transplanted since the “alcohol contract” was implemented (February 2007) and 68 patients transplanted before.

**Results** Overall (n=100; 62 male, median age 54), 37 patients reported some alcohol intake post-OLT. The proportion of patients returning to any alcohol was 35.3% before the “alcohol contract” and 40.6% after (NS; p=0.66). For heavy drinking (>21 units [168 g ethanol]/week) this was 16.2% and 15.6%, respectively (NS; p=1.0). Four patients underwent OLT despite pre-transplant liver histology consistent with active ALD. After OLT, one of these returned to heavy drinking and another denied drinking but had a positive blood alcohol. At explant, 10 patients had features of active ALD: six of these returned to drinking post-OLT. Blood alcohol was measured in only 24 of 63 patients reporting abstinence. Two had positive tests; one of these subsequently disclosed heavy drinking. During follow-up, 25 patients died. Most deaths (87%) occurred in those (65%) who did not return to drinking. Only one death in 675 patient-years of follow-up could be directly attributed to alcohol intake.

**Conclusion** Post-OLT recidivism is higher in our cohort than other published series but the impact of drinking on post-transplant survival remained low. The introduction of an “alcohol contract” may have value in improving public perception of transplantation in ALD patients but is insufficient to alter rates of recidivism. Random blood alcohol testing is inadequate to detect post-transplant drinking. More robust abstinence support and better assessment measures might improve outcomes.

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**Abstract PTU-067 Table 1 Patient demographics and clinical features**

<table>
<thead>
<tr>
<th>Aetiology</th>
<th>OPA (n=67)</th>
<th>IPA (n=92)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viral</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Alcohol</td>
<td>6</td>
<td>21</td>
</tr>
<tr>
<td>HCC</td>
<td>26</td>
<td>12</td>
</tr>
<tr>
<td>Metabolic</td>
<td>9</td>
<td>20</td>
</tr>
<tr>
<td>Autoimmune/biliary</td>
<td>30</td>
<td>13</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>UKELD median (range)</td>
<td>51 [43–66]</td>
<td>53 [43–67]</td>
</tr>
</tbody>
</table>

**Liver co-morbidities**

- Encephalopathy: 23/40
- Refractory ascites: 0/7
- Variceal bleeding: 14/8

**Competing interests** None declared.

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**Hepatobiliary I**

**PTU-068 BILIARY MATRIX METALLOPROTEINASE 9 LEVELS ARE INDEPENDENT OF NEUTROPHIL GELATINASE-ASSOCIATED LIPOCALIN IN PATIENTS WITH MALIGNANT BILIARY OBSTRUCTION**

**Introduction** Assessment for orthotopic liver transplantation (LT) traditionally requires admission to hospital. In 2010, the liver unit at the University Hospital Birmingham (UHB) launched the first UK-based out-patient assessment programme (OPA). This study aims to describe our experience, with specific focus on feasibility, efficacy, cost-effectiveness and patient satisfaction.

**Methods** Patients undergoing elective LT assessment were retrospectively analysed between June 2010 and April 2011. Data collected included patient demographics, clinical features, LT assessment parameters, duration to listing/LT and reasons for LT refusal. An extensive cost evaluation was performed on both in- and out-patient LT assessment, including clinical tests, staffing and hospital facilities utilised. Patient satisfaction questionnaires were collected prospectively from April 2011 to November 2011.

**Results** 179 patients underwent LT assessment. 87/94 successfully completed OPA, with seven converted to in-patient LT assessment (IPA) due to pre-existing co-morbidity including refractory ascites and hepatic encephalopathy. All patients referred for OPA were triaged 2 weeks prior to the assessment to ensure suitability. 92 patients successfully underwent IPA. 66/87 OPAs were subsequently listed for LT (median duration from OPA to listing 3 days [0–306], of which 37/66 received a cadaveric graft. The reasons for OPAs not listed include: too early for LT (50.0%), contraindication to LT (42.9%) and patient refusal (7.1%). 53/92 OPAs were listed, mean duration 4 days [1–39], of which 54/55 were transplanted. Reasons for IPAs not listed: contraindication to LT (48.2%), too early for LT (44.4%) and patient refusal (7.4%). A single IPA costs on average £14,441 as compared to £11,494 for an OPA. Overall satisfaction (mean score 9.6/10; 10=very satisfied, 1=very dissatisfied) and convenience (7.9/10) for patients undergoing OPA were high.

**Conclusion** We describe for the first time that OPA is feasible, efficient and cost-effective. With increasing demand on hospital beds in the UK National Health Service, such a programme has the potential to reduce the burden on LT in-patient services.

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**Competing interests** None declared.
**Introduction** Better biomarkers are urgently needed to assist accurate diagnosis and appropriate treatment of malignant biliary obstruction, as, although malignancy is a common cause of obstructive jaundice, current diagnostic techniques often fail to differentiate benign from malignant disease. Molecular analysis of bile has recently produced promising candidate biomarkers. Previous work from our group found that biliary neutrophil gelatinase-associated lipocalin (NGAL), a small extracellular 25-kDa protein with several biological functions, differentiates obstructive jaundice from malignancy from that in benign disease. The mechanism of NGAL in hepatopancreatobiliary (HPB) malignancy is unknown, although in other systems it promotes neoplastic diffusion by complexing and stabilising matrix metalloproteinase-9 (MMP9), enabling local invasion.

**Aims** (1) To investigate possible biliary complexing of MMP9 and NGAL as a mechanism of tumorigenesis. (2) To validate our previous findings of biliary NGAL as a novel biomarker of malignancy in biliary obstruction.

**Methods** Bile samples were collected from 77 patients undergoing ERCP (n=77, 22 with malignant disease and 55 with benign disease) at Imperial College London. ELISA was used to quantify levels of MMP9/NGAL complexes and of NGAL and MMP9 occurring independently in bile. Pearson’s correlation analysis was used to determine the relationship between NGAL, MMP9 and NGAL/MMP9 complex levels, and statistical significance assessed by the Mann–Whitney U test.

**Results** Biliary NGAL levels were significantly higher in malignant biliary obstruction compared to benign disease (median 1555 ng/ml vs 402 ng/ml, p=0.003), giving a ROC AUC of 0.74. Biliary MMP9 and NGAL/MMP9 complex levels were not different between these groups (p=0.527, p=0.760). Unbound biliary NGAL and MMP9 levels correlated poorly (r²=0.03, p=0.05). Unbound NGAL correlated poorly with complex (r²=0.07, p>0.05) whereas unbound MMP9 correlated with NGAL/MMP9 complex level (r²=0.75, p<0.05).

**Conclusion** This study is novel in confirming the presence of MMP9 in bile, alone and in complex with NGAL. However, although NGAL was increased in malignancy, MMP9 and MMP9/NGAL complex were not, suggesting that NGAL acts independently of MMP9 in endobiliary HPB malignancy. Mechanisms remain to be elucidated. This study also supports previous reports of NGAL as a novel and independent bile biomarker of malignant biliary obstruction.

**Competing interests** None declared.

### PTU-070 FINE MAPPING OF THE IL-2/IL-21 AND IL2RA LOCI IN PRIMARY SCLEROSING CHOLANGITIS

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<table>
<thead>
<tr>
<th>First author</th>
<th>Affiliation</th>
<th>Abstract PTU-070 table 1</th>
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<tr>
<td>1B Sivasweta, 1G F Mells, 2J H Cordell, 2A Murithi, 2, M Brown, 3E Ellinghaus, 3A Franke, 4T H Karlens, 4R N Sandford, 5G J Alexander, 5R W Chapman, 6S M Rushbrook, 5E Mellem, 1Academic Department of Medical Genetics, University of Cambridge, Cambridge, UK; 2Institute of Genetic Medicine, Newcastle University, Newcastle upon Tyne, UK; 3Institute of Clinical Molecular Biology, Christian-Albrechts-University, Kiel, Germany; 4Norwegian PSC Research Center, Oslo University Hospital, Rikshospitalet, Oslo, Norway; 5Department of Medicine, University of Cambridge, Cambridge, UK; 6Department of Hepatology, John Radcliffe University Hospitals NHS Trust, Oxford, UK; 2Department of Hepatology, Norfolk and Norwich University Hospitals NHS Trust, Norwich, UK</td>
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**Introduction** Recent genetic studies in Primary sclerosing cholangitis (PSC), a chronic bile duct disease, have shown suggestive association at 10p15, a locus associated with IBD. In order to replicate these findings, with a view to identifying candidate susceptibility genes, a fine-mapping study was undertaken in 1030 British PSC cases and 5162 healthy controls.

**Methods** For SNP selection, 80 Kbp and 564 Kbp regions were selected on 10p15 and 4q27, respectively, and SNP data from HapMap Data Rel 24/phase II was used to identify tag SNPs with haploview v4.2. 62 tag SNPs were genotyped on a Sequenom platform. Control genotype data were available for 62 SNPs, previously genotyped in the Wellcome Trust Case Control Consortium 2 (WTCCC2). 59 SNPs (26 at 4q27 and 31 at 10p15) passed quality control and were analysed using logistic regression in PLINK v1.07. For selected SNPs, previously published summary statistics were used to perform a meta-analysis.

**Results** Significant association (p<8.5x10⁻⁴) corrected for multiple testing (Bonferroni method) was observed for one SNP at 4q27 and three SNPs at 10p15 (Abstract PTU-070 table 1). In addition, nominal significance (p<0.05) was seen for 9/27 SNPs at 4q27 and 10/28 SNPs at 10p15. Genome-wide significance (p<5x10⁻⁷) was observed for rs4147589 (10p15) in the combined analysis.