The computer programme will be demonstrated during the meeting and will eventually be accessible on the EUSOMA website.

References: [1] Blamey RW et al., Reading the prognosis of the individual with breast cancer.

[2] Blamey RW et al., Improvement in case survival in breast cancer across the prognostic spectrum.

O-33. Validation of the Nottingham Prognostic Index (NPI) in a district general hospital (DGH) in the UK

Kuzhively R, Gray C, Barnsley A, Harper K, Robinson S, Dyson P, Barker P, Williams MR. *Cumberland Infirmary, Carlisle*

The NPI has been extensively validated as a predictor of outcome after treatment for breast cancer in Teaching and University Hospitals but has rarely been examined in a DGH setting. The NPI when accurate may be used to guide adjuvant treatments. This study examines prognosis in a consecutive series of 1061 patients presenting with operable primary breast cancer in whom the NPI was recorded after initial surgery. Patients of all ages were included in the study. All patients were under the care of a single surgeon, received treated according to protocols and were followed up on a long term basis at regular intervals by breast physicians in designated clinics. All data was stored prospectively on the BASO database by a data manager present in the clinics.

Results: Median age at presentation = 63 years. Median follow up = 49 months.

Grade	1	11	111
Patients	241	509	311
Lymph node status	1 (neg)	11 (1–3 pos)	111 (4+ pos)
Patients	624	285	152

NPI: 4 year survival (absolute)

	Patients studied	Deceased at 48/12	Alive at 48/12
Excellent	150	0	66 (100%)
Good	238	9	110 (92%)
Moderate	484	41	232 (85%)
Poor	189	50	59 (54%)

Analysis of Kaplan Meier survival curves for NPI using Log Rank (good and excellent combined); $p < 0.001$ (2df. Log Rank 85.09).

O-34. Young women with breast cancer; clinical, histopathological and prognostic considerations

Morgan A, Osborn GD, El-Saify W, Vaughan-Williams E, Williams RJL. *Royal Glamorgan Hospital*

Breast cancer comprises 22% of all cancers affecting women in the UK. Only 2% of cases occur in those aged ≤35, but the disease may be more aggressive in this age group.

We carried out a retrospective study of women presented to our hospital with breast cancer aged ≤35 years over 14 years considering mode of presentation, clinical staging, prognostic indices, tumour histopathology including type, size, Bloom-Richardson grading, lymph-nodal status, vascular invasion, ER. NPI, treatment modalities and outcome.

A total of 75 patients with median age of 32 (18–35) were diagnosed. 68 (90%) presented with a palpable lump, three (4%) with inflammatory cancers, two (3%) with pain and two (3%) with distant metastasis. Clinical features were considered suspicious in 62 (83%) patients, indeterminate in 8 (10%) and benign in five (7%). 16 (21%) women had a family history of breast cancer. Median pathological tumour size was 22 (5–90) mm, 66 (88%) had Invasive Duct Carcinoma and 41 (55%) showed Grade III Tumour. During a mean follow up period of 43 months (12–132) distant spread occurred in 19 (25%) women. Mortality was 24% (18 patients). Mean metastatic-free survival was 48 (5–108) months. Tables 1 & 2 conclude results.

Table 1. Prognostic Indices

Tumour Size			Nodal Status			Grade			NPI Score		
Size	Pt.	No. (%)	Nodes	Pt. No.	(%)	Gr.	Pt. No.	(%)	Score	Pt. No	(%)
Tx	5	7%	0	29	39%	CIS	4	5%	≤3.4	6	8%
Tis	1	1%	1 to 3	28	37%	I	4	5%	≤4.4	13	17%
T1	27	36%	4 to 9	11	15%	II	26	35%	<5.4	30	40%
T2	35	47%	≥10	7	9%	III	41	55%	>5.4	26	35%
T3	3	4%									
T4	4	5%									

Table 2. Treatment Modalities

Treatment	Pt. No.	(%)	Treatment	No.	(%)
Mastectomy	41	55%	Wide Local Excision	34	45%
– No Rec.	11	15%	Chemotherapy		
– Immediate Reconst.	27	35%	– Neo-Adjuvant	4	5%
– Delayed Reconstruction	3	4%	– Post Operative	41	55%
Axillary Surgery	64	85%	Radiotherapy		
– Node Clearance	53	70%	– Post Operative	40	53%
– Node Sampling	11	15%	– Palliative	4	5%
			Hormonal	58	77%

Prompt diagnosis of breast cancer in younger women is not always straight-forward, moreover, in our experience they often present with grade III, lymph nodes presenting tumour with considerably poor NPI score. We concluded that breast Cancer in young Women is biologically aggressive. Diagnosis and treatment of such group remains a challenging prospect.

ER: Oestrogen Receptors, NPI: Nottingham Prognostic Index.

O-35. Young age is not an independent prognostic factor

Blamey RW, Mitchell MJ, Macmillan RD, Robertson JFR, Pinder SE, Ellis IO, Elston CW, Lee A. *Nottingham City Hospital*

A common contention is that breast cancers in young women have worse prognoses than similar tumours in older women. In a previous publication [1] we showed that poorer overall survival was due to the higher proportion of Grade III tumours. Once standard prognostic factors had been taken into account (by use of the Nottingham Prognostic Index – NPI) survival was no different from that in older women.

Survival has improved in all NPI groups in the last 15 years and the contention remains that young age is an adverse prognostic factor. A new study in tumours diagnosed 1990-99 is

reported. 185 consecutive cases in women aged <40 compared with 477 cases aged 40–49 and 687 cases aged 50–59. Overall 10 year % survivals were 73, 80 and 82 respectively.

Table 1. Distribution of grade and NPI at presentation (%)

Age	Grade			NPI Group				
	1	2	3	EPG	GPG	MPGI	MPGII	PPG
<40	8	24	69	5	13	24	33	25
40–49	17	30	53	11	17	30	27	14
50–59	24	38	38	19	24	27	17	13

Table 2. Survival by NPI (10 year actuarial %)

	Age		
	<40	40–49	50–59
EPG	100	100	96
GPG	84	96	97
MPGI	78	78	84
MPGII	81	76	64
PPG	49	54	50

Poorer overall survival is due to more grade III and less Grade I cases in young women, placing more into the Poor Prognostic Group. Survival depends on the prognostic factors of the tumour at all ages and young age is not an independent prognostic factor.

Reference: [1] Kollias J et al. Early onset breast cancer. British J Cancer (1997) 75; 1318–23.

O-36. Prognosis after local/regional recurrence

Asgeirsson KS, Mitchell M, Lee A, Ellis IO, Blamey RW, Macmillan RD. *Nottingham City Hospital*

Both local and regional recurrence is known to be associated with a worse survival compared to patients who remain recurrence free. The study aims to quantify the effect of LR and RR on prognosis and identify the factors that influence it.

The prognosis after recurrence was analysed for 1193 patients who underwent mastectomy (Mx) and 1044 that had wide local excision (WLE) between Jan 1990 and Dec 1999. The relative reduction in survival at 10 years observed in women who had a LR or RR was calculated and a multivariate analysis of factors predicting survival after LR or RR was performed.

The relative reduction in survival observed for LR was 40.0% after Mx (48% v 80%) and 27.6% after WLE (63% v 87%). For RR it was 63.4% after Mx (30% v 82%) and 59.1% after WLE (36% v 88%). Independent predictors of survival after LR or RR were disease-free interval (DFI, $p < 0.001$), grade ($p < 0.001$), size ($p = 0.013$) and lymph node stage ($p = 0.015$). 10 year survival with no LR or RR was 86%. 10 year survival according to DFI is shown below.

DFI	LR	RR
<2 yrs	30%	35%
2–5 yrs	53%	18%
>5 yrs	86%	56%

LR and RR are associated with a large relative reduction in survival. This effect is larger for Mx patients than after WLE. Early LR or RR are both predictors of very poor survival.

O-37. Modification of the Nottingham Prognostic Index by nodal status

Macmillan RD, Mitchell M, Lee A, Ellis IO, Blamey RW. *Nottingham City Hospital*

The Nottingham Prognostic Index (NPI) has been extensively validated and is widely used to estimate prognosis and guide recommendation for adjuvant therapy. It is based on a proportional hazard (Cox) analysis.

The aim of this study was to devise a separate NPI for node +ve and node −ve cases and assess how these refined indices may impact upon treatment planning.

890 cases (ES), who had no adjuvant therapy treated between Jan 1980 and Dec 1986, and 2238 cases (LS), who had selective adjuvant therapy treated between Jan 1990 and Dec 1999 were used for multivariate analysis of factors predicting survival. In addition to size, grade and lymph node stage, this included vascular invasion (VI) and single node positivity as previous studies demonstrated that these were important prognostic factors for node −ve/node +ve cases respectively, this latter factor not being available in the early series. For 575 node −ve cases in the ES, size, grade and VI were independently and equally significant. The formula of size + grade + VI produced 4 evenly spaced prognostic groups (10-year survival 89%, 67%, 65% and 48%). Compared with the standard NPI, 73 women (13%) changed to a prognostic group that differed in 10-year survival by at least 10%.

For 784 node +ve cases in the LS, size, grade and stage (1 = single node +ve; 2 = 2 or 3 nodes +ve; 3 = 4 or more nodes positive) were independently significant factors. The weighting gave a formula of size + 4 × grade + 3 × stage which produced 5 evenly spaced significantly different prognostic groups (10-year survival 94%, 88%, 73%, 67%, 34%). Compared with the standard NPI, 298 women (38%) changed to a prognostic group that differed in 10-year survival by at least 10%.

Both of these modifications of the NPI may be useful for treatment planning.

O-38. Predicting survival in BRCA mutation carriers

Macmillan RD, Scott N, Ellis IO, Blamey RW. *Nottingham City Hospital*

The management of BRCA mutation carriers is complex but may be aided by a better understanding of risks of breast cancer death for individual women.

Of 23 BRCA1 mutation carriers presenting with breast cancer in Nottingham, 22 were grade 3, 21 were ER negative and 10 were node positive. Mean tumour size was 25 mm. Of 11 BRCA2 mutation carriers presenting with breast cancer, 4 were DCIS, 3 were grade 3, 2 were node positive and 6 were ER positive. The mean size was 30 mm.

Using penetrance data, an average Nottingham Prognostic Index score for a BRCA1 and a BRCA2 cancer and expected effects of adjuvant systemic therapy, risks can be estimated. For instance, a 30 year old woman with a BRCA1 mutation who chooses screening by mammography as her risk management option has a 20% chance of developing breast cancer over the next 10 years. There is approximately a 7–9% chance of devel-