

# THE BRITISH ASSOCIATION OF UROLOGICAL SURGEONS Section of Oncology

**Analyses of Cystectomies performed between** 

January 1st and December 31st 2014

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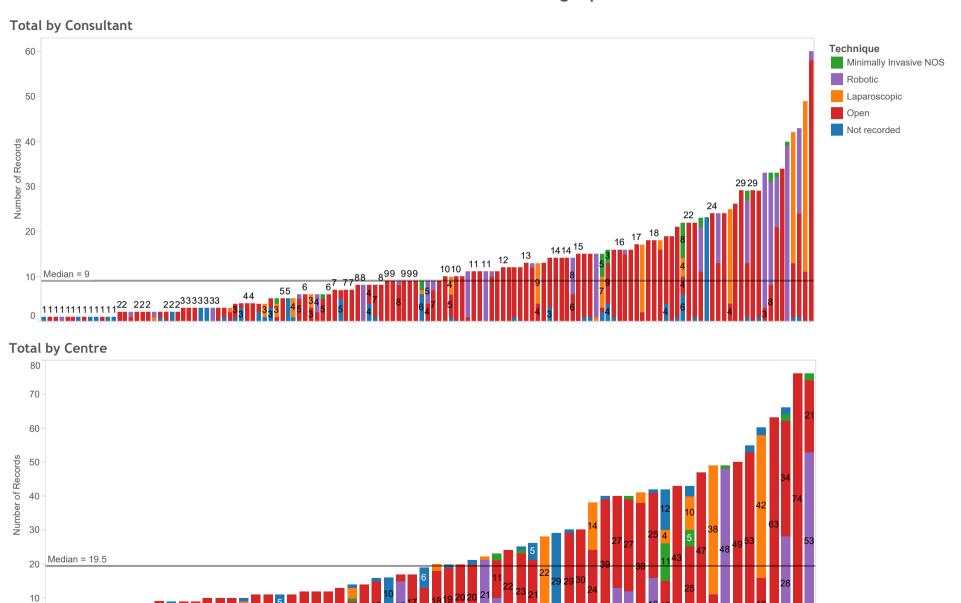
# **AUDIT RESULTS SUMMARY – Cystectomy dataset**

All the data presented here are a summary of the data extracted from the web-based database on 28<sup>th</sup> August 2015 and relate to operations performed during the whole of 2014. Once extracted the data was transferred to an Access<sup>TM</sup> database for validation before being imported into Tableau<sup>TM</sup> for generation of the analyses. The validation mainly comprised checks for duplicate and / or empty entries and invalid / inappropriate dates.

The data collection period was from 1 January 2014 to 31 December 2014.

- 1,601 cases were submitted in total, of which 1,532 were from England. The 1,601 cases came from 135 consultants at 64 sites and include 9 private patients from 8 consultants.
- Median number of cases per consultant: 9 (range 1 60)
- Median number of cases per centre: 19.5 (range 1 76)
- The overall transfusion rate was 23.6% By technique, the transfusion rates were: open 28.5%, laparoscopic 10.4% and robotic 11.1%.
- The overall Clavien Dindo Grade III plus post-operative complication rate was 10.3%. (Open 10.9%, laparoscopic 6.6% and robotic 9.9%)
- Hospital Episode Statistics (HES) for 2014 indicate that there were 2,054 cystectomies undertaken so we collected data on 78% of the cases undertaken in England in 2014.

# Total returns for procedures performed between 01/01/2014 and 31/12/2014 1601 cases from 135 consultants at 64 centres including 9 private cases from 8 consultants



#### Totals by Technique

Gender

		Gender								
	Ma	le	Female		Not red	corded	<b>Grand Total</b>			
Technique	N	%	N	%	N	%	N	%		
Open	808	73.9%	266	24.3%	20	1.8%	1,094	100.0%		
Laparoscopic	122	83.6%	24	16.4%			146	100.0%		
Robotic	180	77.6%	51	22.0%	1	0.4%	232	100.0%		
Minimally In	24	85.7%	4	14.3%			28	100.0%		
Not recorded	77	76.2%	24	23.8%			101	100.0%		
Grand Total	1,211	75.6%	369	23.0%	21	1.3%	1,601	100.0%		

#### Indication

Indication For Cystectomy	N	% Total
Muscle invasive TCC	737	46.0%
Primary NMIBC	162	10.1%
NMIBC refractory to intravesical treatment	201	12.6%
Primary adenocarcinoma	21	1.3%
Primary CIS	56	3.5%
Salvage after radiotherapy	63	3.9%
Sarcoma	21	1.3%
Squamous cell carcinoma	64	4.0%
Uncontrolled non-muscle invasive disease	23	1.4%
Other	159	9.9%
Not recorded	94	5.9%
Grand Total	1,601	100.0%

#### **Pre-op Serum Creatinine**

Pre-op Serum Creatinine	N	% Total
0 - 120	1,163	72.6%
121 - 200	196	12.2%
> 200	23	1.4%
Not Recorded	219	13.7%
Grand Total	1,601	100.0%

#### Technique by Age

Technique	N	%	Median Age	Min. Age	Max. Age
Open	1,094	100.0%	69	14	99
Laparoscopic	146	100.0%	71	35	83
Robotic	232	100.0%	68	31	86
Minimally In	28	100.0%	71	43	81
Not recorded	101	100.0%	68	32	83
Grand Total	1,601	100.0%	69	14	99

#### Pre-op Imaging

Pre Operative Imaging (group)	N	% Total
СТ	837	52.3%
CT & MRI	205	12.8%
CT +/- Bone scan, USS, MRI Others	342	21.4%
CT,MRI,Bone scan,USS	1	0.1%
MRI	78	4.9%
MRI,Other & MRI,PET	13	0.8%
MRI,Bone scan	1	0.1%
USS +/- Other	8	0.5%
None	30	1.9%
Other	5	0.3%
Not recorded	81	5.1%
Grand Total	1,601	100.0%

## Pre-operative Serum Egfr

Egfr Normal	Serum Egfr (group)	N	% Total
Yes (>60)	Not recorded / Applicable	688	43.0%
	Total	688	43.0%
No	<20	6	0.4%
	20 - 39	72	4.5%
	20 - 39 72 40 - 60 385 Not recorded / Applicable 3	24.0%	
	Not recorded / Applicable	3	0.2%
	Total	466	29.1%
Not recorded	Not recorded / Applicable	447	27.9%
	Total 466 29		
Grand Total		1,601	100.0%

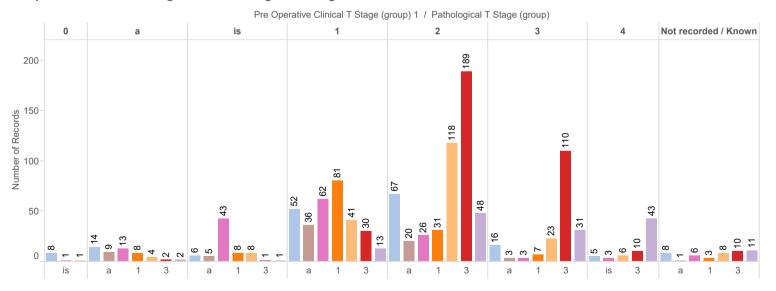
#### **Status Upper Tracts**

Status Upper Tracts	N	% Total
Normal	1,031	64.4%
Unilateral hydronephrosis	215	13.4%
Bilateral hydronephrosis	70	4.4%
TCC	23	1.4%
RCC	4	0.2%
Single functioning kidney	12	0.7%
Other	38	2.4%
Not recorded	208	13.0%
Grand Total	1,601	100.0%

#### Pre-operative CT stage

Pre Operative Clinical T Stage (group)	% of Total Number of Records						
0	1.1%	18					
is	5.4%		87				
a	3.9%		63				
1	23.7%					380	
2	30.9%						495
2a	3.5%		56				
2b	1.9%	3	1				
3	8.9%			143			
3a	1.8%	29	)				
3b	2.9%		47				
4a	4.6%		73				
4b	1.0%	16					
Not recorded / Known	10.2%			163			
		0	100	200 Numbe	300 er of Reco	400 ords	500

#### Comparison Clinical T stage with Pathological T stage



# Pathological T Stage (g..



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#### Operating Surgeon

Grade Of Main Surgeon	Supervised Training Operation	N	% Total
Consultant	Yes	438	27.4%
	No	809	50.5%
	Not recorded	254	15.9%
	geon Operation           No         809           Not recorded         254           Total         1,501           Yes         61           Total         61           No         2           Total         2           rotal         2           No         1           No         14           Not recorded         22           Total         37	93.8%	
SpR	Yes	61	3.8%
	Total 61	61	3.8%
Other	No	2	0.1%
	Total	2	0.1%
Not recorded	Yes	1	0.1%
	No	14	0.9%
	Not recorded	22	1.4%
	Total	37	2.3%
<b>Grand Total</b>		1,601	100.0%

#### **Joint Operating Cases**

Grade Of Main Surgeon	Joint Operating Case	N	% Total
Consultant	Yes	364	22.7%
	No	1,137	71.0%
	Total	1,501	93.8%
SpR	Yes	1	0.1%
	No	60	3.7%
	Total	61	3.8%
Other	No	2	0.1%
	Total	2	0.1%
Not recorded	Yes	3	0.2%
	No	34	2.1%
	Total	37	2.3%
<b>Grand Total</b>		1,601	100.0%

#### **Diversion Procedure**

Technique	
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	Ор	en	Laparo	scopic	Rob	ootic		mally re NOS	Not re	corded	Grand	l Total
Diversion Procedure	N	% Total	N	% Total	N	% Total	N	% Total	N	% Total	N	% Total
Continent cutaneous	16	1.5%	2	1.4%	2	0.9%	1	3.6%			21	1.3%
lleal conduit	946	86.5%	136	93.2%	199	85.8%	21	75.0%	22	21.8%	1,324	82.7%
Orthotopic	64	5.9%	5	3.4%	25	10.8%	1	3.6%	1	1.0%	96	6.0%
Rectal diversion	3	0.3%			1	0.4%	2	7.1%			6	0.4%
Other	2	0.2%	1	0.7%							3	0.2%
Not recorded	63	5.8%	2	1.4%	5	2.2%	3	10.7%	78	77.2%	151	9.4%
Grand Total	1,094	100.0%	146	100.0%	232	100.0%	28	100.0%	101	100.0%	1,601	100.0%

#### Conversions

#### Converted

	No		Yes	3	Not red	corded	Grand Total		
Technique	N	%	N	%	N	%	N	%	
Laparoscopic	142	97.3%	3	2.1%	1	0.7%	146	100.0%	
Robotic	229	98.7%	3	1.3%			232	100.0%	
Minimally Invasi	24	85.7%	2	7.1%	2	7.1%	28	100.0%	
Grand Total	395	97.3%	8	2.0%	3	0.7%	406	100.0%	

#### **Conversion Reasons**

Technique	Conversion Reason	N	%
Laparoscopic	Failure to progress	1	100.0%
	Lack of progress	1	100.0%
	tolerential bleeding	1	100.0%
Robotic	ADHERENT SIGMOID COLON TO ABDOMINAL WALL	1	100.0%
	Large bladder tumour	1	100.0%
	Mass filled entire pelvis	1	100.0%
Minimally	Difficult views	1	100.0%
Invasive NOS	Not recorded	1	100.0%
Grand Total		8	100.0%

#### **Duration of Operation**

Duration Of Operation (group)

	<3 hou	ırs	3-5 hours		>5 hc	ours	Not rec	orded	Grand Total		
Technique	N	%	N	%	N	%	N	%	N	%	
Open	100	9.1%	523	47.8%	377	34.5%	94	8.6%	1,094	100.0%	
Robotic	6	2.6%	115	49.6%	90	38.8%	21	9.1%	232	100.0%	
Laparoscopic	3	2.1%	98	67.1%	41	28.1%	4	2.7%	146	100.0%	
Not recorded	1	1.0%	8	7.9%	7	6.9%	85	84.2%	101	100.0%	
Minimally Invasive NOS			5	17.9%	15	53.6%	8	28.6%	28	100.0%	
Grand Total	110	6.9%	749	46.8%	530	33.1%	212	13.2%	1,601	100.0%	

#### **Blood Loss**

Measured	Blood	Loss
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	<300	ml	300-500	0 ml	500-100	00 ml	1000-20	00 ml	>2000	ml	Not reco	orded	Grand	Total
Technique	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Open	112	10.2%	226	20.7%	351	32.1%	181	16.5%	58	5.3%	166	15.2%	1,094	100.0%
Laparoscopic	54	37.0%	44	30.1%	34	23.3%	5	3.4%	1	0.7%	8	5.5%	146	100.0%
Robotic	96	41.4%	76	32.8%	34	14.7%	4	1.7%	3	1.3%	19	8.2%	232	100.0%
Minimally In	4	14.3%	5	17.9%	1	3.6%					18	64.3%	28	100.0%
Not recorded	2	2.0%	3	3.0%	2	2.0%	4	4.0%			90	89.1%	101	100.0%
Grand Total	268	16.7%	354	22.1%	422	26.4%	194	12.1%	62	3.9%	301	18.8%	1,601	100.0%

#### Transfusions

Units Of Blood Transfused During This Surgical Admission

					D.000							
	Nil		Minor (<2 units)		Moderate (3-6 units)		Major (>6 units)		Not recorded		Grand	l Total
Technique	N	%	N	%	N	%	N	%	N	%	N	%
Open	661	60.4%	174	15.9%	79	7.2%	10	0.9%	170	15.5%	1,094	100.0%
Laparoscopic	121	82.9%	12	8.2%	1	0.7%	1	0.7%	11	7.5%	146	100.0%
Robotic	192	82.8%	19	8.2%	4	1.7%	1	0.4%	16	6.9%	232	100.0%
Minimally Invasive NOS	9	32.1%	1	3.6%					18	64.3%	28	100.0%
Not recorded	10	9.9%	4	4.0%					87	86.1%	101	100.0%
Grand Total	993	62.0%	210	13.1%	84	5.2%	12	0.7%	302	18.9%	1,601	100.0%

#### **Known Transfusion Rate**

Transfusion

		Hans	iusioni	
	Ye	s	No	0
Technique	N	%	Ν	%
Open	263	28.5%	661	71.5%
Laparoscopic	14	10.4%	121	89.6%
Robotic	24	11.1%	192	88.9%
Minimally Invasive NOS	1	10.0%	9	90.0%
Not recorded	4	28.6%	10	71.4%
Grand Total	306	23.6%	993	76.4%

#### Intraoperative Complications by Technique

Technique

	Open Laparoscopi		copic	Robo	otic	Minimally I	nvasive	Grand Total		
Intra Operative Complications	N	% Total	N	% Total	N	% Total	N	% Total	N	% Total
None	843	77.1%	109	74.7%	198	85.3%	22	78.6%	1,172	78.1%
Adhesions	32	2.9%	1	0.7%	7	3.0%			40	2.7%
Difficult dissection	52	4.8%	12	8.2%	14	6.0%	1	3.6%	79	5.3%
Haemorrhage / Bleeding	78	7.1%	15	10.3%	6	2.6%			99	6.6%
Nerve injury	3	0.3%	1	0.7%					4	0.3%
Rectal Injury	12	1.1%	3	2.1%	1	0.4%			16	1.1%
Robotic device failure					1	0.4%			1	0.1%
Small bowel injury	2	0.2%							2	0.1%
Unresectable tumour	3	0.3%	1	0.7%	4	1.7%			8	0.5%
Vascular injury	1	0.1%			1	0.4%			2	0.1%
Not recorded	68	6.2%	4	2.7%			5	17.9%	77	5.1%
Grand Total	1,094	100.0%	146	100.0%	232	100.0%	28	100.0%	1,500	100.0%

## Postoperative Complications by Technique

Technique

	Ope	n	Laparoscopic		Rob	otic	Minimally I	nvasive	Grand	Total
Post Operative Complications (	N	% Total	N	% Total	N	% Total	N	% Total	N	% Total
No Complication	593	54.2%	102	69.9%	128	55.2%	15	53.6%	838	55.9%
Anastomotic leak	7	0.6%	1	0.7%	3	1.3%	2	7.1%	13	0.9%
Bleeding/Haemorrhage	7	0.6%			3	1.3%			10	0.7%
Bowel obstruction	12	1.1%	4	2.7%	1	0.4%			17	1.1%
Chest Infection	44	4.0%	6	4.1%	6	2.6%	1	3.6%	57	3.8%
Intra-abdominal infection	32	2.9%	3	2.1%	12	5.2%	2	7.1%	49	3.3%
Lymphocoele	7	0.6%			2	0.9%			9	0.6%
MI	4	0.4%							4	0.3%
PE / DVT	6	0.5%			1	0.4%			7	0.5%
Prolonged ileus	100	9.1%	14	9.6%	19	8.2%			133	8.9%
Urine leak	14	1.3%	2	1.4%	1	0.4%			17	1.1%
Wound dehiscence / infection	66	6.0%	3	2.1%	3	1.3%			72	4.8%
Not recorded	202	18.5%	11	7.5%	53	22.8%	8	28.6%	274	18.3%
Grand Total	1,094	100.0%	146	100.0%	232	100.0%	28	100.0%	1,500	100.0%

#### Post-operative complication rate

Post Operative Complications (group)

						(0 1)					
	Complication		No Comp	lication	Not rec	orded	Grand Total				
Technique	N	%	N	%	N	%	N	%			
Open	299	27.3%	593	54.2%	202	18.5%	1,094	100.0%			
Laparoscopic	33	22.6%	102	69.9%	11	7.5%	146	100.0%			
Robotic	51	22.0%	128	55.2%	53	22.8%	232	100.0%			
Minimally Invasive NOS	5	17.9%	15	53.6%	8	28.6%	28	100.0%			
Grand Total	388	25.9%	838	55.9%	274	18.3%	1,500	100.0%			

#### Clavien Dindo Grade of Post operative complications

Clavien Dindo Grade Of Complications

	Gra	de I	Grad	de II	Grad	e IIIa	Grad	e IIIb	Grade	· IVa	Grade	e IVb	Grad	de V	Not red	corded	Grand	l Total
Technique	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Open	61	20.4%	114	38.1%	29	9.7%	34	11.4%	16	5.4%	4	1.3%	8	2.7%	33	11.0%	299	100.0%
Laparoscopic	6	18.2%	17	51.5%	1	3.0%	7	21.2%					1	3.0%	1	3.0%	33	100.0%
Robotic	9	17.6%	22	43.1%	8	15.7%	4	7.8%	3	5.9%			2	3.9%	3	5.9%	51	100.0%
Minimally Invasive NOS											1	20.0%	1	20.0%	3	60.0%	5	100.0%
Not recorded															6	100.0%	6	100.0%
Grand Total	76	19.3%	153	38.8%	38	9.6%	45	11.4%	19	4.8%	5	1.3%	12	3.0%	46	11.7%	394	100.0%

# Known CD IIIplus complication rate

CDGradeIIIplus

	Y	es	N	lo	Grand	l Total
Technique	N	%	N	%	N	%
Open	95	10.9%	775	89.1%	870	100.0%
Laparoscopic	9	6.6%	127	93.4%	136	100.0%
Robotic	18	9.9%	164	90.1%	182	100.0%
Minimally Invasive NOS	2	11.8%	15	88.2%	17	100.0%
Grand Total	124	10.3%	1,081	89.7%	1,205	100.0%

#### Total by LOS

Technique	N	% Total	Median Length Of Stay	Min. Length Of Stay	Max. Length Of Stay
Open	1,094	68.3%	12	0	379
Laparoscopic	146	9.1%	8	1	281
Robotic	232	14.5%	8	1	90
Minimally Invasive NOS	28	1.7%	8	2	27
Not recorded	101	6.3%	12	1	68
Grand Total	1,601	100.0%	11	0	379

#### 30 day mortality

#### Thirty Day Mortality

	Yes	6	No	o .	Not rec	orded	Grand Total		
Technique	N	%	N	%	N	%	N	%	
Open	11	1.0%	741	67.7%	342	31.3%	1,094	100.0%	
Laparoscopic	2	1.4%	97	66.4%	47	32.2%	146	100.0%	
Robotic	2	0.9%	166	71.6%	64	27.6%	232	100.0%	
Minimally Invasive NOS	1	3.6%	18	64.3%	9	32.1%	28	100.0%	
Not recorded			20	19.8%	81	80.2%	101	100.0%	
Grand Total	16	1.0%	1,042	65.1%	543	33.9%	1,601	100.0%	

#### 90 day mortality

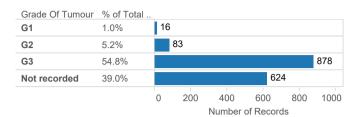
#### Ninety Day Mortality

	Ye	s	N	0	Not re	corded	Grand Total		
Technique	N	%	N	%	N	%	N	%	
Open	20	1.8%	627	57.3%	447	40.9%	1,094	100.0%	
Laparoscopic	1	0.7%	88	60.3%	57	39.0%	146	100.0%	
Robotic	7	3.0%	119	51.3%	106	45.7%	232	100.0%	
Minimally Invasive NOS	1	3.6%	10	35.7%	17	60.7%	28	100.0%	
Not recorded			17	16.8%	84	83.2%	101	100.0%	
Grand Total	29	1.8%	861	53.8%	711	44.4%	1,601	100.0%	

#### Operative Histology

Operative Histology	N	% Total
No cancer	206	12.9%
Gynaecological cancer	12	0.7%
Primary adenocarcinoma	26	1.6%
Primary CIS	109	6.8%
Primary CIS,Other	1	0.1%
Primary CIS, Primary adenocarcinoma,	1	0.1%
Radiation change only	6	0.4%
Sarcoma	16	1.0%
Secondary adenocarcinoma	9	0.6%
Squamous cell carcinoma	71	4.4%
тсс	771	48.2%
TCC,Other	12	0.7%
TCC,Primary CIS	3	0.2%
TCC,Primary CIS,Other	1	0.1%
Other	93	5.8%
Not recorded	264	16.5%
Grand Total	1,601	100.0%

#### **Grade of Tumour**



# Lymph nodes

		Positive Lymph Nodes												
	Non	ne	1 -	5	6-1	0	11-2	20	21-	30	Not rec	orded	Grand	Total
Lymph Nodes Sampled	N	% Total	N	% Total	N	% Total	N	% Total	N	% Total	N	% Total	N	% Total
1 - 5	84	9.7%	19	10.4%			2	20.0%			14	24.1%	119	10.5%
6-10	214	24.7%	44	24.2%	4	20.0%					19	32.8%	281	24.7%
11-20	388	44.9%	78	42.9%	7	35.0%	3	30.0%			21	36.2%	497	43.7%
21-30	129	14.9%	29	15.9%	6	30.0%	3	30.0%	1	50.0%	3	5.2%	171	15.0%
>30	50	5.8%	12	6.6%	3	15.0%	2	20.0%	1	50.0%	1	1.7%	69	6.1%
Grand Total	865	100.0%	182	100.0%	20	100.0%	10	100.0%	2	100.0%	58	100.0%	1,137	100.0%

#### Known Positive Surgical Margin Rate

Positive Margins

	1 oslave Margins									
	Ye	s	N	О	Grand Total					
Technique	N	%	N	%	N	%				
Open	77	8.8%	802	91.2%	879	100.0%				
Laparoscopic	8	6.5%	116	93.5%	124	100.0%				
Robotic	16	9.3%	156	90.7%	172	100.0%				
Minimally Invasive NOS	3	15.0%	17	85.0%	20	100.0%				
Grand Total	104	8.7%	1,091	91.3%	1,195	100.0%				

#### Status at most recent Follow-up

Time to follow up (group)

		Time to follow up (group)									
		0-90		91 - 1	180	181 - 360		>360		Grand Total	
Follow-up Current status	Follow-up Patient status	N	% Total	N	% Total	N	% Total	N	% Total	N	% Total
Alive with metastatic disease	Alive	1	0.8%	2	2.8%					3	1.2%
Alive with no evidence of bladder cancer	Alive	6	5.0%	3	4.2%	3	5.5%	1	7.1%	13	5.0%
Not recorded / applicable	Alive	111	93.3%	64	88.9%	49	89.1%	13	92.9%	237	91.2%
	Died in followup	1	0.8%	3	4.2%	3	5.5%			7	2.7%
Grand Total		119	100.0%	72	100.0%	55	100.0%	14	100.0%	260	100.0%

#### **Participating Hospital Centres 2014**

#### We are grateful to consultants from the following Centres / trusts who returned data for these analyses:

Addenbrooke's Hospital, Cambridge

Alexandra Hospital, Redditch Arrowe Park Hospital, Wirral

Barking, Havering And Redbridge University

Hospital

**Belfast City Hospital** 

**Bradford Royal Infirmary** 

**Bristol Oncology Centre** 

**Burnley General Hospital** 

Castle Hill Hospital, Hull

Cheltenham General Hospital

Churchill Hospital, Oxford

Colchester General Hospital

Darent Valley Hospital, Kent

Derriford Hospital, Plymouth

Eastbourne District General Hospital

Freeman Hospital, Newcastle

Gartnavel General Hospital, Glasgow

Guy's & Thomas's Hospital

Heartlands Hospital, Birmingham

Imperial College Healthcare NHS Trust

Kent and Canterbury Hospital

Leicester General Hospital

Lincoln County Hospital

Maidstone Hospital

Medway Maritime Hospital, Gillingham

Morriston Hospital, Swansea

Musgrove Park Hospital, Taunton

New Cross Hospital, Wolverhampton

Norfolk And Norwich University Hospital

Northampton General Hospital

**Nottingham City Hospital** 

Pinderfields General Hospital, Wakefield

Queen Alexandra Hospital, Portsmouth

Queen Elizabeth Hospital, Birmingham

Royal Alexandra Hospital, Paisley

Royal Berkshire Hospital, Reading

Royal Bournemouth General Hospital

Royal Derby Hospital

Royal Devon and Exeter Hospital

Royal Hallamshire Hospital, Sheffield

Royal Liverpool University Hospital

Royal Marsden Hospital, London

Royal Preston Hospital

Royal Surrey County Hospital, Guildford

Royal Sussex County Hospital, Brighton

Salford Royal Hospital

Southampton General Hospital

Southend Hospital

Southmead Hospital, Bristol

St George's Hospital, London

St James's University Hospital, Leeds

Stepping Hill Hospital, Stockport

Stobhill Hospital, Glasgow

Sunderland Royal Hospital

The James Cook University Hospital,

Middlesbrough

University Hospital of North Staffordshire

Victoria Hospital, Kirkcaldy

Walsgrave Hospital, Coventry

Wexham Park Hospital, Slough

Wrexham Maelor Hospital

Wycombe Hospital, High Wycombe

Ysbyty Gwynedd Hospital, Bangor