

**THE BRITISH ASSOCIATION OF
UROLOGICAL SURGEONS**

SECTION of ONCOLOGY

**BAUS Cancer Registry
Analyses of Complex Operations
January 1st – 31st December 2005**

May 2006

MEMBERS OF THE EXECUTIVE COMMITTEE

C G Eden	D A Gillatt	D R Greene	R C Kocklebergh
G S McIntosh	J K Mellon	R A Persad	S Prescott
K S Swami			

PRODUCED FOR BAUS SECTION OF ONCOLOGY

by

**Mrs Sarah Fowler
BAUS Cancer Registry Manager**

CONTENTS

	Page Number
Introduction	1
Results Summary & Methods of analysis	2
A. Cystectomies Charts 1 – 24	3
B. Radical Prostatectomies Charts 25 – 50	15
C. Nephrectomies Charts 51 – 71	28

Introduction

Again it is a pleasure to be asked to write this introduction to the analysis of our second year of collecting data on these complex operations.

Unfortunately there have been fewer operations reported for each procedure. From HES (Hospital Episode Statistics) data the number of cystectomy procedures is fairly static, but this analysis reports a fall compared with 2004 figures. HES data indicates a rapidly rising number of radical prostatectomies, whereas we have recorded fewer (1185 versus 1443). The number of reported nephrectomy operations is also reduced.

The falling numbers of reported procedures may be false and may reflect fewer submissions due to indifference or apathy about data collection generally. There may be, as we all seem to get busier each year, significant difficulty in data collection or retrieval. I trust, and hope, that indifference is not the case and I believe that the majority of surgeons still want to know how effective their treatments are. In the data collection for 2004 there were some major cancer surgeons and centres who did not submit any data, this being detrimental to our figures. Some of these have submitted data this year but not all.

Despite the centralisation of major pelvic cancer operations according to Improving Outcome Guidance (IOG) there has been no significant change in the number of reporting surgeons or centres. There are still many surgeons, and centres, reporting small numbers of procedures. In the case of cystectomy, if all those surgeons reporting five or less procedures per year passed this work onto another colleague with a greater number, this would mean that there were only 33 surgeons and 25 centres reporting these procedures for the whole of the UK. More surgeons and centres would be left operating on the radical prostatectomy workload if a similar cut-off were imposed.

Follow up data submission has been poor and extremely so for cystectomy and nephrectomy procedures with data being received on only a quarter of the patients. The value of the audit to determine outcome as well as having the denominator number of procedures is therefore significantly limited. We must explore methods of enhancing follow up data submission.

There has been a reduction in complications and mortality for all three procedures in comparison to the 2004. Conversely the number of laparoscopic procedures has risen for each operation type and the conversion rate fallen. The use of neo adjuvant chemotherapy prior to cystectomy has increased considerably in one year from 8.2 to 11.1%. Interestingly the number of orthotopic bladder reconstructions has fallen with no continent cutaneous or rectal diversion procedures being reported. If this is a genuine reduction what are the possible causes? Could it be a reflection of patient concern from pre-operative counselling about these procedures?

Significant developments are taking place with the BAUS Cancer Registry, HES data and the South West Public Health Observatory collaborating and funding has almost been secured to aid further audit and analysis developments. We must regain our initial enthusiasm for data capture and submission and would commend continued submission of data to Sarah Fowler, our Registry manager, who once again has carried out all the hard work presented in this report.

Gregor McIntosh
Salisbury
May 2006

AUDIT RESULTS SUMMARY

BAUS Complex Operations Datasets – January 1st – December 31st 2005

- **364 cystectomies reported by 78 consultants from 46 centres**
- **258 males (72%) ; 102 females**

- **83.5% (304/364) of the cystectomy data was returned electronically**

- **1185 prostatectomies reported by 90 consultants from 53 centres**
- **86% (1019/1185) of the prostatectomy data was returned electronically**

- **939 nephrectomies reported by 121 consultants from 57 centres**
- **64% males (568/892 recorded)**

- **75% (703/939) of the nephrectomy data was returned electronically**

Private patients accounted for 2.7% (10/364) of the cystectomies; 8.2% (97/1185) of the radical prostatectomies and 8.3% (78/939) of the nephrectomies.

How were the data analysed?

Information obtained from consultants was entered into the computer database using unique identifying numbers for individual consultants or, if they preferred, a centre number. Three centres returned data under a centre number only (12 consultants in total).

Data could be returned either by completion of pro formas for each patient (462 – 19% of returns) or in electronic format using either an Access (Microsoft) database or “in-house” database (2027 – 81% of returns) designed for the purpose. The pro formas were entered directly into an Access database, at which time validation comprising mainly of checks for duplicate entries and on dates could be carried out. There are separate pro formas for the operation and follow-up information.

The data presented here are a summary of the data received up to 20th March 2006 and relate to operations performed during the whole of 2005. Follow-up information was returned on 27% (98/364) of the cystectomies; 42% (493/1185) of the radical prostatectomies and 27% (176/939) of the nephrectomies.

For the ranked charts (1, 2, 21, 22, 25, 26, 47, 49, 51, 52, 68 & 69) the individual consultant or centre identification numbers were removed and replaced with rank numbers starting at 1. A unique, confidential "Ranking Sheet" was prepared for each surgeon to enable them to identify their rank in every chart. For those charts where overall figures for the entire database are shown the ranking sheet displays the consultant's individual figures. No one else can identify the results of an individual consultant. The ranked comprise single bars, with in addition the 25, 50, and 75 percentiles and are ranked from left to right in the ascending order of the data item being measured. Where percentages are included figures have been rounded up to one decimal point.

A personal ranking sheet for each consultant for each of the three procedures was issued individually to go with this chart book.

Sarah Fowler
BAUS Cancer Registry (BCR) Manager
May 2006

A. Cystectomies for malignant disease
Chart 1

Total Number of Cystectomies Reported per Consultant
Median: 3 (Interquartile Range 1 - 7)

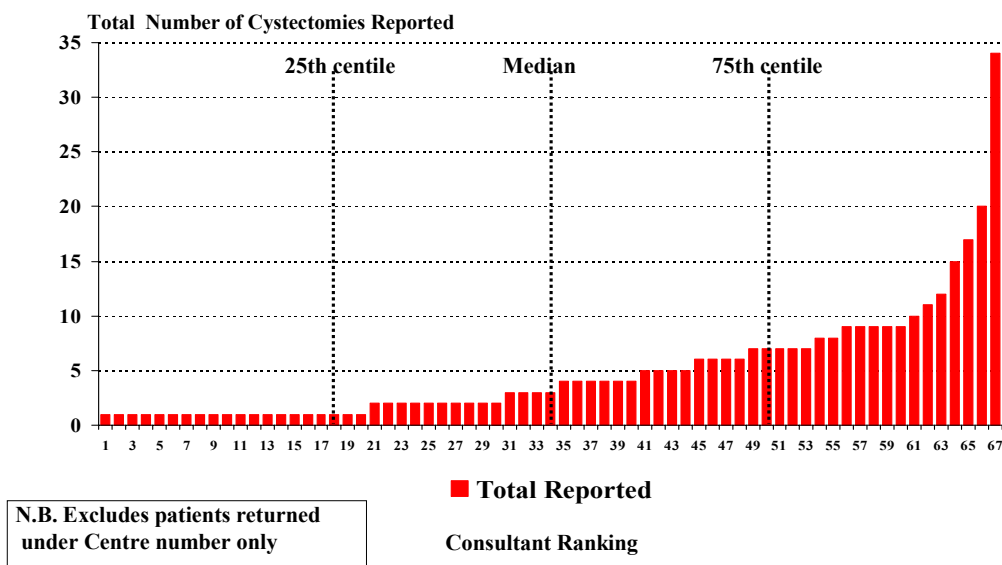


Chart 2

Total Number of Cystectomies Reported per Centre
Median: 4 (Interquartile Range 2 - 9)

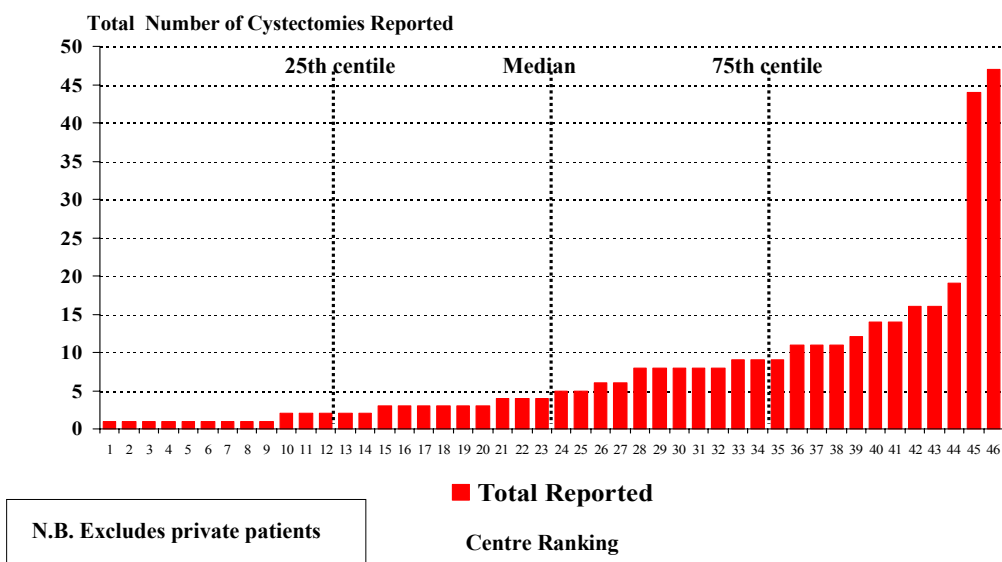


Chart 3

Indication for Cystectomy

Indication	Number & percentage of total (364)	
	N	%
Muscle invasive TCC	184	62.2
Salvage after Radiotherapy	13	4.4
Uncontrolled superficial disease	38	12.8
Squamous cell ca	11	3.7
Primary CIS	21	7.1
Sarcoma	2	0.7
Gynaecological ca	4	1.4
Primary Adenocarcinoma	2	0.7
Secondary Adenocarcinoma	4	1.4
Other	17	5.7
Not recorded	68	23.0

Chart 4

Cystectomy Pre-operative Clinical Staging Staging could be estimated in 80% (291/364) cases

Known Staging	Total Known	
	N	%
Stage 0a (T _a N ₀ M ₀)	6	2.1
Stage 0is (T _{is} N ₀ M ₀)	17	5.8
Stage I (T ₁ N ₀ M ₀)	55	18.9
Stage II (T _{2a} , 2b N ₀ M ₀)	153	52.6
Stage III (T _{3a} , 3b, 4a N ₀ M ₀)	47	16.2
Stage IV (T _{4b} N ₀ M ₀ Any T N ₁ , N ₂ , N ₃ M ₀ Any T any N M ₁)	13 including 6 with metastases	4.5 2.1

Chart 5

Cystectomy - Comparison of Pre-operative clinical & pathological Categories

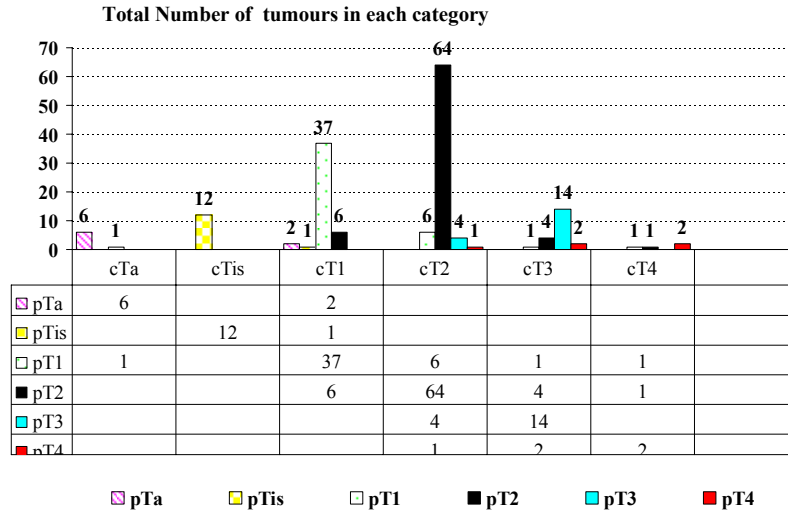


Chart 6

Cystectomy - Comparison of Pre-operative clinical & Post-operative pathological staging

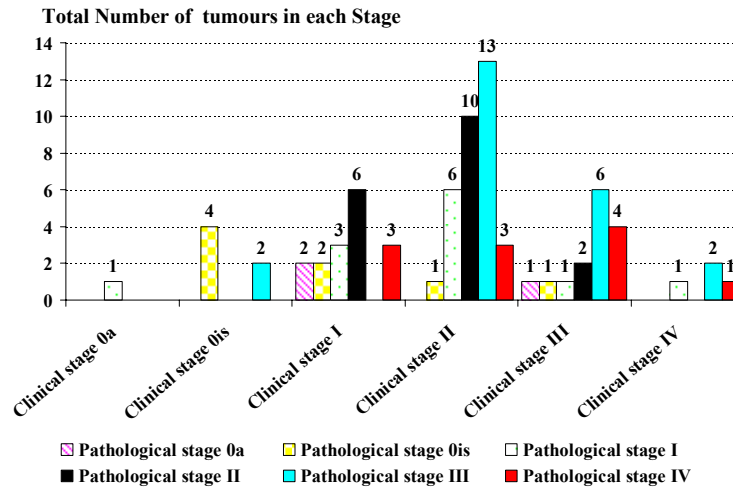


Chart 7

Cystectomy - Pre-operative Imaging Total Numbers Reported with those as only Imaging method in () Information recorded in 81% cases (296/364)

Imaging Method	N
CT Scan	240 (141)
MRI	51 (23)
Bone Scan	43 (2)
IVU	82 (0)
Others	14 (0)
None	14 (14)

Chart 8

Cystectomy - Pre-operative Serum Creatinine

Serum Creatinine Level $\mu\text{mols/l}$	N	% of total (364)
0 – 120 $\mu\text{mols/l}$	243	66.7
121 - 200 $\mu\text{mols/l}$	62	17.0
> 200 $\mu\text{mols/l}$	10	2.7
Not recorded	49	13.5

Chart 9

Cystectomy - Other Pre-operative findings

	N	% of total reporting
Pre operative Radiotherapy	24/284	8.5
Pre operative Neoadjuvant Chemotherapy	32/288	11.1
Synchronous Upper tract disease	13/285	4.5

Chart 10

Cystectomy - Status Upper Tracts

Status	Number & percentage of total reported (364)	
	N	%
Normal	185	50.8
Tumour	3	0.8
Hydronephrosis – left	23	6.3
Hydronephrosis – right	26	7.1
Hydronephrosis – bilateral	15	4.1
Non – functioning kidney	15	4.1
Other	12	3.3
Not recorded	85	23.4

Chart 11

Cystectomy Pre-operative Potency

	N	% of total (364)
Impotent	42	11.5
Partially potent	33	9.1
Fully potent	87	23.9
Potency not recorded	202	55.5

Chart 12

Cystectomy Pre-operative Continence

	N	% of total (364)
Complete	250	68.7
Minor stress leakage	4	1.1
1 pad per day	2	0.5
> 1 pad per day	8	2.2
Appliance	6	1.6
Continence not recorded	94	25.8

Chart 13

Cystectomy Grade of Main Operating Surgeon
with numbers & percentage reported as being a supervised training operation

	Total Number	% of total (364)	Supervised training operation	%
Consultant	324	89.0	84/203	41.3
Specialist Registrar	29	8.0	27/28	96.0
Other	7	1.9	1/7	14.3
Surgeon not recorded	4	1.1	-	-

Chart 14

Cystectomy - Diversion procedure
7 laparoscopic procedures were reported
54 combined synchronous urethrectomies
12 combined synchronous nephroureterctomies

	N	% of total (364)
Ileal conduit	288	79.1
Orthotopic	19	5.2
Rectal diversion	0	-
Continent cutaneous diversion	0	-
Other	-	-
Not recorded	57	15.7

68% (13/19) of the orthotopics were Studer; 5.3% (1) ileal

Chart 15

Cystectomy Lymph Node Dissection

	N	% of total (364)
None	53	14.6
Palpable only	41	11.3
Below bifurcation of common iliac	169	46.4
Extended above bifurcation of common iliac	10	2.7
Not recorded	91	25.0

Chart 16

Cystectomies

- **Median duration of operation:**
 - All patients = 292 mins; Range: 60 – 600; (271 patients)
 - Patients having LND = 285 mins; Range: 120 – 600; (172 patients)
 - Patients with no LND = 270 mins; Range: 60 – 450; (45 patients)
- **Median number of units of blood transfused = 2**
Range: 0 - 12
(reported in 65% (236) patients)
- **Median measured blood loss = 1,500 mls**
Range: 0 – 13,000
(reported in 64% (233) patients)
- **Median post-operative stay = 14 days (excluding deaths)**
Range: 2 - 354
(reported in 83% (301) patients)

Chart 17

Cystectomies Complications

		N	%
Intra-operative complications:		25/279	9.0
	Bleeding	6/279	2.1
	Other / NR	19/279	6.8
Post-operative complications:		89/259	34.4
	Infections/ Septicaemia	30/259	11.6
	Prolonged Ileus	11/259	4.2
	Leaks	6/259	2.3
	Other / NR	42/259	16.2

Chart 18

Cystectomy - Significance of Complications

Overall morbidity Rate = 27.5% (100/364)

30 day mortality Rate = 2.2% (8/364)

	Intra-operative		Post-operative	
	N	%	N	%
No action required	4	16.0	8	9.3
Contributed to death	3	12.0	6	7.0
Delayed discharge	6	24.0	5	5.8
Required medical treatment	4	16.0	26	30.2
Required surgery	2	8.0	24	27.9
Not recorded	6	24.0	17	19.8

Chart 19

Cystectomy - Operative Histology reported in 26.4% (96/364) cases

Histology	Number & percentage of total known (96)	
	N	%
No cancer	9	9.4
Muscle invasive TCC	50	52.1
SCC	4	4.2
Primary CIS	14	14.6
Sarcoma	2	2.1
Gynaecological ca	0	-
Primary adenocarcinoma	2	2.1
Secondary adenocarcinoma	1	1.0
Other	14	14.6

Chart 20

Cystectomy Follow ups

Follow up recorded in 27% (98 / 364) patients

Median time to Follow-up = 81 days; range 25 – 398 days

Median number of Follow-ups = 0; Range: 0 - 4

Time to latest follow-up:

Time from Operation to follow-up	N	% of total (98)
0 – 90 days	53	54.1
91 – 180 days	23	23.5
181 – 360 days	21	21.4
>=361 days	1	1.0

Chart 21

**Total Number of Cystectomies Reported per Consultant
Including number with follow-ups
Follow up recorded in 27% (98 / 364) patients**

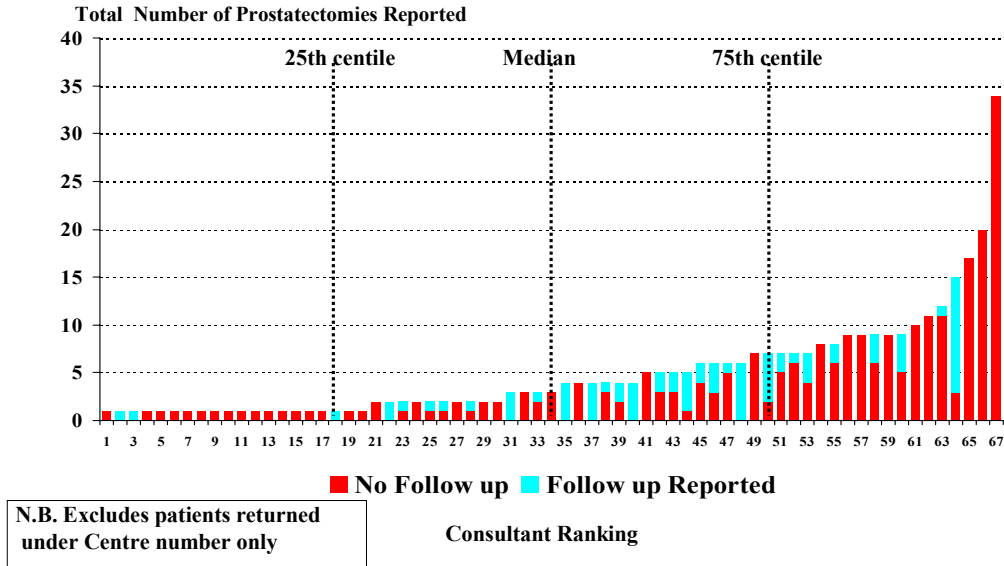


Chart 22

**Total Number of Cystectomies Reported per Centre
Median: 4 (Interquartile Range 2 - 9)**

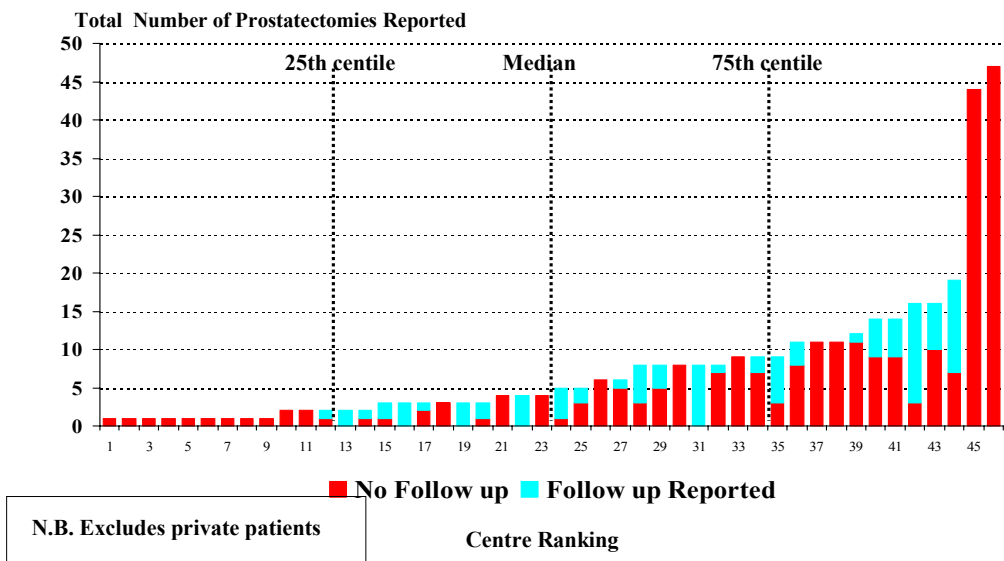


Chart 23

Cystectomy - Current Status
 Follow up recorded in 27% (98 / 364) patients
 Median time to Follow-up = 81 days; range 25 – 398 days

	N	% of total (98)
Alive with no evidence of bladder cancer	75	76.5
Alive with local recurrence of bladder cancer	1	1.0
Alive with lymph node involvement	3	3.1
Alive with metastatic disease	4	4.1
Dead	2	2.0
Not recorded	13	13.3

Late complications were reported in 12/98 (12.2%) patients

Chart 24

Cystectomy - Current Status
 Follow up recorded in 27% (98 / 364) patients
 Median time to Follow-up = 81 days; range 25 – 398 days

Time to follow up	N	% of total (98)	0 – 90 days		91-180 days		181 – 360 days		≥361 days	
			N	%	N	%	N	%	N	%
Alive with no evidence of bladder cancer	75	76.5	46	86.8	18	78.3	11	52.4	0	-
Alive with local recurrence of bladder cancer	1	1.0	0	-	1	4.3	0	-	0	-
Alive with lymph node involvement by bladder ca	3	3.1	2	3.8	0	-	1	4.8	0	-
Alive with metastatic disease	4	4.1	0	-	2	8.7	2	9.5	0	-
Dead	2	2.0	0	-	2	8.7	0	-	0	-
Not recorded	13	13.3	5	9.4	0	-	7	33.3	1	100.0

B. Radical prostatectomies

Chart 25

Total Number of Prostatectomies Reported per Consultant
Median: 9 (Interquartile Range 3 - 17)

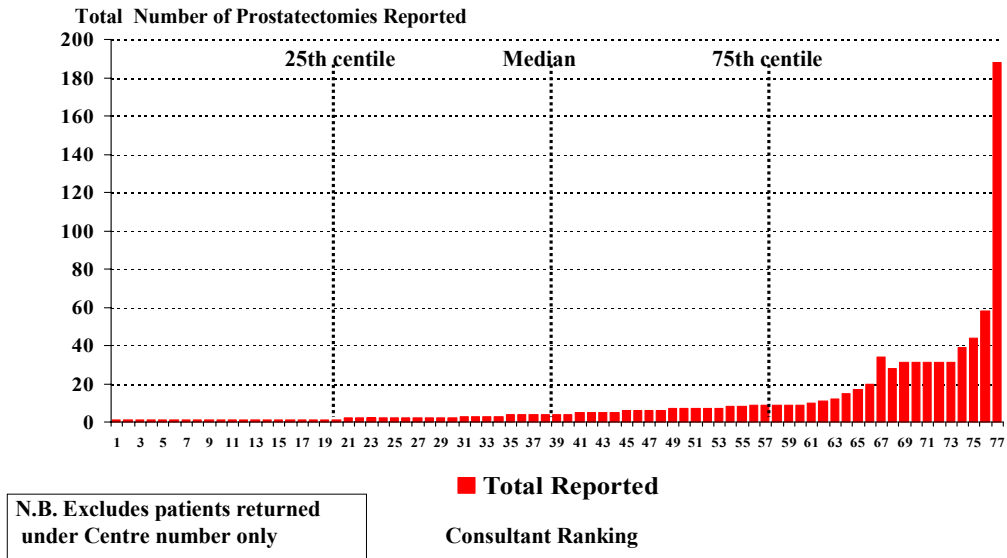


Chart 26

Total Number of Prostatectomies Reported per Centre
Median: 12 (Interquartile Range 4 - 27)

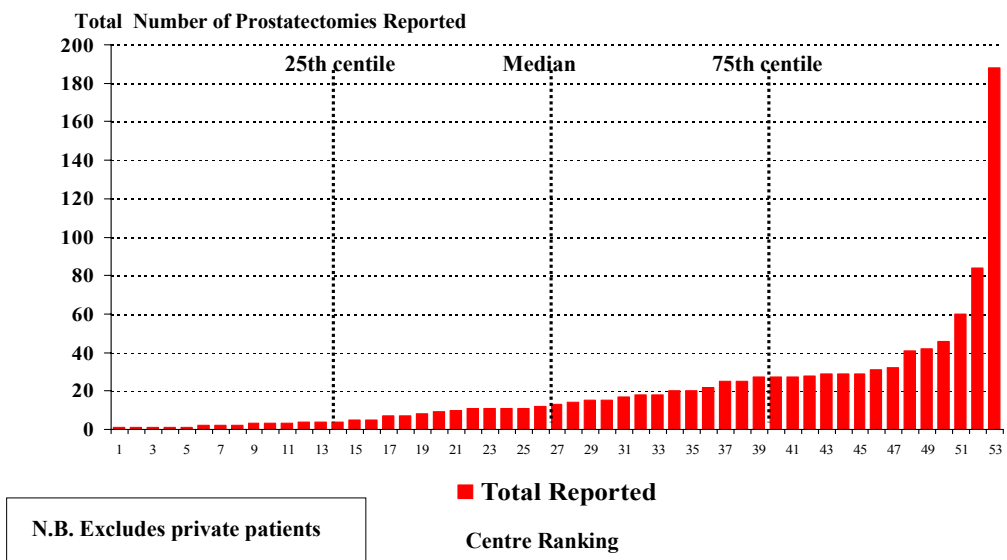
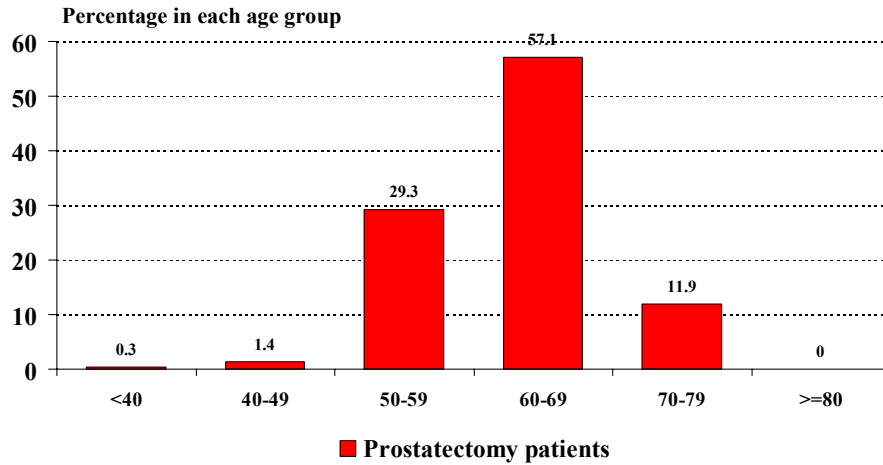


Chart 27

Percentage Age Distribution - Prostatectomies Median : 63 Years; Range 16 -79 (n= 1,175*)



Age could be calculated when both date of birth and operation date were recorded = 1175/1185 (99%)

Chart 28

Prostatectomy Presentation

Presentation	N	% of total (1185)
Via Screening or Case Finding	705	59.5
LUTS	75	6.3
Other	233	19.7
Not recorded	172	14.5

Other presentation was only recorded in 23% (53/233) cases:

0.7% (8/1185) Protec T

0.6% (7/1185) Incidental

0.6% (7/1185) TURP

7.1% (74/1039) were reported as having had a previous TURP

Chart 29

Prostatectomy Pre-operative Clinical Staging Staging could be estimated in 81.3% (963/1185) cases

Known Staging	Total Known	
	N	%
Stage I (T1a N0 M0)	8	0.8
Stage II (T1b, 1c, 1, 2 N0 M0)	T1 - 100 T1b - 13 T1c- 416 T2 - 410	10.4 1.4 43.2 42.6
Stage III (T3 N0 M0)	16	1.7
Stage IV (T4 N0 M0 Any T N1 M0 Any T any N M1)	0	-

Chart 30

Prostatectomies Comparison of clinical & pathological staging

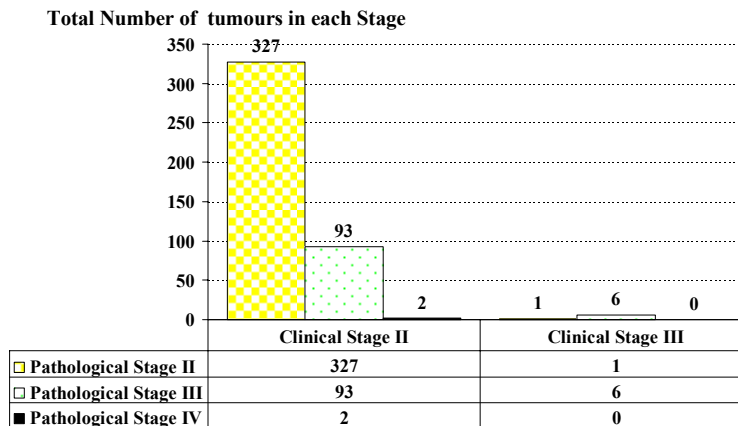


Chart 31

Staging of Prostate Tumours by PSA

Numbers falling in each category*

Pre-operative PSA was recorded in 92% patients (1096/1185)

Staging could be estimated in 81% patients (963/1185)

Known Clinical Staging	Total Patients	PSA 0-5		PSA 6-10		PSA 11-20		PSA 21-50		PSA > 50	
		N	%	N	%	N	%	N	%	N	%
Stage I T1a N0 M0	8	5	2.4	2	0.4	1	0.5	0	0.0	0	0.0
Stage II T1b, 1c, 1, 2, N0 M0	921	206	97.2	521	98.5	181	97.3	11	73.3	2	100
Stage III T3 N0 M0	15	1	0.5	6	1.1	4	2.2	4	26.7	0	0.0
Totals	944	212	22.5	529	56.0	186	19.7	15	1.6	2	0.2

Chart 32

Gleason Sum Scores by Age Group - Prostatectomies

Number falling into each category

Gleason scores were recorded in 94% (1107/1185)

Age could be recorded in 99% (1098/1108) of these

Age Group	Total Patients	Gleason sum 2 – 4		Gleason sum 5 – 6		Gleason sum 7		Gleason sum 8 – 10	
		N	%	N	%	N	%	N	%
< 60	348	1	0.3	227	65.2	103	29.6	17	4.9
60 – 64	311	2	0.6	206	59.2	91	26.1	12	3.4
65 – 69	307	1	0.3	212	60.9	82	23.6	12	3.4
70 – 74	124	0	0.0	78	22.4	44	12.6	2	0.6
75 – 79	8	0	0.0	4	1.1	3	0.9	1	0.3
>=80	0	-	-	-	-	-	-	-	-
Totals	1098	4	0.4	727	66.2	323	29.4	44	4.0

Chart 33

Gleason Sum Score Related to Age

Gleason scores were recorded in 94% (1107/1185)

Age could be recorded in 99% (1098/1108) of these

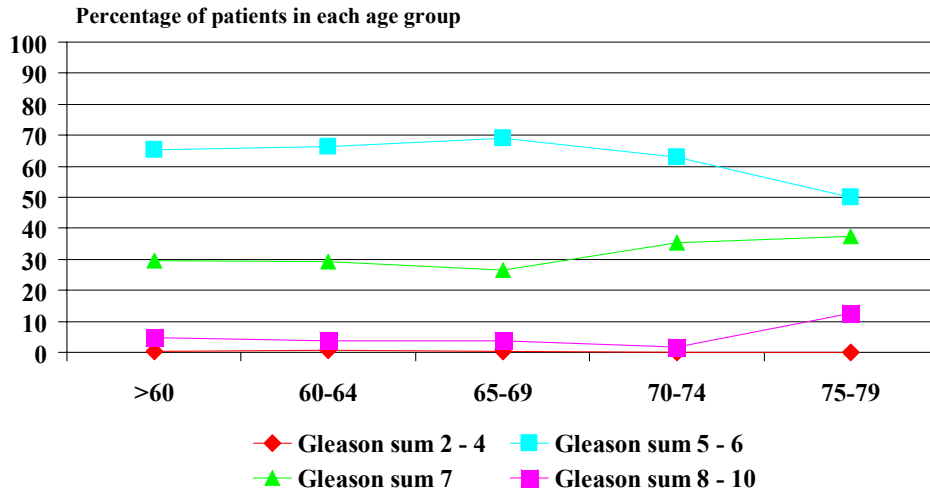


Chart 34

Prostatectomy Pre-operative Potency

	N	% of total (1185)
Impotent	109	9.2
Partially potent	188	15.9
Fully potent	567	47.8
Potency not recorded	321	27.1

Chart 35

Prostatectomy Pre-operative Continence

	N	% of total (1185)
Complete	955	80.6
Minor stress leakage	18	1.5
1 pad per day	1	0.1
> 1 pad per day	0	-
Appliance	2	0.2
Continence not recorded	209	17.6

Chart 36

Prostatectomy Grade of Main Operating Surgeon with numbers & percentage reported as being a supervised training operation

	Total Number	% of total (1185)	Supervised training operation	%
Consultant	1114	94.0	192/734	26.1
Specialist Registrar	51	4.3	48/49	98.0
Other	7	0.6	3/4	75.0
Surgeon not recorded	13	1.1	-	-

Chart 37

Prostatectomy - Procedure Nerve sparing

Nerve Sparing	N	% of total (1185)
Bilateral	445	37.6
Unilateral	164	13.8
None	288	24.3
Not recorded	288	24.3

Chart 38

Prostatectomy Procedure - Approach

	N	% of total (1185)
Retropubic	835	70.5
Perineal	29	2.4
Other	9	0.8
Not recorded	312	26.3

Chart 39

Prostatectomy Procedure – Laparoscopic Conversion rate = 2.2% (6/276)*

Laparoscopic	N	% of total (1185)
Yes	276	23.3
No	602	50.8
Not recorded	307	25.9

* Conversion reasons

- 2 due to failure to progress
- 1 bleeding & adherent seminal vesicles
- 1 poor view
- 1 anatomical difficulties & poor space around prostate
- 1 not recorded

Chart 49

Prostatectomies

- 34.9% had Lymph Node dissection (344/985 patients)
- Median duration of operation:
 - All patients = 158 mins; Range: 45 - 600; (1014 patients)
 - Patients having LND = 160 mins; Range: 65 - 435; (306 patients)
 - Patients with no LND = 155 mins; Range: 45 - 600; (708 patients)
- Median number of units of blood transfused = 0
Range: 0 - 20
(reported in 70% (832) patients)
- Median measured blood loss = 700 mls
Range: 10 - 18,000
(reported in 78% (926) patients)
- Median post-operative stay = 4 days (excluding deaths)
Range: 1 - 148
(reported in 89% (1048) patients)

Chart 41

Prostatectomies - Procedure

	Procedure	N	Median	Range
Duration of Operation (mins)	Total patients	1014	158	45 – 600
	Retropubic	752	155	45 – 435
	Perineal	25	130	75 – 360
	Laparoscopic	266	180	78 – 600
Units of Blood Transfused	Total patients	832	0	0 – 20
	Retropubic	687	0	0 – 20
	Perineal	25	0	0 – 3
	Laparoscopic	232	0	0 – 4
Measured Blood Loss (mls)	Total patients	926	700	0 – 18000
	Retropubic	756	700	0 – 18000
	Perineal	23	400	200 – 3200
	Laparoscopic	244	200	0 – 3000
Post –op Length of Stay (days)	Total patients	1048	4	1 – 148
	Retropubic	769	4	1 – 148
	Perineal	27	3	2 – 10
	Laparoscopic	271	3	1 - 34

Chart 42

Prostatectomies Complications

		N	%
Intra-operative complications:		42/1086	3.9
	Bleeding	16/1086	1.5
	Rectal Injury	9/1086	0.8
	Other / NR	17/1086	1.7
Post-operative complications:		122/948	12.9
	Wound Infections	21/948	2.2
	Leaks	8/948	0.8
	Haematoma	4/948	0.4
	Lymphocele	3/948	0.3
	Haematuria	2/948	0.4
	Other / NR	84/948	8.9

Chart 43

Prostatectomy - Significance of Complications

Overall morbidity Rate = 13.2% (157/1185)

30 day mortality Rate = 0.08% (1/1185)

	Intra-operative		Post-operative	
	N	%	N	%
No action required	13	31.0	17	13.9
Contributed to death	0	-	0	-
Delayed discharge	4	9.5	27	22.1
Required medical treatment	3	7.1	26	21.3
Required surgery	1	2.4	12	9.8
Not recorded	21	50.0	40	32.8

Chart 44

Prostatectomies Comparison of Pre-operative Biopsy and Operative Surgical Gleason Sum Scores

Total Number of tumours in each Group

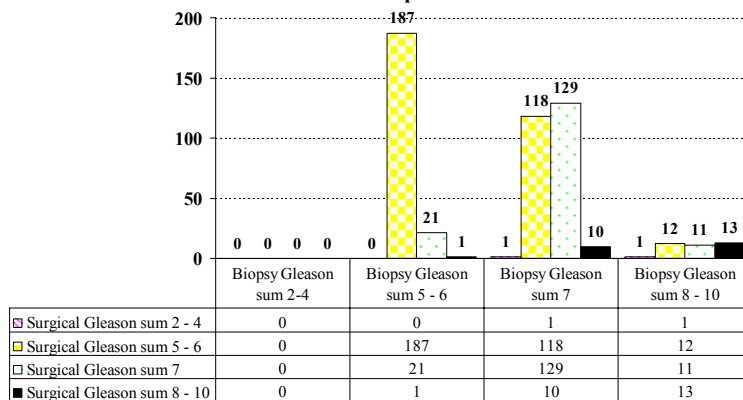


Chart 45

Prostatectomy Pathology

	N	% of total known
Known Lymph Node Involvement	1/216	0.5
Known Seminal Vesical Involvement	26/489	5.3

Chart 46

Prostatectomy Follow ups

Follow up recorded in 41.6% (493 / 1185) patients

Median time to Follow-up = 103 days; range 5 – 531 days

Median number of Follow-ups = 0; Range: 0 - 5

Time to latest follow-up:

Time from Operation to follow-up	N	% of total (493)
0 – 90 days	197	40.0
91 – 180 days	174	35.3
181 – 360 days	106	21.5
>=361 days	16	3.2

Chart 47

**Total Number of Prostatectomies Reported per Consultant
Including number with follow-ups
Follow up recorded in 41.6% (493/1185) patients**

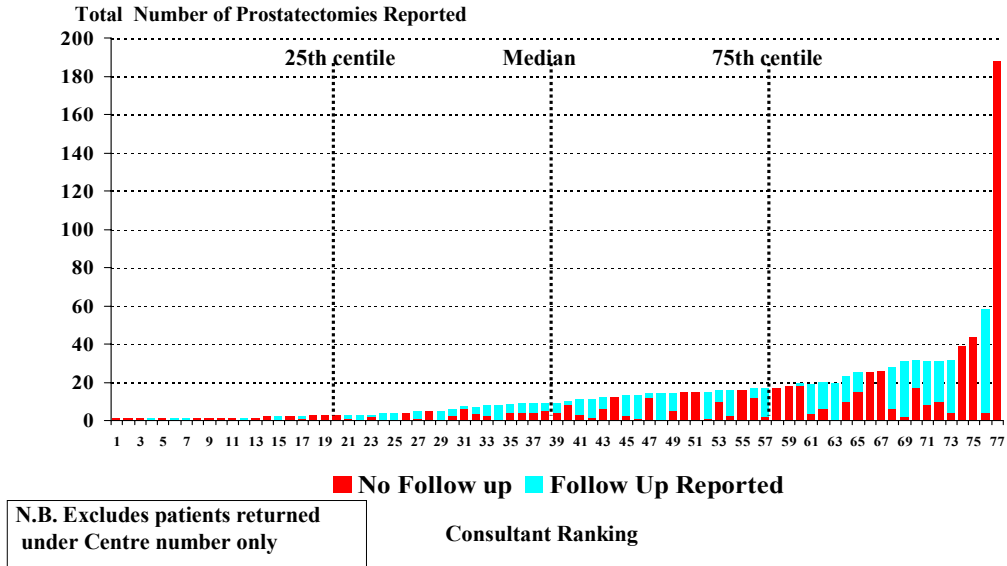


Chart 48

**Total Number of Prostatectomies Reported per Centre
Median: 12 (Interquartile Range 4 - 27)**

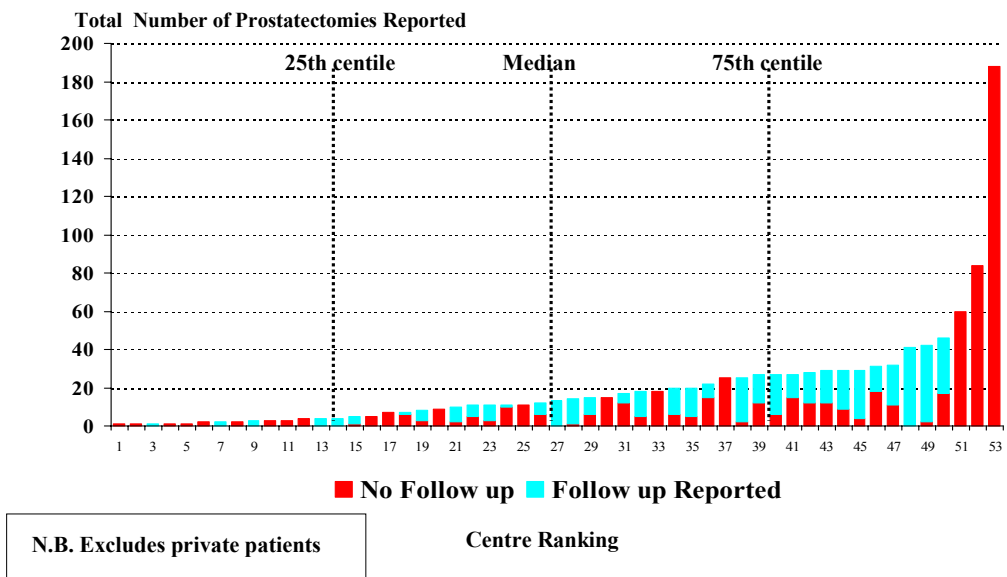


Chart 49

Prostatectomy - Current Status
Follow up recorded in 41.6% (493/1185) patients
Median time to follow-up = 103 days (range 5 – 531)

	N	% of total (493)
Alive with no evidence of prostate cancer	400	81.1
Alive with local recurrence of prostate cancer	9	1.8
Alive with lymph node involvement	0	0.0
Alive with metastatic disease	0	0.0
Dead	1	0.2
Not recorded	83	16.8

Late complications were reported in 2 patients only:

1 Anastamotic stricture (3 – 6 months post op)&

1 Urethral stricture (between 6 months & 1 year post op)

Chart 50

Prostatectomy - Current Status
Follow up recorded in 41.6% (493/1185) patients
Median time to follow-up = 103 days (range 5 – 531)

Time to follow up	N	% of total (493)	0 – 90 days		91-180 days		181 – 360 days		≥361 days	
			N	%	N	%	N	%	N	%
Alive with no evidence of prostate cancer	400	81.1	165	83.8	145	83.3	78	73.6	12	75.0
Alive with local recurrence of prostate cancer	9	1.8	4	2.0	3	1.7	2	1.9	0	-
Dead	1	0.2	0	-	1	0.6	0	0.0	0	-
Not recorded	83	16.8	28	14.2	25	14.4	26	24.5	4	25.0

C. Nephrectomies

Chart 51

Total Number of Nephrectomies Reported per Consultant
Median: 6 (Interquartile Range 2 - 9)

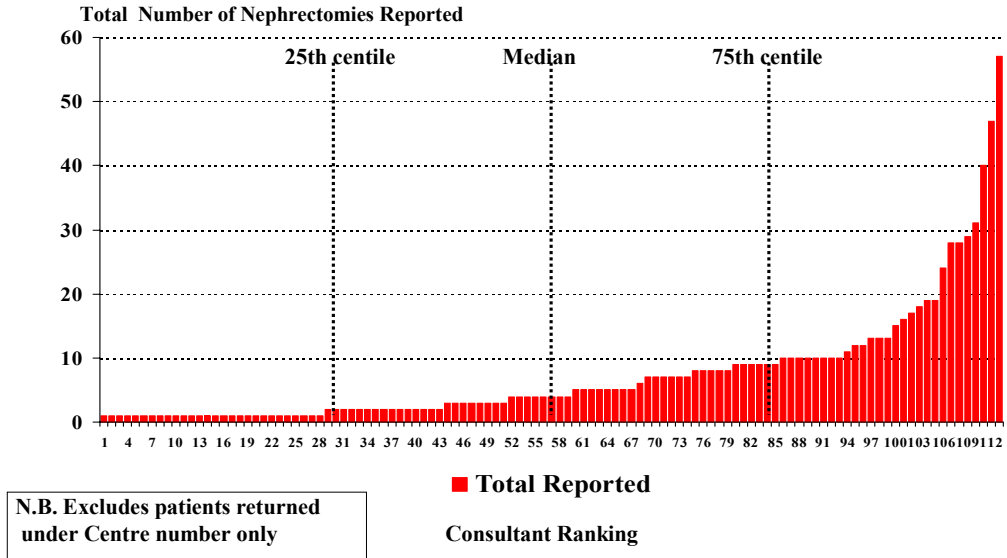


Chart 52

Total Number of Nephrectomies Reported per Centre
Median: 10 (Interquartile Range 3 - 17)

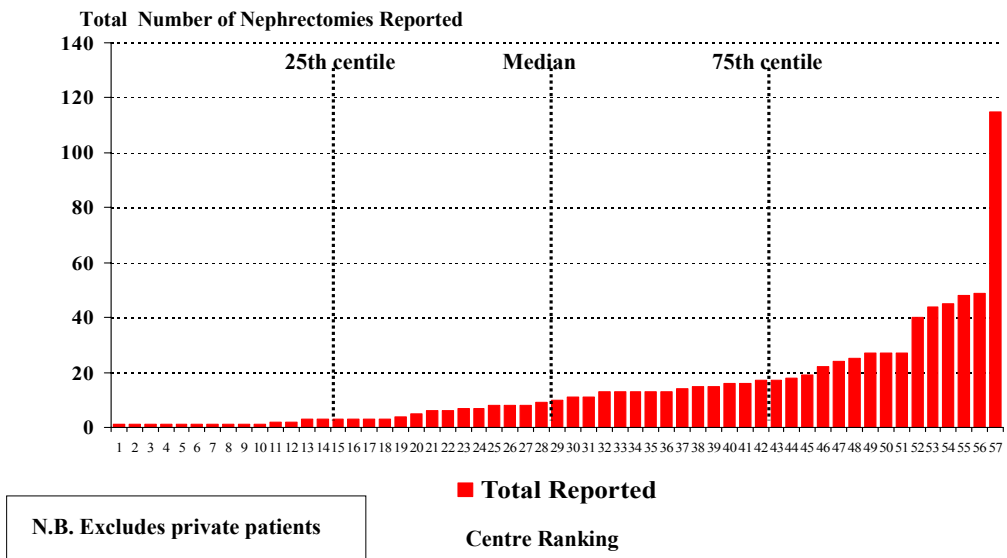


Chart 53

Nephrectomy - Pre-operative presentation

	N	% of total (939)
Incidental finding with no symptoms	325	34.6
Other:	510	54.3
Haematuria	248	26.4
Pain	75	8.0
TCC bladder	20	2.1
Anaemia	6	0.6
Weight loss	10	1.1
Other/Not recorded	151	16.1
Not recorded	104	11.1

Chart 54

Nephrectomies – Haematology at Presentation

	N	Median	Range
Hb (g/L)	788	13	7 – 163
Total WBC (* 10⁹ / L)	763	8	3 – 75
Neutrophils (* 10⁹ / L)	660	5	2 – 85
Lymphocytes (* 10⁹ / L)	435	2	0 – 293
Platelets (* 10⁹ / L)	695	274	0 – 282,200

Chart 55

Nephrectomy - Pre-operative Serum Creatinine

Serum Creatinine Level $\mu\text{mols/l}$	N	% of total (939)
0 – 120 $\mu\text{mols/l}$	649	69.1
121 - 200 $\mu\text{mols/l}$	161	17.1
> 200 $\mu\text{mols/l}$	15	1.6
Not recorded	114	12.1

Chart 56

Nephrectomy Pre-operative Clinical Staging Staging could be estimated in 73% (689/939) cases

Known Staging	Total Known	
	N	%
Stage I (T1 N0 M0)	339	49.2
Stage II (T2 N0 M0)	169	24.5
Stage III (T1, T2, T3 N0, N1 M0)	110	16.0
Stage IV (T4 N0, N1 M0 Any T N2 M0 Any T any N M1)	71	10.3
	including 46 with metastases	6.7

5.7% (47/822) patients were reported as having a pre-operative biopsy

Chart 57

**Nephrectomies
Comparison of clinical & pathological staging**

Total Number of tumours in each Stage

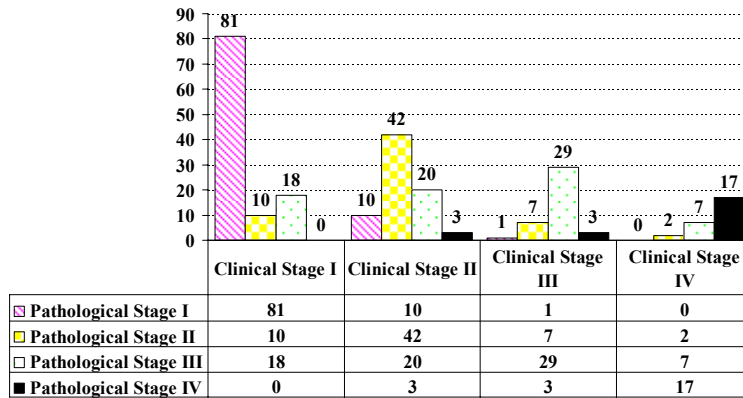


Chart 58

**Nephrectomy Grade of Main Operating Surgeon
with numbers & percentage reported as being a supervised training operation**

	Total Number	% of total (939)	Supervised training operation	%
Consultant	743	79.1	188/514	36.5
Specialist Registrar	168	17.9	152/156	97.4
Other / Not recorded	28	3.0	-	

Chart 59

Nephrectomy – Procedure

The vena cava was reported as being explored in 5.9% (43/732) cases
75.9% (22/29) Infra-diaphragmatically; 24.1% (7/29) Supra-diaphragmatically

	N	% of total (939)
Radical Nephrectomy	653	69.5
Bilateral Radical Nephrectomy	3	0.3
Partial Nephrectomy	67	7.1
Simple Nephrectomy	29	3.1
Nephroureterectomy	143	15.2
Other	11	1.2
Not Recorded	33	3.5

Chart 60

Nephrectomies – Surgical Approach

Known Laparoscopic Conversion rate = 10.2% (24/235)*

Approach	N	% of total (939)
Open	654	69.6
Laparoscopic	285	30.4

* Conversion reasons

- 7 due to bleeding
- 7 due to adhesions
- 3 due to failure to progress
- 7 other / not recorded

Chart 61

Nephrectomy Approach by Pre-operative Clinical Staging Staging could be estimated in 73% (689/939) cases

Known Staging	Total	Open		Laparoscopic	
	N	N	%	N	%
Stage I (T1 N0 M0)	339	176	51.9	163	48.1
Stage II (T2 N0 M0)	169	131	77.5	38	22.5
Stage III (T1, T2, T3 N0, N1 M0)	110	100	91.0	10	9.0
Stage IV (T4 N0, N1 M0 Any T N2 M0 Any T any N M1)	71	56	78.9	15	21.1

Chart 62

Nephrectomies

- 12.8% had Lymph Node dissection (106/825 patients)
- Median duration of operation = 165 minutes
Range: 55 - 573
(reported in 72% (674) patients)
- Median number of units of blood transfused = 0
Range: 0 - 20
(reported in 62% (582) patients)
- Median measured blood loss = 300 mls
Range: 0 - 10,000
(reported in 62% (584) patients)
- Median post-operative stay = 7 days (excluding deaths)
Range: 1 - 282
(reported in 83% (775) patients)

Chart 63

Nephrectomies - Procedure

	Procedure	N	Median	Range
Duration of Operation (mins)	Total patients	674	165	55 - 573
	Open	440	150	55 - 573
	Laparoscopic	233	180	75 - 483
	LND	85	180	60 - 480
Units of Blood Transfused	Total patients	582	0	0 - 20
	Open	404	0	0 - 20
	Laparoscopic	178	0	0 - 6
Measured Blood Loss (mls)	Total patients	585	300	0 - 10,000
	Open	377	500	0 - 10,000
	Laparoscopic	208	150	0 - 4,000
Post -op Length of Stay (days)	Total patients	775	7	1 - 282
	Open	517	7	1 - 282
	Laparoscopic	258	5	1 - 64

Chart 64

Nephrectomies Complications

		N	%
Intra-operative complications:		69/812	8.5
	Bleeding	18/812	2.2
	Required splenectomy	6/812	0.7
	Pneumothorax	5/812	0.6
	Other / NR	40/812	4.9
Post-operative complications:		164/752	21.8
	Wound Infection	20/752	2.7
	Chest Infection	17/752	2.3
	Bleeding	12/752	1.6
	MI	6/752	0.8
	Death	2/752	0.3
	Other / NR	107/752	14.2

Chart 65

Nephrectomy - Significance of Complications

Overall morbidity Rate = 21.8% (205/939)

30 day mortality Rate = 1.5% (14/939)

	Intra-operative		Post-operative	
	N	%	N	%
No action required	20	29.0	21	29.0
Contributed to death	3	4.3	7	4.3
Delayed discharge	5	7.2	30	7.2
Required medical treatment	10	14.5	58	14.5
Required surgery	4	5.8	15	5.8
Not recorded	27	39.1	33	39.1

Chart 66

Nephrectomies – Predominant cell type

Reported in 25.2% cases (237/939)

Predominant Cell Type	N	% of total reported (237)
RCC	176	74.3
TCC	25	10.5
Papillary	11	4.6
Oncocytoma	12	5.1
Chromophobe	7	3.0
Other	6	2.5

Chart 67

Nephrectomy Follow ups

Follow up recorded in 27% (176 / 939) patients

Median time to Follow-up = 107 days; range 19 – 434 days

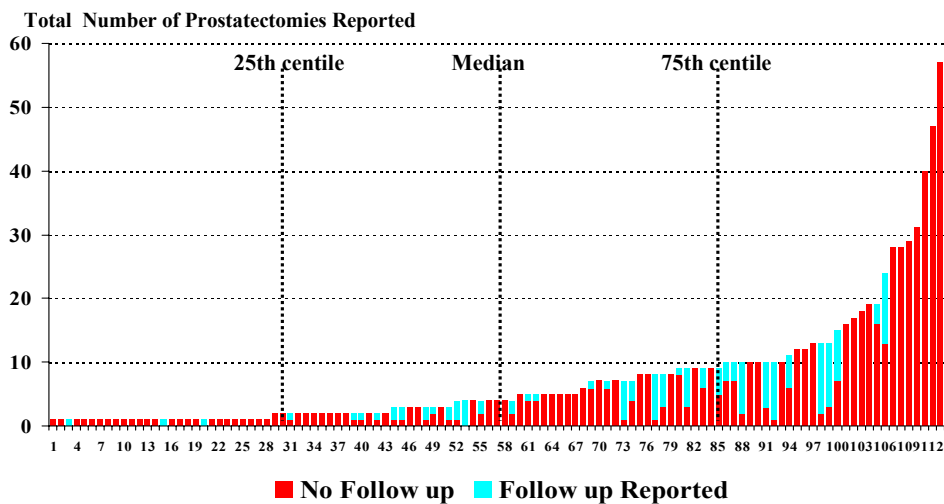
Median number of Follow-ups = 0; Range: 0 - 3

Time to latest follow-up:

Time from Operation to follow-up	N	% of total (176)
0 – 90 days	75	42.6
91 – 180 days	49	27.8
181 – 360 days	48	27.3
>=361 days	4	2.3

Chart 68

Total Number of Nephrectomies Reported per Consultant Including number with follow-ups Follow up recorded in 27% (176 / 939) patients



N.B. Excludes patients returned under Centre number only

Consultant Ranking

Chart 69

Total Number of Nephrectomies Reported per Centre Median: 10 (Interquartile Range 3 - 17)

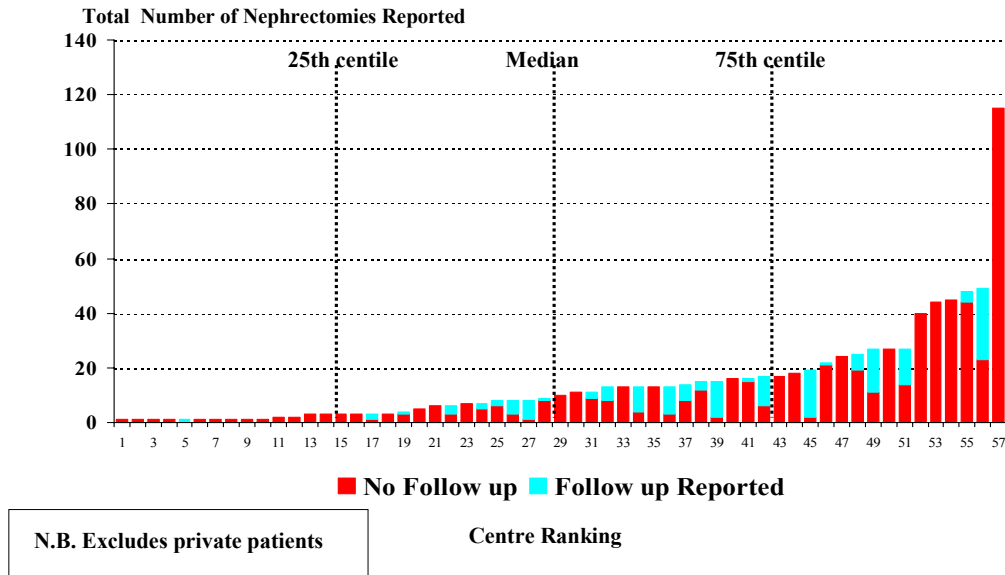


Chart 70

Nephrectomy - Current Status Follow up recorded in 27% (176 / 939) patients Median time to Follow-up = 107 days; range 19 – 434 days

	N	% of total (176)
Alive with no evidence of renal cancer	140	79.5
Alive with local recurrence of renal cancer	2	1.1
Alive with lymph node involvement	3	1.7
Alive with metastatic disease	13	7.4
Dead	3	1.7
Not recorded	15	8.5

Late complications were reported in 24/176 (13.6%) patients:

- 4 wound infection
- 1 wound hernia
- 1 wound pain
- 7 renal impairment
- 11 other

Chart 71

Nephrectomy - Current Status
Follow up recorded in 27% (176 / 939) patients
Median time to Follow-up = 107 days; range 19 – 434 days

Time to follow up	N	% of total (176)	0 – 90 days		91-180 days		181 – 360 days		≥361 days	
			N	%	N	%	N	%	N	%
Alive with no evidence of renal cancer	140	79.5	60	80.0	39	79.6	39	81.3	2	50.0
Alive with local recurrence of renal cancer	2	1.1	1	1.3	1	2.0	0	-	0	-
Alive with lymph node involvement	3	1.7	2	2.7	1	2.0	0	-	0	-
Alive with metastatic disease	13	7.4	6	8.0	4	8.2	3	6.3	0	-
Dead	3	1.7	2	2.7	1	2.0	0	-	0	-
Not recorded	15	8.5	4	5.3	3	6.1	6	12.5	2	50.0