68 patients having benign disease. Of these 530 patients, 281 underwent WLE/ cavity margins resection with 39 requiring re-operation for positive cavity margins. 13/39 had re-excision of margins with 10 having no residual disease.
249/530 patients underwent WLE without cavity margin excision. 64/249 underwent re-operation. 38/64 had re-excision of cavity margins of which 27 had no residual disease. The reduction in reoperation rates by taking cavity margins is significant ($p < 0.01$). Younger patients, axillary node positivity, tumour grade and multi-focal tumours are more likely to be associated with margin involvement and therefore subsequent re-operation.
Conclusion: WLE combined with cavity margins resection has a lower rate of reoperation due to positive cavity margins. Pre-operative anticipation of the factors identified, combined with radiographic confirmation of completeness of excision (for those having needle localisation procedures), should help the surgeon make an intra-operative decision for or against cavity margins resection.

O-17 Implanted gold seeds for tumour bed localisation and image-guided radiotherapy

C.E. Coles*, G.C. Wishart, J. Fairfoul, E. Donovan, E. Harris, A. Poynter, J.S. Wilkinson, S. Tudor, J. Yarnold, on behalf of the IMPORT Trial Management Group. *Cambridge University Hospitals, Royal Marsden Hospital, Ipswich Hospital, UK*

Introduction: The aim of this multicentre study is to assess feasibility of inserting gold markers into the surgical cavity wall for tumour bed (TB) localisation and image-guided radiotherapy (IGRT) for early breast cancer. The results will inform TB localisation and IGRT protocols in the NCRI IMPORT (Intensity Modulated Partial Organ Radiotherapy) Trials.
Methods: Six gold markers were implanted in the TB at surgery and subsequently localised on CT images collected in the RT treatment position. Patients were treated with standard tangential RT and a second CT scan was performed in the last week of treatment. Portal imaging (PI) during RT was carried out, and couch displacement in anterior-posterior, left-right, inferior-superior directions were generated for all imaged RT fractions. Target recruitment is 60.
Results: Data from the first 30 patients confirmed success rates for insertion, CT localisation and PI assessment of 90%, 92% and 100% respectively. The median times for surgical insertion, CT localisation and PI assessment were 8, 10 and 8 minutes respectively. Median change in TB volume between CTs was –7 ml (range: –52 to +30 ml), with the TB generally becoming less visible following RT. Standard deviation of the systematic and random setup errors in anterior-posterior, left-right, inferior-superior directions were 4.1, 2.7 and 3.9 mm and 2.9, 2.5 and 2.8 mm respectively.
Conclusion: Results demonstrate the feasibility gold markers for TB localisation and IGRT with minimal additional time required. TB delineation sub-study results will be used with these data to determine planning target volumes and for IMPORT HIGH.

O-18 Is face-view only enough for the aesthetic evaluation of breast cancer conservative treatment (BCCT)?

M.J. Cardoso*, J.S. Cardoso, C. Vrieling, D. Christie, J. Joahensen, S. Costa, T. Almeida. *Faculdade de Medicina do Porto and INESC Porto, Porto, Portugal*

Background: Trying to overcome the lack of reproducibility of the methods available for aesthetic evaluation of BCCT, we developed a software for the objective evaluation called BCCT.core (Breast Cancer Conservative Treatment. cosmetic results). The BCCT.core software makes use of only a face-view photograph of the patient, considered by some to be insufficient for an accurate evaluation of aesthetic results. The purpose of this work is to compare the performance of BCCT.core with subjective expert analysis using a face-view and a four-view evaluation.
Material and Methods: The photographs in four positions of 150 patients, captured with a digital camera, were evaluated by a panel of experts and a consensus classification was obtained. The agreement with the consensus of the BCCT.core on the face-view evaluation was calculated using the kappa (k) and weighted kappa (wk) statistics. Afterwards, the 150 face-views were sorted and sent for additional evaluation by 3 of the panel experts. The agreement with the consensus of the face-view evaluation and the four-view evaluation of the 3 experts was calculated using the same methods.
Results: The software obtained a moderate agreement with the consensus ($k = 0.57$; $wk = 0.68$). The mean agreement between the four-view evaluation by the three experts with the consensus was identical to the software agreement ($k = 0.55$; $wk = 0.67$). In the face-view only experiment, the mean agreement between the three experts and the consensus was only fair ($k = 0.37$; $wk = 0.54$).
Conclusions: The software evaluation obtained a better agreement with the consensus than the expert evaluation with the face-view only. The agreement between the three experts using the four-view evaluation did not exceed the values obtained by the software. Although the software could be improved with additional views, as it is, the performance of BCCT.core equals the one obtained by experts using the four-view evaluation.

O-19 Post-operative radiotherapy (RT) in minimum-risk elderly (PRIME) – assessing the impact of breast radiotherapy on quality of life in low risk older patients

R.J. Prescott, I.H. Kunkler*, L.J. Williams, C.C. King, W. Jack, J.M. Dixon, M. van der Pol, T.T. Goh, R. Lindley, J. Cairns. *University of Edinburgh and University of Aberdeen, UK*

Objectives: To assess the impact of post-operative breast radiotherapy (RT) on the quality of life (QoL) of low risk older women following breast conserving surgery (BCS).
Methods: After BCS with clear margins, 'low risk' women who were 65 years or older with histologically node negative unilateral breast cancer, treated by endocrine therapy, were randomised to receive or not receive whole breast RT. Primary endpoints were QoL, anxiety and depression and cost effectiveness. QoL was measured four times over 15 months by the EORTC QLQ C30 and BR23 modules, and EuroQol for the calculation of QALYs. Mental state was assessed by the HADS and Philadelphia Geriatric Center Morale Scale.
Results: 255 patients were entered in the trial. The expected improvements in QoL with the omission of RT were not seen in the EuroQol assessment or in the global domains of the EORTC scales. RT was, however, associated with increased breast symptoms, fatigue and a slower return to normal social functioning, but with less insomnia or endocrine side effects. Immediate costs to the NHS with post-operative RT were calculated to be of the order of £2000 per patient.
Conclusions: Although there are no differences in global QoL scores between patients treated with and without RT, there are several dimensions which exhibit advantage to the omission of RT. Extrapolations from these data suggest

RT may not be a cost effective treatment in this population unless it results in a recurrence rate at least 5% lower in absolute terms than those treated without RT.

O-20 Surgical opinion of cosmetic outcomes following breast conserving surgery for primary breast cancer

N. Hopper*, N. Jones, R.J. Williams, E. Vaughan-Williams. *Royal Glamorgan Hospital, Llantrisant, UK*

Several studies have shown that breast conserving surgery [BCS] (wide local excision followed by radiotherapy) and mastectomy results in equivalent survival rates. Thus BCS has potential advantages of better cosmesis and body image, with subsequent improvement in quality of life. Results however often fall below expectations.
The aims of this study were analyse the cosmetic outcomes following BCS for primary breast cancer, comparing the opinions of Consultant Surgeons (CS) and Non-surgical practitioners (NSP).
Post-operative photographs (3 different views, standard conditions and positions) of 50 patients (median age 61, range 42–84) with primary breast cancer, who had been treated by wide local excision and radiotherapy were evaluated on a standardised 4 point grading system by 4 consultant breast surgeons, 1 plastic surgeon, 1 breast physician, 3 nurses and 1 lay person. The assessors also gave an overall score out of 10.

	Surgeon	Non-surgeon	P value
Breast shape rated as "Excellent"	44%	28%	<0.001
Scarring rated as "Excellent"	27%	23%	0.353
Nipple position rated as "Excellent"	32%	25%	0.138
Breast position rated as "Excellent"	47%	26%	<0.001
Symmetry rated as "Excellent"	33%	24%	0.038
Median overall score	8	7	0.004

Increasing weight of specimen adversely influenced both CS and NSP opinions ($r = -0.201$, $P = 0.002$ and $r = -0.175$, $P = 0.007$).
Consultant Surgeons universally scored the outcomes of breast conserving surgery more highly than non-surgeons. Both groups were more satisfied if the resected specimen was small.

O-21 Residual disease after excision of ductal carcinoma *in situ* of the breast: a multivariate regression analysis of predictive factors

J.T. Jenkins, J. Mansell*, C.R. Wilson, E.A. Mallon, J.C. Doughty, W.D. George. *Western Infirmary, Glasgow, UK*

Background: Recurrent disease after DCIS treatment may result from outgrowth of the same disease; "residual disease"; or a new primary tumour. The only definitive method of detecting residual disease involves further surgery. Reliably predicting residual disease and the need or avoidance of further surgery would usefully guide surgical management.
Methods: 432 consecutive patients with DCIS and definitive assessment for residual disease were assessed. Patients undergoing mastectomy as the initial surgical procedure were excluded. Multiple clinical factors were prospectively recorded and multiple histopathological features were reassessed by a single pathologist. Univariate predictors of residual disease were submitted to multivariate logistic regression analysis to identify independent predictors of residual disease.
Results: Of 432 patients, 201 (46.5%) had residual disease. 205 (47%) initial excision margins were involved; single margin involvement in 84 specimens, the remainder had two or more involved margins. Significant univariate predictors were; margin status, extensive DCIS, pathological size, comedonecrosis, micropapillary histology, nuclear grade, Van Nuys Pathological Classification, volume of excision, HRT use, and presentation mode. Multivariate logistic regression assessed a suitable model for residual disease prediction. Margin status [OR 2.5 (95% CI 1.16–5.39)], extensive DCIS [OR 2.16 (95% CI 1.49–3.14)], micropapillary [OR 2.29 (95% CI 1.41–3.73)] and comedonecrosis histology [OR 1.66 (95% CI 1.17–2.36)] were independent predictors of residual disease.
Conclusions: Identifying a group of DCIS patients at highest risk of residual disease is worthwhile. Patients with one or more risk factors may benefit from re-excision, mastectomy, or radiotherapy, to reduce recurrence. This study reports a large consecutive series with consistent pathological reporting.

O-22 Mode of recurrence of operable invasive breast cancer with reference to NICE guidelines

R. Kuzhively*, K. Harper, A. Barnsley, C. Gray, M.R. Williams. *North Cumbria Breast Unit, Carlisle, UK*

Study aims: NICE guidelines suggest breast cancer follow up by specialists should cease after 2–3 years. This study examines type and mode of presentation of recurrence in a consecutive series presenting with operable invasive breast cancer.
Patients and Methods: 1113 patients received treatment between January 1995 and December 2004 and were followed under strict protocol in designated cancer follow up clinics by Breast Physicians. Patients attended every 3/12 for 12/12, every 6/12 for second year and annually thereafter. Recurrences were entered prospectively onto a computerised database. Patients were divided into 3 groups.
Group A: Disease detected at specialist follow up clinic. Group B: Direct GP referral for recurrence Group C: Recurrence detected by routine mammography
Results: 168 patients have recurred. 75 (45%) recurred with loco-regional disease alone (36 local, 33 regional, 6 combined); 76 (45%) with metastases alone and 17 (10%) with combined disease. Median follow up = 63 months. Lost to follow up <2%.

Mode of presentation of recurrence

Group A	113 (67%)
Group B	47 (28%)
Group C	8 (5%)

Time to recurrence

<12 months	28 (17%)
12–24 months	57 (34%)
25–36 months	29 (17%)
>36 months	54 (32%)

Conclusion: 67% of all recurrences were detected by specialist follow up and 32%, to date, occurred after 3 years. This suggests that NICE guidelines may need revisiting.

O-23 Patient led breast cancer follow up

D. Chapman*, E. Cox, G.C. Wishart. *Addenbrookes Hospital, Cambridge, UK*

We recently introduced patient-led follow up (PLFU) for low risk breast cancer patients. The aim of this study was to audit patient satisfaction with this protocol.
A questionnaire was sent to 114 consecutive, low risk (post-menopausal, node negative, NPI < 3.4, DCIS