in high-volume specialized centres is subject of an ongoing debate in many countries. We have conducted a systematic review and the first meta-analysis of the literature on the effect of procedural volume or surgeon specialty on outcome of lung resections for cancer.
Material and Methods: A systematic search was done to identify articles investigating the effects of surgeon specialty and hospital or surgeon volume of lung resections on mortality and survival, published between January 1990 and December 2010. All articles were scrutinized on methodological quality. After strict inclusion, meta-analysis assuming a random effects model was done to estimate the effect of surgeon specialty and higher volume on patient outcome. Meta-regression was used to identify volume cut-off values. Heterogeneity in study results was evaluated with an I^2-test; the risk of publication bias with Egger's regression intercept.
Results: Nineteen studies investigating the relationship between procedural volume or surgeon specialty and outcome of lung resections were found. Studies were heterogeneous, especially in the definition of volume categories. Ten studies met the inclusion criteria for meta-analysis on hospital volume and postoperative mortality and 7 studies on hospital volume and survival. The pooled estimated effect size was significant in favour of high-volume providers in the analysis of postoperative mortality (OR 0.71; CI 0.62–0.81) but not for the survival analysis (OR 0.93; CI 0.84–1.03). The meta-analysis on surgeon volume and outcome showed no significant results. General surgeons had significantly higher mortality rates than general thoracic (OR 0.78; 0.70–0.88) or cardio-thoracic surgeons (OR 0.82; 0.69–0.96). A cut-off value for volume of resections for lung cancer could not be identified. No publication bias was detected.
Conclusions: Hospital volume and surgeon specialty are important determinants of outcome in lung cancer resections, but evidence-based minimal volume standards are lacking. Using a minimal volume standard as a tool, not a goal in itself, to enable more statistically accurate evaluation of individual institutions in a national audit program can help elucidate the influence of individual quality-of-care parameters, including hospital volume, on outcome.

3617 POSTER

Cost-Effectiveness of Cetuximab and Bevacizumab in the First-Line Treatment of Metastatic Colorectal Cancer (mCRC) for Patients With KRas Wild-Type Tumours in the United Kingdom

Y. Samyshkin[1], N. Hertel[1], I. Griebsch[2]. [1]*IMS Health, Health Economics and Outcomes Research, London, United Kingdom;* [2]*Merck KGaA, Pricing & Health Economics, Darmstadt, Germany*

Background: Combinations of chemotherapy (CT) and monoclonal antibodies (MAbs) against the vascular endothelial growth factor (bevacizumab) and the epidermal growth factor receptor (cetuximab) have been shown to improve the clinical outcome of patients (pts) with mCRC. Little is known about the economic implications of their use. The aim of this analysis was therefore to evaluate the cost, clinical- and cost-effectiveness of adding the MAbs cetuximab or bevacizumab to CT in the first-line treatment of mCRC pts with *KRAS* wild-type (wt) tumours, from the United Kingdom (UK) NHS perspective.
Methods: A semi-Markov model was developed to simulate patient outcomes and costs for first and subsequent lines of treatment including long-term survival after a curative resection of liver metastases. Data for progression-free survival, resection rates and other model parameters were mainly derived from the CRYSTAL and NO16966 phase 3 studies. The long-term benefits of surgery were estimated from a consecutive series of 1439 pts. Resource use included drugs, physician visits, scans, hospitalizations and treatment of adverse events. Extensive scenario and univariate sensitivity analyses were undertaken to explore the robustness of the results with regard to various modeling assumptions and parameter uncertainty.
Results: In the base case, the estimated mean life expectancy for cetuximab- and bevacizumab-containing regimens was 3.22 and 2.31 years (all undiscounted) respectively. The incremental cost-effectiveness ratio (ICER) for FOLFIRI + cetuximab compared with FOLFIRI alone was £30,665 per quality-adjusted life year (QALY) and £17,626 per QALY compared with FOLFOX + bevacizumab. The ICER is mainly driven by the number of pts becoming resectable and the acquisition cost for each antibody.
Conclusions: This analysis suggests that cetuximab in combination with FOLFIRI is the most effective treatment regimen compared with FOLFOX + bevacizumab or CT alone for pts with *KRAS* wt tumours. The incremental cost-effectiveness ratios of cetuximab in combination with CT compared with CT alone, and bevacizumab-containing regimens are within the commonly accepted threshold for cost-effectiveness in the UK.

3618 POSTER

Multi-disciplinary Meetings for Linking Cancer Care Centres in Rural Australia − Results From a Clinical Practice Improvement Project

G. Mathew[1], V. Subramaniam[1], S. Sukumaran[2], P. Baghi[1]. [1]*Northweat and New England Cancer Centre, Medical Oncology, Tamworth, Australia;* [2]*Flinders Medical Centre, Medical Oncology, Adelaide, Australia*

Background: Cancer care in regional Australia has some unique challenges; geographic vastness of the area is one of the major hurdles. Cancer patients from remote areas often travel long distances to access various health services including specialist consultations, chemo/radiotherapy sessions, and follow-up care. We report the results of a clinical practise improvement project-involving establishment of a multidisciplinary team (MDT) meeting linking several rural and remote health service providers.
Methods: It was established that lack of MDT meeting was a key factor precluding optimal care. This currently runs fortnightly from a host site based in TRRH. We retrospectively reviewed MDT meeting documentation from May 2010 to December 2010.
Results: Three centres (Moree, Tamworth, and Newcastle) were actively involved in the MDT meeting. MDT was constituted by Medical Oncologist, Radiation Oncologist, General Surgeons, Pathologist, Radiologist, Palliative Care Physician and Allied Staff. Total of 80 cases were discussed during this period. Approximately 50% of the cases were referred from general surgery. Cancers of colon, lung, and breast were the main cases discussed (16, 15, and 13 cases respectively). Remote area surgeon [from Moree] presented three cases. Fourteen cases were referred to higher centres for further work-up and management, four cases were referred to tumour specific MDT, and seven cases were considered for clinical trials. Average time taken to initiate chemotherapy, based at Tamworth Hospital, was one week as compared to 4−6 weeks before the MDT. Allied health care intervention was achieved in 27 patients within 24 hour after MDT meeting. Pathological and Radiological diagnosis were modified in 4 cases. Minutes of the MDT were circulated by email and patients were notified by phone within 24−48 hrs. MDT meeting also generated revenue through medicare and this was utilised for upgrading resources.
Conclusion: Lack of co-ordinated cancer care was one of the main issues identified in rural cancer care. Establishment of MDT resulted in appropriate care for patients from remote locations. Increased awareness of the limitations in regional cancer centres has resulted in referring appropriate patients to higher centres for more specialised care. It was observed that there is substantial increase in the quality of the service, better co-ordination among patients and care providers.

3619 POSTER

Factors Affecting Time From Surgery to Adjuvant Chemotherapy for Early Breast Cancer in a Rural and Urban Medical Oncology Unit − a Retrospective Cohort Study

P.N. Fox[1], M.D. Chatfield[2], J. Beith[1], K. Turley[1], P.S. Grimison[1]. [1]*Sydney Cancer Centre, Department of Medical Oncology, Camperdown, Australia;* [2]*University of Sydney, NHMRC Clinical Trials Centre, Camperdown, Australia*

Background: A delay in commencing adjuvant chemotherapy after surgery by more than 12 weeks is associated with increased mortality (Hershman, 2006). Patients living in rural areas are particularly vulnerable to delays in therapy due to their limited access to oncology services. This study compared waiting times between a rural and urban oncology unit operated by the same institution in Australia.
Materials and Methods: This retrospective study included all patients who received adjuvant chemotherapy for stage I-III breast cancer during the period from 2008−10 (in the rural unit) and during 2009 (in the urban unit). We evaluated factors affecting the time from primary surgery and definitive surgery until the commencement of adjuvant chemotherapy.
Results: We identified 79 rural patients and 94 urban patients. Rural patients were significantly less likely than urban patients to commence chemotherapy within 12 weeks of primary surgery (80% vs 97%, $p < 0.001$), but equally likely to commence chemotherapy within 12 weeks of definitive surgery (97% vs 98%, $p = 0.9$).
We identified a number of factors affecting treatment delay. Rural patients were more likely than urban patients to undergo multiple operations (43% vs 24%, $p = 0.01$), mainly due to more staged rather than immediate axillary dissections (34% vs 12%, $p < 0.001$). They were also less likely to see a medical oncologist within 4 weeks of primary surgery (24% vs 81%, $p < 0.001$), but more likely to commence chemotherapy within 2 weeks of consultation by a medical oncologist (72% vs 55%, $p = 0.02$). Further details are included in the accompanying table.
Conclusions: In our institution, rural patients are more likely than urban patients to experience delays in receiving adjuvant chemotherapy for early breast cancer. Treatment delay is associated with a longer time from

definitive surgery to medical oncology assessment, and a higher rate of multiple operations. Potential strategies to reduce treatment delays for rural patients include the use of frozen section analysis of intra-operative sentinel nodes to reduce staged axillary dissections, minimising referral times to medical oncology by use of virtual multi-disciplinary meetings, improved efficiency in pathology reporting, and introduction of a breast cancer coordinator. Since delays in commencing chemotherapy are known to affect treatment efficacy, further resources are required to improve integration of rural surgical and medical oncology services.

Table: Time from surgery and medical oncology assessment to the commencement of adjuvant chemotherapy

Interval	Median time (weeks)			
	Rural cohort (n = 79)	Urban cohort (n = 94)	Difference (weeks)	p-value
Primary surgery to chemotherapy	8.9	4.3	4.6	<0.001
Definitive surgery to chemotherapy	6.3	3.9	2.4	<0.001
Primary surgery to definitive surgery (when multiple operations needed)	(n = 34) 3.9	(n = 23) 3.0	0.9	0.2
Definitive surgery to medical oncology assessment	4.9	1.9	3.0	<0.001
Medical oncology assessment to chemotherapy	1.4	2.0	−0.6	0.07

3620 POSTER

Use of Darbepoetin Alfa for the Treatment of Chemotherapy-induced Anaemia in European Clinical Practice − Data From the CHOICE Study

S. Van Belle[1], A. Galid[2], C. Karanikiotis[3], T. Wheeler[4], B. Pujol[5], J.L. Labourey[6]. *[1]University Hospital Ghent, Medical Oncology, Ghent, Belgium; [2]Hanusch KH, Gynecology and Obstetrics, Vienna, Austria; [3]Euromedica − Kyanous Stavros Hospital, Oncology, Theassaloniki, Greece; [4]Amgen Ltd, International Development, Uxbridge, United Kingdom; [5]Amgen Europe, International Development, Zug, Switzerland; [6]Centre Hospitalier Antoine Gayraud, Oncology/Haematology, Carcassonne, France*

Purpose: A final analysis from the CHOICE study to assess the percentage of patients (pts) treated with darbepoetin alfa (DA) according to its European product label.
Methods: A prospective, multicentre, observational study (EudraCT Number: 2007–007665−21) assessed DA use among 1,900 pts with cancer in 11 European countries. Haemoglobin (Hb) levels and red blood cell (RBC) transfusion requirements were evaluated.
Results: *Demographics*: A total of 1,887 pts (mean±SD age 62.4±11.4 yr) were included in the full analysis set. Cancer types included: lung (n = 701); breast (n = 575); colorectal (n = 310); and ovarian cancer (n = 301); 1,585 pts (84%) had a current disease stage of ⩾3. Common chemotherapy regimes were platinum based (n = 574 [30%]), taxanes (n = 316 [17%]) or a combination of both (n = 215 [11%]).
Haemoglobin levels: At DA initiation (baseline [BL]), 1,051 pts (56%) had a Hb value <10 g/dL. Mean Hb level was 9.8±0.8 g/dL at BL, which increased to 10.7±1.8 g/dL at the end of the treatment period (EOTP). Complete records for the primary outcome (proportion of pts with a Hb level between 10 and 12 g/dL at week [wk] 9) were available for 1,170 pts (62%). A total of 596 out of 1,887 pts (32% [crude percentage]) had a Hb value of 10−12 g/dL (95% confidence interval [CI]: 30%,34%), 239 pts (13%) had a Hb value >12 g/dL and 335 (18%) had a Hb value <10 g/dL. Of pts still on study at wk 9 (1,081 pts): 517 pts (48%) had a Hb value in the target range of 10−12 g/dL (CI: 45%,51%); 172 pts (16%) had a Hb value >12 g/dL and 279 pts (26%) had a Hb value <10 g/dL; data were missing for 113 pts (10%). For pts with a BL Hb level <10 g/dL, the Kaplan–Meier percentage (K-M%; wk 1 to EOTP) achieving Hb levels ⩾10 g/dL was 90% (CI: 75%, 104%) with 10% (CI: 7%, 12%) of pts having a Hb value >13 g/dL.
RBC transfusions: From wk 5 to EOTP, 18% (K-M%) of pts required RBC transfusions (only pts in the study for ⩾29 days after starting DA treatment; CI: 16%,20%). Among pts with a BL Hb value <10 g/dL or ⩾10 g/dL, 22% (K-M%; CI: 19%,25%) and 13% (K-M%; CI: 10%,16%) received RBC transfusions, respectively.
Adverse events: Eleven out of 1,887 pts (5 with BL Hb <10 g/dL; 6 with BL Hb ⩾10 g/dL) reported DA treatment-related adverse drug reactions (6 were thromboses).
Conclusions: In agreement with the European product label for DA, the majority of pts initiated DA treatment at a BL Hb level <10 g/dL. DA was effective in achieving the recommended Hb target range.

3621 POSTER

Assessing 2-month Clinical Prognosis in Patients With Solid Tumours − Final Results of PRONOPALL Study

H. Bourgeois[1], S. Traore[2], P. Maillard[3], M. Marcq[4], E. Boucher[5], E. Bourbouloux[6], J. Baudon[7], P. Mussault[8], P. Ingrand[9], F. Grudé[10]. *[1]Centre Jean Bernard, Medical Oncology, Le Mans, France; [2]Centre Paul Papin, Bio-Statistics, Angers, France; [3]Centre Paul Papin, Medical Oncology, Angers, France; [4]Hospital Center, Medical Oncology, La Roche sur Yon, France; [5]Centre Eugène Marquis, Medical Oncology, Rennes, France; [6]Centre René Gauducheau, Medical Oncology, Nantes, France; [7]Hospital Center, Medical Oncology, Cholet, France; [8]Hospital Center, Palliative Care Unit, Longjumeau, France; [9]University Hospital Center, Bio-Statistics, Poitiers, France; [10]Centre Paul Papin, Regional Health Agency, Angers, France*

Background: In 2008, we published our results of a prognostic score defined by 4 factors (Karnofsky index, number of metastatic sites, serum albumin and LDH levels) in a population of 177 hospitalized patients in two hospitals [1]. Albumin cutoff was 33 g/l and LDH cutoff was 600 ui/l. This score defined 3 different patients populations: A: low score (0 to 3), B: intermediate score (4 to 7) and C: high score (8 to 10). The survival rates at 2 months were 92.2±3.8% (population A), 42.7±5.2% (population B) and 8.3±4.6% (population C).
Methods: In order to validate this score with performance status (PS), we decided to start a second study in a large multicentric trial with a high proportion of out-patients.
Results: Between October 2009 and October 2010, 302 patients were included from 16 institutions. Inclusion criteria: adults patients with a solid tumour in palliative setting and with one or more of the three following criteria: life expectancy less than 6 months, PS ⩾ 2, evidence of progressive disease during palliative chemotherapy. All patients signed an informed consent. At this time, 146 (48%) patients are evaluable for this first analysis. 13 patients are not eligible. Median age 64 years [37−87], women 60%, men 40%. PS 0−1 (43%), PS 2 (40%), PS 3−4 (17%). The most frequent primary sites: breast (39%), colon/rectum (23%), lung (15%), pancreas (10.5%), others (12.5%). One metastatic site (31%), two (37%), more than two (33%). Median LDH level: 362 ui/l [118–1314]. Median level of serum albumin was 36 g/l [20−54]. According the prognostic score, the 2-month survival rate and the median survival were 87% and 306 days [195–417] (population A, 72 patients), 60% and 75 days [53−97] (population B, 62 patients) and 18% and 15 days [7−23] (population C, 12 patients). These three populations are statistically different (p < 0.0001).
Conclusions: PRONOPALL confirms the three prognostic profiles defined by combination of these four factors and is useful in daily practice.

References

[1] Assessing 2-Month Clinical Prognosis in Hospitalized Patients With Advanced Solid Tumours. Anne-Claire Barbot, Pascale Mussault, Pierre Ingrand and al. J Clin Oncol vol 26, p 2358–2543; 2008.

3622 POSTER

Audit Programmes Can Actually Improve Cancer Control

M. de Boer[1], A. Nuijten[1], R.J. Oostenbroek[1]. *[1]The Dutch Comprehensive Cancer Centre Rotterdam, Oncology, Rotterdam, The Netherlands*

Background: The purpose of IKNL is to provide cancer patients and their families access to comprehensive and high-quality care, as close to home as possible. This service is directed towards improving professional, organisational and relational quality of oncology care. The Rotterdam area has 15 general hospitals and a university hospital. In 1996 an audit programme started to monitor and improve the quality of care in the general hospitals. Until 2011 these hospitals have been audited three times, the third started in 2008. After each round the focus was reassessed and has shifted from monitoring the organisation of care to measuring quality of care outcome with performance indicators. We evaluated the quality of care, the audit process and the perceived benefit of performing audits. In 2011 an comparable audit program in the whole country was started.
Material and Methods: The audit program concentrates on structure and process criteria. The auditing committee is peer based. The final audit report reflects the number of criteria and contains recommendations for improvement. The audit reports of these hospitals were analysed, comparing results in first, second and third round. The committee and hospital management received a questionnaire to evaluate the benefit of oncology audits. The auditing process itself was continuously evaluated and optimized with the Plan-Do-Check-Act cycle especially in the third round.
Results: In all 15 hospitals, results on the audit criteria improved between the rounds. The remaining major issues are the poor availability of performance indicators as perceived by the professionals and the poor