospectively for these units for a 6-month period. TRs for blurring were identified by site and by practitioner and images examined through PACS.

Results: The highest percentage rate (0.86%) occurred at one of the MBSUs. Further investigation revealed the increase in blurred images occurred at one specific site and was not evident when the MBSU changed location. The same practitioners were located on this MSBU at both locations, indicating it was neither the unit nor the practitioners causing the increase but the location of the site.

Conclusions: This evaluation was undertaken to determine the cause of an increase in the number of TRs for blurring. A large proportion of these images occurred at a particular site. On return to this site the MSBU must be seated securely in order to avoid a similar increase

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POSTER PRESENTATIONS

P.5
Second timed appointments for women who do not attend their first screening appointment

J Wimbury
Oxford University Hospitals NHS Trust, UK

It has been policy in the National Breast Screening Programme for women who do not attend their first appointment be sent a second one.[1] In April 2013 this became mandatory.[2]
Three months' worth of appointments were evaluated to see how many appointments would be needed – this averaged out to 600 per month. Different models of appointments were drawn up and a test clinic was set up in March 2013 to see how many women attended. 13/30 women did so which, at 43%, was somewhat higher than we were hoping for. It was decided to set up clinics in the static unit only, rather than on the mobile units, at a rate of 30 extra appointments per day mirroring normal screening clinics. If women wished to change their appointments the administrative staff were trained to rebook them into short term appointments in normal clinics.
The attendance rate was monitored over a six month period. This was 18% with a range of 0 to 11 attendees over the period.
27 women were assessed and 5 cancers were diagnosed.

References:

1. NHSBSP Publication 47, November 2000. NHS Cancer Screening Programmes. Published in the UK. 'Quality Assurance Guidelines for Administrative and Clerical Staff". Section 4, page 2, 4.5.9.
2. Public health functions to be exercised by NHS England. Breast Screening Programme Service Specification No.24, April 2013. Page 13, 2.2.

P.6
Audit of discordant breast-screening film-reader opinion that subsequently resulted in a breast cancer diagnosis

B Bickley, G Erdelyi
South Staffs Breast Screening Service, UK

Background: The objective of this audit is twofold. Firstly in order to compare our performance of discordant-read breast cancers with that of previously published data[1,2] and secondly enabling the development of a case collection of images that demonstrates the subtle imaging features associated with discordant reads.[1]

Methods: All discordant-read cancers from 11.04.12 to 31.12.13 were included in this audit. Each case was reviewed at a consensus audit meeting and the breast density, mammographic abnormality, one/two-view presentation, size, histological type and first/second reader identification was recorded.

Results: 31/234 detected cancers were the result of a discordant read. 74% of the abnormalities were less than 15mm in size. There was an equal distribution of both ill-defined lesions and microcalcifications. 68% of the mammographic abnormalities were present on two views, 16% were identified on the cc projection and 16% were visualized on the mlo projection.

Conclusions: Discordant-read cancers accounted for 13.25% of screen-detected cancers in keeping with previous published data.[1] 68% of the discordant read cancers would not have been identified if the use of two-readers had not been employed, fully supporting

References:

1. Cornford EJ, Evans AJ, James JJ, Burrell HC, Pinder SE, Wilson AR. The Pathological and Radiological Features of Screen-Detected Breast Cancers Diagnosed Following Arbitration of Discordant Double Reading Opinions. Clinical Radiology 2005; 60:1182–1187.
2. Batohi B, Rahim R, Adejolu M, Michell M. Audit of screening-detected breast cancers with discordant interpretations on double-read screening mammography. Breast Cancer Research 2013; 15(1): 41.
3. Quality assurance guidelines for breast cancer screening radiology. Publication No 59. 2nd ed. Published March 2011 by NHS Breast Screening Programme.

P.7
Audit of male breast imaging – a service evaluation

A Coate, J Sykes, R Smith
Mid Yorkshire Hospitals Trust, UK

Current practice within this Trust is to perform ultrasound imaging on all male patients referred to the breast clinic. Guidance, (Dept. of Health 2010), has suggested imaging may not be required for many male patients. Can referral criteria be identified to reduce service demand, whilst maintaining safe practice?

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Methodology: A consecutive sample of 478 male patients attending the one-stop breast clinic yielding 820 ultrasound examinations of the breast/chest wall. Data was collated from imaging requests and radiology reports. Clinical findings ('P' value code) and radiological findings ('R' value code) were recorded along with brief free text comments.

Results: A total of 4 cancers were found, all presented with palpable lumps and were clinically recorded as P3 (indeterminate) to P5 (malignant). In total, 25 (3%) requests were coded as P3 to P5, suggesting that if this was used as a referral criteria for imaging, the referrals could be reduced by as much as 97%.

Conclusions: This study identified male breast patients do not routinely require imaging. The findings support the adoption of clinical referral criteria restricted to patients with lesions at P3 or above. As a result, capacity is created within breast imaging, whilst ensuring safe practice.

Reference:

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P.8
Small invasive cancer detection in the digital mammography era

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Background: Small invasive cancer (SCA) detection affords the best opportunity for achieving a reduction in mortality and morbidity from breast cancer. Several authors have recorded an increase in micro-calcification (MC) and DCIS detection, after transition to digital mammography (DM); however our study analyses and compares the imaging characteristics of SCA up to 15mm diameter.[1] Detection of invasive tumours, in this size range, is associated with 5 year survivals up to 98%.[2]

Methods: This observational series reviews the initial, consecutive 150 SCA from 56,800 DM studies in a fully accredited Melbourne Breastscreen service (during staged DM introduction 2011–13). The mammographic characteristics leading to recall to assessment clinic were studied, and compared with the SCA detection data from analogue film screening in the preceding 6 years, as well as during the transition period. Tumour size was based on the histopathology report following surgery.

Results:

• SCA detection rates remained in the range 25.1–26.4 per 10,000 women screened, and showed no statistically significant difference between analogue and digital modalities.

• Mammographic recall categories resulting in SCA detection:

Digital v Analogue Mammo' Features	Digital-image SCA's	Fraction % of total	N= 958 Analogue SCA's	Fraction % of total
Mass	88	58.7	Mass	66.2
Architectural distortion	8	5.3	Architectural distortion	6.4
Calcs (MC) only	31	20.7	Calcs (MC) only	16.7
Asymmetric density	23	15.3	Asymmetric density	10.7
	N =150	100%	N = 958	100%

Conclusions: During our transition to DM, our SCA detection rate remained stable, and compliant with the standards set by Breastscreen Australia.
Within the digitally detected SCA group there was a trend to an increased detection by MC alone (up to 20.7% with DM v 16.7%; p>0.05). The improved ability of DM to penetrate dense areas of breast parenchyma, and thus better detect MC is reflected in the increased reported recall rates[3]. Further, the challenge of predicting the outcome of MC recalls remains considerable, with our readers recording suspicious or malignant features (Grades 4 or 5) in only 42% (13 out of 31) cases.
This work demonstrates the continuing challenge of early invasive cancer detection, and reader interpretation of MC, in the digital screening era.

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3. Skaane P, Young K and Skjennald A. Population-based Mammography Screening: Comparison of Screen-Film and Full-Field Digital Mammography with Soft-Copy Reading—Oslo I Study. Radiology 2003; 229: 877–884.

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P.9
Comparison of attendance and cancer diagnosis rates of age extension groups for first year of trial

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This unit started inviting women under the NHSBSP Age Extension Trial in September 2011. The younger age group is 47 to 49 and the older invited group is 71 to 73.
Although the age groups were randomly selected on a GP by GP basis, three times as many young women were invited than older women. However, attendance in the younger age group was 70.5% against 103% in the older age group. This latter number contained some women who self referred, hence the large percentage attendance rate.
Out of 2191 younger women screened 18 cancers were found as opposed to 14 out of 1179 women in the older group. This indicates, from a very small sample, that there is a higher cancer rate in the older age women – 1.187% against 0.82% in the younger tranche.
The conclusions would be that although some of the 14 cancers in the older age group would have been detected because of self referral the 18 in the younger age group may not have been found until the disease had progressed further. It also showed that the older women are more likely to attend for screening.

P.10
Unnecessary Assessment Recalls: How much is inadequate compression to blame?

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Great Western Hospital, UK

Purpose: Discomfort for women having mammography may be increased with greater compression. However, sub-optimal compression may result in mammographic artefactual abnormalities. This may lead to unnecessary recall s to assessment. We audited our recalls to see if this was a factor.

Method: We reviewed mammograms of 166 women recalled to assessment that were returned to routine recall. These mammograms were compared with the assessment films to see if sub-optimal compression was a factor. Dose, breast thickness, filters used, compression in Newtons, Kv and mAs were evaluated.

Results: 281 women were assessed and 166 (59.1%) returned to Routine Recall.
22/166 (13 %) sub-optimal compression was the primary factor. This is the equivalent of almost a clinic per month. This is 8% (22/281) of those recalled.
Dose was generally lower with better compression unless a different filter was used or the AEC position was over a denser area of the breast.

Conclusion: Greater compression on screening mammograms can prevent unnecessary recalls. This will generally result in a lower dose, but not necessarily. It is important to educate Mammographers on the importance of compression and feedback results to individuals.

P.11
Sensitivity of axillary ultrasound and core biopsy of axillary lymph nodes in the management of breast cancer and its relation to sentinel node biopsy

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Objective: Axillary USS and biopsy is widely used to help identify breast cancer patients needing axillary clearance, thus reducing the need for SNB. We assessed the sensitivity of both our ultrasound and core biopsy procedures.

Method: A retrospective analysis of 119 USS from women with known nodal disease based on post operative histology and subsequently of 46 core biopsies taken from sonographically abnormal nodes.

Results: 63 scans were abnormal (sensitivity 53%) and 47 were normal (false negative rate 47%) by our criteria.
Of 46 CBs, 43 were positive for nodal disease and 3 were negative (sensitivity = 93%, false negative rate 7%). This compares favourably with previous studies.[1,2]

Conclusion: Our sensitivity of USS at 53% may be due to our strict criteria for diagnosis of abnormality. This could be improved by relaxing these criteria. The effect of doing this would have resource implications for the radiology department and would need to be considered in the context of the risks and benefits of core biopsy versus sentinel node biopsy.
With respect to CB, sensitivity was high, which may be due in part to our strict USS criteria resulting in specific targeting of abnormal nodes for CB.

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2. Britton et al. Uss guided percutaneous axillary lymph node core biopsy: How often is the sentinel node being biopsied? The Breast (2009) Vol 18: Issue 1, 13–16.

P.12
A prospective audit of complications following vacuum assisted biopsy

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Vacuum assisted biopsy (VAB) is the established technique for sampling microcalcifications in screening assessment. In most units, written consent is obtained and patients informed of serious and frequent complications of the procedure, including bleeding, bruising, haematoma formation. We performed a prospective audit to assess complications rates in our screening unit.
The breast care nurses (BCN) telephoned patients 5 days after stereotactic VAB and completed a questionnaire regarding post biopsy symptoms. Patients were asked about:

- bruising
- bleeding
- signs of infection
- support and medical advice sought after the procedure
- antibiotics prescribed for localised infection.

Our results identified 43 women who were prospectively identified and contacted after stereotactic VAB.
33% (14/43) experienced bruising, and 5% (2 patients) developed a haematoma. 0/43 experienced bleeding.
Several patients, 35%, developed localised inflammation at the biopsy site but only 5% (2 patients) developing infection requiring antibiotics.
6/43 patients (14%) required medical advice, with 5/6 contacting the BCN, and a further patient contacting their GP.
No acceptable complications rates following VAB have been published and our small group of patients appear to have acceptable rates of complications.

P.13
Audit of women recalled for symptoms reported at the time of breast screening

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Breast Screening and Assessment Unit, RVI, UK

Objective: To determine the effectiveness of recalling women with breast symptoms in the NHS BSP, regardless of mammographic findings.

Methods: Audit of women recalled for assessment, reporting a current nationally recognised breast symptom at the time of screening, between April 2012 and March 2013. Mammographic and clinical findings in this group were reviewed.

Results: In the year studied, 37,116 women attended for screening, with 1,255 (4%) recalled for assessment and 279 cancers detected (CDR 7 per 1,000). Of those recalled to assessment, 62 women (5% of those assessed) had reported symptoms at the time of assessment. 10 of the women had positive mammography. 52 women with symptoms had normal mammograms.
From the 52 women recalled with symptoms and a normal mammogram, the predominant symptom reported was a breast lump (37/52 women), but other symptoms, such as nipple retraction were also noted.
6 of the 52 women had a biopsy. 4 were benign and 2 malignant. The two cancers diagnosed were in moderately dense breasts. Overall, 2 breast malignancies were identified from 52 women with symptoms and normal mammograms (approx 4%).

Conclusion: Assessment of women with normal mammography and self-reported symptoms has a low, but clinically relevant rate of breast malignancy.

P.14
Satellite Technology on a Mobile Mammography Unit

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Nuffield Health, UK

Mobile Mammography Breast Screening poses a communication problem getting personal information onto the equipment modality and sending the finished study to PACs. Historically information has been transported from the mobile unit to the reporting site by a variety of means, portable hard drive, CD or DVD all of which rely on a member of staff or courier service.
A secure, efficient and cost effective service was required and is now available using Satellite Technology. Information is transferred to and from the modality via a satellite dish located on the roof of the mobile. Improved Broadband technical advances enable the transfer of picture and written information providing rapid reliable transmission of information. Additional communication is available which include a landline telephone, internet access for staff and visitors and TV. The improvement to the Breast Screening service is both financial and clinical.

P.15
Closing the loop – medical physics feedback in mammography

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University Hospital of South Manchester, UK

Purpose: A fundamental part of the National Health Service Breast Screening Programme (NHSBSP) is Quality Assurance (QA). Medical physics have been an indispensable part of the QA system since the implementation of the breast screening programme. Commissioning, routine testing and visits following equipment maintenance, if required, are an integral part of this service. Following any visit a report is produced and it is the Radiation Protection Supervisor (RPS) and manager's responsibility to ensure any recommendations that are made are actioned and feedback is sent back to medical physics.

Method: Development of simple and effective feedback system that supported effective feedback and action on a simple colour rated system. Enables clear individual log for each mammography, ultrasound, specimen cabinet and pacs monitor in the department.

Results: Developed tool: highlights effective system and monthly reporting mechanism to medical physics. Each system has a unique tab and historical information about each system is enabled.

Conclusion: Being responsible for managing a screening service goes hand in hand with inherent systematic QA processes; one of which is ensuring that the equipment that is in the service is effectively monitored to high standards to ensure effective image quality.

P.16
Peer review in mammography – an essential part of learning and development

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Purpose: A fundamental part of the National Health Service Breast Screening Programme (NHSBSP) is Quality Assurance (QA). The aim of QA to maintain standards and improve performance of all aspects of breast screening. Purpose: to develop and implement a robust, structured peer review system to adhere to QA guidance.

Methods: Develop a structured peer review system which encouraged reflection, discussion and problem solving. Review of sessions; information gained used to motivate individuals to acknowledge gaps/ set goals. Recognise: need for regular monitoring and review.

Results: Sessions led by QA Radiographer and film reader. Session structure:

- Open critique, discussion and analysis of mammograms
- Findings documented on image analysis form.
- Consolidation of key discussion points.
- Feedback to practitioners through report and image assessment sheet(CPD).
- Feedback reports monitored for key trends - further training needs identified.

Conclusions: Being responsible for managing a screening service goes hand in hand with inherent systematic QA processes; one of which is ensuring that staff are aware of their own standards of proficiency and how those standards relate to those of their peer group and NHSBSP standards. This peer review process is considered essential development and is now fully implemented within this service.

P.17
Clinical Peer Review for Advanced Practitioners

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Background: Clinical Advanced Practitioners performing stereo-tactic interventional procedures work single handed with a Radiographer, therefore to observe and compare practice with each other is somewhat difficult. Following the Francis report, there has been acknowledgement within the team that sharing our experiences good and bad will endeavour to improve practice.

Aims: Through reflection – aim to provide mutual learning using a holistic approach to provide the most appropriate care for the patient. A no blame approach

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is used all practitioners are encouraged to speak openly and honestly.

Method: Following group discussion and a review of relevant literature (1,2), a model was produced. Each practitioner agreed to take part and with the provision of protected time, cases are discussed regularly.

Results: A formal anonymysed record of each case discussed is kept for reflection.
Cases discussed to date have resulted in:

- Improved communication amongst Advanced Practitioners, promoting openness.
- Debate about tissue markers and the appropriateness to perform check x-rays.
- Localisation practice reviewed and updated.

Conclusion: Improved Communication: Sharing of ideas about difficult cases has empowered the Advanced Practitioners to suggest new practice. Following discussion new practice has been implemented and an open and honest forum for discussion is in place.

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P.18
A Practical Guide to the introduction of Contrast Enhanced Spectral Mammography

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Background: This poster will describe the preparation and planning involved in implementing Contrast Enhanced Spectral Mammography (CESM) within an established symptomatic breast service. It will take the format of a reflective account of the experiences encountered in facilitating this new technology. The Nottingham Breast Institute has undergone major refurbishment to become a fully digital department and with this came the opportunity for Nottingham to be the first UK centre to offer CESM.

Methods: CESM uses iodinated contrast to improve lesion detection, by exploiting the increased vascularity of breast tumours. 2 sets of images are obtained during one exposure – a low-energy set equivalent to a standard mammogram, and a recombined set showing contrast uptake within the breast. We will show examples of real cases performed at our centre and discuss specific issues with image acquisition.

Results: We will describe the process of introducing CESM to our unit and the teething problems encountered, including training requirements for staff (e.g. anaphylaxis and cannulation), additional equipment required (e.g. warming cabinet and pump injector) and relevant safety and clinical risk issues (e.g. contra-indications and risk of contrast nephropathy).

Conclusion: This poster will provide useful practical information to other centres considering the introduction of CESM.

P.19
Mucinous carcinoma and fibroadenoma

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Aims/objectives: To investigate the possibility of the misdiagnosis of mucinous breast cancer for a common benign breast lesion e.g., a fibroadenoma in the younger age group.

Content: 36 year old patient attended with a palpable lump in the inner half of the right breast and a family history of breast cancer. It was initially thought to be a fibroadenoma but later confirmed by histology to be a mucinous carcinoma.
The case study includes images and reports and pathology slide.
The patient was listed for WLE and sentinel node biopsy. There were 0/1 lymph nodes with no lympho-vascular invasion. Low grade cribriform DCIS was also present.

Relevance/impact: There is a potential for misdiagnosis when two breast pathologies exhibit similar appearances on imaging and could have an effect on the correct outcome for the patient.

Outcomes: The MDT decision recommended adjuvant Radiotherapy and Endocrine therapy (Tamoxifen 20mg per day for 5 years). The patient has been referred for egg preservation.

Discussion: The possibility of misdiagnosis can arise due to the fact that mucinous carcinoma accounts for no more than 2% of all breast cancers and more so in older women. This case study discusses other diagnostic differences between fibroadenoma and mucinous carcinoma.

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P.20
How to manage Incidental breast lesions Identified on CT scans, arranged for other medical/surgical causes

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Background: Incidentally detected breast lesions on CT chest / Abdomen performed for other diagnostic purpose could be overlooked. They may be the first clue of underlying breast pathology. Further evaluation by Mammogram +/- Ultrasound is therefore warranted.

Objective: To describe the radiological features and final outcome of incidentally detected breast lesions on CT.

Material and Methods: A retrospective evaluation of Breast lesions detected on CT arranged for other clinical indication had been carried out.

Results: There were 6 patients with breast lesions detected on CT thorax, over a period of 6 months, average age of 65 years.
Patients were referred to the breast unit, discussed at the multi-disciplinary team meeting.
3/6 patients had CT for respiratory symptoms.
Breast assessment confirmed two Breast carcinomas and one fibro-adenoma.
2/6 patients were scanned for pulmonary lesions identified on Chest X-rays.
Breast assessment confirmed one cancer with pulmonary and hepatic metastases. The second was a recurrence, 26 years after left mastectomy with sternal/ mediastinum deposits and right axillary nodes.
One case was a follow-up of lung cancer, showed a breast lesion, confirmed to be malignant.

Conclusion: Breast lesions Identified incidentally on CT thorax/abdomen should be accurately described and referred to breast specialist for further assessment.

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P.21
'Discussed in' cancers review

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Purpose: To provide a reflective learning exercise for all film readers by collating and analysing all the discussion cases resulting in a cancer diagnosis. Trends in mammographic abnormality 'missed' would allow focused reflection for the film readers involved.

Method: All our film readers partake in first and second reading. Any discrepancies are discussed, rather than arbitrated by a single reader. All available film readers, including at least one who has not seen the images in question, review discussion cases.

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Cases were identified *via* the NBSS database. All readers then reviewed (as per interval cancers) all cases of eventual malignancy. Mammographic abnormalities detected were recorded by individual reviewers and agreed by consensus if discrepant for purposes of this study.

Results: From a total of 44,609 women screened in 2012/2013:

- 347 were recalled to assessment;
- 59 of these resulted in a malignant diagnosis.

These 59 cancers were divided into:

- 17 calcification;
- 21 distortions;
- 21 densities.

Conclusion: Each reader found the exercise educational, and it has provided an excellent resource for mammographic learning. We are continuing with this as routine practice within our unit, alongside interval cancer review.

P.22
Ultrasound of the male breast - when to biopsy

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Purpose: To present a pictorial review of interesting cases and unexpected findings in symptomatic male breast clinic patients.

Background: Gynaecomastia is the most common disease of the male breast, with one series showing palpable breast tissue in 57% of the male population older then age 44[1] This was confirmed in our unit with 377 male patients being imaged in a 2 year period in which over 92% had a diagnosis of gynaecomastia or pseudogynaecomastia confirmed on ultrasound +/- mammography, with no further intervention being required.
Confidence in the varied presentation of gynacomastia by the breast radiologist is of paramount importance to prevent unnecessary biopsies.[2] If, however, imaging is inconclusive, biopsy should be performed.

Method: A computer based search identified the 377 male patients attending our symptomatic clinic between January 2012 and December 2013.
Results: 28 patients required biopsy due to abnormal imaging findings.Biopsy results demonstrated a variety of pathologies including meloma, metastatic prostate and melanoma deposits, lymphoma, breast abscess and gynaecomastia.
The cases will be displayed including imaging and biopsy findings with relevant clinical indication to highlight the factors that prompted the radiologist to proceed to biopsy.

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P.23
Peritoneal metastases in breast cancer

A Eleti[1], S Sripathi[2], K En[1]
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Background: Metastases from breast cancer is commonly to lungs, liver, bone, brain and soft tissues. Peritoneal metastases are seen in advanced breast cancers and can be in the form of discrete or confluent nodules, peritoneal thickening and nodularity, ascites or secondary deposits. GIT metastases commonly involve the colon while small intestine involvement is very rare and diagnosed late.

Objective: To describe the CECT (Contrast enhanced CT) findings of peritoneal metastases in known case of breast cancer. Materials and Methods: A total of 7 patients with history of breast cancer who underwent CECT abdomen for non specific complaints like abdominal pain, distension, jaundice, constipation etc is included.

Results: The age of the patients ranged from 50 to 74 years. The CT findings in these patients were ascites with extensive peritoneal nodularity, well defined complex adnexal lesion with peritoneal nodules, moderate ascites with pelvic lesion, enlarged inguinal lymphnodes and intrahepatic biliary radical dilatation (IHBRD).

Conclusion: Though peritoneal metastases from breast cancer is rare, there must be a high index of suspicion in patients presenting with gastrointestinal and genitourinary symptoms in a known case of breast cancer and CECT should be done. A multidisciplinary approach necessary to make a diagnosis should be undertaken and an optimal therapeutic approach should be followed.

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P.24
Stereotactic vacuum assisted breast biopsies using VACORA: Our Experience

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Background: Vacuum-assisted breast biopsy using VACORA is a percutaneous large core biopsy procedure where a portable hand held device with a 10 gauge probe is used under stereotactic guidance.

Objective: To enumerate the indications of VACORA and assess its diagnostic performance by correlating it with surgical and histopathological findings.

Materials and Methods: A total of 36 patients (sites=40) underwent vacora biopsy from October 2013 to January 2014 and their data was retrospectively reviewed.

Results: The age of patients ranged from 49 to 74 years. Indications were R3 calcifications (n= 21, sites=23), R4 calcifications (n=5, sites =7), R5 calcifications (n=1), R3 asymmetry (n=7), R4 mass (n=1) and benign nodule (n=1). The histopathology findings for R3 calcifications were: DCIS (11), fibrocystic disease (6), fibroadenoma (3), fat necrosis (2) and intraductal papilloma (1). Histopathology from R3 asymmetry showed fibrocystic changes (3), DCIS (1), invasive mucinous carcinoma (1), scar tissue (1) and intraductal papilloma (1). All R4 calcifications showed DCIS while one case showed fibrosis with scar.

Conclusion: Since area sampling was done using vacora instead of point sampling, a large volume of tissue was retrieved. R3 and R4 calcifications showed a high diagnostic accuracy for both benign and malignant lesions.

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P.25
To alert or not to alert that is the question

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Introduction: Current NHSBSP guidelines state that women should be recalled for assessment for 'significant breast symptoms or signs identified at screening'.[1]
Within our unit numbers of clinical/radiographer alerts have increased by 5.5%.
An audit was undertaken to explore the outcome of these alerts.

Method: A retrospective audit was conducted of 25, 913 women screened in 2013.

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Women allocated a clinical alert at time of screening were identified and reviewed with regard to signs and symptoms, imaging features and outcome.

Results: 176 women received a clinical alert (6.79%).

Signs and symptoms included lumps, pain, distortion and nipple changes.

Malignant:	19	(10.79 %)	All except one demonstrated changes on imaging in addition to clinical alert
Benign:	39	22.15%)	
Routine Recall:	118	(67%)	

Conclusion: Recall to assessment is associated with significant anxiety and the audit demonstrated the need to use clinical alerts appropriately.[2] Review of our current protocol for managing signs and symptoms at screening was carried out. A poster demonstrating the significant signs and symptoms was produced and increased training and education have been put in place. A follow up audit will be conducted.

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P.26

Mammographic features and prognostic Histopathological characteristics of True Negative interval breast cancer

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Background: A true negative interval cancer is diagnosed in the interval following a negative screening examination and before the next scheduled screening examination. The interval cancer rate is a measure of efficiency of a screening programme. In this study we reviewed the imaging appearances, histopathological characteristics and prognostic factors of true negative interval cancer.

Methods: A total of 215 cases were selected from the regional interval cancer database between Jan 2006 to Mar 2012. The data was collected from the NHSBSP screening records, mammography films and the PACS/CRIS.

Results: The majority of these interval cancers occurred in 12–23 months following a negative screening. The breast parenchyma was mostly of mixed density followed by dense and fatty. Most cancers were ill defined or spiculate with an average lesion size of 23mm on mammography. Majority of these were high grade DCIS or grade III invasive cancers with lympho-vascular invasion and ER, HER2 receptor positive status.

Conclusions: We concluded that true negative interval cancers have a unique set of characteristics but are not more aggressive than any other screen detected breast cancer.

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P.27

Pictorial review of the appearance of breast cancer with a 64 slice CT scanner

S Flais, A Newland, N Uraiqat

Ealing Hospital, UK

Objectives: Determine whether relevant breast imaging can be obtained with a 64 slice CT scanner.

Methods: 56 patients diagnosed with breast cancer at Ealing Hospital between November 2012 and November 2013 had a staging CT. All the CTs were double read by a breast radiologist. All the possible breast abnormalities were listed and correlated with the appearance in mammography, US and MRI.

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POSTER PRESENTATIONS

Results: 16 % of studies provided only partial breast imaging. Breast abnormalities, possibly subtle, were identified in 91 % of the cases. The most common signs were contrast uptake (88%) and a breast mass (86%). Microcalcifications were never demonstrate. Additional occult benign or malignant masses were identified for 4 patients. The possible appearances of breast cancer are shown and correlated with the mammography, US or MRI.

Conclusions: Non dedicated CT is not thought to be an efficient breast imaging method. However, the majority of proven breast cancers can be seen on the images provided by a 64 slice CT scanner, with additional lesions demonstrated in 7% of the patients. Further audit is required to gauge whether previously undetected incidental lesions identified on contrast enhanced CT merit routine further investigation.[1,2]

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P.28

A case of eosinophilic mastitis

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Background: Eosinophillic mastitis is a rare entity. To our knowledge, to date only six cases are described in the literature. The evidence suggests that this is a benign condition and can be successfully managed conservatively.

Case history: A 42 year old lady presented with a two week history of a painless left breast lump. Past medical history included asthma and Kimura's disease which had previously presented with subdermal skin lesions.

On examination there was a 3cm ill defined, non tender lump in the outer aspect of the left breast. The ipsilateral axilla was normal on palpation.

Mammogram demonstrated an ill-defined, 31mm spiculated, dense mass lesion in the left outer breast. No calcification was seen.

Ultrasound demonstrated a 25mm irregular shadowing mass that corresponded to the site of the clinical lump. The radiographic and sonographic findings were categorised as BIRADS 5. Two lymph nodes with a cortical thickness of 5mm were seen (BIRADS 3).

Core biopsy performed showed histopathologic features of eosinophillic mastitis. No malignant cells were seen. Axillary biopsy was normal.

Conclusion: Eosinophilic Mastitis is a rare entity but is a potential mimic of breast carcinoma. Radiologist should be aware of the possible presentation. Core biopsy is required to differentiate.

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P.29

Radiology led breast assessment clinics within a District General Hospital setting

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Background: Hinchingbrooke Healthcare NHS Trust is a district general hospital (DGH), operating within the "Circle" franchise healthcare group since February 2012.

As a small DGH, to achieve a one stop approach within the 2 week cancer targets, we changed to a radiology first symptomatic service. This is not a new concept; although most breast units conform to the surgical led service.

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This poster demonstrates our audit results of this service in the symptomatic setting against the national cancer waiting time targets.

Methods: All referrals are vetted by mammographers using a breast team agreed proforma.
Most patients see radiology first as a one stop clinic although some see the surgeons first if clinically appropriate.

Results: 988 patients seen between 1/6/13–31/1/14.
46 men and 942 women.
98% 2 week wait target, 96% 62 day, 100 % 31 day.
88% referrals seen radiology first and 64% discharged after first one stop clinic.
No patients have represented with a cancer after primary radiology discharge during this time.

Conclusion: Radiology led breast clinics are safe and effective use of resources in a DGH and a sustainable mechanism to obtain national cancer targets.

P.30
Review of granular cell tumours of the breast

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Purpose: Granular cell tumours (GCT) of the breast are rare neoplasms that are usually benign in nature. However, they often have sinister imaging appearances. This is an illustrative poster reviewing the radiological characteristics of granular cell tumours diagnosed at our institute.

Methods: GCT's of the breast were retrieved from the histopathological database. We analysed the demographic data, clinical and radiological features of these tumours.

Results: 5 patients were diagnosed with GCT of the breast over the last 10 years. Average age at presentation was 46 years with age range of 28-50. Three were screen detected and two presented symptomatically. 3/5 patients presented with lesions in the inner quadrant of the breast.

Conclusions: GCTs are an unusual finding in the breast and can have a variable radiological appearance but usually appear as irregular hypoechoic masses with posterior acoustic shadowing on US. They are thought to be derived from striated muscle cells/perineural cells. They often arise from the supraclavicular nerve and are therefore commonly found in the upper inner quadrant of the breast. The management is wide local excision, as whilst mostly benign, a small proportion (1%) can have invasive potential.

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P.31
A pictorial review of male breast imaging at Hull and East Yorkshire Breast Care Unit

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Male breast cancer is rare [1% of all breast cancers][1] however locally the number of men presenting at breast clinics appears to be increasing with 260 men being seen in the last twelve months. The majority of these patients presented with a subareolar mass, breast enlargement or tenderness.
Local imaging protocols include mammography for men over fifty with ultrasound for focal lesions and ultrasound first in younger men. Mammography commonly shows prominent pectoral muscles, fatty tissue and small nipples with increased tissue in the subareolar area in cases of gynaecomastia Ultrasound can reveal lesions obscured by overlying gynaecomastia[3] and in this review ultrasound is the most frequently requested imaging with 142 patients having only ultrasound regardless of age.
The aim is to provide a pictorial review of male breast lesions and although gynaecomastia was the most common finding with 169 cases, some classic and unusual appearances are presented of the 5 ductal carcinomas, 1 axillary recurrence, 1 lung metastasis, 1 pancreatic metastasis, 1 large periductal collection,1 intramuscular haemangioma and 1 rare encysted papillary carcinoma[4] that were also diagnosed.

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P.32
The role of clinical-academic collaboration in inspiring a research culture within a typical breast unit

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Background: UK breast units are well-disciplined in ensuring a quality service through audit, yet mammographers rarely undertake empirical research, a phenomenon also noted within the wider radiography profession.

Methods: A research partnership was established between a breast unit and a university to foster and promote an ethos of research and evidence-based practice (DOH, 2012). A clinical scenario was identified (staff-client interactions in the assessment clinic) and investigated through a multi-methods process evaluation approach, including audit, observation, interviews and focus groups. A steering group included the principal investigator, R+D representation and a patient representative, supporting novice researchers throughout their research journey.

Results: This presentation will explore the relative merits of engaging in collaborative research. The benefits include enhancements in: research governance awareness; individual and collective research expertise; internal (Trust) recognition and networking; external profile and opportunities; training opportunities; CV and PDR development; CPD and peer benchmarking; individual accreditation; service improvement; dissemination skills and research outputs.

Conclusion: A clinical-academic partnership has the potential to develop a research culture in a typical breast unit. For both academic and clinical departments the greatest benefits included developing confidence in undertaking research as individuals and as a team, and pride in the service they delivered.

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P.33
Can we use screen reading radiographers to interpret and report symptomatic mammograms?

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Aim: The aim of this study was to explore the implications of involving screen reading radiographers in symptomatic mammography image interpretation and reporting.

Methods: Unstructured interviews were conducted with radiographers and the clinical lead radiologist at a purposive sample of eight NHS Trusts where radiographers are involved in symptomatic image interpretation and reporting. The data we analysed thematically and the 'one sheet of paper' (OSOP) method used to summarise relevant data.

Results: Three main themes that highlight the implications of using screen reading radiographers to interpret symptomatic mammograms emerged.
Theme 1 – 'the task is different' incorporated the categories: case mix, reporting environment, report writing and quality monitoring.
Theme 2 – 'the decision making context is different' included the categories: prior training and experience, triple assessment, multiskilling, autonomy and decision support.
Theme 3 – 'managing the workload' included the categories capacity and demand, skills mix and job satisfaction.

Conclusions: Despite differences in clinical case mix and the reporting environment, the pattern recognition and analytic reasoning skills of screen reading radiographers are transferable to symptomatic practice. With additional support screen reading radiographers develop competence in report writing and confidence in autonomous decision making. Diversifying the screen reading radiographer's role can benefit patients and staff.

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P.34
What happens if we involve radiographers in double reading symptomatic mammograms?

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Aim: This study explored radiographer involvement in double reporting symptomatic mammograms.

Methods: Unstructured interviews with clinical lead radiologists and radiographers at eight NHS Trusts were analysed thematically. Four illustrative case studies were extracted.

Results: Case study 1: radiographers provide written comments about their mammography images for reporting radiologists. This helps streamline patient flow through clinic and improves radiographer job satisfaction for no additional cost. However radiographers are frustrated by lack of feedback and believe their skill is under-utilised due to radiologist availability.
Case study 2: mammographic abnormalities missed by radiologists in one-stop clinics are detected by delayed radiographer second reading. Sensitivity improves but discordant reads necessitate 'problem-solving' follow up sessions and delayed patient recall.
Case study 3: mammography image interpretation trained sonographers independently review images before performing ultrasound examinations. Discordant opinions are resolved and additional lesions investigated with minimal diagnostic delay. Radiographer-radiographer 'double reading' is a source of peer support and may improve diagnostic accuracy.
Case study 4: radiologist workforce shortages are addressed where radiographers independently double read family history and annual surveillance mammograms.

Conclusion: Radiographers double read symptomatic mammograms in a variety of ways. Evaluation research methodology identifies what works, for whom and in what circumstances, to what effect.

P.35
Ultrasound lymphangiography with microbubbles to locate axillary sentinel lymph nodes

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Objective: To assess the usefulness of intradermal microbubbles for lymphangiography to identify axillary sentinel lymph nodes (SLN) in women with breast carcinoma.

Methods: In twenty women 0.4–1mL of SonoVue microbubble contrast agent was injected intradermally in the periaraolar region under local anaesthesia (Cox et al). Using a microbubble-specific mode, the injection site was scanned and the bleb of contrast identified. The draining lymphatic was traced towards the axilla until the first lymph node was reached. 2–4 core biopsies were taken with a 16 G cutting needle under local anaesthesia. At subsequent conventional surgery the SLN were sampled. The histology of the biopsied and excised nodes were compared.

Results: Optimisation of the scanner settings was necessary to obtain useful ultrasound ymphangiograms. The skin bleb gave strong signals. The draining lymphatic appeared as a tortuous line running towards the SLN which was identified as an ovoid enhanced region. Core biopsy revealed lymphatic tissue in all but one case. In 10 cases there was agreement between the image-guided and the surgical histology so that management could be better informed in 50% of patients.

Conclusions: Contrast-enhanced breast lymphangiography can be used to identify SLNs for biopsy.

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P.36
Performance measures during the first 2 years of the Ontario Breast Screening Program: High Risk Screening Program

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Background: The Ontario Breast Screening Program expanded to screen women aged 30–69 at high risk for breast cancer with annual magnetic resonance imaging (MRI) and digital mammography.

Methods: The High Risk Screening Program was implemented in 28 centres that provide referrals for genetic assessment, and offer annual MRI and mammography. Women are eligible upon meeting one of the following criteria: known genetic mutation predisposing to a markedly elevated breast cancer risk; untested first-degree relative of a gene mutation carrier; family history consistent with hereditary breast cancer and estimated lifetime cancer risk ≥25%; radiation therapy to the chest (before age 30 and at least 8 years previously). Performance measures were examined from routinely collected information.

Results: Of the 4,026 women screened between July, 2011-July, 2013 and followed to February 2014, 2,299 (57.1%) women had a subsequent screen. Of the 59 cancers detected at initial screen (14.9 per 1000), 57 were detected by MRI (14.4 per 1000) and of the 22 detected at subsequent screen (10.5 per 1000) 20 were detected by MRI (9.6 per 1000).

Conclusions: The program is achieving the expected improved performance based on the high MRI cancer detection rate among women at high risk for breast cancer.

P.37
Intervention trial of previous non-attender invitation for breast screening

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Introduction: Previous Non Attenders (PNAs) are women who were invited but did not attend screening in the previous screening round. In BreastCheck this group receives one invitation with an appointment date assigned, with poor uptake of screening appointments (18%-22%).[1] The aim was to evaluate a new appointment scheduling method.

Methods: This intervention trial was conducted throughout OSR 5 in two regional screening units (an Intervention Unit (IU) (14,960 PNAs) and Control Unit (CU) (13,719 PNAs). In the IU PNAs were invited to contact screening unit to make an appointment. In the CU the standard invitation with an assigned appointment continued.

Results: Significantly fewer PNAs took up their appointment (IU 22.0% OS4, 15.5% OSR5; CU 21.4% OSR4, 18.3% OSR5; p<0.001). The IU potentially saved 68 screening days by not assigning a predetermined appointment. The CU lost 46 screening days due to assigning an appointment to PNAs who did not attend. Cancer detection rate per 1,000 women screened was lower in the IU (11.8 vs 15.4); CDR in PNAs was higher than routine attenders in both units.

Conclusions: Notwithstanding the improvement in efficiency, the Programme Management decided not to implement this intervention on the basis of higher CDR in PNA women.

References:

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P.38
Pain in mammography: where and why does it arise?

D O'Leary, Z Al Maskari
University College Dublin, Ireland

Background: The purpose of the study was to determine the intensity of pain experienced by women undergoing mammography examination and where exactly the pain arises in the breast during compression.

Method: Pain experience data were collected at 3 discrete time-points during mammography using both visual-analogue scales ad Likert scales. Breast diagrams were used to determine exactly where the pain was felt during the compression phases of the examination.

Results: The overall experience of pain/ discomfort due to compression was rated by 96.6% of the women. The pain experienced during breast compression mainly arises from the compression pressing on the middle of the breast and chest wall in the cranio-caudal projection and from the compression pressing on the sternum, middle and underneath of the breast and the axilla in the medio-lateral oblique projection in specific areas.

Conclusion: This study supports other published work that women experience pain during breast compression

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within the mammographic examination. This pain experienced is as a consequence of multiple factors. The study emphasises that more attention must be paid to training of radiographers especially with respect to the importance of the communication with the client during mammography.

P.39
Silicon cushions: a pain reduction intervention for mammography

D O'Leary, Z Al Maskari
University College Dublin, Ireland

Background: The purpose was to determine the effectiveness of silicon cushions in providing pain relief during mammography. The impact of the silicon pad(s) on image quality and radiation dose were also assessed.

Method: Transparent silicon pads were randomly assigned to either breast; the other breast was imaged as normal. The pad was strategically placed on hard edges of the mammography machine using 3 methods. Pain experience data were collected at 3 discrete time-points using visual-analogue scales and Likert scales. Image evaluators were blinded to pad assignment during image quality evaluation. Radiation dose was compared for the pad and without.

Results: Quantitatively no significant pain reduction ($p>0.05$) was observed with the silicon pad in either mammographic projection. Qualitatively there was a trend for pain reduction with the silicon pad. No significant degradation in image quality was seen except in breast positioning due to the pad design. There were significant increases in the radiation dose ($p<0.00$) for both projections due to the slight increase in the compressed breast thickness from the pad thickness.

Conclusion: The silicon breast cushion remains a promising intervention but requires design changes before use in pain reduction intervention. Radiographer interaction remains the primary pain reduction method during mammography.

P.40
The ability of radiographers in mammography to discern benign and malignant disease in breast images: A tri-country comparison

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Background: Studies have shown that radiographers without formal training have shown promise in reading mammograms with accuracy equivalent to that of current screen readers (Moran & Warren-Forward 2010).

Method: Radiographers in countries which do not have formal mammogram reporting/reading training programmes were examined regarding their ability to describe, name and identify mammographic features and lesions, and whether these radiographers could describe the imaging pathway for clarification of these pathologies. Qualitative and quantitative questions using open, closed and breast images were administered to Saudi Arabian, Irish and Egyptian mammography radiographers over a 6 month period.

Results: Mammographers from all 3 countries are able to discriminate normal from abnormal in the mammographic images to varying degrees, with Irish radiographers showing the greatest discrimination. Success appears to be dependent on education type, continuing professional development activities and the experience of the mammographer. Lack of postgraduate training has a detrimental effect on the ability of mammography radiographers to discern breast pathology.

Conclusion: Respondents from the three countries are however not ready to take on a formal reporting role without specific postgraduate training programmes since their experience and knowledge is still far below the projected targets in the literature.

P.41
Higher image quality and greater compression force in mammography are linked

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Purpose: Numerous publications suggest that compression force applied to the breast be reduced to encourage attendance for mammograph Previous studies have not used complex mathematical modelling

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or sufficient statistical correlation of compression force data to image quality to reinforce these contentions.

Method: This quantitative and qualitative study of symptomatic breast units, collected image quality, compression and radiation dose data from 4790patient images. The data were analysed using Univariate Analysis of Variance mathematical modelling and ANOVA.

Results: Compression force consistently showed significant effects on image quality, with perfect and good images consistently requiring significantly more compression force than moderate and inadequate images. Mean compression force required to produce a perfect image was: 121.34N for digital craniocaudal; 134.23N for digital mediolateral oblique; 112.23N for analogue craniocaudal and 129.66N for analogue mediolateral obliques. Only 2% of patients expressed dissatisfaction with the compression force applied.

Conclusions: Compression forces are suboptimal which affects image quality; greater compression force by 11-15N is needed to achieve a perfect image. Greater training of radiographers is required to standardise the undertaking of mammographic projections with regard to achievable compression depth, application of compression force and doses delivered to the breasts of women attending breast services.

P.42
Patient bra size as a gauge of compression required in mammography

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Purpose: Mammographic compression is vital but the amount of compression applied remains subjective/variable as evidenced in an optimisation of mammographic examinations stud. An objective amount of compression based numerous factors were investigated; bra size was chosen as the simplest strategy for objective compression levels. Retailers of brassieres maintain 70% of women wear the incorrect bra size; investigation of this contention was undertaken.

Method: 4970 patient mammogram images were examined in digital format. The volume of the breast was calculated and the average nipple to pectoralis distance was measured on both craniocaudal and mediolateral oblique images for each patient's breast. Breast volumes were compared to brassiere manufacturers' data for specific bra sizes. Correlations were made between patient bra sizes and manufacturers' data.

Results: Strong statistical correlation was found between volume of patient breast and bra size worn and patient breast volume to manufacturers' bra size data ($\rho>0.721$; $p<0.01$). Less than 20% of patients wear the incorrect bra size and more than 70% of these patients had undergone surgery on at least one breast.

Conclusion: Bra size is a potentially simple and easily implementable strategy for objective compression level correlation which will improve both image quality and radiation dose levels.

P.43
Cultural humility model of cross cultural communication skills training in breast care

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Background: Breast screening uptake rates remain consistently low in minority ethnic women. Poor communication plays a significant part in this. To a large extent it relied on improving health professionals 'Cultural Competence'. The 'Cultural Humility' model however is a dynamic process & reaches beyond 'Cultural Competence' and is a lifelong process of self-reflection and self-critique".
Inculcate a shared breast team understanding of the cultural humility model:
ii) Encouragement to become an active participant.
iii) Use trainees feedback to develop future learning process.

Methods: Cultural Humility model relies on actively engaging in an ongoing process of communication skills besides actively follow the patient. A range of non-verbal and verbal skills have been modelled & rehearsed in situations of increasing complexity with opportunities to reflect and develop greater self-awareness using role play, video playback & Interpersonal Process Recall.

Design and Delivery: Groups of multi-disciplinary breast care health professionals have participated in five a one day 'Enhanced Communication Skills' courses based on Cultural Humility model. Self-reflection, observer & facilitator feedback have enabled participants to develop their skills of cultural humility. The programme encouraged groups to

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explore and resolve their barriers to communication. The 5 courses so far have attracted very high ratings from participants with further developments planned to enhance user experience.

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P.44

A National Digital Mammography Image Database and Associated Observer Study Software

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Research into digital medical imaging requires the large-scale collection and anonymisation of images/data. To conduct such research we have developed a flexible image database, which prospectively collects images and data from UK sites for research.

Methods: The database contains unprocessed and processed images, associated data and expert-determined ground truths. Currently, the associated data is made up of radiological, clinical and pathological information extracted from the National Breast Screening System (NBSS). The process of collection, annotation and storage is fully automated and adaptable. All images and data are anonymised. Furthermore, a software application MedXviewer has been developed which allows radiologists to annotate clinical features and participate in observer studies.

Results: At present we have collected 2,623 patient cases, consisting of 34,014 2D images of which 680 are normal cases, 1,836 malignant and 107 benign. These images are being utilised in multi-site observer studies.

Conclusions: A valuable database have been developed which holds both processed and unprocessed mammographic images. The provision of unprocessed images enables a multitude of potential research possibilities that utilise the images. Furthermore, the availability of associated data and expertly determined ground truth can facilitate other research applications, such as big data analysis.

P.45

A mammography image set for observer training and assessment in BI-RADS density classification

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Purpose: Breast density categorisation consistency is important when performing research where density is a relevant variable. Minimisation of inter and intra-operator variability is essential if findings are to be meaningful. Aim: validate a set of mammography images for visual breast density estimation to achieve consistency in research and to determine observer agreement.

Methods: 50 mammograms scored twice by eight observers (BI-RADS – four category density scale). Scoring agreement within and between observers was assessed. Film screen utilised as research was been carried out on film images. Further work includes repeating this study for digitally acquired images.

Results: Six of eight observers achieved strong intra-observer agreement (Cohens' Kappa >0.81). Strong agreement between paired observers was demonstrated in 10 of 28 pairs (first scoring round) and 12 of 28 on second. No observers demonstrated delta variance above 1. Fleiss' Kappa used to evaluate concordance between all observers on first and second scoring rounds (0.64 and 0.56 respectively).

Conclusion: We have set a gold-standard score for 50 images and enabled evaluation of observers' scoring. This will facilitate rigour in future research where BIRADS mammographic density scores are relevant.

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P.46

Comparison of calcification cluster detection by CAD and human observers at different image quality levels

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Purpose: To compare calcification detection by human observers and CAD at different image quality (IQ) levels.

Method: 162 normal screening cases were collected from a Hologic Selenia and subtle calcification clusters inserted. By transforming these images produce four other sets of images with different IQ were created: simulating CR images at the same dose and at half dose and DR images at half and quarter dose. These images were read by seven expert observers in a previous study and by a commercial CAD using the "certainty of finding" (1-100) in the DICOM structured report with JAFROC analysis.

Results: At normal dose DR the figure of merit for the CAD was 0.82 and 0.84 for the humans. At the lowest IQ level the figure of merit for the CAD and humans were 0.62 and 0.55 respectively. At each IQ level there was no significant difference ($p>0.05$). The IQ defined by threshold gold thickness had a significant correlation with both human and CAD figures of merit.

Conclusion: The performance of the CAD and humans were both significantly degraded by changes in IQ. There was no significant difference in calcification detection between the CAD algorithm and the human observers at each IQ level.

P.47

Word of Mouth Mammography e Network (WOMMeN): a feasibility study

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Purpose: We plan to develop a Digital Social Network (DSN) app for women attending breast screening. This approach to communication with service users reflects current NHS strategy (DOH 2010). It also responds to women's preferences for eliciting information about mammography using word-of-mouth (Poulos and Llewellyn 2005) and their growing interest in social networking (Brenner 2012).

Aim: This paper presents the findings of a feasibility survey.

Method: A survey was sent to a convenience sample comprising university employees ('service-users') and employees at two NHS Trusts ('health professionals'). It explored: current social media usage; preferred health information format; preferred modes of interaction with other users and health professionals; and whether WOMMeN was a good idea.

Results: 88 surveys were completed:

- ~75% use DSNs, mainly for 'social chat'.
- DSNs are not frequently used for information/networking related to health, but Twitter is the preferred choice.
- Women want to view uploaded videos but not to upload their own.
- Health professional involvement on the DSN is desirable.
- There may be some reticence by health professionals to engage in health-related DSNs.

Conclusions: Generally the app was thought to be a good idea. We intend to extend the survey to include a wider cross-section of UK communities.

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How do the results of virtual clinical trials using simulated cancers relate to cancer detection in screening

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Purpose: Studies using subtle simulated calcification clusters have compared the performance of different imaging technologies. To relate the results to cancer detection in screening this work quantitatively compares the characteristics of subtle screen-detected and subtle simulated calcification clusters.

Methods: Mammograms for 266 sequential screen-detected cancers were reviewed and 26 identified as presenting as subtle clusters. The cluster diameter, number of calcifications, calcification diameter and calcification contrast were calculated for these subtle clusters containing 442 microcalcifications and compared to 30 simulated clusters containing 349 microcalcifications.

Results: 28% of cancers were detected as microcalcification clusters only and 33% were judged subtle. 25% of the subtle clusters were invasive and 75% were DCIS. The mean calcification diameters were 0.26mm (range: 0.11–0.92mm) and 0.24mm (0.08–1.00mm) for the real and simulated clusters respectively. The mean cluster diameter was 8.0mm (2.1–19.0mm) and 4.0mm (1.9–9.4mm) for the real and simulated clusters respectively. However, the range of diameters of the simulated clusters included 76% of the real subtle clusters.

Conclusions: The characteristics of the real and simulated calcifications were sufficiently similar that a change in detection in simulated clusters can be used to predict the impact of differences in imaging technology on cancer detection.

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New dose levels for 'standard' and real breasts – lower remedial tolerances and diagnostic reference levels

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Purpose/Background/Objectives: The current national diagnostic reference levels (NDRLs) bis 3.5mGy, was setup during the film-screen era. Similarly,remedial tolerances of 2.5mGy for 'standard breast' phantoms used in physics testing have not been updated with the emergence of digital imaging. More than 85% of screening services are now fully digital, and the remaining services will be soon.This study investigates doses on digital systems and proposes updated tolerances and DRLs.

Methods: Data was collected for approximately 10,000 patients on 27 digital systems.Doses to 'standard breasts' from physics surveys were also obtained on each system. New DRLs and remedial tolerances were proposed using percentile data of mean Room Mean Dose (RMD).

Results: The mean RMD was 1.36mGy and the maximum RMD was just 2mGy (43% lower than the NDRL). The maximum 'standard breast' dose was 1.6mGy (36% lower than the remedial tolerance). There were notable differences between manufacturer doses.

Conclusions: Current DRLs are of little relevance to modern systems and need revising. Recommendations include a NDRL for 1.9mGy on digital systems, manufacturer specific DRLs from 1.5mGy to 1.9mGy, and lower remedial tolerances for physics testing, including a 1.5mGy tolerance for 53mm breast equivalent phantoms.

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Clinical epiphotoacoustic imaging on breast cancer patients

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Background: Photoacoustic (PA) imaging maps the distribution of optical absorbers in tissue with ultrasonically-determined spatial and temporal resolution. It is emerging as a powerful non-invasive technology to image the spectral differences between oxygenated and deoxygenated haemoglobin in the blood as well as melanin in the skin and has been used to assess breast cancer.[1,2] Epiphotoacoustic imaging (with the laser energy emitting close to the acoustic probe) is preferred because it holds potential for incorporation into freehand ultrasound scanning[3] with broad future clinical applications. We present the first UK clinical experience with epiphotoacoustic imaging.

Methods: Research ethics committee and written informed consent was obtained. Ten patients with large locally invasive breast cancers underwent epiphotoacoustic freehand scanning prior to commencing neoadjuvant chemotherapy on an in-house prototype scanner, following standard B mode ultrasound.

Results: Photoacoustic signals were identified to originate from areas surrounding the tumour (peritumoural region), but not from within the tumour. A strong emission was also observed from the skin of patients having high levels of melanin pigmentation.

Conclusions: Freehand epiphotoacousic ultrasound of breast cancer identifies signal from the peritumoural region which is often the most vascular. It holds potential for monitoring tumour angiogenesis and blood oxygenation mapping.

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P.51
Does wearing a hospital gown when recalled to the Breast Cancer Screening Assessment clinic compromise privacy and dignity?

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Objective: The primary objective was to identify if any changes to existing practice were required to maintain privacy and dignity and how this may improve women's experience.

Methods: The methodology utilised in this study was patient satisfaction questionnaires. The study design was both qualitative and quantitative; combined these would give an understanding of the totality of the patient experience (Yoshikawa et al 2008). In total 116 questionnaires were distributed and completed achieving 100% response rate.

Results: The findings of this study were not conclusive; a recommendation would be to undertake further research over a longer period of time. A limitation of this study was that it did not capture the diverse population under investigation because the research was carried outduring the month of Ramadan andmany Muslim women deferred their appointment.

Conclusions: The findings contributed to a greater understanding of women's experience. The research took place in Central London which has a diverse community; it is easy to make assumptions based on cultural sensitivities and their perception of modesty, however, this researchhighlighted that modesty is not unique to certain cultures asprivacy of the body was important to most women attending breast cancer screening assessment clinics.

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P.52
Ending isolation on mobile breast screening units

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Background: European Space Agency sponsored demonstration project to establish the viability of a new satellite based communications service to end the isolation of mobile units in the National Breast Screening Service. Ten mobile units in various QA regions took part in the pilot.

Objectives: The project addresses the following objectives:

- Increased demand for screening services by increasing the potential throughput on all mobile screening units.
- Remove need for physical transfer of work-lists and screening images.
- Reduce risk of clinical data loss during transfer between imaging device and reading desks of radiologists.
- Enable live work-lists and NBSS software on mobile units.
- Provide reliable communications by voice, email and internet to mobile units.

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• Improve the working environment for staff working on mobile screening units.

Methods: The pilot research phase conducted recently, comprising interviews and assessment with six Superintendent Radiographers in two stages: pre and post satellite technology in place.

Results: Proven quantitative and qualitative findings, including cost decreases, time savings, opinion on security of results transfer and staff morale.

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Retrospective review of the assessment of well defined breast masses in post menopausal women on imaging

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Background: Well defined masses are a common mammographic finding in women of all ages within the screening population however, the approach to the imaging characterisation and referral to assessment of these lesions in post-menopausal women may vary greatly between services across the NHSBSP.

Purpose: To assess if well-defined masses in post-menopausal women can be safely characterised at mammographic screen reading to minimize the potential for women to undergo unnecessary screening assessment.

Method: Records for women who attended for screening at our breast screening service and were subsequently recalled to assessment, over a 6 month period in 2012 were reviewed. Of these, 71 women were aged 60 or above and were recalled for well-defined masses which underwent further imaging investigation and guided biopsy.

Results: Of the 71 women aged over 60 reviewed, 8 (11%) of the well defined masses were shown to be malignant.

Conclusion: Well defined masses in post-menopausal women cannot be assumed to be benign. American studies have shown that short term follow-up of well-defined masses is acceptable as the risk of malignancy is quoted as less than 2%.[1] Our results suggest this may be an underestimate, thus recommending that a more pro-active approach is adopted.

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P.54
Role of MRI in the management of Mixed Lobular Breast Cancer

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Background: Currently MRI is offered to women with mixed lobular carcinoma on core biopsy if they are considering breast conservation in our institution. The purpose of this study was to determine the utility of MRI in women with mixed lobular carcinoma.

Study/Design: Between 1st September 2005 and 15thMay 2013, 43 cases of mixed lobular carcinomas were identified on core biopsy. 35 cases who underwent preoperative MRI and proceeded to surgery without neo adjuvant therapy were included. 12 cases with other histology types following surgery were excluded.

Results: The final histological diagnosis was mixed lobular in 23 patients. MRI correlated well with final histology in 18 cases (78%). It underestimated the size in 3 cases and overestimated in 3 cases. It identified 3 contra lateral lesions; an invasive mixed lobular, a DCIS and a papilloma. It lead to a change in management in 10 cases; 8 (31%) had appropriate surgery whilst MRI contributed to 2 inappropriate mastectomies.

Conclusion: This study shows that MRI identifies additional disease and informs management in 30% of mixed lobular carcinomas. Therefore it would be appropriate to continue with the current practice of using MRI as an adjunct to conventional imaging in the preoperative diagnostic pathway of mixed lobular carcinomas.

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