BJUI

BAUS Annual Meeting, 23–26 June 2014

Poster Sessions

Tuesday 24th June
Poster Session 1
10:30–12:00 Room 4
BLADDER CANCER
Chairs: Mr Ed Rowe and Professor Mark Soloway
Posters P1–12

Poster Session 2
10:30–12:00 Room 12
BASIC SCIENCE
Chairs: Professor John Kelly and Mr Stuart McCracken
Posters P13–22

Poster Session 3
13:30–15:30 Room 4
IMPROVING YOUR PRACTICE
Chairs: Mr Jeremy Noble and Mr Nic Munro
Posters P23–36

Poster Session 4
13:30–15:30 Room 12
RENAL CANCER
Chairs: Professor Abhay Rane and Mr Gren Oades
Posters P37–49

Wednesday 25th June
Poster Session 5
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PROSTATE CANCER DIAGNOSIS
Chairs: Professor Karl Pummer and Mr Mark Emberton
Posters P50–60

Poster Session 6
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FUNCTIONAL UROLOGY
Chairs: Mr Nikesh Thiruchelvam and Mr Marcus Drake
Posters P61–71

Poster Session 7
13:30–15:30 Room 4
ANDROLOGY, RECONSTRUCTION AND TRAUMA
Chairs: Professor Raj Persad and Professor Culley Carson
Posters P72–85

Thursday 26th June
Poster Session 8
11:30–13:00 Room 4
STONES & IMAGING
Chairs: Mr James Armitage and Mr Bo Parys
Posters P86–96

Poster Session 9
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GENERAL UROLOGY
Chairs: Mr Thiru Gunendran & Mr Bill Dunsmuir
Posters P97–108

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Tuesday 24th June
Poster Session 1
10:30–12:00 Room 4
BLADDER CANCER
Chairs: Mr Ed Rowe and Professor Mark Soloway
Posters P1–12

P1

Radical Cystectomy: A National Audit from the UK
A review of 5321 radical cystectomy (RC) procedures from the British Association of Urological Surgeons (BAUS) Section of Oncology dataset

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Broadgreen Hospital, The Royal Liverpool & Broadgreen University Hospitals Trust, United Kingdom

Introduction: The data submitted to the BAUS cystectomy dataset was analysed to review UK practice from 2004–2012 and to examine the strengths and weaknesses of the current data collection strategy.
Patients and Methods: Data for radical cystectomy were entered into an access database voluntarily by operating surgeons. The dataset was analysed to examine trends in patient selection, perioperative management, surgical technique and outcomes. Comparison was made to Hospital Episode Statistics (HES) data to estimate the proportion of cases captured by the dataset.
Results: From 2004 to 2012, data was submitted on 5321 patients undergoing radical cystectomy. This constituted 37.1% of all procedures undertaken during the corresponding time period. Notable trends were increasing use of neo-adjuvant chemotherapy (25%), introduction of minimally invasive surgery (8.4% in 2012), and increasing adoption of pelvic lymphadenectomy. Ileal conduit continues to be the predominant urinary diversion of choice (80% of cases) and there has been a reduction in transfusion rate.
Conclusion: This large dataset offers interesting insights into UK practice over the last 9 years, information for UK patients and service commissioners. The major weakness of the study is that only one-third of cases were recorded and outcome data was very limited. Mandatory entry of surgical data will increase the capture of cases.

P2

Radical Cystectomy Survival in England

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Introduction: Up to 30% of Bladder cancer presents as muscle invasive and ~50% of those will have occult metastasis. Through modern anaesthetic techniques and excellent post-operative care we have now driven down 30-day mortality of cystectomies to <2%. However the long term data is less well known.
Methods: Using a merged Hospital Episode Statistics and Office for National Statistics Deaths database we gathered information regarding patients who had died from bladder cancer (ICD-10 code C67) during 2006–08. We identified cystectomy admissions (OPCS code M34) within the last-year-of-life (LYOL), and compared this to the number of cystectomy admissions between 2005–07 who were not known to have died.
Results: 555 cystectomies (12% of all procedures) were carried out in the LYOL. The 30 day mortality rate is lower than expected at 0.64% (range 0%-1.58% age dependent) but the 1 year mortality rate is much higher – average 8.46% (range 4.17%–13.925) (see Table 1).
Conclusions: This 2006–08 data predates most UK enhanced recovery programmes, sophisticated preoperative assessment with CPEX testing and minimally invasive techniques and thus we would expect perioperative mortality to continue to improve. It also compares favourably to the recently published US National Cancer Database 30 day mortality rate of 1.9% in high volume centre's (Neilsen BJUI: 2013-Epub ahead of print).
However, when consenting our patients for surgery, which may take 4–6 months recuperation period, we should be cogniscent of the 12 month mortality data, especially in the frail and the elderly. For these patients a BC2001 radiotherapy regimen may be kinder.

Table 1 (P2).

Age Band	30 days	2–6 months	7 to 12 months	Total in LYOL	Total Cystectomies	30 Day Mortality	12 month Mortality
40	1	2	3	6	142	0.70%	4.23%
45	0	6	3	9	216	0.00%	4.17%
50	2	12	15	29	360	0.56%	8.06%
55	2	21	24	47	647	0.31%	7.26%
60	5	32	38	75	1,060	0.47%	7.08%
65	6	52	45	103	1,252	0.48%	8.23%
70	12	56	58	126	1,325	0.91%	9.51%
75	8	48	45	101	1,063	0.75%	9.50%
80	5	15	24	44	316	1.58%	13.92%
85	0	3	1	4	46	0.00%	8.70%
Total	**41**	**247**	**256**	**544**	**6427**	**0.64%**	**8.46%**

P3

Trends in T1/T2 bladder cancer survival in England: A population based study

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Introduction: The incidence of bladder cancer in the UK has been decreasing but the survival trends for T1 and T2 tumours are unknown. We aimed to analyse the trends in survival rates for T1 and T2 bladder cancers in England.
Patients and Methods: Prospective maintained databases: National Cancer Data Repository, National Cancer Information System, Office for National Statistics were used to calculate Incidence, survival and mortality data for all T1 and T2 bladder cancers in England from the 1990–2010.
Results: 20 683 and 14 366 men and 5861 and 5820 women were diagnosed with T1 and T2 tumours of the bladder, respectively. 11% of men and 8% of women diagnosed with T1 bladder cancer and 21% of men and 17% women who were diagnosed with T2 bladder tumours progressed to cystectomy.
Despite this, there were overall reductions in the 5 and 10-year relative survival rates for both T1 and T2 bladder cancers during this period (Table 1).
Conclusion: Despite increases in awareness and treatment, the relative survival from T1 and T2 bladder cancers appear to be worsening in England.

Table 1 (P3).

Bladder cancer type	Sex	Period	Relative survival rate (%)	Reduction in relative survival (%)
5 year relative survival				
T1 Tumours	Males	1990–94	94.1	13.1
		2000–04	81.0	
	Females	1990–94	88.5	16.9
		2000–04	71.6	
T2 Tumours	Males	1990–94	54.0	18.4
		2000–04	35.6	
	Females	1990–94	83.8	18.0
		2000–04	65.8	
10 year relative survival				
T1 Tumours	Males	1990–94	88.7	13.5
		1997–01	75.2	
	Females	1990–94	83.8	18.0
		1997–01	65.8	
T2 Tumours	Males	1990–94	43.2	10.2
		1997–01	33.0	
	Females	1990–94	45.8	20.3
		1997–01	25.5	

P4

CYR61 as a novel therapeutic target in muscle invasive bladder cancer

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Aims: CYR61/CCN1 (Cysteine rich-angiogenic inducer 61) is implicated in aggressive cancer cell behaviour, proliferation and hepatocyte growth factor (HGF) dependent migration. CYR61's role in muscle invasive bladder cancer (MIBC) is unknown. We used novel marker approaches, correlating cell line models of bladder cancer with an outcome linked MIBC tissue microarray (TMA) to evaluate its role.
Methods: CYR61 siRNA knockdown in J82 and T24 TCC cell-lines (high-grade, invasive) was performed during proliferation, migration, invasion and chemo-sensitivity assays. A TMA constructed using the cystectomy specimens from 567 patients, with >6 years follow up correlated CYR61 expression with clinical outcome.

Results: CYR61 knockdown significantly reduced T24 ($P = 0.003$), but not J82 cell proliferation, associated with loss of vimentin expression in T24 cells. CYR61 knockdown combined with IC50 cisplatinum significantly reduced cell proliferation in both cell lines compared to IC50 cisplatinum alone ($P < 0.05$). HGF induced migration and HGF and FCS induced invasion in both cell lines was significantly reduced ($P < 0.01$) by CYR61 knockdown. Across the TMA 84% of cancers demonstrated intermediate/high CYR61 expression, compared to 75.3% for adjacent urothelium and 59.4% for normal controls. For the histological subtype of TCC, intermediate/high compared with negative/low expression was associated with a substantially worse prognosis (median survival 32 vs. 72 months ($P = 0.03$) and was an independent predictor of outcome, HR 2.147 ($P = 0.014$, Cox regression).
Conclusions: CYR61 promotes an aggressive MIBC phenotype with knockdown reversing features of Epithelial to Mesenchymal Transition and increasing chemo-sensitivity. Clinical correlation confirms CYR61 as a promising treatment target in MIBC that warrants further investigation.

P5
Genome-Wide DNA Methylation Analysis of a High Risk Non-Muscle Invasive Bladder Cancer Cohort Reveals Potential Novel Prognostic Biomarkers

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Introduction: Epigenetic aberrations are consistently found in human malignancies, and importantly can precede tumour development by a significant time. Recent developments in high-throughput genome-wide methylation (Illumina™ 450 K) array platforms have revealed their potential for identification of diagnostic and prognostic epigenetic biomarkers across a range of malignancies, including bladder cancers. Given the hugely variable clinical course in high-risk non-muscle invasive bladder cancer (NMIBC), exploitation of epigenetic biomarker signatures could improve clinical outcomes through accurate prognostication of disease recurrence and progression.
Materials and Methods: Bisulphite Converted DNA from 21 primary G3pT1 bladder TCC samples from the Bladder Cancer Prognosis Programme (taken at initial presentation), and 3 normal bladder samples, were investigated for abnormal methylation using an Illumina™ 450 K methylation array. The tumours exhibited one year outcomes of 'no-recurrence', 'recurrence', and 'progression' ($n = 7$ each group), permitting epigenetic comparison of three divergent clinical outcomes of high-risk NMIBC.
Results: Aberrant hypermethylation was a more frequent finding in 'recurrent' tumours (1262 CpGs) than their 'non-recurrent' (430 CpGs) or 'progressive' (112 CpGs) counterparts. Methylation at 28 specific CpG sites demonstrated an increase in frequency from the non-recurrent through to progressive tumours. Moreover, hypermethylation of 306 discrete CpG sites segregated with the 'recurrent' and 'progressive' tumours and not their 'non-recurrent' counterparts.
Conclusion: To our knowledge, this is the first reported use of array technology that interrogates more than 450 000 CpG sites across the genome in a discrete cohort of high-risk NMIBC. Preliminary analyses demonstrate distinct methylation profiles for different tumour growth patterns and/or clinical outcomes in high-risk NMIBC.

P6
Are We Finally Closer to Predicting the Outcome to Intravesical BCG Immunotherapy for Bladder Cancer? The T-cell Response Offers Promising Results

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Introduction: BCG immunotherapy has made a major impact in the management of high-risk non-muscle invasive bladder cancer. Unfortunately, 20–30% do not respond and are at increased risk of progression and dying from their cancer. Being able to identify who is likely to respond to treatment would be helpful in counseling and managing those patients.
Methods: Patients due for intravesical BCG were recruited and blood samples were taken before and after induction treatment. PPD inducible T cells, their subsets and their cytokine potentials were identified and measured.
Results: The outcomes were available for 31 patients with a median age of 77 years (range 46–89 years). There were 6 females, 19 reported being vaccinated to TB and 13 had recurrences at the 1st cystoscopy.
The mean percentage of pre-treatment interferon gamma positive (IFNg+) T-cells in the (CCR7-CD27-CD28+) subset were significantly different between the recurrence-free group and the recurrence group; 5.54% (±4.00) versus 1.90% (±2.05) ($P = 0.0048$). The difference persists after treatment; 8.50% (±6.81) versus 3.36% (±3.77) respectively ($P = 0.0219$).
The same was observed with tumour necrosis factor positive (TNF+) T-cells in the (CCR7-CD27-CD28+) subset in the pretreatment levels; 9.80% (±6.57) versus 4.01% (±4.00) respectively ($P = 0.0110$).
The difference also persists after treatment; 12.24% (±8.72) versus 6.65% (±9.30) respectively ($P = 0.0375$).
Conclusions: The mean percentages of (IFNg+) and (TNF+) T-cell were significantly different following PPD stimulation and have clinical potential to act as predictors of response.

P7
Pre-operative electromotive drug administration of mitomycin C (EMDA-MMC) in newly diagnosed non muscle invasive bladder cancer (NMIBC): A pilot feasibility study

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Introduction: A trial of EMDA-MMC prior to TURBT reported reduced recurrence compared to standard post-TURBT single-shot passive MMC. Before introducing the technique into routine practice, its feasibility, tolerability and efficacy should be shown to be reproducible in other settings.
Methods: Patients with newly diagnosed NMIBC at our institution were consented for pre-TURBT EMDA-MMC. 1–2 hours before TURBT, 40 mg of MMC dissolved in 100 mL water was instilled via a catheter for 30 minutes with 20 mA intravesical current.

Results: 26 patients were treated between November 2012 and October 2013. 16/26 (62%) tolerated the entire treatment, 2/26 tolerated between 20–30 minutes, 6/26 (23%) tolerated less than 20 minutes, and 2/26 (8%) could not be catheterised. Overall, over 90% of patients received some MMC, comparing favourably to findings from a previous randomised trial performed at our institution, where only 69% of patients received single-shot MMC post TURBT. TURBT operations were uneventful apart from 1 patient with a small extra-peritoneal perforation. Post TURBT complications included 3 with significant haematuria, 1 requiring cystoscopic bladder washout, and the other 2 requiring re-catheterisation and continuous bladder irrigation. 2 failed trial without catheter. First check cystoscopy outcomes are available for 18 patients: 1/18 patient had CIS recurrence, and 1/18 had residual distal ureteric G1pTa.
Conclusions: Pre-operative EMDA-MMC is clinically and logistically feasible in the majority of patients undergoing TURBT. However, the procedure is not tolerated by a third of patients, particularly the elderly and patients with pre-existing LUTs. Early oncological outcomes appear promising and the technique deserves further study.

P8
The safety and efficacy of intravesical Mitomycin-C hyperthermia in the management of high-risk non-muscle invasive bladder cancer: A seven-year experience

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Introduction: Up to 50% of patients who receive intravesical Bacillus Calmette–Guérin (BCG) treatment for high-risk non-muscle invasive bladder cancer (HR-NMIBC) will experience non-response, recurrence or disease progression. The alternative, radical cystectomy, may not be suitable due to its inherent morbidity. We report our seven-year experience of intra-vesical Mitomycin-C hyperthermia (MMC-HT), and establish its role as a viable alternative in this patient cohort.
Patients and Methods: Prospective data was collected for one-hundred patients with HR-NMIBC treated with MMC-HT between June-2006 and August-2013 from a single institution. Ninety-six patients completed induction treatment and underwent urine cytology, cystoscopy and bladder-biopsies at three-months. Responders were continued on maintenance MMC-HT instillations. Response rates at three-months, tumour progression, survival and side effects were noted. Progression was defined as development of muscle invasion, distant metastases, requirement for cystectomy or radiotherapy and death from bladder cancer.
Results: A median follow-up of thirty-four months (3–88 months) revealed 72% of patients had a complete response at three months. A further 10% achieved partial response and 18% developed disease recurrence. No patient suffered a Clavien-Dindo complication above two. Five year overall survival was 61.9%, and disease specific survival was 85.2%. Progression free survival five year survival was 46.9%. Twenty patients underwent radical cystectomy. Eighteen patients had T0 or organ-confined disease and two patients had pathological T3 disease. Only one patient developed disease recurrence following cystectomy.
Conclusion: MMC-HT is well tolerated with comparable five-year survival to radical-cystectomy in the management of HR-NMIBC following BCG-failure. For those suitable patients who fail MMC-HT, radical-cystectomy remains a potentially curative option.

P9
Outpatient Holmium: YAG laser ablation of non-muscle invasive bladder cancer is safe and efficacious; results of a large retrospective UK case series

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Introduction: Despite the development of evidence-based, risk-stratified treatment schedules, many patients with non-muscle invasive bladder cancer (NMIBC) develop recurrences of their tumour following initial resection. Flexible cystoscopy under local anaesthesia (LA) with holmium: YAG laser ablation of tumour (HoLAT) is a treatment which can be performed easily, with reduced costs of treatment and avoidance of anaesthesia. We retrospectively analysed the results of a large series of patients undergoing HoLAT at our institution over a 7 year period.
Patients and Methods: Patients were offered HoLAT if the tumour recurrence was small (<1 cm) and/or they were deemed unfit for regional or general anaesthesia. Patient records and relevant histological findings were reviewed retrospectively.
Results: Between February 2006 and September 2013, 257 patients underwent a total of 400 HoLAT procedures. The mean average follow-up length was 39.2 months. 172 (66.9%) patients had 1 HoLAT, 53 (20.6%) had 2 HoLATs, 19 (7.3%) had 3 HoLATs with the 16 remaining having 4 or more. Mean time to recurrence was 16.6 months in patients with initial histology G1-2 Ta, 11.9 months for G2T1, 18.1 months for G3 Ta-T1 and 10.2 months for mixed TCC and CIS. 18 patients (7%) experienced progression but there was only 1 case of TCC-specific mortality.
Conclusions: HoLAT has been shown to be safe and well tolerated with a low rate of progression and only 1 TCC-related death. The role of HoLAT in patients who are deemed unfit for anaesthesia seems clear, but further prospective trials are needed to define its role in others.

P10
Sequential BCG/electromotive drug administration (EMDA) mitomycin C (MMC) as the standard intravesical regimen in high risk non muscle invasive bladder cancer (NMIBC) – one year outcomes

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Introduction: Sequential BCG/EMDA-MMC is reported to be superior to BCG alone but has not been widely adopted. In 2009, our institution introduced it as the standard induction regime for patients with high-risk NMIBC undergoing bladder conservation.
Methods: Induction regime: BCG in weeks 1 and 2, EMDA-MMC (40 mg, 20 mA intravesical current, 30 mins) in week 3; this cycle repeated thrice, total of 9 treatments. Response assessed by GA-cystoscopy 8 weeks later. Maintenance

schedule: 3 doses of BCG 3 and 9 months post-induction.
Results: 108 patients were treated. 79/108 (73%) newly diagnosed, 28/108 (26%) recurrent NMIBC, 1 post-diverticulectomy. 87/108 (81%) had high-grade Ta/T1, of whom 35 had secondary CIS. 19/108 (18%) had primary CIS. Two had low-grade multifocal disease.
104/108 (96%) underwent first-check cystoscopy – 90/104 (87%) were clear. Of 90 complete responders, 58 (64.4%) underwent 1 year cystoscopy – 49/58 (85%) were clear.
31/108(29%) did not complete the 9-dose induction. Reasons include side effects (17/31); inability to tolerate EMDA catheter (6/31), unrelated illness (4/31), BCG shortages (3/31), and 1 defaulted. There was no difference in recurrence rate between patients who received the full schedule and those on a reduced schedule. Recurrence-free at first-check: Full schedule 65/75 (87%), reduced schedule 25/29 (86%), $P = 0.95$; Recurrence-free at one-year check: Full schedule 35/42 (83%), reduced schedule 14/16 (88%), $P = 0.70$.
Conclusions: This study confirms the excellent oncological efficacy of sequential BCG/EMDA MMC in high risk NMIBC. Tolerability is a challenge but alterations to the 9-week induction regimen appear to have negligible impact on outcomes.

P11
Multicenter Assessment of Neoadjuvant Chemotherapy for Muscle-Invasive Bladder Cancer

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Introduction and Objective: The efficacy of neoadjuvant chemotherapy (NAC) for muscle invasive bladder cancer (MIBC) was established primarily with MVAC (methotrexate, vinblastine, doxorubicin, cisplatin), with complete response rates (pT0) as high as 38%. We evaluate current response rates wins in a large, multicenter cohort.
Materials and Methods: Data was collected retrospectively at 16 international centers on sequential patients with MIBC (clinical T2-T4a, N0-3, M0) who received NAC, consisting of at least three cycles of chemotherapy, followed by radical cystectomy, between 2000 and 2013. Patients with variant histology other than mixed urothelial carcinoma with squamous or glandular differentiation were excluded. The primary outcome was pathologic stage at cystectomy. Univariate and multivariable analyses were used to determine factors predictive of pT0N0 stage.
Results: Data on 1449 patients were collected, of whom 954 (65.8%) had a clinical node stage N0 (cN0) and 277 (19.1%) had cN1-3 (remaining 15.0% cNx). GC was utilized in the majority of the patients ($n = 816$; 56%), followed by MVAC ($n = 405$; 28%), and gemcitabine/carboplatin or other regimens ($n = 217$; 15%). In the cN0 group, 22.3% ($n = 212$) had pT0N0 on final histology and 41.1% ($n = 391$) had pT1N0 or lower stage (pT1/pTa/pT0/pTis). The rate of pT0N0 disease for cN0 patients receiving GC was 22.2% as compared to 25.9% for MVAC ($P = 0.2$). On multivariable analysis for all patients (cN0 and cN+) MVAC neoadjuvant chemotherapy was a statistically significant factor associated with pT0 ($P = 0.04$) but not = pT1 disease ($P = 0.17$) (Table 1). For patients with cN0, there was no difference between MVAC and GC in pT0N0 on multivariable analysis (OR 1.19 (95% CI 0.868–1.632); $P = 0.28$).
Conclusion: Response rates to NAC in an international cohort are clearly lower than those reported in prospective randomized trials. The use of MVAC compared to GC was predictive of a higher likelihood of patients achieving pT0N0 after NAC.

Table 1 (P11).

Predictor	≤pT1		pT0	
	OR (95% CI)	*P*-value	OR (95% CI)	*P*-value
Age	1.005 (0.99–1.02)	0.44	1.04 (0.99–1.03)	0.085
Gender				
Male	1	0.56	1	0.44
Female	1.092 (0.81–1.47)		1.15 (0.80–1.65)	
cT-Stage				
≤T2	1		1	
≥T3	0.66 (0.51–0.85)	**0.002**	0.74 (0.55–.01)	0.064
cN-Stage				
N0	1		1	
N1-3	0.57 (0.41–0.79)	**0.001**	0.66 (0.45–0.97)	**0.036**
NAC agents				
GC	1		1	
MVAC	1.21 (0.91–1.60)	0.17	1.39 (1.01–1.91)	**0.041**

P12
Metastases at presentation of transitional cell muscle invasive bladder carcinoma in a 10 year series of 427 patients: is staging computed tomography of the thorax always required?

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Introduction: In Muscle Invasive Bladder Cancer (MIBC) EAU guidelines recommend staging computed tomography (CT) of the thorax, whilst other authors (Campbells Urology) recommend chest radiograph. Our aim was to characterise metastatic burden in Transitional cell carcinoma (TCC) MIBC at presentation and in particular identify the proportion of isolated lung metastases with no intra-abdominal disease.
Methods: A prospectively maintained cohort of bladder cancer patients for the 10 year period 2002–2012 was studied. All patients had a histological diagnosis. Patients with non-TCC variants were excluded. Data was compiled from histology reports, patient notes and formal radiology reports.
Results: 2893 cases of TCC were confirmed. 477 were MIBC (16.5%). Data was available for 427 patients. In MIBC 45 patients (10.5%) had metastases on CT. Of those with metastases; 9 had pelvic/abdominal nodal and visceral metastases (20%), 25 had nodal disease with no visceral metastases (56%) and 11 had visceral metastases with no nodal disease

(24%). Visceral metastases were identified in lung ($n = 16$), liver ($n = 2$), bone ($n = 4$) and spleen ($n = 1$). In those with lung metastases 10 patients had nodal disease (62%) and 6 patients did not have nodal disease (38%).

Conclusion: The rate of measurable metastases in our series is similar to historically reported series. The rate of lung metastases in MIBC was 3.7%. Over one third of patients with lung metastases had no measurable nodal disease, which may be partly due to the limitations of CT in identifying nodal metastases. Therefore chest imaging cannot be excluded on the basis of negative abdominal/pelvic nodal disease.

BJUI

Tuesday 24th June
Poster Session 2
10:30–12:00 Room 12
BASIC SCIENCE
Chairs: Professor John Kelly and Mr Stuart McCracken
Posters P13–22

P13

P21-activated kinase 5 (PAK5) and epithelial mesenchymal transition in bladder cancer

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Introduction: Signalling pathways that regulate the cytoskeleton in oncogenesis involve Ras-related small GTPases and their effectors: PAKs. The PAK family comprises six isoforms, and has been found to be over-expressed in many tumours. PAK1 over-expression has been associated with bladder tumour recurrence and progression. We find that PAK5, a novel member of the PAK family, has distinct differential expression in bladder cancer. We proceeded to characterise PAK5's role in the oncogenesis of bladder cancer.
Methods: T24, TCCSUP, 253, RT112 and RT4 cells were screened for the expression of PAK5 using isoform-specific antibody. Confocal microscopy and immunofluorescense were used to characterise the subcellular localisation, and co-immunoprecipitation was used to identify interacting partners. PAK5 expression in patient samples was assessed by RT-PCR. SiRNA technology was used to silence PAK5 expression.
Results: PAK5 protein expression was significantly higher in non-invasive bladder cancer cell lines. In patient samples, PAK5 expression was also higher in normal bladder tissue compared to tumours. PAK5 co-localised and co-immunoprecipitated with E-cadherin and P120-Catenin. Silencing of PAK5 affected E-cadherin and the integrity of cell-cell adherens junction in RT4 cell colonies, and potentially the induction of EMT in bladder cancer.
Conclusions: Our results indicate PAK5 expression in bladder cancer is associated with non-invasive morphology, and that PAK5 is within the adherens junction complex. We hypothesise that PAK5 contributes to maintain the adherens junction stability. We are currently investigating the mechanism of interaction of PAK5 within the adherens junctions, to assess the prognostic and therapeutic utility of PAK5 in bladder cancer.

P14

Genomic Mutations in Bladder Cancer

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Bladder cancer is a heterogeneous disease and one of the most common genitourinary malignancies in the world, with an estimated 386 300 new cases and 150 200 deaths in 2008 alone. Despite this we know little about the genetic alterations driving this disease. To improve understanding of the genetic basis of TCC, we performed an extended whole-exome sequencing of tumour and matched peripheral blood samples from 50 bladder cancers. 95% of coding exons were covered at least 20 fold. An average of 6.7 mutations per megabase (range 2–32) were identified. We identified 17 genes which are significantly ($P > 0.05$) mutated in 3 or more samples.
These include genes know to be altered in bladder cancer including tumour suppressors TP53 (39%) and pRb (22%), FGFR3 (17%), and genes putatively associated with bladder cancer STAG2 (22%) and CREBB2 (26%). We also identified mutations in novel genes including the RNA-binding protein ZFP36L1 (17%), TTBK2 (2%). Our extended sequencing also allowed analysis of regulatory regions, including gene promoters, enhancers and transcription factor binding sites.
This revealed an over intricate pattern of regulatory mutations, including known alterations in the hTERT promoter, along with over 1500 other genes, the expression of which is potentially impacted by regulatory mutations.
These data show that despite other efforts highly recurrent alterations remain to be found in bladder cancer, and that analysis of regulatory regions may provide novel insights into the development of bladder cancer.

P15

Prostate Cancer Mediated Differentiation of Bone-Marrow Derived Mesenchymal Stem Cells Facilitates Prostate Cancer Cell Invasive and Migratory Capacity

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Introduction: The tumour microenvironment is host to a heterogeneous population of cells including cells of the immune system, fibroblasts, endothelial cells and mesenchymal stem cells (MSCs). MSCs are multipotent cells capable of differentiating into cell types such as osteocytes, adipocytes, and chondrocytes. MSCs have the capacity to home to inflammatory sites including tumours where it has been suggested that MSCs contribute to tumour growth and progression. We hypothesise that prostate cancer cells re-programme MSCs, inducing a cancer associated fibroblasts-like phenotype that promotes prostate cancer progression.
Methodologies: Human male MSCs were exposed to prostate cancer (PrCa) cell lines of differing invasive capacity: 22Rv1, DU145 and PC3 and assessed for alterations in growth factor secretion using MesoScale Discovery. 22Rv1, DU145 and PC3 cells were also tested for their migratory capacity in response to PrCa adapted MSCs and relevant growth factors using the xCelligence system.
Results and Conclusions: Platelet-derived growth factor (PLGF) and vascular endothelial growth factor A (VEGFA) secretion was elevated in MSCs after exposure to 22Rv1-, DU145- and PC3-conditioned media, compared to control. 22Rv1, DU145 and PC3 exhibited increased rates of migration towards MSC-conditioned media. PLGF has previously been reported to activate migration associated signal transduction through the VEGFR. We demonstrated that DU145 and PC3, and the non-invasive 22Rv1 migrated towards PlGF in a dose dependent manner at equivalent levels produced by MSCs, indicating MSC-derived PLGF may play a role in PrCa cell migration. Future studies will explore the impact of the PLGF/VEGF/VEGFR axis in MSC-mediated PrCa cell invasion, proliferation and angiogenesis.

P16

Similar Expression to FGF (Sef) alters Epithelial to Mesenchymal Transition related genes in prostate cancer

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Introduction: Similar Expression to FGF (Sef) is an inducible feedback inhibitor of FGF signalling and plays an important role in prostate cancer. We have previously shown that Sef plays an important role in determining the prostate cancer cells' response to growth factor stimulation, with Sef over-expression resulting in a decrease in proliferation & migration of these cells. In this study, we investigated the downstream gene expression changes that result from Sef over-expression.
Methods: Stable Sef over-expressing (or control) PC3M cell lines were serum starved and stimulated with RMPI-1640 media containing fetal bovine serum (FM). At 24 hrs, cells were lysed and RNA extracted using isopropanol precipitation. Gene expression analysis was carried out on Illumina v4HT12 arrays and data analysis was performed using R, Ingenuity Pathway Analysis and MetaGo Software.
Results: The genes most differentially expressed were those involved in cellular movement, cellular growth, proliferation & development of cancer. Further analysis revealed that genes particularly implicated in epithelial-mesenchymal transition (EMT) were amongst the top differentially expressed genes in our dataset. Validation using EMT focused PCR array revealed that E-Cadherin (CDH1) expression in particular was substantially higher in cells over-expressing Sef compared to controls.
Conclusion: This study presents for the first time the potential role of the endogenous negative signalling regulator Sef in regulating EMT related genes in prostate cancer.

P17

Elevated HERV-K Expression in PBMC is Associated with a Diagnosis of Prostate Cancer among Older Men and Current Smokers

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Introduction: Retroelements account for 8% of the human genome and include the human endogenous retroviruses (HERVs). HERV-K retains open reading frames for all canonical retroviral genes (gag-pol-env). HERV-K has been implicated in the aetiology of cancers such as prostate, breast, ovarian and melanoma due to the observation of high levels of HERV-K mRNA and protein.
Patients and Methods: Using qRT-PCR, we examined HERV-K gag expression in peripheral blood mononuclear cells (PBMC) from 294 cases and 135 healthy men, and type I and type II HERV-K env transcript in a subset of men. Multivariable logistic regression was used to assess the association of HERV-K mRNA transcripts with prostate cancer risk. Stratification analysis was employed to examine the effects of race, age at diagnosis and smoking status.
Results: The abundance of HERV-K gag message was significantly higher in cases than controls. Men with gag expression in the highest quartile had a more than 12-fold increased odds [OR = 12.87 (95% CI 6.3–26.25)] of being diagnosed with prostate cancer than those in the lowest quartile of gag expression. Moreover, our results showed that HERV-K expression may perform better as a disease biomarker in older than younger men (whereas the sensitivity of PSA testing decreases with age), and in men with a smoking history when compared with never smokers.
Conclusion: We conclude that combining non-invasive HERV-K testing with PSA testing may improve the efficacy of prostate cancer detection specifically among older men and smokers who tend to develop a more aggressive disease.

P18

Multi-transcript profiling in diagnostic archival needle biopsies to identify predictive biomarkers of non-surgical therapy outcome in prostate cancer

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Introduction: Most predictive biomarkers in prostate cancer have only been evaluated in surgical cohorts. The value of these biomarkers in a different therapy context remains unclear. Here we tested a panel of surgical biomarkers for predictive value in men treated by external beam radiotherapy (EBRT) or primary androgen deprivation therapy (PADT).
Method: The Fluidigm®- this is original symbol on abstract (enlarged) PCR array was used for multi-transcript profiling of laser micro-dissected tumours from archival formalin-fixed diagnostic biopsies of patients treated by EBRT or PADT. Cases were matched for disease characteristics and had known 5 year biochemical relapse outcomes ($n = 60$). Results were validated by immunohistochemistry in a custom needle biopsy tissue microarray. Six biomarkers previously tested only in surgical cohorts were analysed (PTEN, E-Cadherin, EGFR, EZH2, PSMA, MSMB). Transcript and protein expression was analysed using Kruskal Wallis, Fisher's test and Cox proportional hazard model.
Results: Altered expression of E-Cadherin ($P = 0.008$) was predictive of early relapse after EBRT. In PADT treated men however only altered MSMB transcript was predictive for early relapse ($P = 0.001$). The remaining biomarkers however did not demonstrate predictive ability in either cohort. In a separate tissue array we validated altered E-Cadherin protein as a predictor of early relapse after EBRT ($n = 47$) (HR 0.34, CI $P = 0.02$) but not in PADT treated men ($n = 63$).
Conclusion: We demonstrate feasibility of transcript profiling in archival diagnostic biopsies as a platform to investigate therapy specific predictive biomarkers in non-surgically treated men. We further identify a novel role for E-Cadherin as a predictor of early relapse following EBRT which warrants further investigation.

P19

The Mutational Landscape of Penile Squamous Cell Carcinoma

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Penile Cancer (PeCa) is relatively rare in the developed world, but is a global health problem, as it represents a common source of significant morbidity and mortality in developing countries. The incidence of PeCa in developed nations is relatively low with an age standardised incidence of 0.3–1 per 100 000 men in Europe and the United States, approximately 500 new cases per annum in the UK.
In contrast, in developing nations the incidence varies from 3–8.3 per 100 000. Other than oncogenic HPV infection little is known about the genetic alterations defining the development of PeCa. Here we report the whole exome sequencing of 30 PeCa tumour normal pairs to determine the mutational landscape of PeCa.
Analysis revealed 810 genes containing somatic mutations among the 30 tumours, with a mean somatic mutation rate of 28 per sample, which represents 1.78 non-silent mutations per megabase (range 0.72–7.5). Of the 810 mutated genes 4 significantly mutated genes were identified, P53 (5/30), FAT1 (4/30), the PRC2 regulator ASLX1 (3/30) and the G-protein suppressor GSP1 (3/30).
Furthermore 88% (712/810) of mutated genes were private alterations confined to a single sample. 756 genes containing private alterations have been previously identified in other cancers, including KDMH4 and NOTCH; several also represent potential therapeutic targets and known oncogenic drives such as kinases FLT1 and TGFBR2, and tumour suppressors including CDKN2A and NF1 along with oncogenic mutations in HRAS.
These data provide novel insight into genomics of PeCa, and highlight potential key alterations driving the development of PeCa.

P20

p16 INK4A expression shows poor correlation with presence of HPV DNA in penile carcinoma

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Introduction: $p16^{INK4A}$ is used as a surrogate marker for HPV infection, although there remains controversy with respect its reliability.
The objective of this study was to determine the presence of HPV DNA in men with premalignant and invasive SCC, and to correlate this with $p16^{INK4A}$ expression in the pathological specimens.
Materials and Methods:
Immunohistochemistry for $p16^{INK4a}$ expression using $p16^{INK4}$ antibody on specimens of invasive squamous cell carcinomas and carcinoma in-situ (CIS/PeIN3). HPV in situ hybridization (ISH) was subtyped into low risk (LR) HPV (6/11) and high risk (HR) HPV (16/18). Results were scored either positive or negative.
Results: 45 cases were analysed; 5 PeIN1/2, 11 CIS, 29 invasive cancers. HPV DNA was detected in 52% of cases of invasive SCC, 52% HR HPV subtypes, 10% LR HPV and both 10%. 86% of invasive SCC expressed $p16^{INK4a}$. 35% of cases did not contain any HPV but were positive for $p16^{INK4a}$ expression. In CIS 82% contained HR HPV and 0% LR HPV. $p16^{INK4A}$ was expressed in 91% of CIS cases.
For all groups, $p16^{INK4a}$ sensitivity and specificity for detecting HPV was respectively; LR HPV 100% and 15%, HR HPV 96% and 24%. There was no significant correlation between $p16^{INK4A}$ expression and presence of HPV DNA in PeIN1/2, CIS, or invasive SCC (Table 1).
Conclusion: The expression of $p16^{INK4A}$ does not appear to be a reliable marker of HPV infection and raises the possibility that the oncogenic effects of HPV may not be entirely mediated by interference of the $p16^{INK4A}$ pathway.

Table 1 (P20).

	LR HPV DNA +ve	HR HPV DNA +ve	Both LR & HR HPV DNA +ve	*Any HPV DNA+ve*	*p16+ve*	*P Value*
PeIN1/2 (n = 5)	1 (20%)	0	0	***1 (20%)***	***4 (80%)***	***1***
PeIN3/CIS (n = 11)	0	9 (82%)	0	***9 (82%)***	***10 (91%)***	***0.2***
Invasive SCC (n = 29)	3 (10%)	15 (52%)	3 (10%)	***15 (52%)***	***25 (86%)***	***0.3***
Total (n = 45)	4 (9%)	24 (53%)	3 (7%)	***25 (56%)***	***39 (87%)***	***0.07***

P21
Development of a tubularised urethral substitute using a novel nanocomposite polymer

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Introduction: We are currently using the novel nanocomposite material, Polyhedral Oligomeric Silsequioxane-poly (carbonate-urea) Urethane (POSS-PCU), to develop an unseeded 'off-the-shelf' tubularised urethral substitute. This study evaluates the biocompatibility of this polymer when exposed to urine in vitro and how this affects its mechanical properties.
Materials and Methods: Bilaminar POSS-PCU tubes (10 cm long; 24 Fr diameter) were produced by casting a non-porous 20 μm inner layer and coagulating an outer layer over it, for a combined wall thickness of 1 mm. These were exposed to pooled human urine over a 10 week period at 37°C. The conduits were also exposed to urine flow at a pressure of 200 cmH20 in a dynamic model. Calcium deposition was assessed quantitatively using absorption spectrometry. Stress/strain behaviour and contact angles were evaluated.
Result: No leakage was demonstrated from the constructs which also resisted diverticularisation at the pressures tested, which by far exceed normal voiding pressures. Burst pressure was in excess of 600 cmH20. Percentage elongation at break point was 353.8 ± 13%. After exposure to urine stress/strain curves did not change significantly. Mean contact angle of the luminal surface was 97.39°. POSS-PCU tubes demonstrated increased resistence to calcium deposition compared to silicone and latex controls (1.48 vs 3.53 vs 4.71 × 100 μg/cm^2).
Conclusion: Early results in vitro show good biocompatibility of POSS-PCU with urine. The mechanical properties of the constructs make them suitable for use as tubularised urethral substitutes. Further encrustation and biofilm resistence studies are ongoing. In vivo assessment in an animal model will be undertaken.

P22
Impact of interleukin-18 gene + 105 A > C polymorphism with kidney stone disease. A study in Kasmiri population

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Introduction: Inflammation may be one cause of nephrolithiasis and the interleukin-18 (IL-18) encoding gene polymorphisms at +105A>C has been implicated in several inflammation related diseases. The aim of this study is to test whether IL-18 + 105A/C polymorphisms could act as genetic markers for renal stone disease. A case-control study was conducted to observe the genotype distribution of IL-18 + 105A>C for elucidating the possible role of this SNP as risk factor in renal stone development and to examine its correlation with the clinicopathologic variables
Material and Method: Using the Polymerase Chain Reaction-Restriction Fragment Length Polymorphism Technique, we tested the genotype distribution of 160 nephrolithiasis patients in comparison with 200 disease free controls from the same geographical region.
Results: We observed significant differences of IL-18 + 105 A to C between the control and patients with odds ratio 5.4 ($P = 0.03$). The prevalence of the variant genotypes AC + CC in the patients was higher than that in the controls (45%v/s 30%) and showed a significant association ($P = 0.03$). Moreover, the frequency per copy of the C allele of IL-18 +105A/C was found to be implicated more in patient group 0.27 as against only 0.16 in controls ($P = 0.01$). Furthermore, males and subjects with <45 years of age in patient group were associated with variant genotype ($P < 0.05$).
Conclusion: Thus, it is evident from our study that IL-18 +105A/C is implicated in renal stone disease, and that the rare, C related allele is connected with higher susceptibility to nephrolithiasis

BJUI

Tuesday 24th June
Poster Session 3
13:30–15:30 Room 4
IMPROVING YOUR PRACTICE
Chairs: Mr Jeremy Noble and Mr Nic Munro
Posters P23–36

P23

Evaluating the quality of operative notes following transurethral resection of bladder lesions

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Introduction and Objectives: Transurethral resection of bladder lesions is the standard of care for patients presenting with bladder lesions. Accurate recording of operative findings is essential for assessing the risk of recurrence and progression, and thus informing further treatment decisions. This study assesses the quality of operative notes following transurethral resection of bladder lesions against an agreed standard.

Material and Methods: A retrospective study of 200 operative notes coded as having a transurethral resection of bladder lesion was carried out at two tertiary urological cancer centres from January 2008 to July 2012. Operative notes were assessed against standards for cystoscopic recording set out in the EAU guidelines for non-muscle-invasive bladder tumours, 2013.

Results: Eleven notes (5.5%) were either incorrectly coded or missing. Forty-three percent of bladder cancers were new presentations. Centre 1 used an electronic operative record system which did not include diagrams as part of the electronic operative note. Overall, only 24% (45/189) of operative notes contained the tumour size and an accurate description of the number of tumours which could be used to determine the risk of tumour recurrence and progression. The results are displayed in the table below:

Table 1 (P23).

Operative note criteria	Centre 1	Centre 2	Combined
Previous histology recorded	79% (42/53)	27 % (14/53)	53% (56/106)
Tumour size	23% (23/100)	27% (24/89)	25% (47/189)
Number of tumours	83% (83/100)	98% (87/89)	90% (170/189)
Tumour appearance	76% (76/100)	83 % (74/89)	79% (150/189)
Bladder diagram	0 % (0 /100)	98% (87/89)	46% (87/189)

Conclusions: Accurate recording of intra-operative findings is essential for monitoring the quality of operative interventions and for effective management of bladder cancers. We have established an operative template to improve the precision of operative notes.

P24

Variability in the quality of decision-making processes in urology multidisciplinary teams compared to other cancer specialties

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Introduction and Objectives: Multidisciplinary team meetings are a mandatory component of cancer care in the UK. Their effectiveness is dependent upon quality of information exchanged and communication amongst team-members. We assessed how these variables differed across most common cancers – lung, breast, colorectal and urological and their impact on decision-making.

Materials and Methods: This was a cross-sectional study with prospective data collection over 10 weeks on 1046 consecutive patients across 5 hospitals (urology = 382, lung = 254, breast = 225, colorectal = 185). Two trained observers used a validated assessment tool (MDT MODe) to capture data in real-time on the quality of information presented and quality of discussion by MDT members. Differences between urology and the other cancer MDTs were assessed using Kruskal-Wallis and Mann-Whitney tests.

Results: Number of cases discussed within each MDT varied between a mean of 18.5 (colorectal) to 38.2 (urology). Average time spent discussing a case was the lowest in urology (mean 2.51 minutes, $P < 0.001$) Urology scored significantly lower compared to other cancers with regards to information exchange (all $P < 0.001$). Urological surgeons were comparable to

their peers in other specialties in terms of effective communication ($P < 0.001$). With regards to decision-making, urology MDTs made clear treatment recommendations in only 83% of cases compared to breast (91%), lung (85%) and colorectal (88%).
Conclusion: This is the first study to provide evidence on quality of information exchange, communication and decision-making in urology MDTs compared to other cancers. Understanding differences between MDTs may help share best practices and identify areas to target improvement efforts to optimise cancer care.

P25
Consultant delivered one stop clinics are efficient, and do not lead to missed diagnoses

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Aims: To determine the re-referral rate for patients seen and discharged by a Diagnostic Urologist from a single outpatient appointment and to see if any important diagnoses were missed.
Materials and Methods: Data was collected prospectively on all patients seen by a single Consultant Diagnostic Urologist between February 2007 and January 2008. In 2013 patients records were reviewed to see if patients had been re-referred to any consultant within the Urology service at the same trust and if so the reason for re-referral.
Results: A total of 899 patients were seen in an outpatients' clinic.
544 (60.51%) were discharged after a single clinic visit. In the study period 43 (7.9%) of these patients were referred back with the same presentation (10 had previously DNA'd). 17 patients (3.13%) were referred back with a different unrelated presentation.
The mean interval for re-referral was 29.17 months (median 25 months). Most of the re-referred patients presented with rising PSA or deteriorating LUTS.
2 patients (0.37%) were referred back with significant diagnoses. One with TCC at 16 months who had declined further investigation at the first visit and one with small renal mass on USS liver at 62 months.
Conclusion: One stop Diagnostic clinics lead to a high discharge rate with a low re-referral rate without missing clinically significant diagnoses.
The potential weakness of this study is that we do not have the data for the patients who may have been referred back to another trust.

P26
Risk factors for 30-day surgical adverse events and hospital readmission among major urological cancers resection surgery

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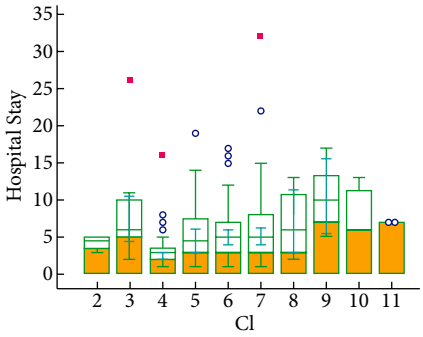
Background: Surgical adverse events and hospital readmission within 30 days of an index hospitalization is under sharp focus as a marker of quality of patient care. This study identifies factors associated with surgical adverse events and readmission after major urological cancers resection procedures.
Patients and Methods: Using multidisciplinary and hospital operative records of Urological Cancers Network, preoperative, intraoperative, and postoperative outcomes were collected on patients undergoing inpatient major urological cancer resections at a single academic centre between 2011 and 2013. Data were linked with our in-house records (Daily Ward Planner, INSITE, ICE, EDD, Clinical Portal) to identify surgical adverse events and unplanned 30-day readmissions. Demographics, co-morbidities, type of procedure, physical activity score, Charlson comorbidity index, postoperative complications, were reviewed for patients who were readmitted. Univariate and multivariate analysis was used to identify risk factors associated with adverse events, longer hospital stay and readmission.
Results: Two hundred patients with radical pelvic and upper tract cancer resections were reviewed. The most common reasons for surgical adverse events and readmission were surgical related infection (19/200; 9.5%), and failure to thrive or lack of community support (8/200; 4%). A higher charlson score was associated with increased length of hospital saty ($P < 0.05$; Fig. 1). A higher physical activity score (MET score) although showing a trend towards a higher pulmonary complications was not associated with adverse events or readmissions. Multivariable analysis demonstrates that the most significant independent risk factor for prolonged hospital stay and readmission is the level of comorbidity index (P value 0.004).
Conclusions: Risk factors for adverse surgical resection and readmission after major urological cancer resection procedures are multifactorial, however, preoperative comorbidity appears to drive readmissions in patients with major urological cancers resection.

Fig. 1 (P26) Correlation between Charlson index and hospital stay.



P27
Factors influencing length of stay and suitability for early community discharge in the management of Acute Pyelonephritis (APN)

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Introduction: APN is a common urological condition necessitating thousands of admissions a year and often with prolonged hospitalisation. Here we assessed factors that influenced the length of stay and suitability for safe early discharge of APN patients to community care.
Method: Patients diagnosed with APN (ICD N10) in 2011–2012 to a tertiary hospital were included in a retrospective study. Data collected included patient demographics, Charlson Co-morbidity Index (CCI), admitting speciality, imaging, hospital stay and any intervention.

Results: 266 patients were analysed with a median age of 35 years (range 15–91 years). 83.1% were managed by urologists and the rest by different specialities. Mean stay was 5.0 days (range 1–73 days). The mean time to imaging was 0.49 days and 1.43 days for urology and other specialities respectively ($P < 0.001$). 18.8% (50/266) of patients had urinary tract abnormalities on imaging but only 1.9% (5/266) required intervention. 9.4% (25/266) had subsequent imaging following an initial scan but none resulted in an intervention. Patients in non-urological specialities were older ($P = 0.001$) and had higher CCI ($P < 0.001$). A high CCI was also a significant predictor of longer stays regardless of admitting speciality ($P < 0.001$). Admission to non-urological specialities however remained a significant predictor of both delayed imaging ($P = 0.001$) and longer stays ($P < 0.001$) even after correction for CCI.
Conclusion: Admitting speciality, co-morbidity and time to imaging are key factors that influence APN management. Rapid urological review and imaging could identify patients suitable for safe early discharge to community management. Urinary tract anomalies or significant co-morbidity however will continue to need speciality specific hospital care.

P28
Challenging the guidelines: Is current cumulative radiation exposure in patients treated with partial nephrectomy safe?

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Introduction: The European Association of Urology (EAU) surveillance guidelines post-partial nephrectomy (PN) involves exposure to ionizing radiation with six-month or annual computed tomography. There is however, a paucity of data examining cumulative radiation exposure (CRE). This is important as the additional risk of secondary malignancy is 0.04% for every 10 milli-Sieverts (mSv) of radiation exposure.
Patients and Methods: A prospective study of 247 patients (mean age: 57; range 31–85) undergoing open or minimally invasive PN was performed over 135 months. 59 patients were excluded with benign histology or incomplete data. Follow-up CRE was calculated in mSv according to imaging modality and matched to tumour histology and stage.
Results: CRE was 16.0, 15.0, 50.3 and 12.9 mSv/patient/year for pT1a ($n = 138$), pT1b ($n = 29$), pT2 ($n = 3$) and pT3 ($n = 18$) tumour surveillance (mean follow up: pT1a = 42 months, pT1b = 50 months, pT2 = 25 months, pT3 = 42 months). The mean time to radiological recurrence was 5.6 months (range 3–8) and this was observed in 3 patients (17%) all of whom had pT3 (pT3a $n = 1$, pT3b = 2) disease. All recurrences demonstrated greater-than Fuhrman grade-3 disease ($n = 1$), tumour size over 3-cm ($n = 2$), or a positive surgical margin ($n = 1$). There was no evidence of disease recurrence or metastases in other tumour stages.
Conclusion: Current EAU follow-up protocols subject patients to un-necessary ionizing radiation. Early recurrence rates are low for low-grade and stage disease. Surveillance regimens must reflect this to address radiation safety concerns. We propose the use of non-ionizing radiological follow-up for this cohort of patients.

P29
Radiation Exposure in Urological Procedures: Are Patients and Staff at Unnecessary Risk?

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Introduction: Ureteric stent insertion is a very common urological procedure that requires the use of radiation which carries the risk of inducing mutations and malignancies in later life through DNA damage. The increased risk is to patients and surgeon. Diagnostic Reference Levels (DRL) of radiation for routine procedures like stent insertions are based on local historical data. Doctors need to make every effort in minimizing use of radiation.
Patients and Methods: For a 3 month period from October 2011–December 2011, 263 Urology cases were carried out under X-ray guidance. Of these, 131 were stent insertions. Following this period, colleagues were made aware of an audit of radiation usage. During the subsequent period of February 2012-April 2012, 220 procedures were carried out of which 108 were stent insertions. The number of cases with radiation exposure over the DRL were noted in both groups.
Results: In the first group, 21 of 131 cases were noted to be above the set DRL. In the second group, 12/108 cases were recorded to have been over the set DRL. 6 of these 12 cases were noted to be difficult due to case complexity, patient habitus and equipment problems. 4 of the 12 were performed by junior doctors.
Conclusion: Common urological procedures exceed acceptable exposure levels especially when performed by junior urologists. Urological procedures requiring X-ray guidance should minimize radiation usage to reduce risks to patients and operating theatre staff. We suggest a protocol and better communication with the radiographers for routine procedures

P30
Is routine 'group and hold (G&S)' blood sampling a necessary in patients undergoing Trans-Urethral Resection of the Prostate (TURP) Surgery? Is it a cost effective addition to patient safety?

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Introduction: This audit demonstrates the post operative transfusion rates for TURP in two UK Hospitals. This information is combined with a local review of the level of auto-antibody positive patients within the centre and in addition the time taken for those patients needing blood to be crossed matched. This allows risk assessment to be made about ceasing to routinely take preoperative G&S samples.
Methods: Transfusion rates for 200 consecutive TURP patients were reviewed. All male G&S submissions over one year were analysed to determine the incidence of positive antibody status within our population. For all antibody positive patients, the time required to cross match was recorded. From this data, the probability of not being able to issue blood locally within 4 hours was calculated. Finally, the likelihood of doing a patient harm with the use of emergency release for transfusion blood was considered.
Results: Transfusion rate was 2%. 4.9% of male G&S samples submitted to the lab had a positive antibody screen. 90% of

those patients could be matched locally within 4 hours.
Conclusions: The safety implication of removing TURP from the list of procedures requiring transfusion was considered. With a transfusion rate of 2% and a local positive antibody profile of (4.9%), combined with the fact that 90% of antibody positive blood can be matched locally within 4 hours, we calculate the risk of having to use emergency release blood for transfusion to be 1: 10 000
Our recommendation is that routine G&S for TURP is not necessary

P31
Urethral catheter care documentation: Are we doing it right?

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Introduction: Urethral catheter associated urinary tract infections (UTIs) account for 40% of all hospital-acquired infections. NICE guidelines state all patients must have a documented record of variables relating to the episode of urethral catheterisation (UC).
Methods and Materials: This quality documentation improvement project is composed of 2 studies: preliminary study (pre-intervention) (group-1) and post-intervention study (group-2). Both studies were prospective and involved patients who were admitted acutely to the hospital and acquired an indwelling urethral catheter during their hospital stay. The intervention is the introduction of the UC documentation sticker system. Variables relating to catheter insertion were chosen according to NICE guidelines.
Results: 60 patients in group-1 (mean age 69 years, range 38–96 years) and 55 patients in group-2 (mean age 68 years, range 22–90 years) were catheterised during their hospital admissions. A remarkable improvement was achieved in documentation the reason for UC post intervention 98% vs. 38% in group-1. Results of post UC urinary analysis was documented in 65% (group-2) vs. 8% (group-1). Aseptic technique was documented in 95% of group-2's patients (vs. 17% in group-1). Post UC residual urinary volumes were recorded in 85% in group-2 vs. 38% in group-1. Date of insertion was documented for 93% of group-2's patients (Table 1).
Conclusion: Compliance with documentation of recommended variables at the time of UC was markedly improved following the implementation of the stickers. Additional improvements are needed to reach the NICE guidelines' standards to achieve better level of patients' care.

Table 1 (P31) Comparison of compliance to documentation of variables relating to catheter care between group-1 and group-2.

Variable relating to catheter care	Group-1 No of patients %	Group-2 No of patients %
Aseptic Technique	17	95
Urine analysis including results	8	65
Documentation of MSSU	15	56
Staff Member Inserting Catheter	88	100
Catheter Size	88	100
Residual Urinary Volumes	38	85
Catheter Balloon Filling	33	96
Date of procedure	Not studied	93
Reduction of foreskin (if applicable)	Not studied	93
Number of UC attempts	Not studied	87
Existence of latex allergy	Not studied	91

P32
Stable prostate cancer discharge – a locally enhanced service

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Introduction: Monitoring of PSA levels in patients with stable prostate cancer or patients who have had radical treatment is a considerable burden on clinic resources. Prostate cancer follow-up appointments were identified as a major contributing factor to adverse urology new: follow-up ratios identified by regional local clinical commissioning group and targeted as an area of improvement.
Patients and Methods: Patients with stable prostate cancer were identified and discharged on one of four pathways: watchful waiting (patients with asymptomatic prostate cancer), androgen deprivation therapy, post-prostatectomy (2 years) and post-radiotherapy. Following the respective management pathway algorithm, General Practitioners were expected to check PSA levels at 6 monthly intervals and refer back to secondary care if PSA levels exceeded the specified threshold. Compliance with the pathways was audited prospectively in patients discharged over a year. The follow-up period ranged from 6 months to 18 months depending on the time of discharge.
Results: 496 patients were discharged from April 2012 to April 2013. Across all pathways 155/896 (17.3%) PSA checks were not performed at 6, 12 and 18 months follow-up. 22 patients had a PSA above the threshold for referral of which 9 patients (40.9%) failed to be referred accordingly.
Conclusion: The devolution of specialist cancer services to the community presents unique challenges for primary and secondary care. The follow-up of stable prostate cancer patients can be done safely in primary care setting however greater education and communication is required regarding PSA thresholds for referral with regular audit and robust safety mechanisms to ensure patient safety.

P33
Does a urology study day improve medical students' core knowledge and skills?

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Introduction: A lecture and case based urology teaching day was organised for

final year medical students. This was delivered by consultant urologists. We assessed if the course improved the delegates' perception of their knowledge and competence in core urology skills.
Methods: A questionnaire was given to all delegates before and immediately after the course. Students were requested to score themselves in 13 domains from 0–6 (0 = never seen and 6 = excellent) on urological conditions. The data was analysed using mean scores and paired T tests.
Results: 127 medical students attended the course. 26.8% were attached to a urological firm at university. 87.4% felt urology would be of relevance to them in their future career.
52.9% students who had been attached to a urological firm were considering choosing urology as a foundation year 1 doctor compared with only 39.8% students who had not been attached to a urological firm. In the last 2 years, 34.6% of students had had no urology teaching.
The overall mean pre-course and post-course score for all 13 domains was 2.61 and 3.70 respectively.
Using individually paired data there was a statistically significant improvement in delegates' perceptions of their ability to deal with all 13 urology topics after attending the course ($P < 0.05$).
Conclusion: Only a quarter of the medical students had been exposed to urology. Although all 13 areas showed statistically significant improvement the students gained the most clinical benefit from areas they are less commonly exposed to such as 3-way and suprapubic catheterisation.

P34
Effectiveness of learning Holmium Laser Enucleation of the Prostate in a virtual reality simulation environment – a validation study

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Introduction: Holmium laser enucleation of the prostate (HoLEP) is a difficult operation to learn. Recently, virtual reality (VR) simulation with its novel and varied capabilities may allow the curve to be shortened. However, validation is required before a simulator can be utilised for training.
Materials and Methods: This prospective observational study recruited 39 participants, comprising of experienced HoLEP surgeons (>100 HoLEPs, $n = 6$), Endourological trainees ($n = 17$), and HoLEP novices ($n = 16$). All participants received an educational package on HoLEP, including lectures on technique, instructional videos and videos of expert surgeries. Each participant then completed a 15-minute familiarisation exercise before carrying out a full enucleation on a simulated 60 cc prostate. Participants' performance and construct validity data were gathered using in-built simulator metrics, and a quantitative questionnaire was used to assess face and content validity, feasibility, and acceptability. The Mann-Whitney U test was used to compare groups.
Results: Experts had an increased enucleation efficiency (grams enucleated/hour) compared to both other groups ($P < 0.001$), and trainees outperformed novices ($P = 0.012$).
86% of participants agreed that simulator based assessment is essential for patient safety, and 87% agreed that there was a role for a validated VR simulator for use in HoLEP training. 61% thought that the overall experience was similar to the real-life setting, and 82% thought it feasible to incorporate simulation into training programmes.
Conclusion: This study demonstrated construct, face and content validity for this novel virtual reality HoLEP simulator. The majority of participants also thought that it is a feasible and acceptable model for HoLEP training.

P35
Prevalence of ciprofloxacin resistant E. coli in rectal swabs prior to TRUS biopsy of prostate

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Introduction: The rising number of patients coming for prostate assessment has lead to an increased number of trans rectal ultrasound guided biopsies of the prostate and this evidently leads to an increase risk of complications. Sepsis in patients undergoing TRUS biopsies can be a serious issue. Prophylactic antibiotic regimes are variable and antibiotic resistance especially to ciprofloxacin can lead to life threatening post biopsy sepsis.
Aim: This study aims to determine the prevalence of ciprofloxacin resistant E coli in the rectal flora in patients attending prostate assessment clinic at a district general hospital. Secondarily we study the outcome for these patients and the antibiotic sensitivity.
Material and Methods: Patients attending the prostate assessment clinics between July 2011 and July 2013 were subjected to the rectal swabs prior to any intervention. The antibiotic policy at the centre was Ciprofloxacin 500 mg and Metronidazole 400 mg orally/per rectally.
Results: Rectal swabs were taken in 38% ($n = 143$) of patients undergoing intervention after clinical assessment ($n = 372$), 26 patients (18.2%)had swabs that showed ciprofloxacin resistant E coli. 3 (2.1%) patients needed admission for post biopsy sepsis although the overall complication rate was 14%. Prevalence of ciprofloxacin resistant strains is compared with published series.
Conclusion: This study reveals a rising number of ciprofloxacin resistant enterobacteriacae, and recommends tailored antibiotic regime and alternate investigation.

P36
Using Clinical Audit to Improve Sepsis Rates Post-TRUS Biopsy

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Background: We recently reported the findings of a regional audit which identified increasing rates of significant sepsis (1.8%) following transrectal ultrasound guided prostate biopsies (TRUS). Following this audit our Microbiology department advised the addition of 160 mg iv Gentamicin as additional prophylaxis.
Aim: To assess the impact of adding Gentamicin to the TRUS antibiotic prophylaxis bundle since implementation in August 2013.
Method: Analysis of all patients who underwent 12 core TRUS biopsy across our Trust between August–December 2013 with minimum 1 month follow-up. Our findings were compared against our

previous audit data and published literature.
Results: There were 246 TRUS biopsy procedures carried out across the Trust following the introduction of our new antibiotic prophylaxis regime. Median age of the population examined was 67 years (range 42–84). Only 1 patient was admitted to secondary care with significant sepsis (0.4%), 3 patients had positive urine cultures performed in primary care but did not require hospital admission (1.2%). The single patient admitted with sepsis had a positive E.Coli blood culture, with the causative organism in the positive urine cultures being E.Coli (2) and Serratia Marcesecens (1). There were no ITU admissions or mortalities.
Conclusion: We conclude that the addition of I.V. Gentamicin has dramatically reduced the incidence of significant sepsis post-TRUS biopsy. This is an example of how we have utilised audit to modify clinical practice. We aim to continue to profile our patterns of sepsis in the future and use this information for the benefit of our patients.

BJUI

Tuesday 24th June
Poster Session 4
13:30–15:30 Room 12
RENAL CANCER
Chairs: Professor Abhay Rane and Mr Gren Oades
Posters P37–49

P37

Partial Nephrectomy in England in 2012

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Introduction: Partial nephrectomy (PN) continues to raise controversy in urological circles. In 2012 it became mandatory in England for urologists to report all PN's to a national database. This large, prospectively collected, database should give a more accurate insight into the management of small renal masses than reports from single centres.
Method: BAUS members entered data online on 1044 PNs performed in England in 2012. This database was analysed using Tableau software.
Results:
Demographics
- 1044 cases: M = 650 F = 394
- Median age: 61 years (17–84)
- 148 Consultants; 86 centres

Indications
- Elective 738 (71%); relative 68 (6%); imperative 127 (12%); extended 101 (10%); VHL 10 (1%)

Technique
- 595 (57%) open; 433 (41.5%) minimally invasive (16 unrecorded)
- Median operation time: 2.2 hours
- Median blood loss: <500 mls
- Median hospital stay: open – 5 days; minimally invasive – 4 days

Complications
- 1 death (0.1%)
- Clavien I – 46(4%); II 48(5%); IIIa 19(2%), IIIb 26(2.5%); IVa 4(0.4%); IVb 2(0.2%)

Histology
- 830 (80%) malignant; 188 (18%) benign (26 unrecorded)
- <40 years – 35% benign
- 51(5%) positive margins; 8% if tumour > 4 cm
- 41(4%) pT3

Extended indication PN (elective >4.5 cm)
- N = 101
- 15(15%) benign
- Higher incidence of Clavien IIIb complications: 5% vs 2.5% overall

Conclusion: In its first year this dataset already gives a unique insight into the management of the small renal mass by partial nephrectomy across England. Minimally invasive surgery appears to have been introduced safely. The rate of positive margins and benign histology, particularly in those younger than 40 years, remains a challenge.

P38

Who dies from nephrectomy and why do they die?

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Introduction: It is vital that patients and surgeons fully understand the risks of surgical interventions. Furthermore, only by analyzing adverse outcomes can a strategy for improvement be generated. The 2012 English national audit of nephrectomy outcomes gives an excellent opportunity to understand 'who dies and why'.
Material and Methods: BAUS members in England entered data online on 6042 nephrectomies performed in 2012. The dataset can be viewed at http://www.baus.org.uk/patients/surgical_outcomes. Information was analysed in May 2013. This analysis concentrated on deaths within 30 days of nephrectomy.
Results: 34 patients (0.6%) died within 30 days of nephrectomy.
Risk of death increased with:
Age: < 70 yrs 15/4205 (0.3%); 71–80 yrs 10/1381 (0.7%); >80 yrs 9/400 (2.3%)
Stage: T1 = 6/2022 (0.3%); T2 = 3/608 (0.5%); T3 = 11/1255 (1%); T4 = 4/100 (4%)
WHO performance status (PS):
PS0 = 0.2%; PS1 = 0.6%; PS2 = 2.2%; PS 3 = 2.1%; PS4 = 5.9%
Blood Loss: > 1 litre 9/290 (3%); <1 litre 15/4605 (0.3%)
Death rates by technique/indication were: open nephrectomy 13/1782 (0.7%); minimally invasive surgery 20/4144 (0.5%); cytoreductive 5/286 (1.7%); partial nephrectomy 1/1044 (0.1%); nephroureterectomy 12/862 (1.4%); radical nephrectomy 16/3098 (0.5%); simple nephrectomy 4/948 (0.4%)
Conclusions: Nephrectomy in England is performed to a high standard. This analysis provides a sound basis for quantifying and communicating risk to patients prior to surgery.

P39

Photodynamic Diagnostic Ureterorenoscopy: An essential tool for upper urinary tract tumour diagnosis and treatment

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Introduction: Photodynamic diagnosis has been proven to increase the detection rates as well as decrease the recurrence rates of bladder tumours by improving visualisation. This evolving technique has been implemented in the ureter and like the bladder has also shown to increase the detection rate of upper urinary tract lesions.
Method: Between July 2009 and July 2013, 106 patients (mean age 72.2) underwent photodynamic diagnosis flexible ureterorenoscopic (PDD-FURS) investigation. Endoscopy was performed for abnormal upper urinary tract on imaging or as follow up and endoscopic treatment for UUT-TCC. Oral 5-Aminolevulinic Acid (1.5 g) was used as the photosensitizer administered 3–4 hours pre-operatively. The sensitivity, specificity, and detection rate of PDD-FURS and white light FURS (WL-FURS) was calculated and compared using the Meta-DiSc v1.4 programme with each patients serving as their own control.
Results: In total 48 lesions were detected, of which 95.8% where detected by PDD-FURS compared to 47.9% detection by WL-FURS ($P < 0.0001$). PDD-FURS detected significantly more CIS/Dysplasia lesion than WL-FURS (93.75% vs. 18.75% ($P = 0.0006$)). Furthermore, PDD-FURS detected significantly more TCC lesions than WL-FURS (96.9% vs. 62.5% ($P = 0.007$)).
PDD-FURS was statistically more sensitive than WL-FURS to detect UUT-TCC (95.8% vs. 53.5% ($P < 0.0001$)). However, there was no difference in the specificity between PDD-FURS and WL-FURS (96.6% vs. 95.2% ($P = 0.716$)).
Conclusion: Oral 5-ALA induced PDD-FURS has a higher sensitivity and detection rate than WL-FURS alone, with a good safety profile. PDD-FURS enhances the visualisation of superficial lesions, such as CIS and dysplasia that would have otherwise been missed by WL alone.

P40

Ex-vivo partial nephrectomy and renal auto-transplantation for complex renal malignancies

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Introduction: Partial nephrectomy is the gold standard treatment for patients with T1-2 renal tumours within a solitary kidney. Some of these tumours are unsuitable for surgery or ablative therapy. These patients usually receive a radical nephrectomy and long term dialysis. An ex-vivo partial nephrectomy and renal auto-transplantation (EPN) can be used to treat complex renal tumours unsuitable for conventional treatment modalities. EPN aims to avoid dialysis whilst maintaining satisfactory oncological outcomes.
Methods: Between 2006 and 2013, patients with highly complex T1-2 renal tumours in solitary kidneys were managed with an EPN at our institution. All patients underwent a radical nephrectomy followed by cold perfusion and bench dissection of the tumours on ice. After renal reconstruction the kidneys were auto-transplanted into the iliac fossa. Surgical outcome data was collected prospectively for all patients.
Results: A total of 18 patients with renal cell carcinoma were treated with an EPN (Mean age 63). The mean tumour size was 6.2 cm; 17/18 patients had a RENAL nephrometry score greater than 10 (94%). EPN surgery was associated with a Clavien III-V complication rate of 66%. Over a median follow up of 31 months the cancer specific survival was 94%, the overall survival 72% and recurrence free survival 66%. 85% of patients still alive are currently dialysis free.
Conclusion: EPN offers patients with complex renal tumours in solitary tumours an excellent chance of oncological control and avoidance of long term dialysis. EPN should be considered before rendering a patient anephric and committing them to long-term dialysis.

P41

Cystoscopic surveillance following nephroureterectomy – can we stratify according to upper tract tumour characteristics?

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Introduction: Bladder tumour recurrence is common following nephroureterectomy for upper tract urothelial cell carcinoma (UTUCC). EAU guidelines recommend cystoscopy at 3 months following surgery and then annually for at least 5 years. We assessed whether this strategy was suitable for our patient cohort.
Methods: We analysed bladder cancer recurrence rates in patients undergoing nephroureterectomy in a single institution. We assessed whether pathological characteristics of the UTUCC (grade, stage, size, location (renal pelvis or ureter), multiplicity and associated carcinoma in situ) and whether a previous history of bladder cancer were associated with bladder recurrence and timings of such recurrences.
Results: 66 patients had nephroureterectomy for UTUCC. 6 were excluded from analysis; 4 patients had less than 6 months follow-up and 2 had a radical cystectomy with their nephroureterectomy. The intravesical recurrence rate was 26.7%. There was no correlation between this and upper tract tumour characteristics on regression analysis.
Median time to bladder recurrence was 6.5 months (interquartile range 5.2–10.8) following nephroureterectomy for patients with high grade UTUCC compared to 14.2 months (6.8–22.6) for grade 1 and 2 UTUCC. This was not influenced by a prior history of bladder cancer. In addition, all high-risk bladder cancer recurrences were in patients with high grade UTUCC.
Conclusion: Patients with high grade upper tract urothelial cell cancers should be considered for more frequent cystoscopic surveillance, than guidelines suggest, during the first year following nephroureterectomy.

P42

Contemporary management of renal tumours with caval involvement: results from the 2012 BAUS nephrectomy audit

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Introduction: In 2012, urological surgeons in England were required to report operative results of nephrectomy for publication of individual surgeon outcomes. 6042 records were entered. This dataset provides a contemporary insight into the demographics, presentation and management of renal cancer. We studied the data for T3b&c tumours to find a more realistic perspective on the results of complex surgery than those published by individual centres of excellence.
Methods: BAUS members entered online data on all nephrectomies they performed during the 2012 calendar year. The dataset can be viewed at http://www.baus.org.uk/patients/surgical_outcomes. Data was analysed in May 2013. This subgroup analysis concentrated on nephrectomies for T3b&c disease.
Results: Of 6042 records, 341 were nephrectomies for pT3b&c non-TCC renal tumours. 73.9% were male and median age group was 61–70 y. Median procedures per centre was 3 (1–15), and per surgeon was 2 (1–12). Haematuria was the commonest symptom (42.6%), followed by incidental finding (25.7%). 93.5% (303/324) were clear-cell histology. 96.5% were pT3b and 19.5% were M1. Median operating time was 2–3 hours for both open and minimally invasive approaches. 32.5% (91/280) required blood transfusion, and 3.9% (11/280) required more than 6 units. Positive surgical margin rate was 17.3% (50/289). Overall complication rate was 21.9% (75/341). Commonest complications were haemorrhage, pneumonia, ileus and acute kidney injury, respectively. Overall 30 d mortality was 1.8% (1.5% T3b, 8.3% T3c).
Conclusions: Results of surgery for T3b&c renal cancer in England are excellent. This study provides a benchmark for other countries and can help shape a strategy for improvement.

P43

Surgical outcomes for cytoreductive nephrectomy in tyrosine kinase inhibitor treated and untreated patients: a matched pair analysis

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Introduction: The oncological role of cytoreductive nephrectomy (CN) in the tyrosine kinase inhibitor (TKI) era is still unknown but there has been an increased pre-operative use of TKIs. Despite this there remains anxiety over the possible adverse effect on complication rates associated with the pre-operative use of these agents. We aim to use a matched pair study design to compare surgical outcomes for TKI treated (T) and untreated (UT) patients undergoing CN.
Methods: 248 CN, 40 with pre-operative TKI therapy, were performed and entered into a national database in 2012. T and UT pairs were matched on histological subtype, pT stage, nuclear grade, maximal tumour diameter, patient age and surgical technique (laparoscopic or open). Comparisons were made for operative outcomes.
Results: 17 pairs were matched (34 CNs). There was no significant difference in mean OT (T = 153 min, UT = 155 min; $P = 0.9$), mean EBL (T = 419 mL, UT = 355 mL; $P = 0.7$), intra-operative complication rate (T = 11.8%, UT = 6.3%; $P = 0.6$) or post-operative complication rate (T = 17.6%, UT = 11.8%; $P = 0.6$) between groups. Mean length of stay was also equivalent (6 days).
Conclusion: Matched pair analysis allows comparison of outcomes with a relatively small study group by comparing like-for-like tumours. There is no significant difference in operative outcomes for CN in patients with and without prior TKI therapy. While this would suggest CN is safe following TKI treatment, we must acknowledge that despite the benefits of the study design this remains a small study group and a trend for higher complications in the treated group is seen, suggesting further large scale investigation is required.

P44

A single centre comparison of robotic and open partial nephrectomy with radio-frequency ablation for the treatment of small renal masses

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Introduction: With increasing incidence of small renal masses, urologists continue to search for the optimal treatment. While open partial nephrectomy (OPN) remains the gold standard, radio-frequency ablation (RFA) and robotic-assisted partial nephrectomy (RPN) are attractive less invasive modalities. A retrospective analysis of these techniques was performed at a single centre.
Materials and Methods: Data was collected from a prospective database including baseline demographics, co-morbidities, PADUA (Pre-operative Aspects and Dimensions Used for Anatomic classification) score and tumour size. Peri-operative complications and medium-term oncological and functional outcomes were assessed.
Results: 203 electively performed cases were analyzed. Results are shown in Table 1. There was one conversion to radical nephrectomy in both OPN and RPN and one blood transfusion in OPN. Follow-up was longer in the OPN and RFA groups due to a more recent commencement of the RPN service. More minor complications were recorded in the OPN and RPN groups, but local recurrence was more frequent in the RFA group (Table 1).

Table 1 (P44).

	OPN	RPN	RFA	*P values* (– = NA/NS)
Subjects (*n*)	60	80	63	–
Tumour size (cm)	3.61	2.96	2.11	RPN > RFA ($P = 0.0003$)
Age (mean)	59.0	54.9	61.0	RPN < RFA ($P < 0.001$)
PADUA score	7.93	7.39	7.27	–
Solitary kidney	0/63	1/80	15/63	–
Median follow-up (years)	3.5	1.4	4.0	–
Hb drop	2.40	1.56	0.3	OPN > RPN > RFA ($P < 0.001$)
sCr increase	10.6	7.6	6.3	
Mean Length of stay	5	3	1	OPN > RPN > RFA ($P < 0.001$)
Clavien I/II complications	6/60	10/80	4/63	–
Clavien III/IV complications	2/60	1/80	1/63	–
Residual disease/positive margins (*n*)	2/60	2/80	2/63	–
Local recurrence/tract seeding (*n*)	0/60	0/80	6/63	OPN/RPN < RFA ($P < 0.01$)
New/Repeat Treatment (*n*)	0/63	0/80	2/63	–
Renal Cancer metastasis	0/63	1/80	4/63	OPN/RPN < RFA ($P < 0.05$)

Conclusion: Although OPN still remains the traditional gold standard, in the elective setting, both RPN and percutaneous RFA offer excellent oncological and functional outcomes with low associated peri-operative morbidity.

P45
The learning curve for robotic-assisted partial nephrectomy, 100 case statistical analysis

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Introduction: Robotic partial nephrectomy (RPN) is an emerging technique for managing small renal masses. This approach is technically demanding and there is limited data on its learning curve. We prospectively collated and statistically analysed several parameters of this technique.
Material and Methods: We evaluated the first 100 RPNs performed at our institution (2010–2013). Using a split group analysis (20 chronological patients per group) the mean, curve of best fit and R^2 were calculated for each parameter. The first and last groups were compared for statistical significance.
Results: Of 100 patients the mean age was 56.4 years. The values for the means, *P* values, R^2 values and curves of best fit are summarised below:
Conclusion: There is evidence to suggest a learning curve for RPN, yet is difficult to quantify using a linear model as more complex cases were taken later on the case cohort ($P = 0.03$). Contrary to previous reports, a linear relationship was identified but not deemed a good enough fit for all parameters measured.

Table 1 (P45).

Case groups/ statistical values	Tumour size (cm)	PADUA score	WIT (mins)	Operative time (mins)	Estimated blood loss (mL)	Length of stay (days)
1–20	2.5	7.1	20.2	178.9	158.8	4.7
21–40	3.1	7.3	17.5	178.4	184.7	3.3
41–60	2.9	7.7	17.5	176.1	128.3	3.1
61–80	2.9	7.4	17.7	182.1	147.7	3.0
81–100	3.3	8.3	18.8	177.9	162.4	3.1
P-value	**0.13**	**0.03**	**0.41**	**0.93**	**0.91**	**0.003**
R^2	**0.57**	**0.74**	**0.91**	**0.38**	**0.52**	**0.78**
Curve of best fit	Logarithmic	Linear	2nd order polynomial	3rd order polynomial	3rd order polynomial	Logarithmic

P46

A critical review of the risks and benefits of planned simultaneous urological and cardiac surgery for complex tumours involving the IVC

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Introduction: Propagation of tumour in the IVC to the level of the diaphragm and beyond has profound circulatory and oncological consequences. Despite advances in surgery and systemic therapy, the value of interventions in these very high-risk situations demands continuous reassessment and identification of pre-operative prognostic factors to guide decision-making.
Methods: Retrospective review of all patients with tumour in the IVC or right atrium referred for simultaneous urological and cardiac surgery since establishing this service in December 2007.
Results: 32 patients evaluated. Median age 65 (31–79) 14 female. 3 patients considered unsuitable for surgery. 26/29 (90%) operated with curative intent and 3 cytoreductive.
20 with tumour into right atrium; 8 at hepatic veins/peri-diaphragmatic, 1 below hepatic veins. Surgical approach was median sternotomy and 'Mercedes-Benz'. 20 patients had bypass and cooling with arrest; 3 bypass only; 6 neither bypass nor arrest. Postoperatively, 11 started on tyrosine-kinase inhibitors (TKI).
Histology; 23 clear cell renal, 2 papillary renal, 1 adrenocortical, 3 others.
Median length of stay 16 days (6–97).
Complications: None = 4; Clavien 1–2 = 11; Clavien 3–4 = 11; and 3 patients died in hospital. The 3 patients who died were all aged > 70 and had raised INR~2 pre-operatively. Overall, 3/5 patients > 70 years and 3/5 patients with pre-operative INR~2 died in hospital. Overall, median survival is 12.6 months. 22/29 (76%) survived to 6 months; 18/29 (62%) to 1 year; and 8/29(27%) to 2 years
Conclusion: Treatment is feasible but very high risk and cannot be recommended for patients over 70 years who have signs of decompensation through raised INR.

P47

Intermediate term oncologic outcomes of renal cryoablation: A single centre analysis

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Introduction: Improved diagnostic imaging has markedly increased the incidence of small renal masses (SRM) in asymptomatic patients and stage migration of renal cell cancer. Cryoablation offers a less invasive management option for the high-risk cohort, yet a dearth of intermediate and long-term follow-up data exists. We present 3 to 5-year follow-up data of a single institution.
Methods: All data was reviewed from patients undergoing laparoscopic renal cryoablation from July 2007 to November 2013 focusing on patients with a minimum of 3-year follow-up. Patient demographics, perioperative outcomes, and oncologic outcomes were retrospectively recorded.
Results: A total of 98 patients were evaluated of which 41 patients had a minimum of 3 years follow-up (mean 40.5 months, Range 36 to 75 months). Mean age was 72 years, mean tumor size was 3.1 cm (range 1.5 to 5.0), and median ASA score was 3. A median number of 3 cryoprobe needles were used and all patients underwent an intra-operative renal mass biopsy. Ten patients (19%) were found to have benign histology. Mean number of freeze/thaw cycles was 2 with a mean duration of the first and second freeze cycle of 10 minutes. Mean follow-up was 40.5 months with recurrence rate of 7.3% ($n = 3$) and mean time to recurrence 16.3 months. All three patients had locoregional recurrence. 5-year overall and cancer specific survival rates were 95.1% and 100% respectively.
Conclusions: Laparoscopic renal cryoablation is a safe and effective oncological treatment for SRM's in select patients. Cancer specific survival of 100% at 5 years is possible.

P48

Surgical Approach in performing robotic assisted partial nephrectomy – the first 100 cases in a UK Unit

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Introduction: The importance of the role of robotic assisted partial nephrectomy (RAPN) is now becoming increasingly accepted. Despite many specialist upper tract laparoscopic surgeons employing the extraperitoneal approach and some described benefits in terms of reduced surgical morbidity in comparative series, thanks to perceived technical difficulties, this approach is rarely described and practised for RAPN. We report our first 100 cases of RAPN, selecting surgical approach on tumour anatomy alone.
Patients and Methods: We prospectively collected data regarding the first 100 partial nephrectomies carried out in our centre over a 3 year period. Data included lesion location (as per Nephrometry Score), surgical technique and approach, operative and post-operative complications.
Results: Average tumour size was 30.3 mm. 87% of the cases were carried out via a retroperitoneal approach despite a wide variety of tumour locations, only those most anterior and hilar necessitating a transperitoneal procedure. Mean operating time was 144 mins with an average blood loss of 77 mL and warm ischaemia time of 23 minutes. Transfusion was infrequently required (4%); there were three conversions to a radical procedure and 3 instances of delayed haemorrhage requiring radiological embolisation. The median hospital stay was 1 night.
Conclusions: Our data suggests that in a high volume tertiary centre, RAPN is a safe, reproducible and truly minimally invasive surgical option for appropriate tumours whatever their anatomy and with the necessary experience can be predominantly carried out using a retroperitoneal approach which may benefit the patient even further.

P49

Percutaneous radiofrequency ablation of small renal masses: The Wales experience

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Introduction: To evaluate short to intermediate-term oncological outcomes of radiofrequency ablation (RFA) of small renal masses (SRMs).
Patients and Methods: We retrospectively analyzed all patients who had undergone RFA for SRMs from November 2008 to March 2013. Follow-up protocol included CT scans at 3 weeks, 3 months, 6 months, 12 months and then annually. Treatment response was defined as absence of contrast enhancement.
Results: Percutaneous RFA was performed for 47 SRMs in 45 patients [mean age 72 years (range 58–86)]. Mean tumor size was 2.8 cms (range 1.6–5 cms) and mean pre-operative creatinine 98 mg/dl (range 63–174). Overall complication rate was 17% (8 cases) with major complications encountered in 6.3% (3 cases), which included 2 infected collections and 1 ureteric stricture. Three procedures were abandoned (Technical difficulty 2; Intraoperative bradycardia 1). Thus 44 SRMs were available for follow-up. Complete treatment response was noted in 77% cases (34/44) after first treatment, with the remaining 23% (10) needing 2 or more RFA treatments. Two patients dropped out from follow-up. At a mean maximum follow-up of 24 months (range 1–48), 93 % (41) SRMs were completely recurrence free. None of the patients had distant metastasis or renal cancer related mortality. Mean post-operative creatinine was 116 mg/dl (range 61–315).
Conclusion: Our results prove that RFA achieves effective oncological control with minimal morbidity and we have successfully set up a safe service comparable to other series in literature.

BJUI

Wednesday 25th June
Poster Session 5
10:30–12:00 Room 4
PROSTATE CANCER DIAGNOSIS
Chairs: Professor Karl Pummer and Mr Mark Emberton
Posters P50–60

P50

PSA Surveillance in Renal Transplant Recipients

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Background: Renal transplant recipients have a higher risk of cancer, though data specifically for prostate cancer is conflicting. Limited evidence exists to base guidelines for prostate cancer surveillance in these men.
Methods: A unique cancer surveillance program was initiated for all renal transplant recipients who were at least 8 years post transplant at a UK teaching hospital. Men were offered an annual PSA test if they were above 50 or younger than 50 with risk factors for prostate cancer. We evaluated the incidence of raised PSA values, prostate cancer detection and the management initiated in this surveillance program over a 30 month period from May 2010-October 2012.
Results: 169 men were offered and accepted PSA testing. Mean age was 59 years. Median time from transplant to the end of the study period was 15.8 years. Fifteen out of 169 (8.9%) men who were screened had a raised age-specific PSA. Four out of 169 (2.4%) men had cancer diagnosed on biopsy at mean age 63 years corresponding to an annual incidence rate of 0.96%. Three men underwent active treatment (radiotherapy/prostatectomy) and one man entered an active surveillance program. The age-matched annual UK incidence of prostate cancer is 0.25% and for those in other series of renal transplant patients is 0.146–0.65%.
Conclusion: The incidence of prostate cancer detected for transplant recipients was almost four times higher than for age-matched UK men and 1.5–6.6 times higher than that currently reported in other transplant recipients' series. This supports annual PSA screening in this population.

Table 1 (P50).

Variable	Outcome
Number of men eligible for and offered PSA test	169
>50	133
40–50 with risk factor(s)	36
Number of men accepting PSA test	169/169 (100%)
Mean age of cohort (years)	58.9
Median follow up (months from transplant)	189
Number of raised age-specific PSAs	15/169 (9%)
Number who had repeat raised age-specific PSAs	13/169 (8%)
Number of men who had palpable lesion on DRE	3/169 (2%)
Number of men who went on to biopsy	6/169 (4%)
Transperineal	5
Transrectal	1
Number of men with prostate cancer	**4/169 (2.4%)**

P51

Urinary engrailed-2 levels in healthy volunteers, patients on active surveillance and following radical prostate cancer treatment

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Aims and Objectives: Engrailed-2 (EN2) is a homeodomain containing transcription factor aberrantly expressed in, and secreted by, prostate cancer. Urinary EN2 was recently described as a potential diagnostic biomarker for prostate cancer and correlated with prostate tumour volume. The aim of this study was to assess the prevalent urinary EN2 levels in several groups; healthy volunteers, an unselected group of men attending a local prostate cancer screening clinic, patients on an active surveillance programme and a group of men five years following radical prostate cancer treatment that showed no evidence of recurrent disease.
Material and Methods: First pass early morning urine samples (5–10 mL) without prior digital rectal examination were collected and stored at −80°C. Urinary EN2 levels were measured using an enzyme-linked immunoabsorbent assay. Urine samples from 156 healthy volunteers, 38 active surveillance and 51 post-radical treatment patients (21 post-brachytherapy, 19 post-radical prostatectomy and 11 post-external beam radiotherapy patients) were evaluated.

Results: We found 6% positive urinary EN2 levels in a healthy volunteer cohort from community and 17% in a cohort with PSA ≤ 2.0 ng/mL. 89% of the active surveillance patients secreted urinary EN2. All patients in the post radical treatment group were negative for EN2 (EN2 level below 42.5 ng/mL).
Conclusions: This study demonstrates the low urinary EN2 secretion in healthy volunteers, individuals in an unselected screening scenario and in men following radical prostate cancer treatment. This data may help in future studies of urinary EN2 as a diagnostic biomarker of prostate cancer.

P52
The use of transperineal sector biopsy as a first-line biopsy strategy: A multi-institutional analysis of clinical outcomes and complications

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Introduction: The first-line biopsy strategy for men with suspected prostate cancer has been transrectal ultrasound guided (TRUS) for over 25 years. TRUS biopsy is known to be inaccurate and misses a third of clinically significant prostate cancer leading to repeat biopsies in 30–40% of men. This study evaluates the clinical outcomes and complications of first-line transperineal biopsy in a large multi-institutional cohort.
Patients and Methods: Data were collected on 402 patients who underwent primary transperineal template sector biopsy (TPSB) at three participating centres over a seven year period. Men who had a previous biopsy were excluded. Primary TPSB was a day-case procedure under general or spinal anaesthesia. TPSB preferentially targets the peripheral zone by sectors (24 to 38 cores). Cancer detection rates were calculated with clinically significant prostate cancer defined as maximum core length greater than 4 mm and/or Gleason score 3 + 4 or greater.
Results: Prostate cancer was diagnosed in 249 men (62%); this was clinically significant in 187 (75%). 43 patients (17%) had cancer located exclusively in the anterior sector and this was clinically significant in 27 (11%). Post biopsy urinary retention occurred in six patients (1.5%). Haematuria requiring overnight hospital admission occurred in four patients (1%). There was no urosepsis.
Conclusions: TPSB is a safe technique with negligible urosepsis. The high cancer detection rate, compared to similar TRUS biopsy primary cohorts that detect cancer in 40–44% of men, is likely due to a more comprehensive assessment of the anterior and apical regions of the prostate.

P53
The Role of Transperineal Template Prostate Biopsies in Prostate Cancer Diagnosis in biopsy naïve men with PSA less than 20 ng/mL

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Objectives: To compare prostate cancer detection rates between Transrectal Ultrasound (TRUS) prostate biopsy and Transperineal template prostate biopsy (TPTPB) in biopsy naïve men. TRUS biopsy is still regarded as gold standard for prostate cancer diagnosis. TPTPB has been shown to improve prostate cancer detection in men with rising PSA and previous negative TRUS biopsies. We carried out a prospective study performing both biopsies in the same group of men with a benign feeling DRE, PSA < 20 ng/mL and no previous prostate biopsies.
Materials and Methods: 50 patients with mean age of 67 years (range: 54–84), mean prostate volume 58 cc (range: 19–165) and mean PSA 8 ng/L (range: 4–18) underwent standard 12-core TRUS biopsy followed immediately by 36-core TPTPB under general anaesthetic. We determined the prostate cancer detection rate between the two diagnostic modalities.
Results: 20/50 (40%) had benign pathology. Of 30/50 (60%) diagnosed with prostate cancer 16 (32%) had positive results in both TRUS and TPTPB, while 14 (28%) had negative TRUS but positive TPTPB. No cancers were detected solely by TRUS biopsy. TRUS biopsy detected cancer in 32% versus 60% with TPTPB. 19/30 (63%) cancers detected by TPTPB had Gleason score ≥7. 2 (4%) experienced urosepsis, 7 (14%) temporary urinary retention, 16 (32%) mild haematuria and 19 (38%) haematospermia.
Conclusions: TPTPB is associated with significantly higher prostate cancer detection rate than TRUS biopsies in biopsy naïve men with a benign feeling DRE and PSA < 20 ng/mL. PSA appears to be better biomarker than previously thought.

P54
Transperineal prostate (TP) biopsies – The first prospective evaluation of patient reported experience and effects on symptoms and life style

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Introduction: Many urologists are choosing the transperineal biopsy approach (TP) for detection of prostate cancer, with alleged higher detection and negligible infection rates compared to the transrectal approach. There is no published PROM data to assess patient reported experience and effects on symptoms. We aimed to prospectively assess their occurrence using a validated PROM tool.
Materials and Methods: Using the PROBE PROM tool, validated for TRUSP biopsies as part of the ProtecT study, we collected data prospectively in four centres in 2013. All patients undergoing TRUSP or TP biopsies were asked to complete the questionnaires immediately after the procedure and at follow up.
Results: 655 patients were included in the study, of these 429 of patients in total completed both questionnaires (228 for TRUS and 201 for TP biopsy). Outcomes and demographics are shown in Table 1. Twice the numbers of cores were taken for TP biopsies (12.27 VS 27.1), yet, there was no clinically significant difference in IPPS from before to after biopsy in both groups. However, there was significant change in IIEF score and sexual desire following both procedures, more so for TRUS. Pain was experienced in both groups in days after biopsy with only little impact on the patients' life.
Conclusion: This study reports the first prospective PROM-based assessment of patients' experience and effects on symptoms of TP biopsies. Despite accruing more biopsies TP appears to have similar impact to TRUSP. Patients should be warned of the effect of both techniques on sexual desire and erectile function.

Table 1 (P54) Demographics and Symptoms scores. ns: Not significant, s: Significant.

	TRUS biopsy ($n = 228$)	TP biopsy ($n = 201$)	Difference TRUS-TP
Age (years)	66.7 ± 8.1 (42–88)	63.9 ± 7.9 (36–83)	$P = 0.265$ (ns)
PSA (ng/mL)	13.5 ± 16.3 (1–116)	11.2 ± 8.4 (0.2–53.2)	$P = 0.000$ (s)
Prostate Volume (mL)	56.4 ± 32.1 (7–211)	56.4 ± 36.1 (6–210)	$P = 0.496$ (ns)
Symptom scores presented as the mean of the difference (follow up – baseline)			
IPSS	–0.61 ± 5.35 (ns)	–0.23 ± 4.05 (ns)	$P = 0.50$ (ns)
Quality of life	–0.36 ± 1.21 (ns)	–0.08 ± 1.22 (ns)	$P = 0.06$ (ns)
IIEF-5-	2.95 ± 6.92 (s)	–1.96 ± 6.86 (s)	$P = <0.01$ (s)
Sexual desire (worse/much worse) since biopsy	14.5% ($n = 33$)	28.3% ($n = 62$)	
Pain			
Pain during period following biopsy	28.1% ($n = 64$)	46.8% ($n = 94$)	
Patients 'little or not affected' by pain	76.5% ($n = 49$)	91.4% ($n = 86$)	
Patients that required painkiller prescription by GP	8.2% ($n = 18$)	23.2% ($n = 53$)	
Patients' experience			
Patients describing procedure as 'uncomfortable'	19.2% ($n = 42$)	23.2% ($n = 53$)	
Patients unhappy to have repeat biopsy	11% ($n = 25$)	10% (22)	
Patients describing procedure as a minor intervention	93.9% ($n = 214$)	82.6% ($n = 181$)	

P55
Transperineal biopsy related erectile dysfunction in Active Surveillance

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Background: Transperineal prostate biopsy (TPSBx) is part of our active surveillance programme. Immediate complications/side effects are well documented. However, short/medium-term side effects on erectile function are not.
Methods: Between September 2009-September 2012, 278 patients with low risk prostate cancer on transrectal biopsy (TRUSBx) underwent TPSBx within 3–6 months of diagnosis as part of our active surveillance programme. Number of biopsies taken ranged between 24–38, as per standardised protocol. All biopsies were taken by a single practitioner. Erectile function was assessed pre-TPSBx using International Index of Erectile Function-5(IIEF-5) and post biopsy at 1, 3 and 6 months.
Results: Mean age at first TPSBx was 63 years (SD: 7.1). Mean PSA at baseline was 9.0(SD: 7.0, the majority of men (56%) presented with T2 disease. Commonest Gleason Grade at biopsy was 3 + 3(36%), 3 + 4(20%), and benign (22%). Mean biopsy time was 4.1 minutes (SD: 0.9).
The mean pre-TPSBx IIEF-5 score was 20.2(SD: 5.9), which dropped to 10.4(SD: 5.6) at 1 month post biopsy (Ppaired t-test: <0.001), a reduction of 49%. By 3 months, mean IIEF-5 increased to 19.6(SD: 5.5) and complete recovery was observed by 6 months when mean IIEF-5 score was 20.4(SD: 5.4) (Ppaired t-test: 0.122).
28(10%) of patients experienced improvements in erectile function between their pre-TPSBx IIEF-5 and 6 months following biopsy.
Conclusion: Transperineal biopsies cause significant short term erectile dysfunction but do not lead to erectile dysfunction in the medium term. 10% of patients experience an improvement in erectile function possibly due to alleviation of anxiety post TPBx. The potential impact on erectile function should be highlighted during the consent process.

P56
Multiparametric Magnetic Resonance Imaging (mpMRI) of Prostate Cancer lesions – How much do we have to learn?

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Introduction: In the last decade mpMRI has emerged as superior prostate cancer diagnostic test through improvements of technology and reading. Leading centres have published on MRI accuracy. Data is lacking on the reproducibility of these results in centres introducing this test in clinical practice. We want to demonstrate the accuracy of mpMRI early and later in the learning curve of cancer centre radiologists using MRI fusion transperineal prostate biopsy (MTTP, BiopSee™) as feedback tool.
Materials and Methods: We prospectively collected data on mpMRI reading and results of MTTP biopsy of our first 70 patients in 2012 (Group A) and the last 70 patients of 2013 (Group B). Demographics are shown in the table. Patients underwent 3 Tesla mpMRI (T2W, DWI) read by two experienced radiologists according to ESUR standards to support MTTP biopsy (TB). Random sector biopsies (RB, Ginsburg protocol) were also taken. Statistical analysis was performed with chi-square correlation test.
Results: Of 70 patients, in group A 64 (91%) and in group B 52 (74%) patients were found to have significant mpMRI lesion (PIRADS class = 3). Results are shown in our table. The difference in prostate cancer detection rate overall (P-value 0.003) and by TB (P-value 0.001) was significant.
Conclusions: Introduction of mpMRI for prostate cancer diagnostics requires training, multidisciplinary team working and audit even in experienced hands. Our outcomes are comparable to published literature after about 250 cases using fusion technology as feedback tool. MRI-guided targeted biopsies alone are not advisable yet.

Table 1 (P56).

	Mar–Aug 2012 first 70	Sep–Dec 2013 last 70
Number of patients analyzed	70	70
Pts with PIRADS class ≥ 3	64 (91%)	52 (74%)
Median age	64	66
Median PSA value	11	8.4
Median prostate volume	77	42
CaP detected in 'MRI-positive' patients	27/64 (42%)	42/52 (81%)
CaP detected by TB	17/64 (28%)	30/52 (58%)
CaP detected by RB	25/64 (39%)	39/52 (75%)
Upgrading of the GS of RB by TB	8	12
CaP missed by TB	10	12
Significant CaP missed by TB (UCL criteria Amber)	1/2	1/2
CaP significance TB (UCL criteria Green/Amber/Red)	17/10 (59%)/5 (29%)	30/25 (83%) /11 (36%)
CaP significance RB (UCL criteria Green/Amber/Red)	25/12 (48%)/5 (20%)	39/15 (38%)/10 (26%)
Patients with MRI score 1 and 2	6/70 (9%)	18/70 (26%)
Patients with negative MRI who had cancer	2/6 (33%)	7/18 (39%)
CaP significance in negative MRI (UCL criteria G/A/R)	2/2 (100%) /1 (50%)	7/2 (29%)/0

P57
MRI Invisible prostate cancer: The role of systematic biopsy outside the MRI lesion

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Introduction: Suspicious lesions identified on multi-parametric MRI (mp-MRI) may be evaluated by targeted biopsy. It has been suggested that limiting biopsies to MRI suspicious areas might improve significant cancer detection whilst avoiding additional biopsies. This study assessed the performance of mp-MRI to exclude clinically significant disease (CSD) outside the MRI lesion.
Materials and Methods: 104 suspicious lesions identified on mp-MRI were evaluated. MRI lesions were graded from 1 to 5 according to the European Consensus guidelines (PI-RADS). MRI-US fusion targeted biopsy (M-UFTB) of the lesion was carried out using Variseed 8.0.2 software (Varian Medical Systems), followed by a systematic sampling of the remaining peripheral zone by transperineal sector biopsies (TPSB min-24 max-38 cores). CSD was located into a prostate quadrant and defined as >4 mm max cancer length and presence of Gleason pattern 4.
Results: Outside the MRI lesion, clinically significant prostate cancer was identified in 39% (41/104). This was located in the same quadrant as the lesion in 9%, an adjoining quadrant in 22% and a non-adjoining quadrant in 9%. The combination of M-UFTB and TPSB gave the highest cancer detection rate of 68% (70/104). The detection rate within the lesion significantly increased with PI-RADS score ($P < 0.001$, chi squared test).
Conclusion: 'MRI Invisible' cancer of clinical significance will be missed if biopsies are limited to the lesion only. The presence of MRI Invisible cancer has implications for the planning of focal or targeted therapies. MRI-targeted biopsy techniques should incorporate a systematic biopsy protocol to avoid missing clinical significant disease.

P58
How well does mp-MRI PiRADS scoring predict the outcome of transperineal sector prostate biopsy?

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Introduction: This prospective cohort study aimed to determine the sensitivity and specificity of multiparametric MRI (mp-MRI) for significant prostate cancer detection with systematic transperineal sector biopsy (TPSB) as the reference standard.
Patients and Methods: Two hundred and one patients had an mp-MRI (T2 and diffusion-weighted images, 1.5Tesla scanner, 8-channel body coil) between July 2012 and November 2013 prior to TPSB for the following indications: prior negative transrectal biopsy with continued suspicion of cancer (103); primary biopsy (83); and active surveillance (15).
A uro-radiologist, blinded to the clinical details, assigned qualitative PiRADS (Prostate Imaging Reporting and Data System) scores on a Likert scale of 1 to 5 denoting the likelihood of significant cancer with 1-highly unlikely, 3-equivocal, and 5-highly likely.
Systematic TPSB was carried out as a daycase under general anaesthetic and included 24 to 40 cores (depending on prostate size). Significant prostate cancer was defined as the presence of Gleason pattern 4 or cancer core length more than 5 mm.
Results: Mean (sd) age, PSA and prostate volumes were 65(7) years, 11.7(9.5)ng/mL and 62(37)mL respectively.
Biopsies were benign, clinically significant and clinically insignificant in 124(62%), 59(29%) and 18(9%) men respectively.
Only 2 of 87 men with PiRADS score <3 had significant prostate cancer giving sensitivity (95% confidence intervals) 0.97(0.88–1) and specificity 0.6(0.51–0.68) at this threshold.
ROC analysis gave an area under the curve (95% confidence intervals) of 0.88(0.74–0.95).
Conclusion: Low PiRADS scoring of mp-MRI performed well as a predictor for negative biopsy. This may inform the decision-making process to recommend for or against biopsy.

P59
Diagnostic MRI prostate pre-biopsy is associated with a significant false negative rate

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Introduction and Objectives: MRI technology is revolutionizing how we

diagnose and manage prostate cancer in the UK. With the advent of MRI-guided biopsy, one important caveat is that of false negative scans: that is when the MRI has reported no lesion but the patient subsequently is found to have a tumour by biopsy. This study aims to determine the rate and causes of false negative prostate MRI exams in our centre.

Methods: 148 prostate MRI scans (with T2WI, DWI and ADC maps) from a tertiary referral centre, conducted in patients with suspected prostatic cancer, prior to transrectal ultrasound (TRUS)-guided biopsy were retrospectively reviewed and compared with histological Gleason grade (June 2011 to May 2013). Scans were reported by 5 radiologists, followed by a second reader who drew a region of interest (ROI) around the lesions to be biopsied (target lesion) according to a prostate MRI map (Dickinson L *et al.* European urology 59, 2011). At prostatic biopsy, specimens were labeled according to histological mapping (Kuru T *et al.* BJU Int. 112, 2013). The histology and location of each positive biopsy was compared with the MRI report. Sectors where positive cores were found were characterised (Table 1).

Results: False negative lesions were identified in 28 exams out of 148 (18.92%; 46 lesions). This number was reduced by the second reader to 25 exams (35 lesions). Most false negative lesions were located in sector 1 (10/46) – Table 1.

Conclusions: Double reading reduced false negative lesions by 23.91% but many of the false negative lesions (15/46) were not MRI visible despite double-reading. This might be due to volume of diseased tissue required in each voxel, for the lesion to be detected and subtleness of areas of abnormality. Anterior lesions were more likely to be missed than lesions elsewhere within the prostate, as has previously been shown (Arumainayagam, N *et al.* Radiology 268, 2013). MRI is still associated with a significant false negative rate and further work is indicated to improve diagnostic accuracy.

Table 1 (P59) Distribution of lesion location and MRI classification of the affected sectors. Number of significant cancers missed on MRI and their correspondent classification.

Lesion location (sectors)				
1	6	3 L	4 L	5 L
10/46	11/46	6/46	6/46	6/46

MRI analysis	MRI report	Target lesion
True miss	10	7
Non-specific features	12	10
No features of a focal lesion	19	15
Miscalled zone	3	1
Difficult interpretation	2	2
Total (lesions):	46	35

MRI analysis	Significant cancer	
	MRI report	Target lesion
True miss	8/10	5/7
Non-specific features	8/12	6/10
No features of a focal lesion	11/19	10/15
Miscalled zone	2/3	0/1
Difficult interpretation	1/2	1/2
Total (lesions):	**30 out of 46**	**22 out of 35**

P60

Re-examining the role of whole body Bone Scan in staging prostate cancer

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Introduction: Current BAUS guidelines for staging prostate cancer include a radionuclide bone scan and MRI or CT of the pelvis/prostate. MRI has a higher sensitivity for detecting skeletal metastasis than bone scan. The aim of our study was to evaluate the incidence of metastasis to the appendicular skeleton in the absence of metastasis to the axial skeleton in prostate cancer. We then carried out a cost-benefit analysis and propose a newly emerging alternative staging method compared to the traditional bone scan.

Methods: Bone scans of all patients with a new diagnosis of prostate cancer at a large district general hospital between January 2012 and December 2013 were evaluated retrospectively.

Results: 109 patients were identified (Mean age was 74.34 ± 9.26 years; PSA range 2.1 to >1000). All were included. Of these, 74 (68%) had metastatic spread identified on bone scan. All 74 (100%) had axial skeleton involvement (pelvis and/or cervical/thoracic/lumbosacral spine). 52 (70%) of these in addition also had appendicular metastasis. Appendicular in the absence of axial skeleton metastasis was not seen. Minimum Gleason score in positive bone scans was 3 + 4.

Conclusion: We propose that performing a limited MRI spine (with DWI) at the time of pelvis/prostate MR will accurately stage patients without the need for a bone scan. In our institution, the additional time is estimated to be twenty minutes with little increase in cost per patient and significant savings from non-performance of bone scans. Moreover, the convenience to patients is one rather than two investigations.

BJUI Wednesday 25th June Poster Session 6 10:30–12:00 Room 12 FUNCTIONAL UROLOGY Chairs: Mr Nikesh Thiruchelvam and Mr Marcus Drake Posters P61–71

P61

Interim Analysis of the Long-term Efficacy and Safety of Repeat OnabotulinumtoxinA in the Treatment of Overactive Bladder and Urinary Incontinence, Median 2.4 Years' Follow up

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Introduction: Long-term efficacy and safety of repeated onabotulinumtoxinA treatments were assessed for patients with overactive bladder (OAB) symptoms including urinary incontinence (UI) who had been inadequately managed by ≥1 anticholinergic (ACH). The results are from a third interim analysis.
Patients and Methods: Patients who completed either of two phase 3 studies could enter a 3-year extension study in which they received multiple onabotulinumtoxinA (100 U) treatments. Data were analyzed by treatment cycle. Change from baseline (BL) in OAB symptoms; proportions of patients with a positive response on the Treatment Benefit Scale (TBS; co-primary endpoint), health-related quality of life (HRQOL), duration of effect, adverse events (AEs), and clean intermittent catheterization (CIC) initiation were assessed.
Results: 829 patients entered this extension study; median follow-up was 126 weeks (2.4 years). Discontinuation rates due to AEs/lack of efficacy were low (4.5%/4.9%). OnabotulinumtoxinA reduced mean UI episodes/day (co-primary endpoint; BL = 5.55) at week 12 by −3.26, −3.70, −3.87, −3.20, and −3.22 (cycles 1–5, respectively). Improvements in other OAB symptoms and HRQOL (exceeding minimally important differences; ≥2.5X) were consistently observed with repeat onabotulinumtoxinA. Positive TBS responses were reported (74.0, 80.9, 80.4, 79.4, 86.1%). Median duration was 24.0, 31.6, 27.9, 24.3, and 23.9 weeks. Most common AE was urinary tract infection, with no changes in overall AE profile. CIC rates were 4.6, 4.0, 4.3, 4.6, and 2.9%.
Conclusions: Patients with OAB and UI inadequately managed by ≥1 ACH showed sustained improvements in OAB symptoms, perception of their condition, and HRQOL after repeated onabotulinumtoxinA treatment, with no new safety concerns.

P62

Decreasing the dose of onabotulinum toxin A from 300 units to 200 units in multiple sclerosis patients – Does it matter?

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Introduction: Traditionally, 300 units (U) of Onabotulinum Toxin A (Bot-A) was used to control neurogenic detrusor overactivity (NDO) in multiple sclerosis (MS) patients. The aim of our study was to evaluate if lowering the dose to 200 U from 300 U decreases the duration of effectiveness who previously have received a higher dose.
Patient and Method: This was a prospective analysis of all patients who received 200 U of Bot-A in 30 mls injected at 30 sites sparing trigone & evaluated with pre and post injections with UDI-6 & IIQ7. The duration of effect was recorded.
Results: 41 patients with MS were identified. At 300 U the mean duration of effect was 16.19 months. Decreasing to 200 U the mean duration of effect was 11.55 months. The duration of effect with 200 U decreased in 13/41(31.7%) patients compared to 300 U in the same individual whilst did not significantly change in others. Reverting back to 300 U, the mean response in 7 of 13 patients had returned back to initial response with 300 U.
Conclusion: In almost a third of patients the duration does not last as long as the original increased dose. The cause of this phenomenon remains unclear and further studies are required to evaluate if this is due to sensitization of the receptors to a higher dose.

P63

Cost comparison of sacral nerve stimulation and OnabotulinumtoxinA to manage urinary incontinence in patients with overactive bladder

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Introduction and Objectives: OnabotulinumtoxinA (BOTOX®) is an effective and minimally-invasive treatment option for OAB. An economic model was developed to compare the costs associated with the use of BOTOX® to those associated with sacral nerve stimulation (SNS) to manage patients with OAB in a Clinical Commissioning Group (CCG) in the UK.
Materials and Methods: A prevalence-based, deterministic budget impact model with a seven-year time horizon was developed from the perspective of a hypothetical CCG. The model estimated the overall treatment-associated costs of using SNS and BOTOX®, including the cost of drugs, devices, procedures, monitoring, disposables and adverse event management.
Results: In a hypothetical CCG covering 100 000 individuals, an estimated 254 had OAB managed by a specialist and not responsive to oral therapies. Of these, we considered 20 patients who were treated either all with BOTOX® or all with SNS (a treatment uptake rate of 8%). The management cost per patient over seven years was estimated at £17 780 for SNS and £6055 for BOTOX®. The cost of managing all 20 patients with BOTOX® was estimated at £121 100, compared to £355 500 for SNS. This represents a £234 500 or 66% cost saving to the CCG if BOTOX® is used rather than SNS.
Conclusion: BOTOX® is a minimally-invasive treatment option for patients with OAB whose use may lead to significant cost savings for CCGs across the UK compared to treating the same patients with SNS.

P64

Can mirabegron reduce the waiting list for repeat intravesical Botulinum injections?

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Introduction: Overactive bladder (OAB) is a common, debilitating condition characterised by urgency, frequency and urge incontinence, affecting daily activities and sleep and negatively impacts quality of life (QoL).
Current treatment includes bladder training and lifestyle advice, antimuscarinics, intravesical Botox and invasive surgery.
The beta 3-adrenoreceptor agonist, mirabegron has recently been approved for OAB. This study's aim was to assess its efficacy in patients who have failed previous first and second line therapies.
Methods: A 2-month trial of mirabegron 50 mg od, was offered to 70 patients awaiting intravesical Botox. Efficacy was assessed using a Frequency-Volume Chart (FVC) and Incontinence Questionnaire – Short Form (ICIQ – SF) before treatment and after the trial.
Results: 52 patients were included with a mean age of 54 years (range 24–79). Statistically significant improvements in frequency, volume leaked and QoL scores following treatment with mirabegron was noted (paired t-test, $P < 0.01$).
There was a 12% reduction of overall ICIQ – SF score (t-test, $P < 0.01$). Frequency reduced by 14% (ICIQ – SF Question 3) and volume leaked by 18% (Question 4). Quality of life scores improved by 21% (Question 5).
There was an absolute reduction in frequency of 2.8 +/− 2.02 times per day (t-test, $P < 0.01$).
Five patients (9.6%) requested to be removed from the Botox waiting list, of which 2 were toxin naive. At 6 month follow up 0 patients still did not require Botox.
Conclusion: Within our local population, our results indicate mirabegron is an effective and economical option for patients who have found previous therapies unsuitable.

P65

Validating a New Nomogram for Diagnosing Bladder Outlet Obstruction in Women

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Introduction: We have developed and validated criteria for classifying BOO in women derived from concurrent Pdet. Qmax and Qmax based on radiographic evidence of increased urethral resistance.
Materials: Retrospective video-urodynamics and clinical data of 186 women were analysed and divided into six groups. The first four groups were categorised according to the primary cause of BOO; functional obstruction; anatomical obstruction; anti-incontinence surgery obstruction and cystocele. The fifth group consists of patients without voiding symptoms or stress urinary incontinence (SUI) and the sixth where SUI is demonstrated. The detrusor pressure at peak flow (Pdet.Qmax) was plotted against peak flow (Qmax) for voids with a volume > 100 mL (Fig. 1). Cluster analysis was performed to derive an axis (BOO criterion) that best divides the definitively obstructed and unobstructed (Fig. 2). The sensitivity and specificity of the BOO criterion was then validated by applying it to a further 350 women who have undergone video-urodynamics in our unit.
Results: The axis of Pdet.Qmax = 2Qmax best divides the women with and without evidence of radiographic BOO in the original cohort. In the validation cohort, the criterion Pdet.Qmax > 2Qmax identifies BOO in women with sensitivity of 0.94, specificity of 0.93 and accuracy of 0.94 (Table 1).
Conclusion: The criterion Pdet. Qmax > 2Qmax defines BOO in women with excellent accuracy and should be utilised for urodynamic diagnosis of BOO in women.

Fig. 1 (P65) Original Cohort Cluster Analysis.

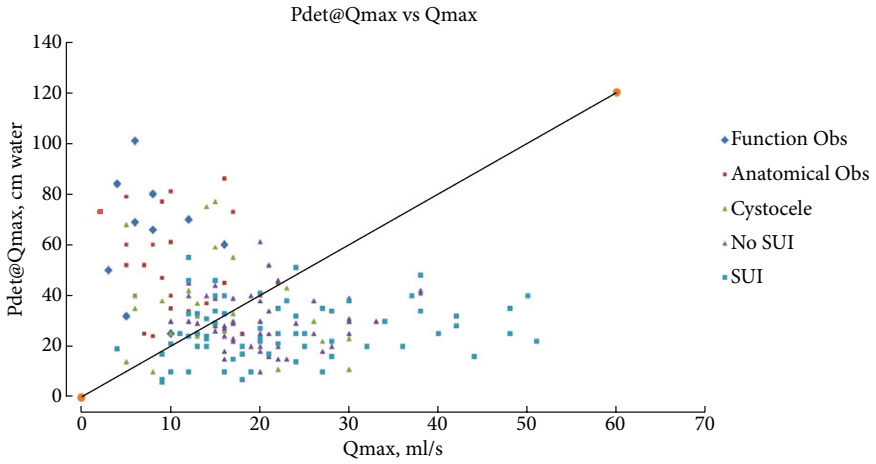

Fig. 2 (P65) Validating Cohort Cluster Analysis.

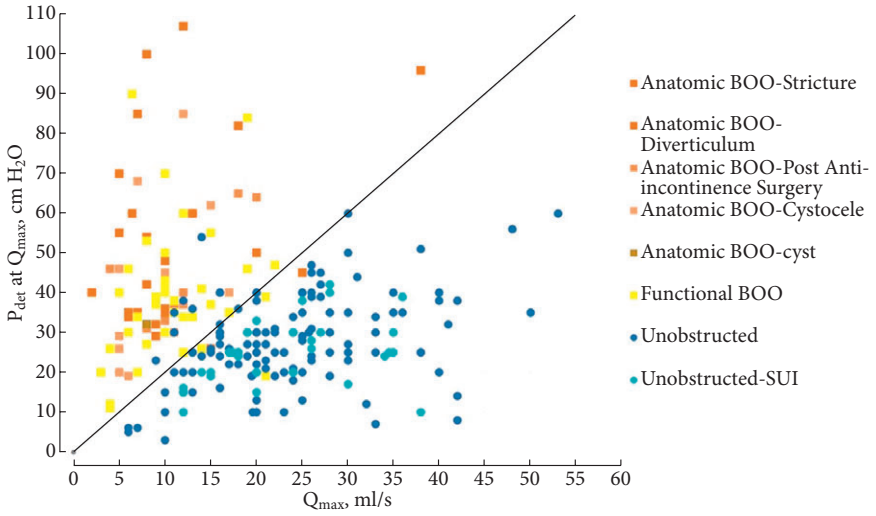

Table 1 (P65).

Pdet > 2Qmax	
Sensitivity	0.944
Specificity	0.930
PPV	0.832
NPV	0.980
Accuracy	0.937

P66

Open label pilot study of urethral injections of Botulinum toxin to treat women in urinary retention due to a primary disorder of urethral sphincter relaxation (Fowler's syndrome)

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Introduction: Urinary retention is uncommon in women, and one cause is a primary disorder of urethral sphincter relaxation (Fowler's Syndrome) (FS). Clean intermittent self-catheterisation is painful and the only treatment to show benefit is sacral neuromodulation (SNM). This aim of this study was to assess the efficacy and safety of urethral sphincter injections of onabotulinumtoxinA in women with FS.
Material and Methods: In this open label pilot study, ten women with mean age 40.2 years (25–65) with a primary disorder of urethral sphincter relaxation, presenting with obstructed voiding ($n = 5$) or complete urinary retention($n = 5$) were recruited. Baseline symptoms were assessed using the IPSS questionnaire, urethral pressure profile(UPP), urinary flow and post-void residual volume. 100 U of onabotulinumtoxinA was injected into the striated urethral sphincter, under EMG guidance. Patients were reviewed at week 1, 4 and 10 post-treatment.
Results: An improvement in symptoms and bother scores on the IPSS, flow rate and post-void residual volumes was demonstrated at week 10 following onabotulinumtoxinA injections. 3/5 women showed at least a 50% improvement in flow rate. 4/5 women in complete retention could void spontaneously by the end, with a mean flow rate of 11.4 mls/sec. Six patients discontinued catheterisation. The mean static UPP improved from 113(86–139) to 92.2(66–151) cmH20 at baseline. No serious side effects were reported. 7/10 women opted to return for repeat injections.
Conclusions: This study demonstrates an improvement in patient-reported and objective parameters following urethral sphincter injections of onabotulinumtoxinA. No serious side effects were reported. A larger study is required to confirm these findings. This represents a safe alternative outpatient treatment.

P67

Long term follow-up of a multicentre randomised controlled trial comparing TVT, Pelvicol (TM) and autologous fascial slings for the treatment of stress urinary incontinence in women

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Introduction: The best available data for surgical treatment of stress urinary

incontinence (SUI) support the use of mid-urethral tape procedures, colposuspension and autologous rectus fascial slings (AFS) [NICE 2013; Ogah *et al*. 2009]. Mid urethral synthetic sling surgery has become the most common, but safety concerns exist regarding placement of synthetic meshes in vaginal surgery. Here we present the results of a long-term follow-up study of a multi-center randomised trial comparing AFS, Porcine dermis (Pelvicol™) and TVT™ for treatment of women with SUI, to determine the efficacy, morbidity and re-operation rates at a median follow-up of 10 years.

Materials and Methods: Postal questionnaires (Bristol Female Lower Urinary Tract Symptoms (BFLUTS), Euro-Qol (EQ-5D) and a simple non-validated questionnaire used in the original study) were sent to all original study participants. Non-responders were contacted and questionnaires completed by telephonic interview.

The primary outcome was surgical success defined as 'women reporting being completely dry or improved' at follow-up.

Results: Of 201 patients originally evaluated, 162 (80.6%) were available for follow-up at median 10 years (Range 6.6–12.6 years) (63 TVT, 61 AFS, 38 Pelvicol).

Main results are shown in Table 1.

Conclusion: TVT and AFS are similarly effective in treating female SUI with durable long-term results and minimal adverse events, though time-dependent deterioration in efficacy was noted for both. Dry rate for AFS is significantly more durable than with the other two procedures, suggesting AFS could be a suitable alternative to synthetic MUS for individuals preferring to avoid artificial mesh insertion.

P68

Systematic review and meta-analysis of the artificial urinary sphincter in men undergoing prior external beam radiotherapy

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Introduction: The artificial urinary sphincter (AUS) is considered the gold standard treatment for post prostatectomy urinary incontinence. Higher rates of AUS surgical revisions are described in patients previously treated with external beam radiotherapy (EBRT), yet this risk remains to be quantified by meta-analysis.

Methods: Published case series of men undergoing AUS insertion were retrieved, against strict exclusion criteria. Patient demographics and surgical outcomes from each case series were extracted. MedCalc Statistical Software was used to analyse the data. Mean patient characteristics, relative risk and risk differences were calculated between pooled radical prostatectomy (RP) and RP + EBRT patient groups.

Results: Twenty two papers were excluded, leaving 14 case series and 1628 patients available for analysis (221 RP and 1407 RP + EBRT patients). Mean patient age was 68.1 ± 1.2, number of patients per study 101.5 ± 27.3 and average follow up was 42.7 ± 4.2 months, (range 15 to 404). Data analysis indicated AUS revision was higher in RP + DXT versus RP alone, risk ratio 1.54 (95% CI 1.26 to 1.87; $P < 0.05$), and risk difference 0.13 (95% CI 0.07 to 0.21; $P < 0.05$). Infection and erosion accounted for the majority of risk in post-EBRT patients ($P < 0.05$). Continence was 87.2 ± 4.3 % at follow up and did not differ significantly between groups.

Conclusions: Men receiving EBRT are at a higher risk of AUS infection and erosion, regardless of surgical approach or cuff size implanted. These data suggest careful patient selection is required in RP + EBRT patients.

P69

Vesico-vaginal fistula repair: Does route of repair affect patient outcome?

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Introduction and Objectives: To assess whether vaginal repair of vesico-vaginal fistula (VVF) avoids the morbidity of abdominal approaches and reduces hospital stay.

Methods: A review of a prospectively acquired database of 32 VVF patients treated with intention to cure between December 2005 and October 2013 by a single surgeon to assess route of repair, morbidity, hospital stay and outcome.

Results: There were 35 repairs (24 vaginal) in 32 patients. The overall success rate of VVF repair was 97% (34/35) with closure following 1st repair in 88% (28/32) and following a second repair in 100% (3/3). The patient with persistent VVF had recurrent SCC (initial biopsies negative) and had no further treatment.

24 (75%) 1st time repairs were performed vaginally with success in 88% (21/) – (91% if the patient with SCC is excluded). 4 patients had absolute indications for abdominal repair: 3 ureteric injuries and 1 vesico-cervico fistula. In patients without an absolute indication for abdominal repair 24/28 (86%) were performed vaginally. Morbidity and hospital stay are shown in the table.

Statistical analysis was by Chi-Squared and significance* determined at $P < 0.05$.

Table 1 (P67).

	TVT	AFS	Pelvicol			
	12 months	10 yrs	12 months	10 yrs	12 months	10 yrs
Success rate	93%	73%	90%	75.4%	61%	58%
Dry rate	55%	31.7%	48%	50.8%	22%	15.7%
Re-operation for SUI	2	0		5		
Required treatment for OAB post-op	6	11		8		

Table 1 (P69).

	Vaginal repair	Abdominal repair
Bowel obstruction	0	1
Urgency	1	0
USUI	2	2
Mean length of stay in days (range)	4 (3–7)	12.7 (5–21)

Conclusions: Vaginal repair of VVF is possible in 86% of patients with success rates of 91%, reduced morbidity and significantly reduced hospital stay compared with abdominal repair. It should become standard unless an absolute indication for abdominal repair exists.

P70

The long-term outcome of bipolar plasma enucleation in large BPH cases – The test of time in a prospective, randomized comparison to open prostatectomy

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Introduction: A long-term, prospective, randomized trial assessed the viability of the bipolar plasma enucleation of the prostate (BPEP) by comparison to open transvesical prostatectomy (OP) in large prostate' cases with regard to perioperative features and follow-up parameters.
Materials and Methods: 140 BPH patients with prostate volume over 80 mL, Qmax below 10 mL/s and IPSS over 19 were equally randomized for BPEP and OP. All patients were evaluated every 6 months after surgery for 3 years by IPSS, Qmax, QoL score, PVR, postoperative prostate volume and PSA level evolution.
Results: BPEP and OP emphasized similar mean operating times (91.4 versus 87.5 minutes) and resected tissue weights (108.3 versus 115.4 grams). The postoperative hematuria rate (2.9% versus 12.9%), mean hemoglobin level drop (1.7 versus 3.1 g/dL), catheterization period (1.5 versus 5.8 days) and hospital stay (2.1 versus 6.9 days) were significantly reduced in the BPEP group. Re-catheterization for acute urinary retention was more frequent after OP (8.6% versus 1.4%), while the early irritative symptoms' rates were similar (11.4% versus 7.1%). No statistically significant differences were determined in terms of IPSS, Qmax, QoL, PVR, PSA level and postoperative prostate volume during follow-up. Consequently, the calculated prostate volume decreases (82.7–84.7% versus 81.0–83.9%) and PSA level reductions (90.2–92.5% versus 89.8–92.6%) by comparison to preoperative measurements were statistically equivalent in the BPEP and OP study arms.
Conclusions: BPEP emphasized similar BPH tissue removal capabilities, superior perioperative safety profile, significantly fewer complications, substantially faster postoperative recovery and satisfactory long-term follow-up symptom scores and voiding parameters.

P71

Prostate artery embolization (PAE) for bladder outflow obstruction: Results of the first UK prospective study

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Introduction: Prostate artery embolisation (PAE) may offer men with bladder outflow obstruction (BOO) due to benign prostatic enlargement (BPE) an alternative to medical therapy or outflow surgery.
Material and Methods: With ethical approval, patients were assessed by International prostate symptom score (IPSS) and Quality of Life (QoL), digital rectal examination, transrectal ultrasound, serum PSA, uroflowmetry and urodynamics.
Patients with urodynamically proven outflow obstruction and prostate volume greater than 40 cc proceeded to CT prostatic and pelvic angiography planning. Patients received PAE under local anaesthetic by femoral arterial access. Selective embolization was performed using hydrophillic microcatheters and polyvinyl alcohol (PVA).
Results: PAE performed for 35 men, mean age 64 years (54–75 years). Results were compared at baseline and 3, 6 and 12 months post-PAE, with 100% technical success (at least unilateral embolization) and bilateral embolization in 90%.
Mean IPSS improved from 24.4 (range: 24–35) to 12.4 (range: 1–32) at 6 months. The mean QoL improved by 2 points from 5 (range:3–6) to 3 (range:2–5) with the baseline flow increasing from 6.6 mL/sec (range:3–12) to 10.9 mL/sec (range:3.6–18). Prostate volume reduction (45%) from 87 cc (42–180) to 52 cc (31–128).
No major complications, retrograde ejaculation, erectile dysfunction or UTI. Minor complications included mild self-limiting suprapubic pain, transient haematospermia (1 patient) and small non-limiting arterial dissection (2 patients).
Conclusions: PAE may offer an acceptable alternative to endoscopic prostate surgery in patients failing medical therapy with promising initial short-term results. However, appropriate patient selection and good technique is paramount for its success.

BJUI

Wednesday 25th June
Poster Session 7
13:30–15:30 Room 4
ANDROLOGY, RECONSTRUCTION AND TRAUMA
Chairs: Professor Raj Persad and Professor Culley Carson
Posters P72–85

P72

Dynamic Sentinel Lymph Node Biopsy in Penile Cancer: A Single Centre Experience

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Introduction: Dynamic sentinel lymph node biopsy (DSNB) has become the recommended approach to assess lymph node status in >G2T1 penile cancer and clinically impalpable inguinal nodes. We present intermediate term outcomes of our patients undergoing DSNB in a supra-regional tertiary referral penile cancer centre.
Patients and Methods: All patients with >G2T1 penile squamous cell carcinoma and non-palpable nodes underwent uni/bilateral DSNB between 2010 to 2013. Patients were assessed by lymphoscintigraphy, followed by inguinal ultrasound scan. At anaesthetic induction, patent blue dye was injected into the proximal penile shaft. Retrieval of sentinel nodes was aided by pre-operative lymphoscintigraphic images and intra-operative detection of radiotracer and patent blue dye. The incidence of node metastasis, false negative rate of DSNB, and preoperative predictors of lymph node metastasis detection were evaluated.
Results: In total, 87 inguinal basins from 47 patients underwent DSNB, with a median follow up period of 15 months (range 1–33 months). Six patients (13%) demonstrated positive DSNB (one patient had bilateral metastasis). To date, no patients have been identified with having false negative findings after DSNB. Predictive factors for the detection of positive nodes were tumour grade ($P = 0.031$) and lymphovascular invasion ($P = 0.004$). Tumour stage and intra-operative radiotracer count did not predict nodes likely to harbour metastasis. Complications of groin pain were seen in 1 patient (2%).
Conclusion: Our data suggests that DSNB can identify lymph node metastasis in patients, without subjecting them to radical inguinal lympadenectomy; and that primary tumour grade and lympovascular invasion are important predictors of DSNB histological outcome.

P73

Does combined Dynamic Sentinel Lymph Node Biopsy and SPECT/CT improve sentinel node detection rates in penile cancer?

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Introduction and Objectives: Dynamic Sentinel Lymph Node Biopsy (DSNB) for penile cancer patients with clinically impalpable inguinal nodes uses 2-D planar lymphoscintigraphy in the majority of centres. The aim of this study was to investigate the role of SPECT/CT following 2-D planar lymphoscintigraphy (dynamic & static) in the detection and localisation of the sentinel lymph nodes.
Patients and Methods: A qualitative review was performed on planar followed by SPECT/CT lymphoscintigraphy in a cohort of 81 patients diagnosed with penile cancer. Injection of 99mTc-Nanocolloid followed by 20 minutes dynamic scanning and static images at 120 mins was followed by SPECT/CT imaging. The lymph-nodes detected in each groin using planar lymphoscintigraphy were compared to those detected on SPECT/CT.
Results: A total of 272 nodes were identified using planar-scintigraphy whereas SPECT/CT identified 325 nodes. Of the additional 53 lymph-nodes detected by SPECT/CT, 28 were new nodes (left groin-22, right groin-5 and 1 at an unusual location in the upper thigh) whilst the remaining 25 were found not to be lymph nodes on SPECT/CT (7 in-transit radiotracer in lymphatic channels, 6 scatter mis-registration and 12 contaminations). Due to SPECT/CT identification, unnecessary groin exploration for these (25) false positive nodes was prevented. Furthermore, SPECT/CT demonstrated precise localization of the regional draining basins for 43 nodes (Inguinal 35, Pelvic 8), which were difficult to distinguish on 2-D planar scintigraphy.
Conclusions: The addition of SPECT/CT improved detection rates of true radiotracer avid lymph-nodes and

delineated their precise (3-D) anatomical localization in the inguinal basins.

P74
Contemporary retroperitoneal lymph node dissection (RPLND) for testis cancer in the UK – a national study

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Introduction and Objectives: RPLND has been performed only in specialist UK centres since 2002. In 2012 all participating surgeons in BAUS committed to a comprehensive prospective national study of RPLND outcomes.
Material and Methods: Data were submitted on-line using the BAUS Section of Oncology Data and Audit System. All new patients undergoing RPLND for testis cancer between March 2012 and February 2013 were included, data analysed using Tableau software and case ascertainment compared with Hospital Episode Statistics (HES) data.
Results: 162 men underwent RPLND by 20 surgeons in 18 centres. Mean case volume was 9 (range 2–32) per centre. Indication was residual post-chemotherapy mass (72%); primary treatment (5%); relapse (14%); salvage (7%). 91% utilised open surgery. 40% had significant comorbidity.
Nerve sparing was performed in 67% (19% bilateral; 48% unilateral). Dissection was template in 81% and lumpectomy in 16%. 25% required additional intra-operative procedures including 11% synchronous planned nephrectomy. Successful resection was achieved in 97% men. 86% men required no or minor (<2 units) blood transfusion. 10% had post-operative complications (7 Clavien grade 1, 7 grade 2 and one grade 3). There were no deaths within 30 days of surgery.
Mean length of stay was 5.5 days (range 1–59).
Histology showed necrosis in 22%; teratoma differentiated in 42%; and residual cancer in 36%.
Conclusions: This collaborative national study describes for the first time the nature and quality of the current provision of RPLND across the UK.

P75
One stage hypospadias reconstruction in adults

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Introduction: Hypospadias is one of the most common congenital abnormalities in men with prevalence rates varying from 4 to 43 patients per 10 000 births in different countries and studies. Hypospadias repair is regarded as a demanding procedure with many techniques described in the literature.
Aim: The aim of this study is to present our experience with one-stage hypospadia repair in adults, using tunica vaginalis flap in combination with buccal or bladder mucosa graft.
Materials and Methods: From 1991 to 2012, a total of 55 adult patients underwent one-stage hypospadia repair with tunica vaginalis flap. Buccal mucosa and bladder mucosa grafts for the neourethra reconstruction were used in 37 and 18 patients respectively. Patients attended routine follow-up visits.
Results: Our series of 55 patients resulted in 91% success after a single operation with 9% needing a second repair. All patients had satisfactory results in terms of aesthetics and function.
Discussion/Conclusion: The goal of hypospadia surgery is the creation of a straight, cosmetically acceptable phallus consisting of an orthotopic, slit-like urethral meautus and conically shaped glans and adequate skin coverage with an appropriate mucosal collar. Tunica vaginalis flap brings its vascular supply to the reconstructed area and therefore serves as a tissue layer that provides the buccal or bladder mucosa graft with the essential nutrients in order for the graft to take. Although more technically challenging, this combination seems to minimize surgical complications and result to a high rate of successful outcomes through a one-stage procedure.

P76
Which stricture-related factors influence the outcome of urethroplasty?

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Introduction: Not all urethral stricture surgery has the same primary success rates (PSR), depending on aetiology and location. We review the results of nearly 1000 unselected patients with typical stricture problems.
Patients and Methods: 998 patients underwent urethroplasty for various stricture aetiology/location between 2007–2011. 797 have at least 1 year follow-up. The results of our first procedure and of subsequent salvage surgery when necessary are reviewed.
Results: The PSR from 357 bulbar urethroplasties of all types was 90%, improving to 95% with a single further procedure. Patients with post-TURP strictures had a PSR of 71%, improving to 81% with a single further procedure.
The PSR for penile urethroplasty was 72% in both hypospadias and lichen sclerosis. With a single further revision this improved to 89% and 80% respectively.
The PSR from 139 posterior urethroplasties (BPA) was 77%. Of those unsuccessful, 12% were salvaged by a single further procedure; 11% were salvaged by further surgery, managed by urethral dilatation, or await further surgery. PSR for bulbar urethroplasty for straddle injuries was 79% with the remaining 21% salvaged by a single further procedure.
Conclusions: The results of urethroplasty in an unselected patient population, many having had previous urethroplasty, are less than previously quoted in the literature. Bulbar urethroplasty gives much the best results, being the easiest to salvage, excluding post-TURP strictures. Penile urethroplasty and BPA are somewhat more challenging. Both aetiology and location are important factors in the outcome of urethroplasty.

P77

Failure of first stage penile urethroplasty using buccal mucosal graft – causes and outcome of revision surgery

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Introduction and Objectives: Staged penile urethroplasty using buccal mucosal graft (BMG) has become the treatment of choice when dealing with complex penile urethral strictures. We review those cases requiring revision of their first stage to identify possible risk factors for failure and whether this has any bearing on the final outcome.
Patients and Methods: 88 patients undergoing staged penile reconstruction using BMG were reviewed retrospectively. Median patient age was 33.5 years with a mean follow-up of 19.1 months. Outcome following eventual retubularisation was assessed by clinical and radiological parameters, and flow rate.
Results: 18 of 88(20.4%) patients required revision of the graft bed prior to successful tubularisation. 2 patients required 2 revisions while one required 3. 12 cases were following failed hypospadias repair. 6 were lichen sclerosis related. Two graft infections were documented. All but one (93.3%) had a successful outcome following eventual retubularisation. Compared to those not requiring first stage revision, the failures had longer strictures (72.2%vs11.1%). In most cases graft contracture occurred at the proximal or distal ends of the graft. No differences in age, ASA score, BMI, number of previous urethroplasties, smoking, diabetes, and hypertension were identified as potential contributors to graft failure. There was also no difference in final outcome.
Conclusion: Revision after first stage penile urethroplasty is commoner in patients undergoing surgery following failed hypospadias repair; and those with long strictures requiring use of multiple grafts. Irrespective of the number of revision surgeries required, staged penile urethroplasty has an excellent outcome.

P78

Long-term patient reported outcome of bothersome oral symptoms following Buccal Mucosal Graft (BUMG) harvest for urethral reconstruction

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Introduction: Buccal mucosal graft (BUMG) harvest is commonly used for urethral reconstruction. Both closure and non-closure of the donor site are safe and effective options. Little long-term data exists on oral symptoms following surgery. Our study, from a regional UK urethroplasty center, aims to evaluate long term oral symptomatology following BUMG graft harvest for urethroplasty.
Patients and Methods: All patients who underwent BUMG harvest for urethroplasty during June 2007 and august 2009 were interviewed 4 to 5 years post-procedure. BUMG morbidity was assessed focusing on oral pain, (5 point analogue score, 1 = none to 5 = severe) resolution of normal diet, perioral numbness, tightness on mastication, and scar biting.
Results: Of the 126 patients in the study, 88 had donor-site closure, and 37 were interviewed (mean age 45 years). Of the 38 patients in the non-closure group, 19 were interviewed (mean age 49 years). There was little difference in mean pain scores between the groups, 1.1 vs. 1.3 respectively. The resumption of a normal diet favoured the closure group (10.5% vs. 0%), with less perioral numbness (10.8% vs. 21.1%). Non-closure resulted in a lower incidence of scar biting (15.8% vs. 27%). A greater proportion of patients in the closure group would permit future buccal harvesting (92% vs. 78.9%), and recommend BUMG urethroplasty (97.3% vs. 84.2%).
Conclusions: Patients are more likely to permit further BUMG harvest for urethroplasty following closure of the buccal mucosal donor site. Both closure and non-closure are well tolerated in the long term.

P79

Outcome of redo-bulbar and membranous urethroplasty

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Introduction: Current urethroplasty techniques offer high success rates however recurrent strictures remain a significant issue, being associated with more challenging surgical treatments. This study evaluates the outcomes of redo-urethroplasty in patients with recurrent bulbar or membranous strictures.
Patients and Methods: Between 2006–2012, 41 redo-urethroplasties were performed in 38 patients in a single centre. Details related to previous surgery, operative and post-operative data were collected retrospectively. Patients were followed up (median 25 months) clinically, radiologically and by flow rate assessment. Penile strictures were excluded.
Result: The commonest stricture etiologies treated were pelvic fracture-related (37%) and idiopathic (32%). The redo procedures consisted of bulbo-prostatic anastomotic and dorsal or ventral patch urethroplasty, in 12 patients each; scrotal flap urethroplasty in 6; bulbo-bulbar anastomotic urethroplasty in 5; and augmented anastomotic urethroplasty using buccal graft in the remainder.
No major complications were reported. The overall radiological success rate was 75.6% with no correlation between a specific surgical technique and a better outcome. The majority of failures were pelvic fracture-related strictures (70%): radiological success rate increased to 92.7% when these were excluded. 8 patients in our cohort had more than one previous failed urethral reconstruction. Five of these (62.5%) had successful outcomes.
Conclusion: Redo-urethroplasty is safe and effective although it is associated with reduced success rate compared with primary urethroplasty. Redo-bulbar urethroplasty was almost always successful. Pelvic fracture-related strictures are associated with a higher risk of failure following redo-urethroplasty which emphasises the importance of a successful primary surgery in these cases.

P80

Six year follow up of the patients undergoing the Nesbit procedure for penile curvature

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Introduction: When treating Peyronie's disease by plaque incision and grafting, the initial results are favourable, but at 5 years up to 67% of patients have deteriorated, usually due to erectile dysfunction (ED). Is this due to the type of operation or the disease itself? To answer this question we have therefore evaluated the six year outcome of the Nesbit procedure for Peyronie's Disease.
Methods: Between 2006 and 2008, 116 patients underwent the Nesbit procedure (90 patients with Peyronie's disease and 26 controls with congenital curvature). Data was collected for risk factors of ED including diabetes, hypertension & hypercholesterolemia and the presence of residual curvature, penile shortening and sexual function (using the IIEF-5 questionnaire and objective use of PDE5 inhibitors). The congenital group was used as controls as they had no pre-operative ED or risk factors. Fisher's exact test and unpaired t-tests were used to compare scores between groups as appropriate.
Results: Median follow-up was 78 months for all patients. Mean age of the Peyronie's group was 57 (range 29–75), and 24 (range 16 –36) in the congenital group. Penile shortening > 1 cm and residual curvature (>30 degrees) was reported in 61% and 6% of Peyronie's patients (no significant difference with control group, $P = 1.0$). Pre-operative ED was present in 16% of Peyronie's patients and new-onset ED requiring PDE5 inhibitors occurred in a further 7% at 3 months and 16 % at 6 years post op. At 6 years, 14% of men with pre-op and new onset ED had progressed from medication to injectables. The most significant risk factor in Peyronie's patients for developing pre & post-op ED was hypertension ($P < 0.05$ compared to non ED patients). At 6 years, the mean IIEF-5 in the Peyronie's patients was 16 and significantly lower than the controls at 25 ($P < 0.05$).
Conclusion: The Nesbit operation may cause penile shortening and result in a residual curvature, but this occurs equally in both Peyronie's Disease and controls. However, erectile dysfunction is common in Peyronie's disease and deteriorates with time. As the control patients did not develop ED, the disease and not the type of operation is the likely cause. This difference is likely due to associated co-morbidities especially hypertension in the older Peyronie's group. This long term data will help with counselling and decision-making in men requiring surgical intervention.

P81

Plaque surgery with insertion of malleable penile prosthesis for severe Peyronies Disease -a real length improvement

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Introduction and Objectives: We report on the synchronous insertion of a malleable penile prosthesis (PP) at the time of plaque incision and grafting in patients with impaired erectile function(ED) and marked penile curvature secondary to Peyronies disease (PD).
Materials and Methods: Over the 24 months period, 10 patients with PD and ED had plaque incision and graft (Pelvicol®) with simultaneous insertion of a malleable PP (Coloplast Genesis®). All patients had preoperative Doppler ultrasound of the penis with caverject and completed a pre and a 3 month post operative IIEF-5 questionnaire.
Results: All patients had ED or PSV < 35 cm/s on Doppler US. 7 patients required plaque incision, and 3 had plaque excision and graft. The median pre-operative dorsal curvature was 60°. All patients had full correction of their curvature.
The median preoperatively length was 11.5 cm and post op length was 13 cm (median real length improvement of 1.5 cm). All patients had a significant increase in their sexual function and ability to penetrate with an improvement in the median pre-operative IIEF-5 score from 2.5 to 21 postoperatively.
All patients were satisfied with the final cosmetic and functional outcome. 3/7 patients had minor complications (haematoma/ swelling) requiring no further intervention.
Conclusion: The simultaneous insertion of a malleable PP at the time of plaque incision and grafting allows full correction of the penile angulation with real length improvement resulting in greater patient satisfaction.

P82

Replacement and revision Artificial Urinary Sphincter (AUS) surgery compared to primary implantation

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Introduction: The aim of this study is to compare outcomes of AUS replacement for malfunction and following explanation for infection/erosion to that of primary implantation.
Patients and Methods: 291 AUS were implanted in a single unit between January 2006 and May 2013. They were analysed in 3 groups: Group 1- 213 primary implantations; Group 2- 50 replacements for suspected device malfunction; Group 3- 28 revisions on average 10 months after previous explantation for infection/erosion. All causes of incontinence, including difficult-to-treat cases, were analysed. Mean follow-up was 18.2 months. Functional outcome and infection/erosion rates were evaluated and compared across groups.
Result: Continence rates of 77.5% and 74% were achieved in primary and replacement implantations respectively compared to 46.4% in those having revisions in Group 3. The explantation rate for infection/erosion was 11.7% for first-time implants, 8% for replacement devices and significantly higher (17.8%) in the revision group. 12 patients (43%) in Group 3 had more than 2 previous sphincters explanted which may contribute to this worse outcome. However, even in the 16 having had only one previous AUS, 7 (43.8%) were either incontinent or needed further surgical revision.
Conclusion: AUS revision in patients having had previous infection/erosion is associated with a significantly worse outcome compared to those having a replacement for malfunction or undergoing primary implantation. For this reason we now perform staged

implantations in patients with compromised urethras following multiple erosions. Early complications with this technique are significantly less.

P83

Urological Trauma in a Level 1 trauma centre: Follow up data

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Introduction: Our Institution has been a Level 1 Trauma Centre since October 2008. We present an update of our experience, including lessons learnt from ultraconservative management of renal trauma.
Methods: In our prospectively collected urological database we have identified 72 cases of renal trauma since October 2008. We have 3 month follow up data that has been analysed.
Results: There were 72 cases of renal trauma between October 2008 to July 2013. The mean age 30.2. 19 patients sustained an isolated renal trauma, 53 were part of polytrauma. Grade 1 7 cases, Grade II8, Grade III 22, Grade IV 31 and Grade V 4. 33 patients (45.8%) had penetrating trauma. Non-surgical management in 69 cases (95.8%), of this 61 (88.4%) were managed conservatively with bed rest and 8 patients required (12.5%) angioembolisation. 3 patients (4.2%) had a primary nephrectomy as unstable. 2 patients has a delayed nephrectomy following failed embolisation(s). 44 patients (61.1%) attended the scheduled follow-up at three months. 18 (25%) were lost to follow up. All patients that attended follow up appointments with a preserved kidney had a DMSA scan. From these patients, all had preserved their renal function at 3 months.
Conclusions: Our series has one of the largest numbers of published penetrating trauma from a European centre. We confirm and reinforce the idea that an ultraconservative approach should be first line management when possible in renal trauma, even in the high grade, as it is a feasible, safe approach.

P84

The long-term (20–30 year) outcome of cystoplasty

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Introduction: Many concerns are still raised as to the long-term outcomes of patients having undergone cystoplasty many years ago, particularly related to preservation of renal function and continence amongst others. This study aims to address these issues.
Patients and Methods: 126 patients underwent cystoplasty by a single surgeon and were followed up in the long-term (20–30 years; mean 24.8 years). 83 (66%) also had an artificial sphincter (AUS). These 126 formed part of an original cohort of 267 patients followed up for a minimum of 10 years. Functional outcome and complications were recorded at both follow-up milestones and compared.
Result: At 10 years, continence rates of up to 75% are maintained, rising to 90% with an AUS. With longer follow-up, continence rates drop, and AUS-related problems become the most significant (63 of 83 patients; 76%) compared to 15 cystoplasty-related complications in 43 patients (35%). Most problems occur between 10 and 15 years. Growth and other metabolic issues, renal impairment and bowel dysfunction are rarely a problem even in the long-term. No malignant transformation has been detected to date in these patients. Stones (22%, mainly in patients self-catheterising) and recurrent UTIs (22%) remain a persistent complication.
Conclusion: The commonest problems in the long-term in these patients are not related to the cystoplasty itself but to their AUS. Many are indeed unsalvageable after multiple AUS revisions and a significant proportion end up either incontinent, catheterise to maintain continence or undergo urinary diversion. Most complications are predictable but unavoidable.

P85

Is there a relationship between standard semen parameters (SSP), age and DNA fragmentation in men undergoing assisted reproductive techniques (ART)?

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Introduction and Objectives: Raised DNA fragmentation may be the cause of idiopathic male factor subfertility or failure to conceive after ART. The relationship between SSP and DNA fragmentation is unclear. The aim of this study was to determine if there is a correlation between DNA damage, age and SSP.
Material and Methods: A prospective analysis of patients with previous failed attempts at ART undergoing DNA Fragmentation Index test (DFI) between 2011 and 2012. Patients were divided into 4 groups according to DFI (A (<15%); B (15–30%); C (30–50%) and D (>50%)) and mean SSPs were compared (ANOVA) and into 3 further groups according to age: group 1 (= 34), group 2 (35–44) and group 3 (= 45).
A receiver operating characteristic curve was used to determine the cut-off point for SSP that predicted a DNA Fragmentation Index (DFI) > 29.
Results: In 117 patients there was a significant negative correlation between mean DFI, count ($P = 0.007$) and motility ($P = 0.001$) with a significant positive correlation between DFI and percentage of abnormal forms ($P = 0.001$), (Table 1). There was a statistically significant association with raised DFI and age >45 years ($P = 0.042$). DFI of > 29 was predicted by sperm count < 24.5 mil/mL, Motility <59% and abnormal forms >24.5% ($P < 0.05$ for area under ROC curves).
Conclusions: A significant proportion (43.5%) of male patients undergoing failed ART will have a raised DFI. DNA damage is significantly correlated to SSP and male age and may be of prognostic value in selecting patients in whom DFI should be measured and investigated prior to ART.

Table 1 (P85).

GROUP	DFI	N	Mean DFI (%)	Count (mill/mL)	Motility (%)	Abnormal forms (%)
A	<15	14	10.4	41.8	67.0	76.5
B	15–30	52	22.5	30.3	61.1	76.7
C	30–50	32	37.7	21.2	51.8	79.7
D	>50	19	62.1	22.3	46.8	83.2
TOTAL		117				

BJUI Thursday 26th June Poster Session 8 11:30–13:00 Room 4 STONES/IMAGING Chairs: Mr James Armitage and Mr Bo Parys Posters P86–96

P86

Does Hospital Volume Affect Outcome after Percutaneous Nephrolithotomy in England? Results from the Hospital Episode Statistics Database

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Introduction: This study investigates the relationship between hospital case volume and safety-related outcomes following Percutaneous Nephrolithotomy (PCNL) within the English National Health Service (NHS), incorporating risk-adjustment for sex, age and comorbidity.
Patients and Methods: The Hospital Episode Statistics database (HES) records operations, comorbidities and outcomes for all English NHS admissions. Data on all patients undergoing their first (index) PCNL between March 2006 and January 2011 were extracted from HES. Multiple logistic regression analyses were carried out using the Stata™ statistical software package.
Results: 5750 index elective PCNL procedures were performed in 156 hospitals. Three groups of patients were defined by volume: 1786 patients underwent PCNL in the 111 hospitals performing fewer than 10 PCNL procedures per year; 2046 patients in the 36 hospitals performing 10–20 per year; and 1918 patients in the 9 hospitals performing 21–113 per year.
After adjusting for age, sex and comorbidity, volume did not significantly affect rates of emergency readmission, infection, haemorrhage or mortality. Lengths of stay were slightly shorter in the medium and high volume groups compared with the low volume group.
Conclusion: From the HES data, safety outcomes following PCNL do not appear to be influenced by hospital volume, although lengths of stay appear reduced in higher volume hospitals.
Enhanced risk-adjustment, incorporating stone complexity in particular, will be of interest because it is expected that higher volume, tertiary referral centres operate on more complex patients.

P87

Evaluation of Hounsfield Units in Cystinuria patients

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Introduction: Cystine stones have been historically perceived as hard and difficult to fragment with ESWL but there is limited in vivo data on their Hounsfield units (HU). Our aim was to:
- Determine the HU of cystine stones in a large series.
- Assess for any difference in HU between different genotypes.
- Assess if HU can determine success with ESWL for cystine stones.

Methods: Patients were identified from a specialist cystinuria clinic database collected since 2008. Mean HU of the largest diameter of the largest stone on most recently available CT was measured. This was correlated with genotype and clinical records were analysed to assess the outcome of those treated with ESWL.
Results: 55 patients within the cystinuria cohort were identified with urinary tract calculi on CT. 33 males; 22 females; age range 15–74 years (median 41). Site of stones: 6 ureteric, 49 renal. Median stone size 11 mm (range 2–45). Median HU 577 (range 173–1338).
No correlation with genotype was seen ($P = 0.8001$); HU for SLC3A1 gene: median = 576 (209–971), SLC7A9 gene median = 500 (173–1338); No correlation with mutation sub-types ($P = 0.7972$).
22/55 have had ESWL; 13 successful (median HU = 586, range 288–794), 9 unsuccessful (HU median = 576, range 209–663), with no significant difference between HU and ESWL outcomes ($P = 0.5932$).
Conclusion:
- There is a wide variation in the HU of cystine stones.
- Identification of cystine stone composition by HU is not feasible.
- Genotype does not determine HU.
- HU cannot be used to predict outcome of ESWL for cystine stones.

P88

What makes percutaneous nephrolithotomy more morbid? A UK Endourology perspective

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Introduction and Objectives: Percutaneous nephrolithotomy (PCNL) will likely become an index procedure for which UK endourologists will have to publish outcomes. Complexity of the caseload must be accurately represented. Current co-morbidity indexes are poor at risk stratifying PCNL.
Materials and Methods: Consultant Urologists performing PCNL in the UK completed a questionnaire using SurveyMonkey®. Responses were recorded using a 10-point Likert scale. The relevance of specific factors to complications and stone free rate (SFR) was asked.
Results: 129 responses were analysed. 71.3% of respondents performed >11 PCNL's/year. Most respondents performed 21–40 PCNL's/year (30.2%). Increasing age (>70 yrs vs. > 80 yrs) was felt to increase risk of complications from moderate to high importance whilst not affecting SFR. Increasing BMI (30–40 vs. > 40) was felt to increase the risk of complications and SFR equally. Specific medical co-morbidities asked were all felt to be of moderate/high importance to complications except pre-op nephrostomy tube placement and pre-op course of antibiotics. Specific medical co-morbidities asked were felt to be of low/no importance to SFR except spinal deformity/spina-bifida, urinary diversion and spinal cord injury. Kidney factors felt to be of high importance to complications were solitary, transplant and pelvic kidney's. Only horseshoe and pelvic kidneys were felt to be of high importance to SFR.
Conclusions: This contemporary study of UK surgeons performing PCNL identifies important patient/kidney factors and medical co-morbidities perceived relevant to surgical outcomes. Incorporating these fields into the BAUS prospective PCNL registry will provide validation of their importance and we hope improve our accuracy in risk stratifying PCNL outcome data.

P89

Experience with Ultra-mini PCNL

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Introduction: Recently, there has been a steady search for ways to reduce the morbidity and invasiveness of percutaneous nephrolithotomy (PCNL), including attempts at reducing the size of the tract. We present our experience of a minimally-invasive percutaneous approach, named 'ultra-mini' PCNL, using an 11F sized sheath.
Patients and Methods: 80 patients between July 2012 and October 2013, with a single kidney stone measuring 0.8–1.5 cm underwent PCNL using an 'ultra-mini' PCNL system. This uses a 1 mm (3F) telescope, 7.5F nephroscope inner sheath and 11 or 13F metallic outer sheath, which serves as the Amplatz sheath. Stones were fragmented with Holmium laser. All procedures were 'tubeless' – leaving only a ureteric catheter along with a Foley's catheter indwelling overnight. Factors evaluated included operating time, stone clearance rates, postoperative analgesia requirement, morbidity, hospital stay, and convalescence time.
Results: 74 out of 80 patients accomplished complete stone fragmentation with the 'ultra-mini' PCNL, whilst 6 required conversion to 'Mini-PCNL' using 12.5 F nephroscope and 15F Amplatz sheath. The mean operating time was 34.7 + 13.3 minutes. All patients achieved complete clearance as confirmed by non-contrast CT scan at 2 weeks postoperatively. There was no significant blood loss in any patients. Majority were discharged at day 1; the average hospital stay being 21.2 + 3.2 hours.
Conclusion: Initial results of 'ultra-mini' PCNL demonstrate its feasibility and effectiveness as a minimally invasive approach to percutaneous renal stone removal in a select cohort. Further studies, including prospective randomized trials, are ongoing to validate these early results.

P90

Efficacy of dietary and thiazide treatment of hypercalciuria in recurrent stone formers

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Introduction: Hypercalciuria is a commonly found metabolic abnormality on 24-hour urine testing in people who form recurrent calcium stones. First line management includes dietary manipulation, and thiazide diuretics may be used in non-responders. We aim to evaluate the efficacy of these treatments in recurrent calcium stone formers with idiopathic hypercalciuria in the context of a multidisciplinary metabolic stone clinic.
Patients and Methods: A retrospective review of patients identified as having idiopathic hypercalciuria was performed. End-points of 24-hour urine calcium (Cau) and new stone growth were recorded before and after metabolic treatment interventions, along with other urinary parameters and demographic and comorbidity data.
Results: Twenty-six patients were identified, aged 29–78 and 85% of which were male.
A reduction in Cau was identified in 14/26 patients after dietary manipulation alone, of which 8 achieved normocalciuria (<7.5 mmol/24 hr). Overall mean Cau dropped from 10.7 mmol/24 hr to 9.0 mmol/24 hrs ($P = 0.01$). Eleven non-responders were prescribed a thiazide diuretic; two were unable to tolerate it and two await further follow-up. Of the remaining seven patients, six had a reduction in Cau with four achieving normocalciuria. Mean Cau reduced from 10.7 mmol/24 hr to 7.2 mmol/24 hr ($P = 0.03$).
Overall 75% of patients had a reduction in Cau and 50% became normocalciuric. New stone growth was seen in 17% (2/12) of patients rendered normocalciuric (mean follow-up 25 months) but in 50% (6/12) of patients where Cau did not reach the normal range.
Conclusion: Combinations of dietary and thiazide diuretic treatment can effectively lower Cau. Achieving normocalciuria is a predictor of stone recurrence.

P91

Mini-Percutaneous Nephrolithotomy in the Treatment of Renal Nephrolithiasis in Adults: A Single Institution Experience

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Introduction: Minimally invasive tract PCNL (Mini-PCNL) was initially used in treating paediatric nephrolithiasis, but has since been used in adults. We present a large single institution series of Mini-PCNL, assessing efficacy, safety and morbidity in comparison to standard PCNL.
Methods: Retrospective analysis of 116 patients undergoing Mini-PCNL from February 2009 to February 2013. Stone size and density were investigated regarding their influence on outcome. A patient was stone free if no residual fragments were identified on post-procedure imaging. Unpaired t-test was used for statistical analysis with *P*-values of <0.05 considered significant. Complications were graded according to the Clavien system. Results were compared with the Clinical Research Office of the Endourological Society Percutaneous Nephrolithotomy Global Study (2011).
Results: 116 patients (60 male, 56 female) were studied. 46.5% patients were stone free, 48.5% had residual fragments and 5% had follow-up elsewhere. 24 patients required further procedures (20.7%). 79.4% patients were completely stone free or had clinically insignificant fragments. Average stone size in patients who were stone free was 21.5 mm, and 25.3 mm in those with residual fragments ($P = 0.105$). Stone density was not a significant factor on the need for a further procedure ($P = 0.397$). Complications included blood transfusion (2.6%), and infections (12.9% urinary, 2.6% wound, 1.7% respiratory infection), all Clavien Grade 2.
Conclusions: Mini-PCNL in adults is a safe and effective alternative to standard PCNL with similar stone re-treatment rates and lower incidence of blood transfusion. There is no adverse effect on stone clearance by stone size or density using Mini-PCNL in this series.

P92

Dual Energy CT scanning in the management of urolithiasis

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Introduction: The successful treatment of urinary tract calculi is largely dependent on stone composition which cannot be determined using conventional imaging. Dual-energy computed tomography (DECT) has been shown in several in-vitro studies to enhance determination of stone composition with limited data evaluating urinary tract stones in patients. We present our data on the management of patients with urolithiasis who underwent DECT.
Method: Patients who presented with renal colic and had DECT between July 2011 and July 2013 were retrospectively analysed. Patients were scanned using fast-switched kV DECT using volumes at two energy levels (135 kV and 80 kV or 135 kV and 100 kV).
Uric acid stones were all colour coded red by the software and all calcified stones appeared blue, allowing clear differentiation. There was minimal overlap between differentiations of stone composition.
Results: Included were 61 patients with 74 calculi. Of these 39 were renal calculi, 5 PUJ stones and 30 ureteric calculi. Number of uric acid stones on DECT colour coding was 9 and calcified stones was 21. Patients with uric acid stones were treated with immediate medical dissolution therapy. Stone compositions of retrieved stones were comparable and there were only 2 patients whose DECT scan and stone analysis did not correlate. Patients with uric acid stones on DECT treated with medical dissolution therapy showed resolution of their stone burden.
Conclusions: Dual-energy CT scan is a promising modality in the differentiation of stone composition and provides expeditious treatment in urolithiaisis.

P93

Tamsulosin is effective at facilitating expulsion of both renal and ureteric stone following extracorporeal shock wave lithotripsy: a meta-analysis

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Objectives: Over recent years use of α(1)-blockers as part of medical expulsive therapy has gained popularity. We conducted a meta-analysis to establish the effectiveness of Tamsulosin in helping stone clearance following treatment of renal and ureteric stones with extracorporeal shockwave lithotripsy (ESWL).
Materials and Methods: Electronic search of Pubmed/Medline, EMBASE, CINAHL databases were conducted with standard MeSH headings. All randomized controlled trials assessing efficacy of α-blocker (Tamsulosin) in stone clearance following ESWL to renal or ureteric stones were eligible for the analysis. Quality of the studies was independently assessed by 2 authors. StatsDirect software was used for statistical analysis.
Results: 15 studies involving 1303 subjects met the inclusion criteria. Study duration ranged from 14 days to 96 days.
In patients with ureteric stones pooled analysis showed a relative risk of 1.22 [95% confidence interval (CI) 1.12 to 1.33, $P < 0.0001$] in Tamsulosin group for stone clearance compared to control group following ESWL. Pooled risk difference analysis revealed 14% (95% CI 8–20%, $P < 0.0001$) increased clearance in favour of Tamsulosin group.
In patients with renal stones pooled analysis showed a relative risk of 1.39 [95% confidence interval (CI) 1.23–1.56, $P < 0.0001$] in Tamsulosin group for stone clearance compared to control group following ESWL. Pooled risk difference analysis revealed 23% (95% CI 16–31%, $P < 0.0001$) increased clearance in favour of Tamsulosin group.
Conclusions: This meta-analysis provides evidence that Tamsulosin is effective at facilitating expulsion of both renal and ureteral stones following ESWL. Further large scale multi-centred studies are required to confirm efficacy of Tamsulosin following ESWL.

P94

A Pilot Study of a Patient Reported Outcome Measure (PROM) for Percutaneous Nephro-lithotomy (PCNL)

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Introduction: As part of the patient-centred drive for quality in the NHS, PROMs have been developed to interrogate patients about their health and quality of life, and the effectiveness of the operation. This pilot study was designed for PCNL to assess the feasibility of such a tool with a view to wider implementation.
Methods: We adapted a validated PROM, with particular focus on 'Pain/Discomfort', 'Anxiety/Depression' and 'Health Today'. The pre-operative PROM was distributed in outpatients, and the post-operative PROM was distributed approximately six weeks after the surgery.
Results: Patients found the PROMs simple and quick to fill in, with no feedback of difficulty with the format.
30 pre-operative PROMs were distributed over six months to all patients with planned PCNL, and 26 were returned completed. The average pre-operative 'Health State' was 70 (out of 100). 10 of the 30 patients reported 'extreme pain or discomfort'
25 PCNLs were actually carried out of which 15 completed post-operative PROMs have been returned to date. The average post-operative 'Health State' was 75 (out of 100). No patients reported 'extreme pain or discomfort'. 13 of the 15 patients reported 'excellent' or 'very good' results of their operation, and 13 of the 15 said that their kidney problems were 'much better'.
Conclusions: This pilot study has confirmed the feasibility of distributing this PROM for PCNL, with nearly 90% of the expected pre-operative PROMs, and 75% of the expected post-operative PROMs returned. The authors would like to see wider roll out of this valuable outcome measure.

P95

Developing a disease specific Ureteric Stone Patient reported outcome measure: Stage 1&2

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Introduction: Outcomes from surgery have traditionally been based on surgeon-reported outcomes. A paradigm shift in assessing healthcare productivity from output to qualitative outcome, has led to increased interest in patient-reported outcome measures (PROMS).
The aim of this project is to develop a disease-specific ureteric calculus PROM instrument. Here we present the first and second stage of this study.
Method: Stage 1: Patient input and generation of PROM content: Patients with ureteric calculi were invited to participate in focus groups or semi-structured interviews. All comments were transcribed; collated and recurring themes were identified.
Stage 2: Drafting and item selection for the PROM.
Results: 19 patients from one unit participated in 3 focus groups and 11 structured interviews. Further focus groups and structured interviews are being conducted as collaborations with two other units.
Major issues reported by patients included pain, nausea, loss of appetite, sleep disturbance and tiredness.
Conclusions: While pain is the dominant symptom, it is clear that many other health-related issues can have significant impact on patient's lives. We will refine, reduce and validate our PROM (Stage 3), before advancing to reproducibility, responsiveness and test-retest validation with the EQ5DL (Stage 4). We will then use our PROM to prospectively evaluate ureteric calculi therapy both locally and nationally as part of the TISU (Therapeutic Interventions for Stones of the Ureter) study.

P96

Modified technique of Tubeless PCNL using antegrade tether: a randomized study

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Introduction: Tubeless percutaneous nephrolithotomy (PCNL) continues to suffer from two major limitations: the need for post-operative cystoscopy for ureteral stent removal; and the inability to perform a 'second-look' procedure for any residual fragments. This study assesses a modification of tubeless PCNL that allows us to triumph over these setbacks.
Patients and Methods: 166 patients undergoing PCNL were randomized into two equal groups, Group A: standard PCNL with the insertion of a nephrostomy tube (control). Group B: modified tubeless PCNL in which a double-J (DJ) stent was inserted with a tether attached to its proximal end, and tunnelled through the tract. Group A patients' nephrostomy tube was removed post-operatively on the second or third day, whereas group B had their stent removed by pulling the attached tether 10–14 days post-operatively.
Results: Mean dose of post-operative tramadol required for analgesia was significantly higher in Group A (128 mg) than group B (81.3 mg) ($P < 0.001$). Four group A patients had a post-operative urinary leak, whereas none in group B. Group B patients spent a significantly shorter time in hospital (21.6 hours), compared to group A (54 hours) ($P < 0.001$). Two group B patients required a 'second-look'; performed by the insertion of a guide wire down the stent pulled out partially by its tether. The tether caused no discomfort to the patients, and all stents were removed successfully.
Conclusion: A tethered DJ stent allows overcoming the main drawback associated with Tubeless PCNL, in addition to providing improved patient outcomes.

BJUI

Thursday 26th June
Poster Session 9
11:30–13:00 Room 12
GENERAL UROLOGY
Chairs: Mr Thiru Gunendran & Mr Bill Dunsmuir
Posters P97–108

P97

Multicentre UK experience of sex cord stromal tumours

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Background: Sex cord stromal tumours account for approximately 5% of testicular tumours. The majority behave benignly and require no adjuvant treatment once excised. However 10–15% behave more aggressively and tend to respond poorly to standard treatments for other testicular tumours. Due to their rarity, few series are published regarding their features, behaviour and management including follow up strategies. This is one of the largest series of sex cord stromal tumours to be reported.
Methods: We conducted a retrospective review of patients presenting with sex cord stromal tumours between 2006–2013. Cases were identified through the North West supraregional testicular cancer network records. Patients were referred to multiple sites throughout the North West and their pathology, clinical features and outcomes were assessed.
Results: We identified 28 patients; 5 of whom were diagnosed with Sertoli tumours and 23 with Leydig tumours. Median age at diagnosis was 41 years and 4 patients had a previous history of orchidopexy. The median size of tumours was 6 mm and all were staged as T1N0M0 at presentation. Only occasional mitoses were seen, none had vascular invasion or necrosis and in the 8 patients with recorded MIB1 expression this was <3%. All had a negative tumour markers and a normal lactate dehydrogenase. There have been no recurrences of disease.
Conclusions: Our data supports our current policy to review patients every 4 months with a CT restaging scan at 1 year and to discharge if there are no concerning features.

P98

Testis – Sparing Surgery for Small Testicular Lesions – Can Multi-Parametric Ultrasound (MP-US) aid Patient Selection?

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Introduction: We aim to describe our experience of testis-sparing surgery (TSS) for testicular lesions, with emphasis on evaluating the usefulness of pre-operative multi-parametric ultrasound (MP-US), including colour Doppler US, contrast-enhanced ultrasound and tissue elastography, in patient selection.
Methods: Consecutive patients undergoing surgery for testicular lesions over 30 months were studied. All lesions were assessed with MP-US for suitability for TSS pre-operatively. Patient demographics, tumour characteristics and histological outcomes were recorded. Oncological outcome in the TSS group was assessed with follow-up ultrasound.
Results: 36 patients who had either orchidectomy or TSS were studied. 13 patients (median 39 years, range 24–48) underwent TSS for 13 testicular lesions (median size 6 mm, range 3.3–15 mm). 23 patients (median age 40 years, range 19–84) underwent orchidectomy for 23 lesions (median size 20.5 mm, range 7–50). 15 malignancies and 21 benign lesions were confirmed on final histology. All malignancies were correctly identified pre-operatively on MP-US. Histopathological findings for all 13 lesions selected for TSS confirm no malignant features, with final diagnosis including Leydig cell tumours (6), Epidermoid cysts (2), Sertoli cell tumour (1), sarcoidosis (2), focal testicular atrophy (1) and Leydig cell hyperplasia (1). On follow-up, no disease recurrence was detected on US in all patients in TSS group at 12 months.
Conclusion: Our experience suggests testis-sparing surgery could be considered as an appropriate management option in selected cases, and advanced multi-parametric US techniques could be valuable tools to improve pre-operative diagnostic confidence, thus avoiding unnecessary orchidectomies.

P99

Is Histological Analysis Necessary Following Laser Transurethral Vaporesection of the Prostate?

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Introduction: Electrosurgical transurethral resection of the prostate (TURP) is the gold standard for the treatment of benign prostatic hyperplasia. However, due to the associated risks of bleeding and TUR syndrome, laser TURP is gaining popularity. This includes laser vaporisation of the prostate where histology is not available. Our Department performs thulium-laser vaporesection of the prostate (TmLRP), where histological samples are available. It is thought that prostate cancer (CaP) diagnosed on TURP is not important. We determined whether this is the case, by retrospectively examining the histology of our laser TURP cases.
Patients and Methods: Between October 2006 and August 2012, 223 patients underwent TmLRP by a single surgeon in our institution. With a background of a benign DRE, and CaP not thought to be a factor, histological results were studied.
Results: The mean age of our 223 patients was 70 years (range 51–90) and their mean PSA was 4.6 ng/mL (range 0.1–20). 4.9% (11/223) had new CaP diagnosed, with a mean age of 73 years (range 62–86) and mean PSA of 6.8 ng/mL (range 0.7–14). Overall, significant CaP disease of pT1b was found in 4.4% (10/223), and GS 7 or more in 3.6% (8/223).
Conclusions: In our retrospective study we have determined that 4.9% of patients had unexpected CaP, with significant disease in 4.4% (pT1b) and 3.6% (Gleason score 7 or more). If pure laser vaporisation is offered, patients should be advised of the small risk of missing significant unsuspected CaP.

P100

Is estimated GFR sufficient for the measurement of renal function after cystectomy and ileal loop diversion?

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Introduction: Estimation of glomerular filtration rate (eGFR) is performed during follow up after cystectomy; however, isotopic measurement of GFR (iGFR) is not routinely performed in all centres. We report the long-term outcomes of post cystectomy renal function and evaluate the accuracy of eGFR.
Patients and Methods: Demographic data, iGFR and eGFR (calculated using the MDRD formula) were retrieved retrospectively on patients who had undergone cystectomy as part of radical clearance for malignancy, or for functional disease, at two large centres.
Results: 610 paired iGFR and eGFR measurements were identified from 166 patients (18% female, median age 69.7 years, range 34–85). Although there was a significant correlation between iGFR and eGFR ($r = 0.792$, $P < 0.0001$) there was a significant difference in individual paired measurements ($P < 0.0001$, paired T-test). eGFR overestimated iGFR in 41.4% of measurements. Underestimations were more common in younger patients with the iGFR:eGFR ratio correlating inversely with increasing age ($r = –0.42$, $P < 0.0001$). Of 85 patients with?5 years follow up and multiple iGFR measurements, 93% experienced a decline in renal function, with 71% losing renal function at a greater rate than expected for renal loss with age (>0.58 mls/min/1.73 m2/yr). Of the 71% with excess loss, there was no decline in eGFR in 32% and where excess loss of iGFR was >10% of baseline function this figure was 28.6%.
Conclusions: iGFR measurement is beneficial in the follow up of cystectomy patients. There are significant differences between eGFR and iGFR values and eGFR fails to detect loss of function in a large number of patients.

P101

The Impact of Music on Pain and Anxiety Experienced in Patients Undergoing Flexible Cystoscopy: A Prospective Randomized Controlled Trial

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Introduction and Objective: To ascertain the effect of music on patients' experienced anxiety and pain whilst undergoing routine office-based flexible cystoscopies.
Methods: Patients scheduled for flexible cystoscopy over a one-month period were randomized into two groups. Those in group 1 listened to music during cystoscopy and those in group 2 did not listen to music. The degree of experienced pain and anxiety was determined through patients completing 100 mm visual analogue scales before and after cystoscopy. Both female and male patients were included. Whether the patients had previous cystoscopies was also recorded to evaluate the possible ameliorating effect of prior experience.
Results: One hundred patients were enrolled, fifty in group 1 and fifty in group 2. Demographic characteristics were comparable between the two groups. Before flexible cystoscopy patients in group 1 (music) had a significantly lower mean pain (1.6) and anxiety (17.5) versus mean pain (8.3) and anxiety (37.2) in group 2 ($P < 0.001$). After flexible cystoscopy patients in group 1 had a significantly lower mean pain (3.5) and anxiety (4.2) versus mean pain (14.1) and anxiety (24.9) in group 2 ($P < 0.001$).
Conclusions: Listening to music during flexible cystoscopy appears to help reduce patients' experienced pain and anxiety. Finally employing music is a simple, low-cost and safe adjunct to improving patient experience during flexible cystoscopy.

P102

Post-operative UTI: How are they different from pre-operative UTI?

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Introduction: Antimicrobial resistance is a growing concern in surgery. Local

Table 1 (P102).

Antibiotic	Pre-operative Sensitivity (%)	Post-operative Sensitivity (%)				Change in sensitivity post-operatively (%)			
		Open	Laparoscopic	Endoscopic	Imaging	Open	Laparoscopic	Endoscopic	Imaging
Amoxicillin	86.0	76.5	64.7	74.3	100	−9.5	−21.3*	−11.7	14.0
Gentamicin	80.8	17.6	29.4	17.1	0	−63.2*	−51.4*	−63.7*	−80.8
Trimethoprim	86.7	94.1	64.7	88.6	100	7.4	−22.0*	1.9	13.3
Meropenem	78.2	70.6	52.9	60	100	−7.6	−25.3*	−18.2*	21.8
Tazocin	54.9	47.1	23.5	40	57.1	−7.8	−31.4*	−14.9	2.2

* indicates statistical significance.

guidelines recommend use of Gentamicin and Amoxicillin for surgical prophylaxis and Meropenem or Tazocin for treatment of post-operative UTI pending culture. We aim to evaluate the characteristics of post-operative infections in Urological practice.

Patients and Methods: 5000 patients who underwent urological surgery at a tertiary hospital were studied for pre and post-operative infections. Patients with positive cultures were analysed further for organisms, antibiotic sensitivities and the type surgery.

Results: Of the 5000 patients, 308 patients had pre-operative (6.16%) and 76 had post-operative UTI (1.52%). Frequency of post-operative UTI was highest after endoscopic procedures (45%) followed by laparoscopic (24%) and open procedures (22%).

Organisms responsible were E.coli (49%), Enterococcus (13%) and Klebsiella (11%) in the pre-operative group and E. coli (37%), Enterococcus (18%) and Staphylococcus (10%) in the post-operative group.

Conclusion: Our current prophylactic regime keeps the risk of postoperative infection very low. While treating post-operative UTIs, difference in causative organisms and their sensitivity pattern should be borne in mind. It is advisable to have different antibiotic regimes for empirical treatment of infections after endoscopic and laparoscopic surgery.

P103
The use of intravesical gentamicin to treat recurrent urinary tract infections

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Introduction: Recurrent urinary tract infections (UTIs) are common. In a number of individuals UTIs become refractory to lifestyle measures and repeated courses of oral antibiotics. Intravenous antibiotics are often required. The aim of this study was to assess the use and tolerability of intravesical gentamicin for treating patients with refractory UTIs.

Method: A two-centre retrospective cohort study of patients treated with intravesical gentamicin was performed. A treatment protocol was developed, reviewed and accepted by the clinical effectiveness committee of both hospitals. Patients were taught to instill the gentamicin into the bladder on a nightly basis by a urology specialist nurse. Inclusion criteria included having 6 or more cultured confirmed UTIs over a 12 month period or at least 1 hospital admission with sepsis. Serum gentamicin levels were taken after 7 days.

Results: Fourteen patients have been treated with intravesical gentamicin for an average of 16 months. All patients started on daily 80 mg gentamicin. The serum gentamicin level was <0.3 ng/mL on day 7 for all patients. 12 patients continued with the instillations: 7 patients have had no further proven UTIs. One patient had a single enterococcus infection, which was resistant to gentamicin. Three patients have had more than 1 coliform or enterococcus infection amenable to oral antibiotic treatment. One patient continued with multiple infections despite intravesical gentamicin and oral prophylaxis.

Conclusion: This study shows that in the small number of patients who have multiple UTIs refractory to conventional treatment, intravesical gentamicin is effective in reducing the frequency of infections.

P104
Lower urinary tract assessment and treatment in patients undergoing subcutaneous implantation of a battery powered catheter drainage system for managing refractory ascites

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Introduction: The Automated Low-Flow Ascites pump (ALFA) is a novel, surgically implanted device which transfers ascitic fluid directly from the peritoneal cavity to the urinary bladder, enabling urethral voiding of ascites. The pump, currently undergoing clinical trials, aims to improve quality of life and prognosis in patients who otherwise require regular paracentesis, although the effect on the lower urinary tract is unknown.

To date, no urological protocol exists to investigate or manage this complex patient group pre and post pump insertion.

We describe the urological investigation and ongoing management of the largest cohort of randomised trial patients in Europe.

Method: At urological consultation, trial participants undergo lower urinary tract

assessment, including uroflowmetry; we have a low threshold for performing urodynamics and flexible cystoscopy if indicated. Following pump insertion, renal function is monitored and urine is regularly checked for microbiological and cytological abnormalities according to protocol.
Results: 16 patients have been randomised at our centre. 4 underwent treatment for lower urinary tract obstruction (prostatic and urethral). One patient, not investigated pre-pump, required treatment of a urethral stricture which became symptomatic only after pump activation. One patient had haematuria post-pump insertion and one had a confirmed urinary tract infection.
Discussion: The ALFA-pump places a high demand on the lower urinary tract and establishing normal function preoperatively is vital. Long-term complications, including UTI, bladder malignancy, catheter malfunction, renal impairment and haematuria are unknown and are being monitored. Urologists should be aware of this device and the requirement for thorough pre and post-operative management.

P105
Outcomes following paediatric one stage inguinal orchidopexy for palpable cryptorchidism within two none-paediatric specialist centres

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Introduction: To investigate the outcomes and complications following one stage orchidopexy procedures undertaken at two secondary referral centres for cases of palpable undescended testes.
Methods and Materials: This retrospective review included all patients having undergone one stage inguinal orchidopexy for palpable cryptorchidism between 2009 and 2012. Patients were included up to the age of 16 years having attended at least one post operative follow-up. The outcomes and complications were compared to those within literature and current guidelines.
Results: 99 patients were identified. The median age at surgery was 46 months. The mean time between referral and operation was 9 months. 16 patients completed their surgical management prior to the age of 18 months. No statistical difference in outcome was noted between the surgeon backgrounds. The overall success rate was 92.9%. Complications included: Bleeding (1%), Infection (1%), Retraction (6.1%) and atrophy (1%).
Conclusion: The outcomes compare favourably to current literature, BAUS, EAU, BAPU guidelines and Nordic consensus. Single stage inguinal orchidopexy for palpable cryptorchidism is safely performed outside paediatric specialist centres by paediatric and urological surgeons with a paediatric interest. However, the median age at surgery remains unacceptably higher than current recommendations (<12 months). This appears secondary to referral delays and time to surgery. Investigation into these delays is essential if future paediatric DGH services are to provide guideline orientated age specific intervention. A comparison study between adult and paediatric urologist outcomes in patients <1 year old will further evaluate the suitability of each surgical provider within the DGH.

P106
The role of an adult urologist with a paediatric urology interest in a District General Hospital

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Introduction: The role of adult urologists in the care of children is often analysed. The Royal College of Surgeons of England in 2010 identified a significant workload of general paediatric surgery, particularly in urology, and published guidelines to safeguard its provision in District General Hospitals (DGH).
The aim of this study was to determine the caseload of two adult urologists with a paediatric urology interest in a DGH.
Patients and Methods: Six months of data from April to September 2013 was collated of patients attending paediatric urology clinics. Information relating to demographics, clinical diagnoses and outcomes was obtained from electronic medical records.
Results: There were 97 clinic appointments comprising 64 new and 33 follow-ups. Median age was 8 years (range 23 days to 15 years). Of the 64 new referrals, the clinical diagnoses were 11 with enuresis and other voiding issues, 11 physiological phimosis, 7 pathological phimosis, 4 undescended testes, 3 acute infections, 3 inguinoscrotal hernias, 2 hypospadias, 2 meatal stenosis, 12 other physiological findings and 5 other diagnoses. 4 did not attend their first outpatient appointment.
23/64 new patients were reassured and discharged on first clinic appointment. 18/33 were discharged from follow-up appointments. Of 81 individual patients, 18 were listed for surgery, 9 underwent further investigations and 13 were managed medically. Only 3 were referred to a tertiary service.
Conclusion: There is a role for adult urologists in delivering basic paediatric urology services. It is feasible to deliver this closer to home at a district general hospital.

P107
Understanding and solving the challenges of Retroperitoneal Fibrosis (RPF) – lessons learnt from a multidisciplinary service

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Introduction: RPF is an enigma. It does not fall clearly into the domain of a single specialty and is, as such, an 'orphan' disease. We surmised that establishing a multi-disciplinary RPF service might help formulate a strategy for addressing the challenges of RPF and reduce the uncertainty that surrounds this disease. We report our 2-year experience of running an RPF service and the lessons learnt.
Methods: We analysed demographics, disease features and clinical outcomes for 40 patients managed in our RPF service since January 2012.
We identified 5 key elements:
1) Tissue diagnosis & classification
2) Renal function
3) Stents
4) Steroids
5) Pain
Results: 40 patients. M = 23 F = 17. Median age:55 (range 36–79)
1) 25/40(62%) have tissue diagnosis. No cancer. Classification: atheromatous peri-aortitis $n = 10$; RPF with AAA $n = 3$;

IgG4-related disease $n = 11$; methysergide $n = 1$; idiopathic $n = 15$
2) 27/40(68%) had renal failure at presentation and 26/27(96%) were stented. 5 managed with stent changes. 19 underwent ureterolysis. Of these, 9/19(47%) had >20% improvement in GFR post-ureterolysis
3) 18/19(95%) ureterolysis patients stent free with one awaiting removal
4) 11/40(28%) opted for pre-emptive ureterolysis because of adverse steroid/stent effects. The problematic side effects of steroids led us to a policy of reserving their use for patients with raised ESR/CRP or positive CT PET
5) Pain significant in 4/40(10%). 1 resolved with ureterolysis; 1 with para-spinal block
Conclusion: The establishment of a multidisciplinary service has clarified the priorities for optimising care for patients with RPF:
Right diagnosis
Preserve renal function
Free of stents, steroids and pain

P108
Impact of the 'Blood in Pee' Pilot Campaign

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Introduction: The 'Be Clear on Cancer' brand was developed to promote population awareness of cancer symptoms and early diagnosis. The 'Blood in Pee' campaign was selected as national priority in 2013, with an initial pilot undertaken in Tyne, Tees and Borders regions (January–March 2013). We describe the pilot's impact in a large teaching hospital.
Patients and Method: Electronic records of haematuria clinics held during the campaign period (February–April 2013: 521 patients) and from a control period (February–April 2012: 392 patients) were reviewed. Statistical analysis was performed using Chi-Squared and Fisher's Exact tests ($P < 0.05$).
Results: Haematuria clinic referrals increased by 31% during the campaign compared to 2012. 361 (70.5%) patients had no abnormality found. In 2013 54% patients had visible haematuria compared to 38% in 2012. Urological cancer was diagnosed in 30 (7.7%) of the 2012 cohort, compared to 46 (9.0%) of patients in 2013, (a 53% numerical increase), which was not statistically significant. A trend towards diagnosis of higher stage urological malignancy was observed during the pilot; however again this was not statistically significant.
Conclusion: Our work is the first to demonstrate the impact of the campaign on urology services. It resulted in an increased number of referrals to our haematuria clinic and a higher proportion of cancer diagnoses. The resultant workload required careful planning of services to accommodate demand on clinics, diagnostics and subsequent treatment. Our data can be used by NHS managers from other departments to allow for an adequately resourced service.