a variety of chemokines which potentially mediate the reciprocal interactions between breast stromal and epithelial populations. The specific chemokines involved remain to be defined.
Aim: To identify factors secreted by tumour stromal cells and elucidate their potential role within the tumour microenvironment.
Methods: Breast tumour specimens harvested at surgery were separated into epithelial and stromal fractions for culture. Chemokines secreted by stromal populations were detected using Chemiarray™, ELISA and RQ-PCR. Transwell® inserts were used to assess migration of breast cancer epithelial cells (MDA-MB-231 and MCF-7) in response to primary stromal cells.
Results: Tumour stromal cells were shown to secrete a range of chemokines including GRO, IL-6, IL-8 and MCP-1. The level of MCP-1 secreted by tumour populations was significantly higher (mean 951±158 pg/ml) compared to normal stromal cells (mean 366±76 pg/ml). RQ-PCR analysis revealed increased MCP-1 gene expression in tumour relative to normal stromal cells ($p < 0.05$). There were significant increases in migration of both MDA-MB-231 and MCF-7 cells in response to factors secreted by tumour, but not normal stromal cells [range 2–10 fold increase]. Significant inhibition (20–70% reduction) of migration was observed in the presence of monoclonal antibodies to MCP-1.
Conclusion: Stromal cell derived MCP-1 stimulates epithelial cell migration and may play an important role in the breast tumour microenvironment. Increased understanding of the role played by stromal cells in breast cancer progression, may lead to the identification of novel therapeutic targets.

O-61 Reading the prognosis of the individual with breast cancer

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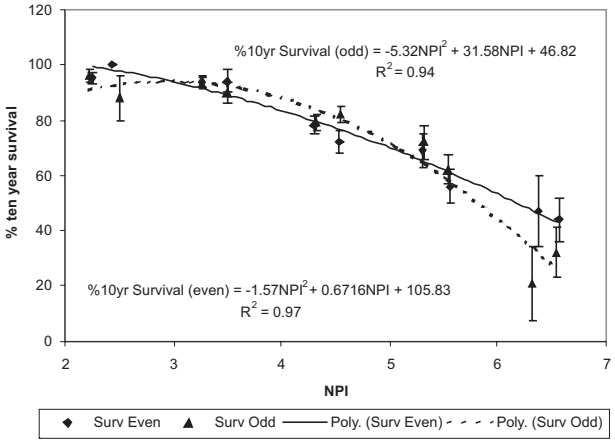
The Nottingham Prognostic Index (NPI) is well accepted and validated. The NPI predicts survival for 6 groups.
Aim: To obtain better survival estimates for the individual than is provided by placement in an NPI group.
Method & Results: Consecutive primary operable breast cancers treated at Nottingham City Hospital 1990–1999. Ten year % survivals plotted for 10 ranges of NPI from 2.0 to 6.9. There is an excellent inverse correlation between median NPI value for each range and survival at 10 years. Rank order is preserved with significant difference between neighbouring ranges.



To enable estimation of survival for all individual values of NPI, a curve fitting technique was applied to these results and gave the formula applied to the individual's NPI score: 10 year survival for the individual = $-3.0079 \times NPI^2 + 12.30 \times NPI + 83.84$. This gave an r^2 of 0.98.
Validity was demonstrated by dividing into odds and evens by case number, with good concordance shown between the two curves produced (Fig).
Example of improved prediction: Two patients with NPI's differing little, of 5.4 and 5.5 lie in different NPI groups (Moderate II and Poor); estimated breast cancer specific 10 year survivals of these groups are 75% and 53% respectively, a 22% difference. Calculations for the individuals from the formula for the individual NPI values gives their survivals as 63% and 60% respectively, only a 3% difference.

O-62 External validation in ONCOPOOL of updated survival according to the Nottingham Prognostic Index (NPI)

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From Nottingham City Hospital (NCH) data the NPI was described and validated in the early 1980s. Case survival has markedly improved and new survival figures for cancers treated in the 1990s NPI groups are presented in this meeting (n = 2235).
ONCOPOOL is a dataset of primary breast cancer assembled as an EC FP5 project in 12 European Breast Units. 6711 cases treated in the 1990s were available for this analysis.

	% Selected		10 Year BCS	
NPI Group	NCH	ONCOPOOL	NCH	ONCOPOOL
EPG	14	19	96±2	94±2
GPG	21	26	93±2	91±2
MPG I	28	27	81±4	84±2
MPG II	22	18	74±4	76±4
PPG	10	9	55±8	53±6
VPG	4	5	38±12	40±8
Overall			77	81±0.4

There are no significant differences in survival in any NPI group between the NCH set and ONCOPOOL nor do overall distributions to prognostic groups differ significantly.
ONCOPOOL gives an excellent intercentre and international validation of the new survival figures according to NPI of women treated to modern protocols.

O-63 Survival in East Anglia according to the Nottingham Prognostic Index

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The E Anglia (EA) (n = 6372), Nottingham City Hospital (N) (n = 2238) and Cambridge Breast Unit data (C) (n = 865) datasets are of women with primary invasive breast cancer aged $\leq$ 70, diam. <5 cm, treated 1998–2003 (EA & C) and 1990–99 (N). The EA set includes the C set.
Analysis according to Nottingham Prognostic Index (NPI) compares the figures in the three datasets. Figures shown in the table are actuarial survival for all causes of death (OS) at 84 months survival.

- The NPI separates the E Anglia and Cambridge cases into groups with significantly differing survivals.
- There are no significant differences between the three series in case numbers falling into each NPI group nor in survival within groups nor in all case survival.

NPI Group	% lying in Group			% OS at 84 Months ± 2 SE		
	EA	C	N	EA (±)	C (±)	N (±)
EPG	18	13	15	95 (2)	93 (6)	92 (2)
GPG	25	22	21	94 (2)	94 (4)	90 (2)
MPG I	25	27	28	89 (2)	93 (4)	84 (4)
MPG II	21	24	22	77 (4)	81 (8)	73 (4)
PPG	8	11	10	62 (6)	70 (12)	59 (6)
VPG	2	3	4	48 (12)	52 (26)	37 (12)
All cases				84 (1)	87 (4)	80 (2)

Conclusion: Examination of the E Anglia and Cambridge series provides validation of the NPI in prognostic discrimination of cases treated in the 1990's.

O-64 The importance of lymphoscintigraphy in sentinel node biopsy of the breast: a six-year, single-centre experience

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Introduction: The use of Sentinel Lymph Node (SLN) biopsy to stage patients with early breast cancer is becoming routine. This study assesses the contribution of three modalities; lymphoscintigraphy, blue-dye and intra-operative, hand-held gamma probe, in the identification and retrieval of SLN.
Methods: All patients with clinically node negative, breast tumours (<30 mm) were considered. Patients were excluded if one or more modalities were not used. Nodes were classified as "hot" (gamma count exceeds background count ten-fold) and/or "blue" (blue node or blue tracking lymphatic).
Results: Between 2001 and 2006, 271 patients had SLN biopsy. Every patient (100% success) had at least one SLN removed (mean 1.92 nodes, range 1–6). The median histological tumour size was 15 mm (range 1.4–60 mm) and 55 patients (20.3%) had SLN metastases. Lymphoscintigraphy identified at least one hotspot in 266 (98.2%) patients. If the only the gamma probe was used, a SLN would be retrieved in 268 (98.9%) patients. If blue dye alone was used, SLN identification would be successful in only 237 (87.5%) (87.5%, $p < 0.0001$; $\chi^2 = 26.107$). Of 521 SLN removed, 367 (70.4%) were hot and blue, 129 (24.8%) were hot only and 25 (4.8%) were blue only ($p < 0.0001$) – 56 (15.3%), 12 (9.3%) and 1 (4.0%) respectively had nodal metastases ($p < 0.0001$).
Conclusion: The most effective SLN biopsy technique will utilise nuclear medicine scanning, blue dye and intra-operative, hand-held gamma probe. Failure to use the hand-held gamma probe will impact on SLN retrieval rates to a greater extent than omission of blue-dye.

O-65 Simultaneous dual isotope quantification of lymphatic flow to axillary nodes from intradermal and parenchymal tissue planes compared with nodal pathology in breast carcinoma; superiority of parenchymal injection for identification of the sentinel node

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The identification of the true sentinel lymph node (SLN) may depend on the plane into which the tracer is injected. We used a novel dual isotope approach in breast cancer patients to explore this.
15 patients with early breast cancer undergoing axillary lymph node clearance surgery had simultaneous injections of ^{99m}Tc-labeled human immunoglobulin-G (HIG) and ^{111}In-labeled HIG into the parenchymal and intradermal planes. All 228 nodes were dissected fresh and assayed by well-counting for quantification of lymphatic flow from the two planes and by haematoxylin/eosin staining and immuno-histochemistry for metastatic disease.
Flow from the intradermal injection to the nodes was 5 times greater than from the parenchymal plane. The pattern of tracer distribution within the draining nodes divided patients into 3 groups of equal size. In the first, there was near perfect correlation between ^{111}In and ^{99m}Tc, whilst in the second and third groups, there was reasonable and poor correlation, respectively.
The parenchymal route was statistically more likely to demonstrate a disease containing node than the intradermal route ($p < 0.001$ vs 0.49).
Comparison of tracer distribution across the nodal population from the two injection planes allows models of functional anatomy to be developed. It appears that there are two routes of drainage from the parenchymal plane, one joining the intradermal route, the other passing independently to the axilla.
Conclusion: There are differences in lymphatic flow patterns from deep and superficial injection sites. Despite the practical advantages of a superficial injection, parenchymal injection is recommended for identification of the true SLN.

O-66 New efficient breast cancer sentinel node biopsy technique for all

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Sentinel node biopsy as practiced in New Start is cumbersome, time consuming and cannot be performed in many hospitals. The aim was to make this sentinel node biopsy an efficient cost effective technique available to all. The aim was to improve sentinel node efficiency and cost effectiveness.
Patients and Methods: The surgeon was the ARSAC licence holder. Radiopharmaceutical was delivered in a unique one use only syringe. 100 patients with invasive breast cancer had 22–28 mBq of Tc^{99}m radioactive albumin colloid injected on induction of anaesthesia into the subareolar region followed by injection of 2 mls of patent blue V and 5 mls of saline through the same needle. Sentinel nodes (blue/hot) and palpable axillary nodes were removed only.
Results: In 100 patients sentinel nodes were identified in 98. Both blue dye and radioactivity were needed to achieve this. Patients included 13 who had undergone neoadjuvant