

clinic. This study suggests that progression results in increased use of chemotherapy, PRRT and targeted therapies and in increased rates of hospitalization.

#### 6617 POSTER Impact of Asian Ethnicity in Gastric Cancer Survival – a Literature Review

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**Background:** Differences between Asian and Western gastric cancer (GC) patients in overall survival (OS) are well-documented. This review addresses the controversy as to whether this can be attributed to ethnicity/biology, treatments, or other factors.

**Materials & Methods:** A systematic search in PubMed (2000–11 English-language), using combinations of Medical Subject Heading search terms such as “gastric cancer,” “Asian,” “outcomes,” and “survival” resulted in 378 citations. Following title and abstract review, 12 publications were fully reviewed.

**Results:** All 12 studies compared Asians and non-Asians in the same countries (10 in the US, 1 in the UK, 1 in Canada). Nine US studies found Asian ethnicity to be an independent predictor of favorable OS in multivariate analyses (relative to Whites, weighted average HR = 0.83, 95% CI 0.82–0.85), including 1 reporting favorable outcomes for foreign-born Asians, but not US-born Asians. Most of the 9 studies used large population-based multi-center cancer registries (mean Asian n = 2478, range 52–6454) and controlled for confounding factors of survival including treatment modality, age, gender, stage, grade, histology, and tumour location. Three studies failed to confirm Asian ethnicity as an independent predictor. These were small single-center studies (mean Asian n = 63, range 13–159) and controlled for fewer or none of the confounding factors. Additionally, 1 small study included only 18 patients of S Asian origin (India, Pakistan, Bangladesh). Other studies examined patients of predominantly E Asian origin (Japan, Korea, China).

**Conclusions:** The majority of the evidence reviewed supports Asian ethnicity as a predictor of favorable OS in GC, independent of other prognostic factors. The Asians included in these studies all live in Western countries and may have been homogenized to other ethnicities. This may have biased the results towards the null, underestimating the effect of Asian ethnicity. Recent literature lacks GC survival studies comparing ethnicities across multiple countries. Current comparisons within countries eliminate disparities in health care systems as a confounding factor. However, the effect of health-seeking behaviors cannot be ruled out. Further investigation in such behaviors could help improve outcomes of other ethnicities. Understanding differences in the underlying biology of GC in Asians would permit development of tailored treatment strategies to meet unmet needs of different ethnicities.

#### 6618 POSTER Cross-Sectional Analysis of Resource Utilization Among Patients With Neuroendocrine Tumours

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**Background:** Although there is high morbidity and mortality associated with neuroendocrine tumours (NET), there are limited data in the literature to quantify the economic impact in this patient population. The aim of this study was to understand resource use among advanced NET patients.

**Materials and Methods:** An online survey was administered to physicians in the US, UK, Germany, France, Brazil, and Italy to collect data on patients with advanced NET. The survey gathered data on the incidence and frequency of resource use (e.g. chemotherapy, somatostatin analogs [SSA], PRRT).

**Results:** Of the 4,100 surveys administered, 197 physicians participated (4.8%), providing data for 394 NET patients. Among all patients, non-pancreatic GI tract was the most common primary site (45.4%), followed by pancreas (30.7%). Resource utilization was high across tumour types as shown in Table 1. The most common types of chemotherapy used were: 5-fluorouracil (16.2%), etoposide (15.5%), and cisplatin (14.8%).

Table 1. Overall resource utilization at any time

	All NET, % (N) (n = 394)	pNET, % (N) (n = 121)	GI/Lung NET, % (N) (n = 273)
Surgery	46.5 (183)	48.8 (59)	45.4 (124)
Chemotherapy	48.7 (192)	43.0 (52)	51.3 (140)
PRRT	10.2 (40)	10.7 (13)	9.9 (27)
SSA	76.7 (302)	74.4 (90)	77.7 (212)
Targeted therapies*	6.1 (24)	9.9 (12)	4.4 (12)
Visits	99.8 (393)	100.0 (121)	99.6 (272)
Hospitalizations	64.5 (254)	65.3 (79)	64.1 (175)
Ultrasounds	55.1 (217)	59.5 (72)	53.1 (145)
Scans (conventional or helical)	92.1 (363)	89.3 (108)	93.4(255)
Other imaging tests†	59.6 (235)	62.0 (75)	58.6 (160)
Biomarker	73.1 (288)	76.0 (92)	71.8 (196)
Other lab Tests	61.9 (244)	70.2 (85)	58.2 (159)

\*Everolimus, sunitinib, imatinib, and bevacizumab.

†PET, SRS, MRI, mIBG, and Chest X-Ray.

**Conclusions:** Results confirm that advanced NET is associated with significant resource use, regardless of tumour site. In addition to SSAs, patients are treated with chemotherapy and radiation-based approaches and twice as many patients are treated with targeted therapies in the pNET group as compared to the GI/Lung NET population.

#### 6619 POSTER Patient Experiences of Having a Rare Cancer: a Qualitative Study

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**Background:** Limited qualitative studies exist regarding the patient experience of having a rare cancer. We sought to understand, in terms of diagnosis, access to treatment and support services available, the patient experience of having a rare malignancy.

**Materials and Methods:** Semi-structured qualitative interviews were used to examine the experience of patients diagnosed with a neuroendocrine tumour (NET) with regards to the diagnostic process and the impact of diagnosis, information availability, support availability, and experience of a specialized multidisciplinary clinic. Patients were identified from a prospectively kept database. An interview guide was generated and piloted. Interviews were completed by a single interviewer (YF) by telephone. Patient interviews were transcribed verbatim and analyzed using standard qualitative research methodology. Grounded theory guided the generation of the interview guide and analysis.

**Results:** Eighteen patients were interviewed. Eight interviewees were female, median age was 62 (age range 45–77) and diagnoses included 11 small bowel NET, 4 pancreas NET, 1 gastric NET, 1 bronchial NET and 1 NET of unknown origin. Median interview time was 31 minutes (range 9 min to 2 hrs 8 min). Seven themes were identified including: incidental or delayed diagnosis; difficulty accessing meaningful information prior to attendance at specialized clinic, difficulty accessing specialized medical care, informal networks were used to access the specialized clinic, value of specialized clinic, the need for support including support specific to the patient's own cancer, and long term negative physical and psychological effects of cancer.

**Conclusions:** Our qualitative analysis found that patients with rare cancers often have a delayed diagnosis, and had difficulty accessing disease-specific information and specialized medical care. Informal networks were used to access the specialized clinic and this clinic generally met patients' care and information needs.

#### 6620 POSTER Cross-Country Comparison in Practice Patterns for Patients With Neuroendocrine Tumours

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**Background:** Neuroendocrine tumours are a rare and progressive form of cancer with limited treatment options. The purpose of this study was

to examine the differences in practice patterns across countries based on resources utilized among advanced NET patients.

**Materials and Methods:** Physicians were asked to record the resource utilization for a sample of their NET patients via an online data survey. The survey focused on patients with advanced, progressive NET. The survey was administered to physicians in the US, UK, Germany, France, Brazil and Italy with the aim to collect data on use of various treatments, routine monitoring and hospitalizations. Resource utilization was assessed across all available follow up from the time of advanced NET diagnosis.

**Results:** A total of 4,100 surveys were sent to physicians across 6 countries, with 197 (4.8%) choosing to participate. Data on 394 patients was obtained. Resource utilization was high across all countries (Table 1).

Table 1. Resource utilization during follow up stratified by country (N = 394)

	US %(n = 110)	UK %(n = 64)	Germany %(n = 52)	France %(n = 54)	Brazil %(n = 60)	Italy %(n = 54)
Surgery	45.5 (50)	32.8 (21)	38.5 (20)	55.6 (30)	46.7 (28)	63.0 (34)
Chemotherapy	38.2 (42)	39.1 (25)	51.9 (27)	59.3 (32)	60.0 (36)	55.6 (30)
PRRT	5.5 (6)	14.1 (9)	17.3 (9)	5.6 (3)	15.0 (9)	7.4 (4)
Somatostatin analogs	78.2 (86)	85.9 (55)	69.3 (36)	61.1 (33)	73.3 (44)	88.9 (48)
Routine monitoring*	99.1 (109)	100.0 (64)	100.0 (52)	100.0 (54)	100.0 (60)	100.0 (54)
Hospitalization	56.4 (62)	53.1 (34)	69.3 (36)	68.5 (37)	71.7 (43)	77.8 (42)
Targeted therapy†	6.4 (7)	1.6 (1)	7.7 (4)	18.5 (10)	3.3 (2)	0.0 (0)

\*Routine monitoring includes visits, ultrasounds, CT Scans [conventional or helical] other imaging tests, bio markers and other lab tests.

† Targeted therapy includes everolimus, sunitinib, imatinib, and bevacizumab.

**Conclusions:** Results of this study demonstrate variations in treatment patterns in the countries studied. In particular, rates of use for chemotherapy, targeted therapies, and PRRT are inconsistent. These findings are likely due to the shortage of evidence and lack of consensus surrounding the most effective treatment alternatives.

## 6621

## POSTER

### Percutaneous Hepatic Perfusion (PHP) With Melphalan for Patients With Unresectable Liver Metastases of Neuroendocrine Tumours (MNET) – NCT0096083

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**Background:** There are few treatment options for unresectable hepatic MNET. Fewer than 10% of pancreatic NET patients demonstrate objective response to everolimus, sunitinib or octreotide. Regional therapies are used, but treatment options for patients with diffuse hepatic disease are limited.

**Materials and Methods:** We used minimally-invasive PHP to give a 30 minute hepatic artery infusion of melphalan 3 mg/kg with extracorporeal hemofiltration using specially-designed catheters positioned in the retro-hepatic IVC and jugular venous return of filtered blood. Treatment was every 4–5 wks up to 4 cycles in consecutive IRB-approved phase 1 and 2 studies at NCI Surgery Branch, Bethesda. Delcath Systems, Inc., NY, USA sponsored the studies. Patients had MNET, limited treatable extrahepatic disease, adequate hepatic reserve (Bili <3.0, PT within 2 seconds of normal, LFTs <10× ULN), no portal hypertension and adequate hepatic vascular access. The primary objective of this analysis was objective response rate by RECIST. We also studied acute peri-procedural events, later-onset AEs post-day 5 of each cycle, progression-free (PFS) and overall survival (OS).

**Results:** From Dec 2001 to Feb 2010, we treated 23 MNET patients (9 with extrahepatic disease), median 15 lesions, 12 with <25%, 5 with 25–50% and 6 >50% liver replacement; the majority had pancreatic NET (n = 17). Median cycles were 3/pt, total 68; median dose 180 mg (126–220); 2 cycles not given due to sclerotic hepatic artery and hypercalcemia. 1 patient received 4 cycles in 2004 and a further 3 cycles upon progression in 2008. Acute procedure-related grade 3–4 changes were transaminitis (22% cycles), thrombocytopenia (21% cycles), anemia (16% cycles) and hyperbilirubinemia (9% cycles) plus 1 tumour lysis, 1 carcinoid crisis and 1 CNS hemorrhage. Later-onset grade 3–4 AEs were mainly hematological: neutropenia (47% cycles), thrombocytopenia (29% cycles) and anemia (15% cycles). The 1 treatment-related death was due to gastric ulcer at day 74 post-cycle 1. There were 79% objective responses in 15 of 19 evaluable patients (2 CR, 13 PR, 3 SD, 1 PD). Median hepatic PFS was 39 months (n = 20) and OS was not yet reached (n = 23).

**Conclusions:** Percutaneous hepatic perfusion with melphalan has substantial efficacy in patients with diffuse MNET of the liver too extensive

for resection, ablation or embolization strategies. Responses to therapy are durable, with a 39-month PFS and the option of retreatment upon progression.

## 6622

## POSTER

### AJCC 7th Edition of TNM Staging Accurately Discriminates Outcomes of Patients With Gastric Cancer

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**Background:** Gastric cancer remains the second leading cause of cancer-related deaths. Surgery is still the only possible means to cure gastric cancer, and postoperative clinical pathological classification can best predict prognosis of the patients. The depth of primary tumour infiltration and number of metastatic lymph nodes (LNs) are known to be the most important prognostic factors of gastric cancer after curative surgery. The American Joint Committee on Cancer/International Union against Cancer (AJCC/UICC) published the TNM classification of Malignant Tumours (seventh edition) for gastric cancer recently. In this study, we retrospectively compared the predictivity of 6th and 7th edition AJCC/UICC TNM staging systems for gastric cancer.

**Materials and Methods:** The clinicopathologic data of 527 patients with gastric cancer treated by surgical resection in Ulsan University Hospital between December 2002 and December 2005 were analyzed retrospectively. We excluded the following patients from the study: 1) patients with recurrent cancer or stump cancer after undergoing subtotal gastrectomy for gastric cancer; 2) patients with distant metastasis, residual macroscopic or microscopic tumour; 3) patients with <15 LNs histologically examined; 4) patients with mortality within 30 days after surgery. A total of 450 cases were included.

**Results:** The median age of 450 patients was 56 years (range 24–83); 299 were male and 151 were female. The median number of retrieved LNs was 31 (range 15–90 LNs). The overall 5-year survival for the whole group of patients was 80.9%, with median survival was not reached. The median follow up for the entire cohort was 2277 days (range 47–3032). In univariate analysis, age, tumour site, tumour size, T stage (6th edition), T stage (7th edition), N stage (6th edition), and N stage (7th edition) were significantly correlated with patients' survival. In multivariate analysis, age, T stage (6th edition), T stage (7th edition), N stage (6th edition), and N stage (7th edition) were significantly correlated with patients' survival. The 5YSR for seventh-TNM T2 and T3 classifications were significantly different in every seventh-TNM N classification patient. The 5YSR for the seventh-TNM N1 and N2 were also slightly different in seventh-TNM T1–3 patients. The seventh-TNM stage IB, IIA, IIB, IIIA, and IIIB demonstrated no significant different survival rates (P = 0.578, P = 0.820, P = 0.749, P = 0.680, and P = 0.291). However, the subgroup of the seventh-TNM stage IIIC and N3 patients (N3a and N3b) demonstrated significantly different survival rates (P = 0.002 and P = 0.034).

**Conclusions:** The seventh-TNM staging system for the gastric cancer appeared to provide better categorized grouping, especially between T2 and T3 categories and N1 and N2 categories. It demonstrated increased homogeneity in each TNM stage. Further studies and understandings are needed for the value of the N3a and N3b classifications.

## 6623

## POSTER

### Distal Bile Duct Adenocarcinoma – Does Location Influence Survival?

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**Background:** To date, clinicopathological data on distal bile duct adenocarcinoma (DBDA) are limited, and the factors that influence survival following curative resection remain unknown. Aims of this study were to retrospectively analyse clinicopathological features of a series of resected DBDA and their influence on outcome. In particular, the significance of tumour location, i.e. entirely confined to the intrapancreatic bile duct (distal DBDA) or with involvement of the extrapancreatic bile duct stump (proximal DBDA), was assessed.

**Materials and Methods:** Patients undergoing curative pancreato-duodenectomy for DBDA between January 2001 and April 2009 were