

## Norfolk and Norwich University Hospitals NHS Foundation Trust

East of England A03

The Norfolk and Norwich University Hospitals NHS Foundation Trust incorporates Norfolk & Norwich University Hospital  
<http://www.nnuh.nhs.uk/> <<http://www.nnuh.nhs.uk/>>

### Patient inclusion and data sources

The majority of these results are for patients in England and Wales diagnosed with bowel cancer 1 Apr 2017 – 31 Mar 2018. The exceptions are for adjuvant chemotherapy and the four trust outcomes: 30-day unplanned readmission, 90-day mortality, 2-year mortality and 18-month stoma rate. 30-day unplanned readmission and 90-day mortality are further restricted to patients undergoing surgery up to 31 October 2018 for patients treated in England, and up to 28 February 2018 for patients treated in Wales. Two-year mortality estimates include patients undergoing a major resection between 1 April 2015 and 31 March 2016. 18-month stoma rates include rectal cancer patients undergoing a major resection between 1 April 2014 and 31 March 2017. Adjuvant chemotherapy estimates include patients undergoing major resection for pathological stage III colon cancer between 01 June 2014 and 31 August 2017 in England only.

The Audit dataset is linked to Hospital Episode Statistics (HES) and Patient Episode Database for Wales (PEDW) at the patient level to obtain further information on patient care and follow-up such as stoma reversal and emergency readmissions in England/Wales. The dataset also links to Office of National Statistics records. These provide information about date, place and cause of death.

NBOCA also links to the National Radiotherapy Dataset (RTDS) for information on radiotherapy treatment in England, and the Systemic Anti-Cancer Therapy database (SACT) for information on chemotherapy treatment in England.

### Data Quality

#### Case ascertainment

Number of patients reported to the Audit as a percentage of the number of patients admitted for the first time to the trust/network with a diagnosis of bowel cancer within the audit period according to HES. This can be larger than 100 if more patients are reported to the Audit than identified in HES.

## **Data completeness**

% of relevant patient group with useable value of data item.

## **ASA grade**

% of patients recorded as having a major resection who have a particular ASA grade recorded, or no ASA recorded.

## **Management of all patients**

### **Potentially curative patients**

Patients electively diagnosed with colon cancer with pre-treatment staging of T2-T4 and no evidence of metastatic disease.

## **Management of patients having major resection**

### **At least 12 lymph nodes excised (%)**

% of colon cancer patients undergoing major resection with a recorded number of lymph nodes, who had at least 12 lymph nodes examined.

### **Adjuvant chemotherapy**

% of adjuvant chemotherapy in patients undergoing major resection for pathological stage III colon cancer between 01 June 2014 and 31 August 2017 in England only. These are unadjusted chemotherapy rates.

## **Rectal cancer patients**

### **Neo-adjuvant therapy (%)**

% of rectal cancer patients having short- or long-course radiotherapy prior to major resection.

### **Circumferential resection margin: Negative (%)**

% of rectal cancer patients undergoing major resection whose CRM is reported to be negative.

### **Circumferential resection margin: Recorded (%)**

% of rectal cancer patients undergoing a major resection who have a recorded CRM.

### APER rate (%)

% of patients with rectal cancer undergoing abdominoperineal excision of the rectum and therefore having a permanent stoma.

## Compare trust outcomes

Funnel plots display trust risk-adjusted outcomes for 90-day mortality, 30-day unplanned readmission, 2-year mortality and, for rectal cancer patients, 18-month stoma rate. The funnel regions represent the 95 per cent limit and the 99.8 per cent limit for trusts compared to the national average. Those trusts with results outside the outer (99.8 per cent) limit are considered potential outliers.

Risk adjustment is performed using the seven items listed under Data Quality as well as mode of admission (elective/emergency) and number of co-morbidities according to HES/PEDW, and an interaction between age and distant metastases. Missing values are imputed using Multiple Imputation. The model for two-year mortality additionally includes interactions between follow-up time (0-3 months after surgery vs. 3-24 months after surgery) and all of the risk factors.

A stoma is considered to be reversed if a HES/PEDW record with relevant code is identified within 18 months of the initial surgical procedure.

See [FAQs <https://www.nboca.org.uk/about/faq/>](https://www.nboca.org.uk/about/faq/) for more details.

## Data Quality

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All Patients:	Trust	Network	National
Number of patients in Audit	397	3626	31676
Case ascertainment (%)	100	101	95
Data completeness of:			
– Pre-treatment TNM (%)	74	71	80

<b>All Patients:</b>	<b>Trust</b>	<b>Network</b>	<b>National</b>
– Performance status (%)	90	89	86

<b>Patients having major resection:</b>	<b>Trust</b>	<b>Network</b>	<b>National</b>
Number of patients in Audit	241	2090	19218
ASA grade 1 (%)	10	13	11
ASA grade 2 (%)	57	52	53
ASA grade 3 (%)	30	30	28
ASA grade 4+ (%)	1	3	3
ASA grade not recorded (%)	2	3	5
Data completeness of:			
7 Audit items for risk-adjustment (%)	84	83	86

#### Key:

- > 80%
- 50 - 80%
- < 50%

## Management of all patients

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<b>All Patients:</b>	<b>Trust</b>	<b>Network</b>	<b>National</b>
Number of patients in Audit	397	3626	31676
Seen by Clinical Nurse Specialist (%)	81	86	87

<b>All patients deemed potentially curative</b>	<b>Trust</b>	<b>Network</b>	<b>National</b>
Number of potentially curative patients	125	756	7416
Undergoing major resection (%)	83	83	86

## Management of patients having major resection

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<b>Patients having major resection:</b>	<b>Trust</b>	<b>Network</b>	<b>National</b>
Number of patients in Audit	241	2090	19218
Distant metastases (%)	5	8	8
Urgent or emergency surgery (%)	1	14	15
At least 12 lymph nodes excised (%)	84	79	84
Laparoscopic surgery attempted (%)	67	75	69

<b>Patients having major resection:</b>	<b>Trust</b>	<b>Network</b>	<b>National</b>
Risk-adjusted length of stay > 5 days (%)	56	57	62

<b>Patients having major resection for stage III colon cancer:</b>	<b>Trust</b>	<b>Network</b>	<b>National</b>
Number of patients in audit	160	1337	11837
Adjuvant chemotherapy (%)	54	55	62

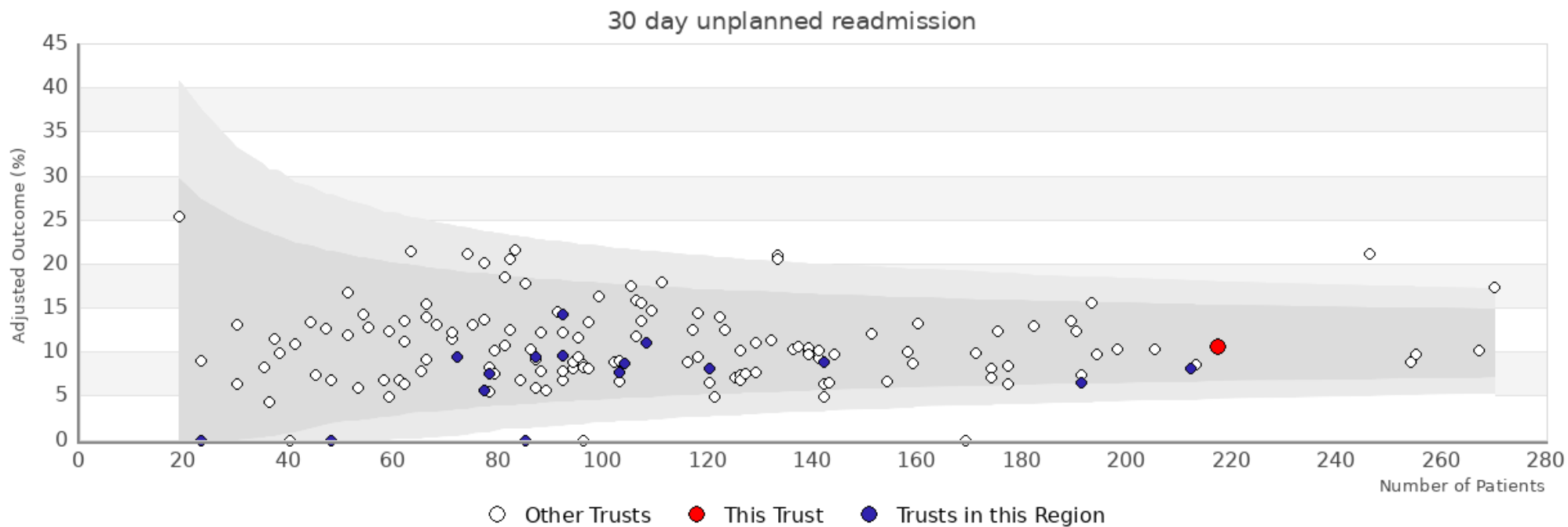
## Rectal cancer patients

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<b>Patients having major resection:</b>	<b>Trust</b>	<b>Network</b>	<b>National</b>
Number of patients in Audit	57	533	4588
Neoadjuvant therapy (%)	37	25	33
Circumferential resection margin: Recorded (%)	100	88	90
Circumferential resection margin: Negative (%)	91	80	80
Rectal volume	N/A	N/A	N/A

<b>Patients in APER/Hartmanns estimate:</b>	<b>Trust</b>	<b>Network</b>	<b>National</b>
Number of patients in APER/Hartmanns estimate	N/A	N/A	N/A

<b>Patients in APER/Hartmanns estimate:</b>	<b>Trust</b>	<b>Network</b>	<b>National</b>
APER/Hartmanns (%)	N/A	N/A	N/A

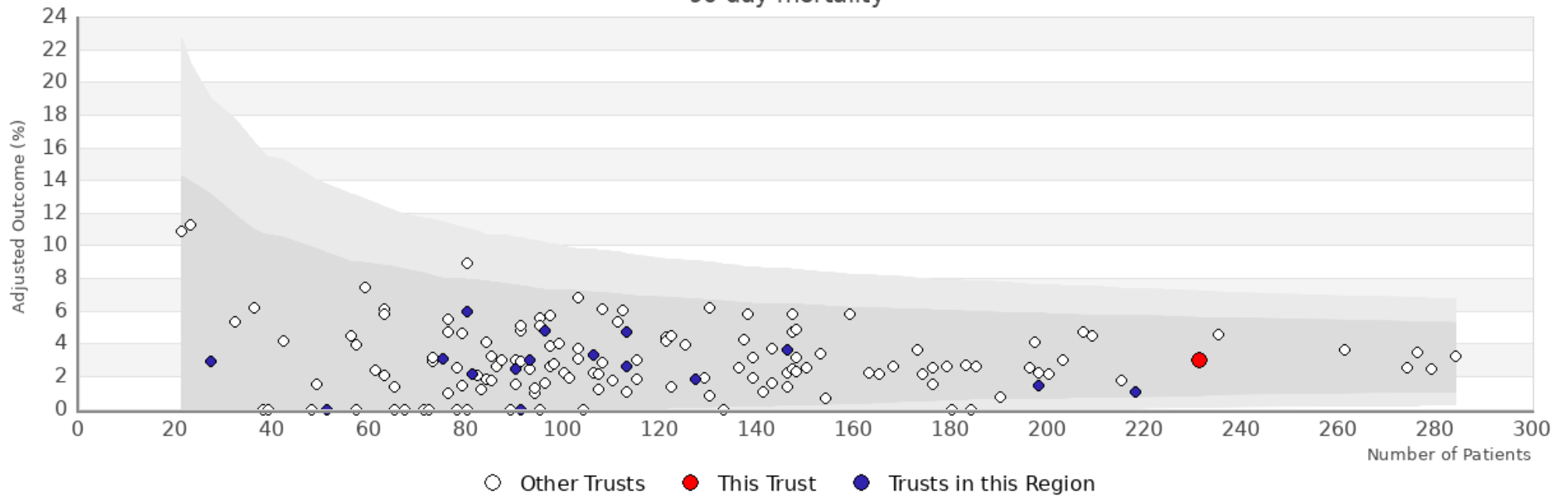


Trust	Number	Adjusted	Observed
Norfolk and Norwich University Hospitals NHS Foundation Trust	217	10.6%	10.1%
Other trusts within the region: East of England			
Basildon and Thurrock University Hospitals NHS Foundation Trust	72	9.5%	9.7%
Bedford Hospital NHS Trust	78	7.6%	7.7%



Trust	Number	Adjusted	Observed
Cambridge University Hospitals NHS Foundation Trust	191	6.6%	6.8%
East Suffolk and North Essex NHS Foundation Trust - Colchester Hospital	103	7.8%	7.8%
East Suffolk and North Essex NHS Foundation Trust - Ipswich Hospital	120	8.1%	7.5%
James Paget University Hospitals NHS Foundation Trust	87	9.5%	9.2%
Luton and Dunstable University Hospital NHS Foundation Trust	104	8.7%	8.7%
Mid Essex Hospital Services NHS Trust	77	5.7%	5.2%
Milton Keynes Hospital NHS Foundation Trust	92	9.6%	9.8%
North West Anglia NHS Foundation Trust	212	8.2%	8%
Southend University Hospital NHS Foundation Trust	108	11%	11.1%
West Hertfordshire Hospitals NHS Trust	142	8.9%	9.2%
West Suffolk NHS Foundation Trust	92	14.3%	13%

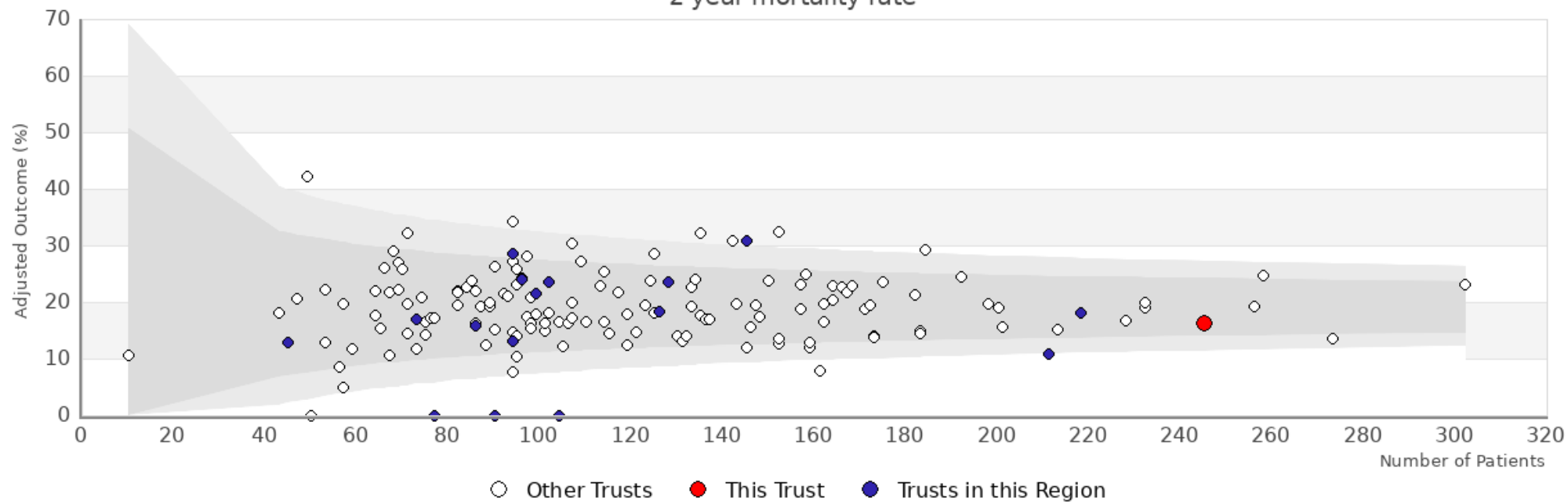
### 90 day mortality



Trust	Number	Adjusted	Observed
Norfolk and Norwich University Hospitals NHS Foundation Trust	231	3%	2.6%
Other trusts within the region: East of England			
Basildon and Thurrock University Hospitals NHS Foundation Trust	75	3.1%	2.7%
Bedford Hospital NHS Trust	81	2.1%	1.2%

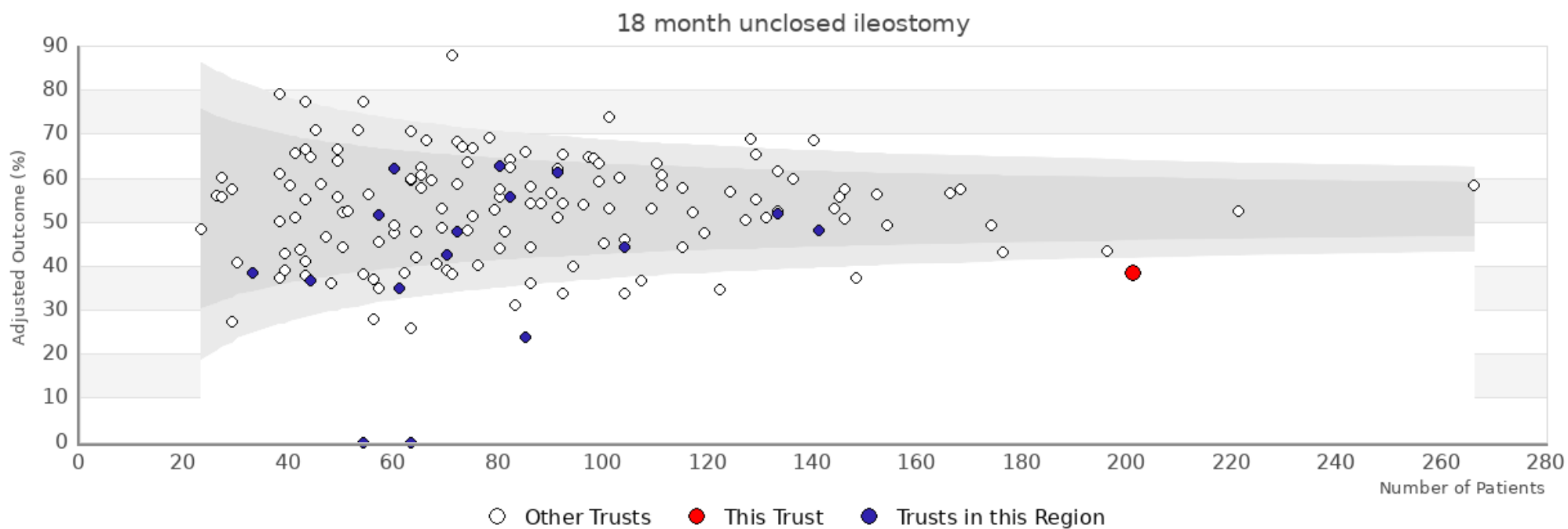
Trust	Number	Adjusted	Observed
Cambridge University Hospitals NHS Foundation Trust	198	1.5%	1.5%
East Suffolk and North Essex NHS Foundation Trust - Colchester Hospital	106	3.3%	2.8%
East Suffolk and North Essex NHS Foundation Trust - Ipswich Hospital	127	1.9%	2.4%
James Paget University Hospitals NHS Foundation Trust	90	2.5%	3.3%
Luton and Dunstable University Hospital NHS Foundation Trust	113	4.7%	7.1%
Mid Essex Hospital Services NHS Trust	80	6%	2.5%
Milton Keynes Hospital NHS Foundation Trust	93	3%	2.2%
North West Anglia NHS Foundation Trust	218	1%	0.9%
Southend University Hospital NHS Foundation Trust	113	2.6%	4.4%
The Princess Alexandra Hospital NHS Trust	27	2.9%	3.7%
West Hertfordshire Hospitals NHS Trust	146	3.7%	3.4%
West Suffolk NHS Foundation Trust	96	4.8%	4.2%

2 year mortality rate



Trust	Number	Adjusted	Observed
Norfolk and Norwich University Hospitals NHS Foundation Trust	245	16.2%	15.2%
Other trusts within the region: East of England			
Basildon and Thurrock University Hospitals NHS Foundation Trust	99	21.5%	22.4%
Bedford Hospital NHS Trust	73	17%	13.5%

Trust	Number	Adjusted	Observed
Cambridge University Hospitals NHS Foundation Trust	211	10.9%	15.7%
East Suffolk and North Essex NHS Foundation Trust - Colchester Hospital	128	23.6%	15.3%
East Suffolk and North Essex NHS Foundation Trust - Ipswich Hospital	145	30.8%	27%
James Paget University Hospitals NHS Foundation Trust	86	15.7%	15.1%
Luton and Dunstable University Hospital NHS Foundation Trust	94	28.5%	25.7%
Milton Keynes Hospital NHS Foundation Trust	96	24%	23.9%
North West Anglia NHS Foundation Trust	218	18%	19.2%
Southend University Hospital NHS Foundation Trust	94	13.1%	12.5%
The Princess Alexandra Hospital NHS Trust	45	13%	14.1%
West Hertfordshire Hospitals NHS Trust	126	18.4%	15.5%
West Suffolk NHS Foundation Trust	102	23.6%	25.9%



Trust	Number	Adjusted	Observed
Norfolk and Norwich University Hospitals NHS Foundation Trust	201	38.6%	36.8%
Other trusts within the region: East of England			
Basildon and Thurrock University Hospitals NHS Foundation Trust	91	61.3%	62.6%
Bedford Hospital NHS Trust	60	62.1%	61.7%

Trust	Number	Adjusted	Observed
Cambridge University Hospitals NHS Foundation Trust	141	48.2%	49.7%
East Suffolk and North Essex NHS Foundation Trust - Colchester Hospital	104	44.4%	44.2%
East Suffolk and North Essex NHS Foundation Trust - Ipswich Hospital	85	23.9%	24.7%
James Paget University Hospitals NHS Foundation Trust	57	51.7%	57.9%
Luton and Dunstable University Hospital NHS Foundation Trust	80	62.9%	63.8%
Mid Essex Hospital Services NHS Trust	44	36.8%	36.4%
Milton Keynes Hospital NHS Foundation Trust	82	55.8%	54.9%
North West Anglia NHS Foundation Trust	133	51.8%	51.9%
Southend University Hospital NHS Foundation Trust	72	47.8%	47.2%
The Princess Alexandra Hospital NHS Trust	33	38.5%	39.4%
West Hertfordshire Hospitals NHS Trust	70	42.6%	42.9%
West Suffolk NHS Foundation Trust	61	34.9%	36.1%