

**THE BRITISH ASSOCIATION OF  
UROLOGICAL SURGEONS  
Section of Oncology**

**Analyses of Radical Cystectomies performed between**

**January 1<sup>st</sup> and December 31<sup>st</sup> 2016**

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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 18<sup>th</sup> July 2017 and relate to operations performed during the whole of 2016. 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.

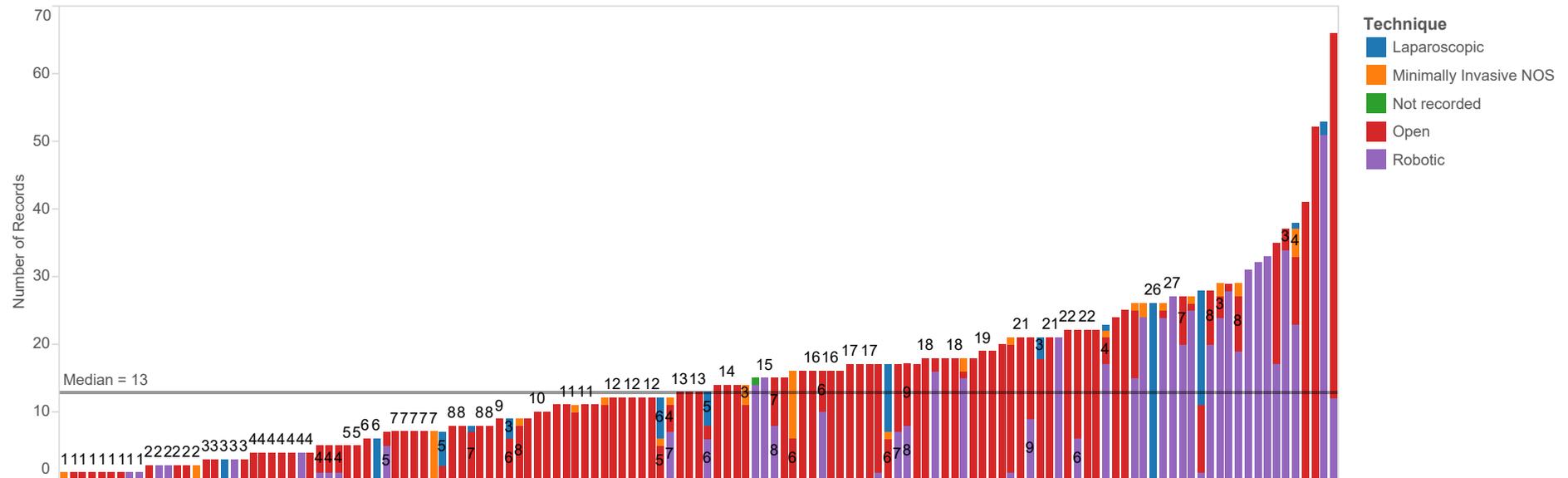
The data collection period was from 1 January 2016 to 31 December 2016.

- 1,995 cases were submitted in total, of which 1,802 were from England. The 1,995 cases came from 135 consultants at 67 sites and include 49 private patients from 20 consultants.
- Median number of cases per consultant: 13 (range 1 - 68)
- Median number of cases per centre: 25.5 (range 1 - 116)
- The overall transfusion rate was 13.1% By technique, the transfusion rates were: open 20.1% and minimally invasive 2.7%.
- The overall Clavien Dindo Grade III plus post-operative complication rate was 6.1%. (Open 7.0%, minimally invasive 4.6%)
- Hospital Episode Statistics (HES) for 2016 indicate that there were 1,877 cystectomies undertaken so we collected data on 96% of the cases undertaken in England in 2016.

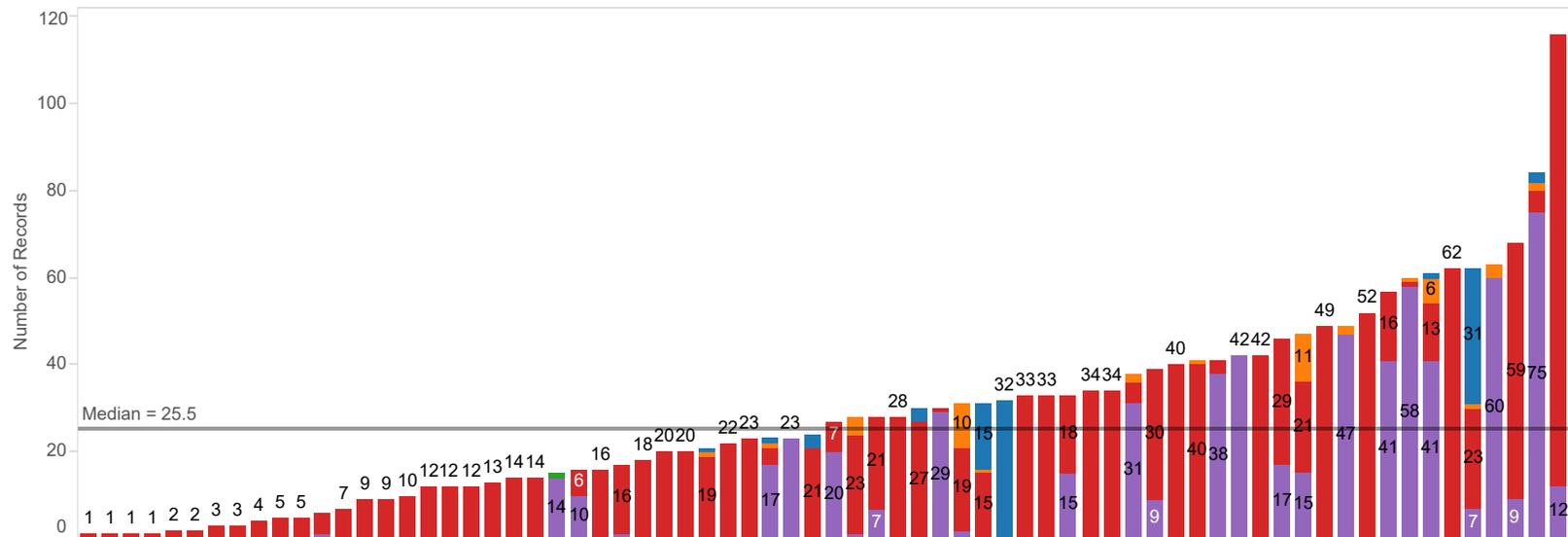
# Total returns for Radical Cystectomy procedures performed between 01/01/2016 and 31/12/2016

1995 cases from 135 consultants at 67 centres including 49 private cases from 20 consultants

Total by Consultant



Total by Centre



## Totals by Technique

| Gender1            | Technique    |               |            |               |              |               |                        |               |              |               |              |               |
|--------------------|--------------|---------------|------------|---------------|--------------|---------------|------------------------|---------------|--------------|---------------|--------------|---------------|
|                    | Open         |               | Robotic    |               | Laparoscopic |               | Minimally Invasive NOS |               | Not recorded |               | Grand Total  |               |
|                    | N            | % Total       | N          | % Total       | N            | % Total       | N                      | % Total       | N            | % Total       | N            | % Total       |
| Male               | 861          | 70.7%         | 512        | 79.8%         | 72           | 80.9%         | 38                     | 82.6%         | 1            | 100.0%        | 1,484        | 74.4%         |
| Female             | 353          | 29.0%         | 130        | 20.2%         | 17           | 19.1%         | 8                      | 17.4%         |              |               | 508          | 25.5%         |
| Not recorded       | 3            | 0.2%          |            |               |              |               |                        |               |              |               | 3            | 0.2%          |
| <b>Grand Total</b> | <b>1,217</b> | <b>100.0%</b> | <b>642</b> | <b>100.0%</b> | <b>89</b>    | <b>100.0%</b> | <b>46</b>              | <b>100.0%</b> | <b>1</b>     | <b>100.0%</b> | <b>1,995</b> | <b>100.0%</b> |

## Technique by Age

| Technique              | N     | Median | Min | Max |
|------------------------|-------|--------|-----|-----|
| Open                   | 1,217 | 69     | 0   | 100 |
| Robotic                | 642   | 70     | 0   | 89  |
| Laparoscopic           | 89    | 70     | 0   | 85  |
| Minimally Invasive NOS | 46    | 69     | 49  | 82  |
| Not recorded           | 1     | 80     | 80  | 80  |

## Indication

| Indication For Cystectomy                  | N            | % Total       |
|--|--------------|---------------|
| Muscle invasive TCC                        | 924          | 46.3%         |
| Primary NMIBC                              | 256          | 12.8%         |
| NMIBC refractory to intravesical treatment | 270          | 13.5%         |
| Primary adenocarcinoma                     | 30           | 1.5%          |
| Primary CIS                                | 65           | 3.3%          |
| Salvage after radiotherapy                 | 91           | 4.6%          |
| Sarcoma                                    | 13           | 0.7%          |
| Squamous cell carcinoma                    | 94           | 4.7%          |
| Benign disease                             | 23           | 1.2%          |
| Gynaecological cancer                      | 17           | 0.9%          |
| Secondary adenocarcinoma                   | 16           | 0.8%          |
| Other                                      | 115          | 5.8%          |
| Not recorded                               | 81           | 4.1%          |
| <b>Grand Total</b>                         | <b>1,995</b> | <b>100.0%</b> |

## Pre-op Imaging

| Pre Operative Imaging (group)     | N            | % Total       |
|-----------------------------------|--------------|---------------|
| CT                                | 1,126        | 56.4%         |
| CT +/- Bone scan, USS, MRI Others | 538          | 27.0%         |
| MRI                               | 53           | 2.7%          |
| Bone scan                         | 2            | 0.1%          |
| MRI + others                      | 8            | 0.4%          |
| USS +/- Other                     | 5            | 0.3%          |
| PET                               | 1            | 0.1%          |
| None                              | 147          | 7.4%          |
| Not recorded                      | 115          | 5.8%          |
| <b>Grand Total</b>                | <b>1,995</b> | <b>100.0%</b> |

## Pre-operative Serum Egfr

| ops EgfrNor..      | Serum Egfr                | N                         | % Total       |
|--------------------|---------------------------|---------------------------|---------------|
| Yes (>60)          | not recorded / applicable | 1,241                     | 62.2%         |
| No                 | 20 - 39                   | 95                        | 4.8%          |
|                    | 40 - 60                   | 299                       | 15.0%         |
|                    | <20                       | 16                        | 0.8%          |
|                    | not recorded / applicable | 61                        | 3.1%          |
|                    | Null                      | not recorded / applicable | 283           |
| <b>Grand Total</b> |                           | <b>1,995</b>              | <b>100.0%</b> |

## Pre-op Serum Creatinine

| Pre-op Serum Creat.. | N            | % Total       |
|----------------------|--------------|---------------|
| 0 - 120              | 1,372        | 68.8%         |
| 121 - 200            | 251          | 12.6%         |
| > 200                | 18           | 0.9%          |
| Not recorded         | 354          | 17.7%         |
| <b>Grand Total</b>   | <b>1,995</b> | <b>100.0%</b> |

## Status Upper Tracts

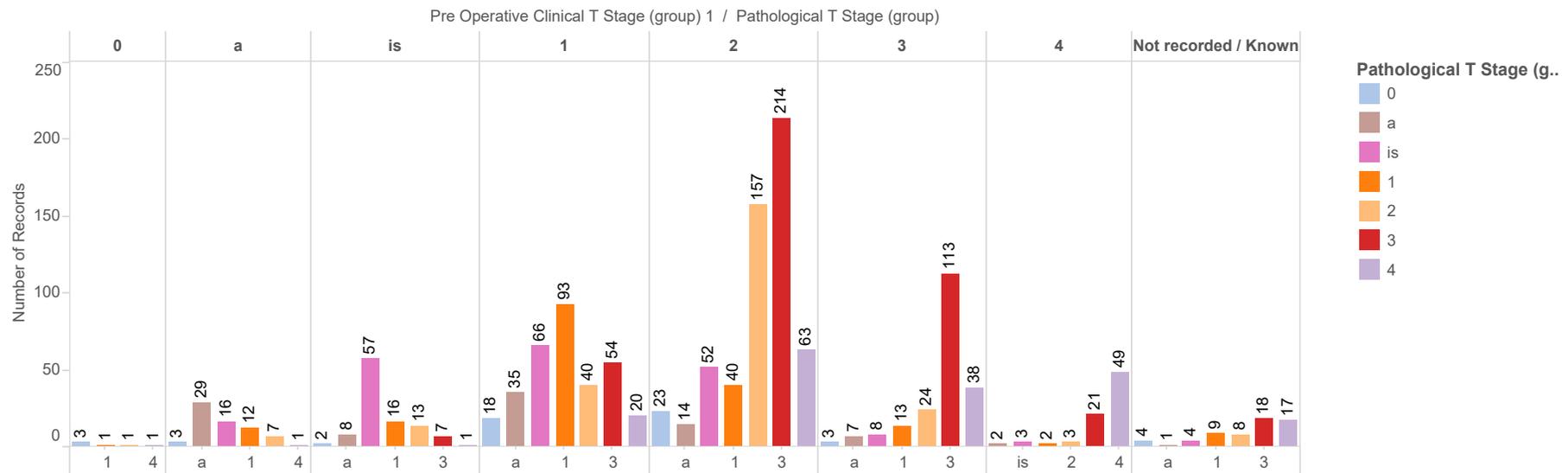
| ops StatusUpperTracts     | N            | % Total       |
|---------------------------|--------------|---------------|
| Normal                    | 1,197        | 60.0%         |
| Unilateral hydronephrosis | 265          | 13.3%         |
| Bilateral hydronephrosis  | 108          | 5.4%          |
| TCC                       | 22           | 1.1%          |
| RCC                       | 2            | 0.1%          |
| Single functioning kidney | 53           | 2.7%          |
| Other                     | 28           | 1.4%          |
| Not recorded              | 320          | 16.0%         |
| <b>Grand Total</b>        | <b>1,995</b> | <b>100.0%</b> |

## Pre-operative CT stage

| Pre Operative Clinical T Stage (group) | % of Total Number of Records | Number of Records |
|--|------------------------------|-------------------|
| 0                                      | 1.1%                         | 22                |
| is                                     | 6.7%                         | 134               |
| a                                      | 5.0%                         | 99                |
| 1                                      | 22.4%                        | 447               |
| 2                                      | 30.1%                        | 601               |
| 2a                                     | 4.4%                         | 88                |
| 2b                                     | 2.3%                         | 45                |
| 3                                      | 6.6%                         | 131               |
| 3a                                     | 2.1%                         | 42                |
| 3b                                     | 4.2%                         | 84                |
| 4a                                     | 4.8%                         | 96                |
| 4b                                     | 1.0%                         | 19                |
| Not recorded / Known                   | 9.4%                         | 187               |

Number of Records

## Comparison Clinical T stage with Pathological T stage



### Operating Surgeon

| Grade Of Mai..     | Supervised Training .. | N            | % Total       |
|--------------------|------------------------|--------------|---------------|
| Consultant         | Yes                    | 23           | 1.2%          |
|                    | No                     | 152          | 7.6%          |
|                    | Not recorded           | 1,698        | 85.1%         |
|                    | <b>Total</b>           | <b>1,873</b> | <b>93.9%</b>  |
| SpR                | Yes                    | 44           | 2.2%          |
|                    | <b>Total</b>           | <b>44</b>    | <b>2.2%</b>   |
| Other              | Yes                    | 2            | 0.1%          |
|                    | <b>Total</b>           | <b>2</b>     | <b>0.1%</b>   |
| Not recorded       | Not recorded           | 76           | 3.8%          |
|                    | <b>Total</b>           | <b>76</b>    | <b>3.8%</b>   |
| <b>Grand Total</b> |                        | <b>1,995</b> | <b>100.0%</b> |

### Diversion Procedure

| Diversion Procedure | Technique    |               |            |               |              |               |                        |               |              |               |              |               |
|---------------------|--------------|---------------|------------|---------------|--------------|---------------|------------------------|---------------|--------------|---------------|--------------|---------------|
|                     | Open         |               | Robotic    |               | Laparoscopic |               | Minimally Invasive NOS |               | Not recorded |               | Grand Total  |               |
|                     | N            | % Total       | N          | % Total       | N            | % Total       | N                      | % Total       | N            | % Total       | N            | % Total       |
| Continent cutaneous | 12           | 1.0%          | 3          | 0.5%          |              |               |                        |               |              |               | 15           | 0.8%          |
| Ileal conduit       | 1,038        | 85.3%         | 571        | 88.9%         | 77           | 86.5%         | 19                     | 41.3%         | 1            | 100.0%        | 1,706        | 85.5%         |
| Orthotopic          | 59           | 4.8%          | 50         | 7.8%          | 9            | 10.1%         |                        |               |              |               | 118          | 5.9%          |
| Rectal diversion    | 2            | 0.2%          | 1          | 0.2%          |              |               |                        |               |              |               | 3            | 0.2%          |
| Other               | 25           | 2.1%          | 16         | 2.5%          | 3            | 3.4%          | 1                      | 2.2%          |              |               | 45           | 2.3%          |
| Not recorded        | 81           | 6.7%          | 1          | 0.2%          |              |               | 26                     | 56.5%         |              |               | 108          | 5.4%          |
| <b>Grand Total</b>  | <b>1,217</b> | <b>100.0%</b> | <b>642</b> | <b>100.0%</b> | <b>89</b>    | <b>100.0%</b> | <b>46</b>              | <b>100.0%</b> | <b>1</b>     | <b>100.0%</b> | <b>1,995</b> | <b>100.0%</b> |

### Joint Operating Cases

| Grade Of Mai..     | Joint Operating C.. | N            | % Total       |
|--------------------|---------------------|--------------|---------------|
| Consultant         | Yes                 | 474          | 23.8%         |
|                    | No                  | 1,399        | 70.1%         |
|                    | <b>Total</b>        | <b>1,873</b> | <b>93.9%</b>  |
| SpR                | Yes                 | 2            | 0.1%          |
|                    | No                  | 42           | 2.1%          |
|                    | <b>Total</b>        | <b>44</b>    | <b>2.2%</b>   |
| Other              | No                  | 2            | 0.1%          |
|                    | <b>Total</b>        | <b>2</b>     | <b>0.1%</b>   |
| Not recorded       | Yes                 | 20           | 1.0%          |
|                    | No                  | 56           | 2.8%          |
|                    | <b>Total</b>        | <b>76</b>    | <b>3.8%</b>   |
| <b>Grand Total</b> |                     | <b>1,995</b> | <b>100.0%</b> |

### Time from Diagnosis to Cystectomy

| Time Diagno..      | N              | % Total       |
|--------------------|----------------|---------------|
| 0-30days           | 68.0           | 4.8%          |
| 31 to 60           | 233.0          | 16.5%         |
| 61-90              | 251.0          | 17.8%         |
| 91-180             | 395.0          | 28.0%         |
| 181-360            | 189.0          | 13.4%         |
| >360               | 275.0          | 19.5%         |
| <b>Grand Total</b> | <b>1,411.0</b> | <b>100.0%</b> |

### CPEX Testing

| Cpex Testing       | N            | % Total       |
|--------------------|--------------|---------------|
| Yes                | 549          | 27.5%         |
| No                 | 1,244        | 62.4%         |
| Not recorded       | 202          | 10.1%         |
| <b>Grand Total</b> | <b>1,995</b> | <b>100.0%</b> |

## Duration of Operation

| Technique              | Duration Of Operation (group) |      |           |       |          |        |              |       |             |        |
|------------------------|-------------------------------|------|-----------|-------|----------|--------|--------------|-------|-------------|--------|
|                        | <3 hours                      |      | 3-5 hours |       | >5 hours |        | Not recorded |       | Grand Total |        |
|                        | N                             | %    | N         | %     | N        | %      | N            | %     | N           | %      |
| Open                   | 103                           | 8.5% | 493       | 40.5% | 440      | 36.2%  | 181          | 14.9% | 1,217       | 100.0% |
| Robotic                | 57                            | 8.9% | 260       | 40.5% | 292      | 45.5%  | 33           | 5.1%  | 642         | 100.0% |
| Laparoscopic           | 5                             | 5.6% | 44        | 49.4% | 27       | 30.3%  | 13           | 14.6% | 89          | 100.0% |
| Minimally Invasive NOS | 1                             | 2.2% | 7         | 15.2% | 12       | 26.1%  | 26           | 56.5% | 46          | 100.0% |
| Not recorded           |                               |      |           |       | 1        | 100.0% |              |       | 1           | 100.0% |
| Grand Total            | 166                           | 8.3% | 804       | 40.3% | 772      | 38.7%  | 253          | 12.7% | 1,995       | 100.0% |

## Blood Loss

| Technique      | Measured Blood Loss |       |            |       |              |        |               |       |          |      |              |       |             |        |
|----------------|---------------------|-------|------------|-------|--------------|--------|---------------|-------|----------|------|--------------|-------|-------------|--------|
|                | <300 ml             |       | 300-500 ml |       | >500-1000 ml |        | >1000-2000 ml |       | >2000 ml |      | Not recorded |       | Grand Total |        |
|                | N                   | %     | N          | %     | N            | %      | N             | %     | N        | %    | N            | %     | N           | %      |
| Open           | 191                 | 15.7% | 304        | 25.0% | 355          | 29.2%  | 155           | 12.7% | 43       | 3.5% | 169          | 13.9% | 1,217       | 100.0% |
| Robotic        | 374                 | 58.3% | 171        | 26.6% | 63           | 9.8%   | 10            | 1.6%  | 3        | 0.5% | 21           | 3.3%  | 642         | 100.0% |
| Laparoscopic   | 50                  | 56.2% | 16         | 18.0% | 10           | 11.2%  | 2             | 2.2%  |          |      | 11           | 12.4% | 89          | 100.0% |
| Minimally In.. | 14                  | 30.4% | 2          | 4.3%  | 2            | 4.3%   | 2             | 4.3%  |          |      | 26           | 56.5% | 46          | 100.0% |
| Not recorded   |                     |       |            |       | 1            | 100.0% |               |       |          |      |              |       | 1           | 100.0% |
| Grand Total    | 629                 | 31.5% | 493        | 24.7% | 431          | 21.6%  | 169           | 8.5%  | 46       | 2.3% | 227          | 11.4% | 1,995       | 100.0% |

## Transfusions

| Technique      | Units Of Blood Transfused During This Surgical Admission |        |                  |       |                      |      |                  |      |              |       |             |        |
|----------------|--|--------|------------------|-------|----------------------|------|------------------|------|--------------|-------|-------------|--------|
|                | Nil  |        | Minor (<2 units) |       | Moderate (3-6 units) |      | Major (>6 units) |      | Not recorded |       | Grand Total |        |
|                | N  | %      | N                | %     | N                    | %    | N                | %    | N            | %     | N           | %      |
| Open           | 870  | 71.5%  | 152              | 12.5% | 53                   | 4.4% | 14               | 1.2% | 128          | 10.5% | 1,217       | 100.0% |
| Robotic        | 620  | 96.6%  | 9                | 1.4%  | 4                    | 0.6% |                  |      | 9            | 1.4%  | 642         | 100.0% |
| Laparoscopic   | 70   | 78.7%  | 3                | 3.4%  | 2                    | 2.2% |                  |      | 14           | 15.7% | 89          | 100.0% |
| Minimally In.. | 21   | 45.7%  |                  |       | 2                    | 4.3% |                  |      | 23           | 50.0% | 46          | 100.0% |
| Not recorded   | 1  | 100.0% |                  |       |                      |      |                  |      |              |       | 1           | 100.0% |
| Grand Total    | 1,582  | 79.3%  | 164              | 8.2%  | 61                   | 3.1% | 14               | 0.7% | 174          | 8.7%  | 1,995       | 100.0% |

## Known Transfusion Rate

| Technique              | Transfusion |       |       |        |
|------------------------|-------------|-------|-------|--------|
|                        | Yes         |       | No    |        |
|                        | N           | %     | N     | %      |
| Open                   | 219         | 20.1% | 870   | 79.9%  |
| Robotic                | 13          | 2.1%  | 620   | 97.9%  |
| Laparoscopic           | 5           | 6.7%  | 70    | 93.3%  |
| Minimally Invasive N.. | 2           | 8.7%  | 21    | 91.3%  |
| Not recorded           |             |       | 1     | 100.0% |
| Grand Total            | 239         | 13.1% | 1,582 | 86.9%  |

## Intraoperative Complications by Technique

| Intra Operative Complications ..   | Technique    |               |            |               |              |               |                     |               |              |               |              |               |
|------------------------------------|--------------|---------------|------------|---------------|--------------|---------------|---------------------|---------------|--------------|---------------|--------------|---------------|
|                                    | Open         |               | Robotic    |               | Laparoscopic |               | Minimally Invasiv.. |               | Not recorded |               | Grand Total  |               |
|                                    | N            | % Total       | N          | % Total       | N            | % Total       | N                   | % Total       | N            | % Total       | N            | % Total       |
| None                               | 916          | 75.3%         | 552        | 86.0%         | 65           | 73.0%         | 20                  | 43.5%         |              |               | 1,553        | 77.8%         |
| Adhesions                          | 69           | 5.7%          | 28         | 4.4%          | 2            | 2.2%          |                     |               |              |               | 99           | 5.0%          |
| Difficult dissection               | 68           | 5.6%          | 33         | 5.1%          | 9            | 10.1%         |                     |               | 1            | 100.0%        | 111          | 5.6%          |
| Haemorrhage / Bleeding             | 29           | 2.4%          | 6          | 0.9%          | 8            | 9.0%          |                     |               |              |               | 43           | 2.2%          |
| Nerve injury                       | 2            | 0.2%          | 3          | 0.5%          |              |               |                     |               |              |               | 5            | 0.3%          |
| Rectal Injury                      | 8            | 0.7%          | 4          | 0.6%          |              |               |                     |               |              |               | 12           | 0.6%          |
| Robotic device failure             |              |               | 1          | 0.2%          |              |               |                     |               |              |               | 1            | 0.1%          |
| Small bowel injury                 | 4            | 0.3%          | 3          | 0.5%          |              |               |                     |               |              |               | 7            | 0.4%          |
| Unresectable tumour                | 2            | 0.2%          |            |               |              |               |                     |               |              |               | 2            | 0.1%          |
| Vascular injury                    | 2            | 0.2%          | 1          | 0.2%          |              |               |                     |               |              |               | 3            | 0.2%          |
| Port complications                 |              |               | 1          | 0.2%          |              |               |                     |               |              |               | 1            | 0.1%          |
| Not recorded                       | 114          | 9.4%          | 9          | 1.4%          | 5            | 5.6%          | 26                  | 56.5%         |              |               | 154          | 7.7%          |
| Rectal injury,Vascular injury      | 1            | 0.1%          |            |               |              |               |                     |               |              |               | 1            | 0.1%          |
| Small bowel injury,Difficult dis.. | 1            | 0.1%          |            |               |              |               |                     |               |              |               | 1            | 0.1%          |
| Vascular injury,Difficult dissec.. | 1            | 0.1%          | 1          | 0.2%          |              |               |                     |               |              |               | 2            | 0.1%          |
| <b>Grand Total</b>                 | <b>1,217</b> | <b>100.0%</b> | <b>642</b> | <b>100.0%</b> | <b>89</b>    | <b>100.0%</b> | <b>46</b>           | <b>100.0%</b> | <b>1</b>     | <b>100.0%</b> | <b>1,995</b> | <b>100.0%</b> |

## Postoperative Complications by Technique

| Post Operative Complications (gro..  | Technique    |               |            |               |              |               |                        |               |              |               |              |               |
|--------------------------------------|--------------|---------------|------------|---------------|--------------|---------------|------------------------|---------------|--------------|---------------|--------------|---------------|
|                                      | Open         |               | Robotic    |               | Laparoscopic |               | Minimally Invasive NOS |               | Not recorded |               | Grand Total  |               |
|                                      | N            | % Total       | N          | % Total       | N            | % Total       | N                      | % Total       | N            | % Total       | N            | % Total       |
| No Complications                     | 612          | 50.3%         | 409        | 63.7%         | 56           | 62.9%         | 8                      | 17.4%         |              |               | 1,085        | 54.4%         |
| Anastomotic leak                     | 8            | 0.7%          | 2          | 0.3%          | 1            | 1.1%          |                        |               |              |               | 11           | 0.6%          |
| Bleeding/Haemorrhage                 | 8            | 0.7%          | 3          | 0.5%          | 1            | 1.1%          |                        |               |              |               | 12           | 0.6%          |
| Bowel obstruction                    | 9            | 0.7%          | 2          | 0.3%          |              |               |                        |               |              |               | 11           | 0.6%          |
| Chest Infection +/- Others           | 65           | 5.3%          | 30         | 4.7%          | 5            | 5.6%          |                        |               |              |               | 100          | 5.0%          |
| Intra-abdominal infection +/- others | 44           | 3.6%          | 16         | 2.5%          | 7            | 7.9%          |                        |               |              |               | 67           | 3.4%          |
| Lymphocele                           | 6            | 0.5%          | 4          | 0.6%          |              |               |                        |               |              |               | 10           | 0.5%          |
| MI                                   | 5            | 0.4%          | 2          | 0.3%          |              |               |                        |               |              |               | 7            | 0.4%          |
| Wound infection / dehiscence         | 75           | 6.2%          | 15         | 2.3%          | 3            | 3.4%          |                        |               |              |               | 93           | 4.7%          |
| PE / DVT                             | 8            | 0.7%          | 5          | 0.8%          | 1            | 1.1%          |                        |               |              |               | 14           | 0.7%          |
| Prolonged ileus +/- others           | 97           | 8.0%          | 47         | 7.3%          | 10           | 11.2%         | 2                      | 4.3%          | 1            | 100.0%        | 157          | 7.9%          |
| Urine leak                           | 15           | 1.2%          | 2          | 0.3%          | 1            | 1.1%          |                        |               |              |               | 18           | 0.9%          |
| Not recorded                         | 265          | 21.8%         | 105        | 16.4%         | 4            | 4.5%          | 36                     | 78.3%         |              |               | 410          | 20.6%         |
| <b>Grand Total</b>                   | <b>1,217</b> | <b>100.0%</b> | <b>642</b> | <b>100.0%</b> | <b>89</b>    | <b>100.0%</b> | <b>46</b>              | <b>100.0%</b> | <b>1</b>     | <b>100.0%</b> | <b>1,995</b> | <b>100.0%</b> |

## Post-operative complication rate

Post Operative Complications (group) (copy)

| Technique              | Complication |              | No Complication |              | Grand Total  |               |
|------------------------|--------------|--------------|-----------------|--------------|--------------|---------------|
|                        | N            | %            | N               | %            | N            | %             |
| Open                   | 339          | 35.6%        | 612             | 64.4%        | 951          | 100.0%        |
| Robotic                | 128          | 23.8%        | 409             | 76.2%        | 537          | 100.0%        |
| Laparoscopic           | 29           | 34.1%        | 56              | 65.9%        | 85           | 100.0%        |
| Minimally Invasive NOS | 2            | 20.0%        | 8               | 80.0%        | 10           | 100.0%        |
| Not recorded           | 1            | 100.0%       |                 |              | 1            | 100.0%        |
| <b>Grand Total</b>     | <b>499</b>   | <b>31.5%</b> | <b>1,085</b>    | <b>68.5%</b> | <b>1,584</b> | <b>100.0%</b> |

## Clavien Dindo Grade of Post operative complications

Clavien Dindo Grade Of Complications

| Technique          | Grade I    |             | Grade II   |              | Grade IIIa |             | Grade IIIb |             | Grade IVa |             | Grade IVb |             | Grade V   |             | Not recorded |              | Grand Total  |               |
|--------------------|------------|-------------|------------|--------------|------------|-------------|------------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|--------------|--------------|--------------|---------------|
|                    | N          | %           | N          | %            | N          | %           | N          | %           | N         | %           | N         | %           | N         | %           | N            | %            | N            | %             |
| Open               | 72         | 7.6%        | 160        | 16.8%        | 34         | 3.6%        | 35         | 3.7%        | 3         | 0.3%        | 1         | 0.1%        | 10        | 1.1%        | 636          | 66.9%        | 951          | 100.0%        |
| Robotic            | 27         | 5.0%        | 66         | 12.3%        | 18         | 3.4%        | 8          | 1.5%        | 5         | 0.9%        |           |             | 2         | 0.4%        | 411          | 76.5%        | 537          | 100.0%        |
| Laparoscopic       | 10         | 11.8%       | 11         | 12.9%        | 1          | 1.2%        | 2          | 2.4%        |           |             |           |             |           |             | 61           | 71.8%        | 85           | 100.0%        |
| Minimally In..     | 1          | 10.0%       |            |              |            |             |            |             |           |             |           |             |           |             | 9            | 90.0%        | 10           | 100.0%        |
| Not recorded       | 1          | 100.0%      |            |              |            |             |            |             |           |             |           |             |           |             |              |              | 1            | 100.0%        |
| <b>Grand Total</b> | <b>111</b> | <b>7.0%</b> | <b>237</b> | <b>15.0%</b> | <b>53</b>  | <b>3.3%</b> | <b>45</b>  | <b>2.8%</b> | <b>8</b>  | <b>0.5%</b> | <b>1</b>  | <b>0.1%</b> | <b>12</b> | <b>0.8%</b> | <b>1,117</b> | <b>70.5%</b> | <b>1,584</b> | <b>100.0%</b> |

## Known CD IIIplus complication rate

Clavien Dindo Grade Of Complications (group) (copy)

| Technique          | Grade I & Grade II |              | Grade III plus |             | Not recorded |              | Grand Total  |               |
|--------------------|--------------------|--------------|----------------|-------------|--------------|--------------|--------------|---------------|
|                    | N                  | %            | N              | %           | N            | %            | N            | %             |
| Open               | 235                | 19.3%        | 85             | 7.0%        | 897          | 73.7%        | 1,217        | 100.0%        |
| Robotic            | 94                 | 14.6%        | 33             | 5.1%        | 515          | 80.2%        | 642          | 100.0%        |
| Laparoscopic       | 21                 | 23.6%        | 3              | 3.4%        | 65           | 73.0%        | 89           | 100.0%        |
| Minimally Invasi.. | 1                  | 2.2%         |                |             | 45           | 97.8%        | 46           | 100.0%        |
| Not recorded       | 1                  | 100.0%       |                |             |              |              | 1            | 100.0%        |
| <b>Grand Total</b> | <b>352</b>         | <b>17.6%</b> | <b>121</b>     | <b>6.1%</b> | <b>1,522</b> | <b>76.3%</b> | <b>1,995</b> | <b>100.0%</b> |

## Total by LOS

| Technique              | N            | Median LOS | Min LOS  | Max LOS    | Avg          | StDevPop     |
|------------------------|--------------|------------|----------|------------|--------------|--------------|
| Open                   | 1,217        | 11         | 0        | 130        | 14.34        | 12.41        |
| Robotic                | 642          | 7          | 0        | 128        | 10.40        | 10.30        |
| Laparoscopic           | 89           | 9          | 2        | 78         | 12.08        | 10.08        |
| Minimally Invasive NOS | 46           | 7          | 3        | 31         | 10.13        | 6.77         |
| Not recorded           | 1            | 13         | 13       | 13         | 13.00        | 0.00         |
| <b>Grand Total</b>     | <b>1,995</b> | <b>10</b>  | <b>0</b> | <b>130</b> | <b>12.88</b> | <b>11.73</b> |

## 30 day mortality

| Technique              | Thirty Day Mortality (group) |              |              |               |              |                |
|------------------------|------------------------------|--------------|--------------|---------------|--------------|----------------|
|                        | Yes                          |              | No           |               | Grand Total  |                |
|                        | N                            | %            | N            | %             | N            | %              |
| Open                   | 10                           | 0.82%        | 1,207        | 99.18%        | 1,217        | 100.00%        |
| Robotic                | 6                            | 0.93%        | 636          | 99.07%        | 642          | 100.00%        |
| Laparoscopic           |                              |              | 89           | 100.00%       | 89           | 100.00%        |
| Minimally Invasive NOS |                              |              | 46           | 100.00%       | 46           | 100.00%        |
| Not recorded           |                              |              | 1            | 100.00%       | 1            | 100.00%        |
| <b>Grand Total</b>     | <b>16</b>                    | <b>0.80%</b> | <b>1,979</b> | <b>99.20%</b> | <b>1,995</b> | <b>100.00%</b> |

## cumulative 90 day mortality

| Technique              | Ninety Day Mortality (group) |              |              |               |              |                |
|------------------------|------------------------------|--------------|--------------|---------------|--------------|----------------|
|                        | Yes                          |              | No           |               | Grand Total  |                |
|                        | N                            | %            | N            | %             | N            | %              |
| Open                   | 23                           | 1.89%        | 1,194        | 98.11%        | 1,217        | 100.00%        |
| Robotic                | 12                           | 1.87%        | 630          | 98.13%        | 642          | 100.00%        |
| Laparoscopic           |                              |              | 89           | 100.00%       | 89           | 100.00%        |
| Minimally Invasive NOS |                              |              | 46           | 100.00%       | 46           | 100.00%        |
| Not recorded           |                              |              | 1            | 100.00%       | 1            | 100.00%        |
| <b>Grand Total</b>     | <b>35</b>                    | <b>1.75%</b> | <b>1,960</b> | <b>98.25%</b> | <b>1,995</b> | <b>100.00%</b> |

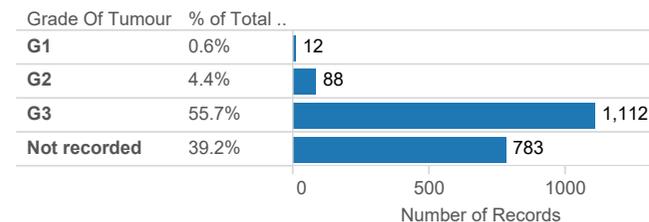
## EnhancedRecovery

| Technique              | Enhanced Recovery Pathway |              |            |             |              |              | Grand Total  |               |
|------------------------|---------------------------|--------------|------------|-------------|--------------|--------------|--------------|---------------|
|                        | Yes                       |              | No         |             | Not recorded |              | N            | %             |
|                        | N                         | %            | N          | %           | N            | %            |              |               |
| Open                   | 814                       | 66.9%        | 153        | 12.6%       | 250          | 20.5%        | 1,217        | 100.0%        |
| Robotic                | 490                       | 76.3%        | 10         | 1.6%        | 142          | 22.1%        | 642          | 100.0%        |
| Laparoscopic           | 80                        | 89.9%        | 2          | 2.2%        | 7            | 7.9%         | 89           | 100.0%        |
| Minimally Invasive NOS | 9                         | 19.6%        | 3          | 6.5%        | 34           | 73.9%        | 46           | 100.0%        |
| Not recorded           | 1                         | 100.0%       |            |             |              |              | 1            | 100.0%        |
| <b>Grand Total</b>     | <b>1,394</b>              | <b>69.9%</b> | <b>168</b> | <b>8.4%</b> | <b>433</b>   | <b>21.7%</b> | <b>1,995</b> | <b>100.0%</b> |

## Unplanned readmission

| Technique              | Unplanned Readmission To Hospital |              |              |              |              |              | Grand Total  |               |
|------------------------|-----------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
|                        | Yes                               |              | No           |              | Not recorded |              | N            | %             |
|                        | N                                 | %            | N            | %            | N            | %            |              |               |
| Open                   | 112                               | 9.2%         | 927          | 76.2%        | 178          | 14.6%        | 1,217        | 100.0%        |
| Robotic                | 80                                | 12.5%        | 462          | 72.0%        | 100          | 15.6%        | 642          | 100.0%        |
| Laparoscopic           | 13                                | 14.6%        | 76           | 85.4%        |              |              | 89           | 100.0%        |
| Minimally Invasive N.. |                                   |              | 21           | 45.7%        | 25           | 54.3%        | 46           | 100.0%        |
| Not recorded           |                                   |              | 1            | 100.0%       |              |              | 1            | 100.0%        |
| <b>Grand Total</b>     | <b>205</b>                        | <b>10.3%</b> | <b>1,487</b> | <b>74.5%</b> | <b>303</b>   | <b>15.2%</b> | <b>1,995</b> | <b>100.0%</b> |

## Grade of Tumour



## Operative Histology

| Operative Histology                  | N            | % Total       |
|--------------------------------------|--------------|---------------|
| No cancer                            | 217          | 10.9%         |
| Gynaecological cancer                | 11           | 0.6%          |
| Primary adenocarcinoma               | 35           | 1.8%          |
| Primary CIS                          | 120          | 6.0%          |
| Primary CIS,Other                    | 5            | 0.3%          |
| Primary adenocarcinoma,Other         | 1            | 0.1%          |
| Radiation change only                | 4            | 0.2%          |
| Sarcoma                              | 6            | 0.3%          |
| Secondary adenocarcinoma             | 7            | 0.4%          |
| Squamous cell carcinoma              | 86           | 4.3%          |
| TCC                                  | 933          | 46.8%         |
| TCC,Other                            | 13           | 0.7%          |
| TCC,Primary CIS                      | 25           | 1.3%          |
| TCC,Primary CIS,Other                | 1            | 0.1%          |
| TCC,Sarcoma                          | 1            | 0.1%          |
| TCC,Squamous cell carcinoma          | 6            | 0.3%          |
| Primary adenocarcinoma,Secondary a.. | 1            | 0.1%          |
| Primary CIS,Gynaecological cancer    | 1            | 0.1%          |
| Secondary adenocarcinoma,Other       | 1            | 0.1%          |
| Squamous cell carcinoma,Other        | 1            | 0.1%          |
| Squamous cell carcinoma,Primary CIS  | 1            | 0.1%          |
| TCC,Gynaecological cancer            | 1            | 0.1%          |
| TCC,Squamous cell carcinoma,Other    | 1            | 0.1%          |
| Other                                | 120          | 6.0%          |
| Not recorded                         | 397          | 19.9%         |
| <b>Grand Total</b>                   | <b>1,995</b> | <b>100.0%</b> |

## Lymph nodes

| Lymph Nodes Sampled | Positive Lymph Nodes |              |            |              |           |             |           |             |          |             |              |             |              |               |
|---------------------|----------------------|--------------|------------|--------------|-----------|-------------|-----------|-------------|----------|-------------|--------------|-------------|--------------|---------------|
|                     | None                 |              | 1 - 5      |              | 6-10      |             | 11-20     |             | 21-30    |             | Not recorded |             | Grand Total  |               |
|                     | N                    | %            | N          | %            | N         | %           | N         | %           | N        | %           | N            | %           | N            | %             |
| 1 - 5               | 125                  | 75.8%        | 37         | 22.4%        |           |             | 1         | 0.6%        |          |             | 2            | 1.2%        | 165          | 100.0%        |
| 6-10                | 272                  | 79.3%        | 61         | 17.8%        | 6         | 1.7%        | 1         | 0.3%        |          |             | 3            | 0.9%        | 343          | 100.0%        |
| 11-20               | 500                  | 80.6%        | 101        | 16.3%        | 15        | 2.4%        | 2         | 0.3%        |          |             | 2            | 0.3%        | 620          | 100.0%        |
| 21-30               | 171                  | 80.3%        | 29         | 13.6%        | 7         | 3.3%        | 3         | 1.4%        | 1        | 0.5%        | 2            | 0.9%        | 213          | 100.0%        |
| >30                 | 64                   | 82.1%        | 8          | 10.3%        | 1         | 1.3%        | 3         | 3.8%        | 1        | 1.3%        | 1            | 1.3%        | 78           | 100.0%        |
| <b>Grand Total</b>  | <b>1,132</b>         | <b>79.8%</b> | <b>236</b> | <b>16.6%</b> | <b>29</b> | <b>2.0%</b> | <b>10</b> | <b>0.7%</b> | <b>2</b> | <b>0.1%</b> | <b>10</b>    | <b>0.7%</b> | <b>1,419</b> | <b>100.0%</b> |

## LNDlevel2

| Lymph Node Dissection      | N            | % Total       |
|----------------------------|--------------|---------------|
| Level I                    | 170          | 12.0%         |
| Level I,Level II           | 58           | 4.1%          |
| Level I,Level II,Level III | 5            | 0.4%          |
| Level II                   | 856          | 60.3%         |
| Level II,Level III         | 4            | 0.3%          |
| Level III                  | 187          | 13.2%         |
| Level I,Level III          | 1            | 0.1%          |
| None                       | 78           | 5.5%          |
| Not recorded               | 60           | 4.2%          |
| <b>Grand Total</b>         | <b>1,419</b> | <b>100.0%</b> |

## Known Positive Surgical Margin Rate

| Technique              | Positive Margins |        |       |        |             |        |
|------------------------|------------------|--------|-------|--------|-------------|--------|
|                        | Yes              |        | No    |        | Grand Total |        |
|                        | N                | %      | N     | %      | N           | %      |
| Open                   | 95               | 11.1%  | 759   | 88.9%  | 854         | 100.0% |
| Robotic                | 49               | 10.5%  | 418   | 89.5%  | 467         | 100.0% |
| Laparoscopic           | 8                | 11.9%  | 59    | 88.1%  | 67          | 100.0% |
| Minimally Invasive NOS |                  |        | 17    | 100.0% | 17          | 100.0% |
| Not recorded           | 1                | 100.0% |       |        | 1           | 100.0% |
| <b>Grand Total</b>     | 153              | 10.9%  | 1,253 | 89.1%  | 1,406       | 100.0% |

## Status at most recent Follow-up

| Current Status                         | Patient Status   | Time to Follow Up |       |          |       |           |       |       |       |             |        |
|--|------------------|-------------------|-------|----------|-------|-----------|-------|-------|-------|-------------|--------|
|  |                  | 0-90              |       | 91 - 180 |       | 181 - 360 |       | > 360 |       | Grand Total |        |
|  |                  | N                 | %     | N        | %     | N         | %     | N     | %     | N           | %      |
| Null                                   | Alive            | 4                 | 33.3% | 4        | 33.3% | 3         | 25.0% | 1     | 8.3%  | 12          | 100.0% |
|  | Died in followup | 12                | 25.0% | 18       | 37.5% | 16        | 33.3% | 2     | 4.2%  | 48          | 100.0% |
| Alive with local recurrence of bladd.. | Alive            | 1                 | 10.0% | 5        | 50.0% | 3         | 30.0% | 1     | 10.0% | 10          | 100.0% |
| Alive with lymph node involvement ..   | Alive            | 4                 | 66.7% | 1        | 16.7% | 1         | 16.7% |       |       | 6           | 100.0% |
| Alive with metastatic disease          | Alive            | 6                 | 28.6% | 6        | 28.6% | 6         | 28.6% | 3     | 14.3% | 21          | 100.0% |
| Alive with no evidence of bladder c..  | Alive            | 114               | 43.0% | 72       | 27.2% | 59        | 22.3% | 19    | 7.2%  | 265         | 100.0% |
| Discharged to GP / Other consultant    | Alive            | 1                 | 16.7% | 3        | 50.0% | 1         | 16.7% | 1     | 16.7% | 6           | 100.0% |
| <b>Grand Total</b>                     |                  | 142               | 38.6% | 109      | 29.6% | 89        | 24.2% | 27    | 7.3%  | 368         | 100.0% |

## Participating Hospital Centres 2016

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

Aberdeen Royal Infirmary  
Addenbrooke's Hospital, Cambridge  
Alexandra Hospital, Redditch  
Arrowe Park Hospital, Wirral  
Belfast City Hospital  
Bradford Royal Infirmary  
Castle Hill Hospital, Hull  
Charing Cross Hospital, London  
Cheltenham General Hospital  
Christie Hospital  
Churchill Hospital, Oxford  
Colchester General Hospital  
Darent Valley Hospital, Kent  
Derriford Hospital, Plymouth  
Eastbourne District General Hospital  
Forth Valley Royal Hospital, Larbert  
Freeman Hospital, Newcastle  
Gartnavel General Hospital, Glasgow  
Guy's & Thomas's Hospital  
Heartlands Hospital, Birmingham  
Kent and Canterbury Hospital  
Leicester General Hospital  
Lincoln County Hospital

Lister Hospital, Stevenage  
Manchester Royal Infirmary  
Medway Maritime Hospital, Gillingham  
Monklands District General Hospital, Airdrie  
Morrison Hospital, Swansea  
New Cross Hospital, Wolverhampton  
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Northwick Park Hospital  
Nottingham City Hospital  
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Queen Elizabeth Hospital, Birmingham  
Queen Elizabeth University Hospital, Glasgow  
Raigmore Hospital, Inverness  
Royal Blackburn Hospital  
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 Shrewsbury Hospital  
Royal Stoke University 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 College Hospital, London  
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Walsgrave Hospital, Coventry  
Western General Hospital, Edinburgh  
Withington Community Hospital, Manchester  
Wycombe Hospital, High Wycombe