NELA+

RCoA Royal College of Anaesthetists | **CR&I** Centre for Research and Improvement | Royal College of Surgeons of England | **HQIP** Healthcare Quality Improvement Partnership
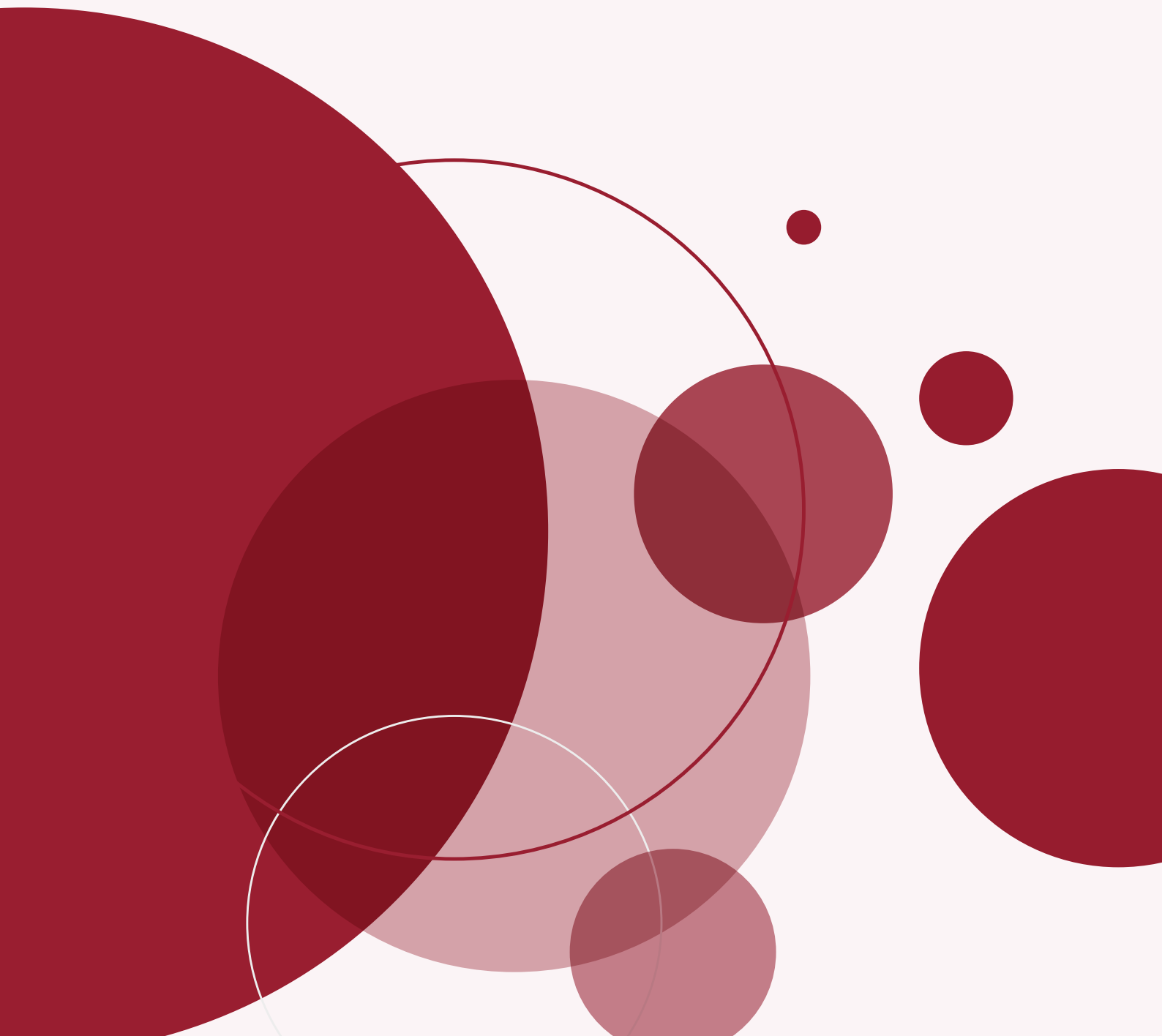
Tenth Patient Report of the National Emergency Laparotomy Audit

EXECUTIVE SUMMARY

1 EXECUTIVE SUMMARY

The tenth annual report of the National Emergency Laparotomy Audit (NELA) examines care received by 23,560 NHS patients in 176 hospitals across England and Wales admitted for emergency laparotomy (emergency bowel surgery, EmLap) between 1 April 2023 and 23 April 2024.

The report shows that clinical teams in many different hospitals were able to provide high quality care against a challenging background, with demand for access to emergency care frequently exceeding capacity[1] **30-day mortality fell to the lowest level in ten years of audit (8.1% compared to 11.7% in Year 1), and postoperative length of hospital stay fell back to a median of 10 days (compared to 11 days in Year 9)**. This reduction in mortality represents around 1,150 fewer deaths per year amongst the estimated 32,000 patients who undergo emergency laparotomy, whilst a fall in median length of stay of one day could represent potential annual financial savings of more than £10milion.[2]

There was evidence of wide variation between hospitals in both processes and outcomes of healthcare: more remains to be done to reduce disparity and ensure all patients benefit from the highest standards of practice. Key messages and specific recommendations are within the Line-of-Sight table and Section 3 below.

DIAGNOSTIC IMAGING

22,024 (93.5%) patients had a CT scan preoperatively (see Table 7.3). Of **16,538** with the most time-critical suspected pathologies, **98.7%** had a CT report delivered by a senior radiologist and around half of these had a CT report within an hour of the scan (see Table 7.1). In **24.7%** of patients, direct communication took place between referring and reporting teams. **12.4%** of patients had a CT scan and report that met all three sub-components of best practice (see Table 7.1).

INFECTION MANAGEMENT

Only **15.4%** of patients with suspected sepsis, and **36.8%** of patients with suspected infection received antibiotics within timeliness targets of one or three hours, respectively. In both groups, **around 25%** of patients **waited more than 5.8 hours** until they first received any antibiotics (see Table 10.1).

TIMELINESS OF ARRIVING IN THEATRE FROM ARRIVING AT HOSPITAL

Only **1,381 (8.4%)** patients with the most time-critical suspected pathologies arrived in theatre within the six-hour target. **75% waited** more than **10.2 hours** before arriving in theatre (see Table 9.1.1).
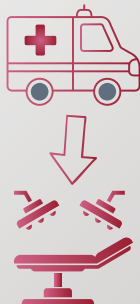
RISK ASSESSMENT

19,160 (81.3%) patients had a formal risk assessment preoperatively, and **16,328 (69.3%)** had a further evaluation of mortality risk at the end of surgery.

CONSULTANT DELIVERED CARE

12,456 (52.9%) patients were high-risk. Consultant surgeon presence in theatre for these patients was **96.4%** and presence of a consultant anaesthetist was **92.3%** (see Table 6.2).

CRITICAL CARE FOR HIGH-RISK PATIENTS

77.6% of high-risk patients were admitted directly to critical care postoperatively (see Table 11.1).

SPECIALIST CARE FOR OLDER PATIENTS AND THOSE LIVING WITH FRAILTY

5,918 patients were aged 80 or older, or 65 or older and living with frailty. **35.5%** of these received specialist postoperative input into their care (see Table 12.2), which is associated with both a reduction in mortality, and, when delivered in hospitals with sufficient resources to provide this service to the majority of older patients, a reduction in length of stay.

POSTOPERATIVE LENGTH OF STAY

8.1% of patients died within 30 days of surgery and median **postoperative length of stay** for survivors was **10 days**.

2 Introduction

An overview of the audit methodology can be found here.

Important changes made for Year 10

- NELA standards of care were reviewed and updated prior to the commencement of the audit year.
- Guidance from the Royal College of Surgeons of England (RCS)[3] categorises emergency patients by potential clinical urgency (Table 2.1 below). Our analysis has focussed mainly on the 'RCS Immediate' group when assessing standards for CT scanning and reporting, and timeliness of definitive surgery. A complete grouping of indications and findings that comprise each metric can be found here.
- NELA updated the Parsimonious Risk Score (PRS) algorithm in 2023. The PRS uses 13 variables rather than the previous 22 and shows good correlation with observed mortality risk.[4]
- In April 2023, NHS England amended the Emergency Laparotomy Best Practice Tariff to financially incentivise improvements for older patients and those living with frailty following emergency laparotomy.

Table 2.1 Categorisation of diagnostic and management urgency according to NELA-relevant suspected abdominal pathology at the time of arrival at hospital. Adapted from the Royal College of Surgeons High-Risk General Surgical Patient 2018[3]

RCS Immediate		RCS Non-Immediate		RCS Non-Operative
- Haemorrhage - Tender small or large bowel obstruction - Incarcerated/strangulated hernia - Pneumoperitoneum - Sepsis - Iatrogenic injury - Anastomotic leak - Peritonitis - GI perforation	- Necrosis - Ischaemia/infarction - Acidosis	- Abdominal wound dehiscence - Abdominal compartment syndrome - Planned relook - Non-tender small or large bowel obstruction - Gastric outlet obstruction - Hiatus hernia/para-oesophageal hernia - Volvulus - Internal hernia	- Pseudo-obstruction - Intussusception - Obstructing incisional hernia - Foreign body - Phlegmon - Abdominal abscess - Intestinal fistula - Colitis	- Self-limiting lower GI bleeding - Some more seriously ill patients who due to extremes of co-morbidity, frailty or sickness severity would not benefit from surgery ('NoLap' group)

3 Key messages and recommendations

Key Message 1a: Timeliness of diagnostic pathway following arrival at hospital

The urgency with which a patient needs initial assessment and management depends upon the pathology with which they present. The diagnostic pathway is complex, and patients usually present with symptoms and signs that are non-specific, with a wide differential diagnosis. Many patients experience prolonged delays during the initial part of their admission (median interval between arriving at hospital and arriving in theatre is almost 22 hours, and 75% of those with the most time-critical pathologies wait more than 10 hours to arrive in theatre). Until proven otherwise, patients with even minor derangements of physiology, combined with symptoms and signs compatible with common surgical diagnoses such as intra-abdominal sepsis, bowel perforation, ischaemia or obstruction, should be assumed to have an urgent need for definitive management including surgery.

Key Message 1b: Timeliness of antibiotic administration in patients with suspected infection and sepsis of surgical origin following arrival at hospital

Patients with sepsis or infection should receive antibiotics within 1 or 3 hours of recognition, respectively. Only about a third of patients with suspected infection received antibiotics within 3 hours (25% waited at least 5.8 hours). For those with suspected sepsis or septic shock, only 15.3% met the target of 1 hour (25% waited more than 5.8 hours). For either clinical condition, performance varied widely between hospitals.

> **Recommendation 1:**
> **Royal College of Anaesthetists, Royal College of Emergency Medicine, Royal College of Nursing, Royal College of Radiologists, and Royal College of Surgeons of England** – should continue to work together to update and develop consensus pathways of care for patients who might require emergency abdominal surgery. Pathways should contain statements around seniority of key decision makers and ideal timeliness of key steps including antibiotic administration and timing of definitive surgery.

Key Message 2: Direct communications between requesting and reporting teams around CT scanning

Direct communication by telephone or in person between requesting clinician and reporting radiologist following urgent CT scanning should happen if the findings have clinical implications for key decisions such as urgency of surgery. 98.7% of 16,538 'RCS Immediate' patients had a CT report delivered by a senior radiologist, but in only 4,077 (24.7%) of these was there evidence of direct communication between requesting clinician and reporter. All involved in requesting or reporting urgent CT scans need to remain cognisant of the importance of two-way discussions, especially when the patient's condition or the CT predicted findings suggest the patient has developed time-critical pathology.

> **Recommendation 2:**
> **Royal College of Anaesthetists, Royal College of Emergency Medicine, Royal College of Radiologists, Royal College of Surgeons of England –** should highlight current guidelines around the need for effective two-way direct communication between referrer and reporter whenever the patient's condition or CT predicted findings suggest the patient has developed time-critical pathology.

Key Message 3: Critical care bed capacity

High-risk patients are not always admitted to critical care following surgery. 16.5% of high-risk patients received standard ward level care following surgery and 4.3% of these died in hospital. Current guidance states that patients at high risk of dying after surgery should be admitted and observed in a critical care unit. There are about 61 NELA cases per 100,000 adult population per year, and over half are high-risk. Thus 30 to 40 critical care admissions related to emergency laparotomy per 100,000 adult population per year should be anticipated by hospitals and commissioners.

Research is needed to understand why admission rates to critical care vary between hospitals and whether alternative and cost-effective enhanced care models might provide sufficient support for certain patients.

> **Recommendations:**
> **3a: NHS England, Integrated Care Boards, and Welsh Health Boards** – should evaluate variations in critical care bed capacity for patients undergoing emergency laparotomy, factoring a predicted need of 30-40 EmLap-related critical care admissions per year per 100,000 adult population served.
>
> **3b: National Institute for Health and Care Research –** should consider commissioning research into optimum placement and management of patients at the margins of risk categories to better understand potential early interventions that could mitigate the risk of dying after surgery.

Key Message 4: Specialist care for older patients, Best Practice Tariff, and incentivising better postoperative care for older patients

Specialist care for older patients and those living with frailty is associated with a reduction in mortality after surgery. In addition, where hospitals can provide reliable expert care for older patients, there was an association with a shorter length of postoperative stay. The NHS England Emergency Laparotomy Best Practice Tariff financially incentivises more comprehensive provision of specialist care, but demand for such expertise in many hospitals often exceeds capacity.

> **Recommendation 4:**
> **Royal College of Anaesthetists, Royal College of Nursing, Royal College of Physicians, Royal College of Surgeons of England and British Geriatrics Society** – should work together across the blended workforce to develop common competency-based training and education around optimising perioperative care for older patients and those living with frailty, such that the unmet need for specialist care can be more reliably delivered.

Key Message 5: Variation in processes and outcomes of care

Widespread variation in delivery of key processes of care for emergency laparotomy patients is seen in different hospitals across both England and Wales. Challenges and potential solutions will likely vary between units.

Key Message 6: Apparent differences in timeliness of care for female and male patients

Whilst standards of care around CT scanning, consultant-delivered care in theatre and admission to critical care after surgery appear to be unaffected by the biological sex of the patient, there is an association between female sex and longer delays from arriving at hospital and arriving in theatre. Reasons for this apparent association are not clear and warrant further enquiry.

4 Participating hospitals

Trust/Health Board	Hospital
Cambridge University Hospitals NHS Foundation Trust	Addenbrookes Hospital
Aintree University Hospitals NHS Foundation Trust	Aintree University Hospital
Airedale NHS Foundation Trust	Airedale General Hospital
Wirral University Teaching Hospital NHS Foundation Trust	Arrowe Park Hospital
Royal Free London NHS Foundation Trust	Barnet Hospital
Barnsley Hospital NHS Foundation Trust	Barnsley Hospital
Basildon and Thurrock University Hospitals NHS Foundation Trust	Basildon University Hospital
Hampshire Hospitals NHS Foundation Trust	Basingstoke & North Hampshire Hospital
Bedford Hospital NHS Trust	Bedford Hospital
University Hospitals Birmingham NHS Foundation Trust	Birmingham Heartlands Hospital
Blackpool Teaching Hospitals NHS Foundation Trust	Blackpool Victoria Hospital
Bradford Teaching Hospitals NHS Foundation Trust	Bradford Royal Infirmary
University Hospitals of Bristol NHS Foundation Trust	Bristol Royal Infirmary
Hywel Dda Health Board	Bronglais General Hospital
Mid Essex Hospital Services NHS Trust	Broomfield Hospital
Hull and East Yorkshire Hospitals NHS Trust	Castle Hill Hospital
Imperial College Healthcare NHS Trust	Charing Cross
Chelsea and Westminster Hosp NHS Foundation Trust	Chelsea and Westminster Hospital
Gloucestershire Hospitals NHS Foundation Trust	Cheltenham Hospital
Chesterfield Royal Hospital NHS Foundation Trust	Chesterfield Royal Hospital
Oxford University Hospitals NHS Trust	Churchill Hospital*
Sandwell and West Birmingham Hospitals NHS Trust	City Hospital
East Suffolk and North Essex Foundation Trust	Colchester General Hospital
East Sussex Healthcare NHS Trust	Conquest Hospital
Countess of Chester Hospital NHS Foundation Trust	Countess of Chester Hospital
Croydon Health Services NHS Trust	Croydon University Hospital
North Cumbria Integrated Care NHS Foundation Trust	Cumberland Infirmary
Dartford and Gravesham NHS Trust	Darent Valley Hospital
County Durham and Darlington NHS Foundation Trust	Darlington Memorial Hospital
Plymouth Hospitals NHS Trust	Derriford Hospital
The Mid Yorkshire Hospitals NHS Trust	Dewsbury and District Hospital*

Trust/Health Board	Hospital
Northern Lincolnshire and Goole Hospitals NHS Foundation Trust	Diana Princess of Wales Hospital
Doncaster and Bassetlaw Hospitals NHS Foundation Trust	Doncaster Royal Infirmary
Dorset County Hospital NHS Foundation Trust	Dorset County Hospital
London North West Healthcare NHS Trust	Ealing Hospital
Surrey and Sussex Healthcare NHS Trust	East Surrey Hospital
The Newcastle upon Tyne Hospitals NHS Foundation Trust	Freeman Hospital
Frimley Health NHS Foundation Trust	Frimley Park Hospital
University Hospitals of Morecambe Bay NHS Foundation Trust	Furness General Hospital
George Eliot Hospital NHS Trust	George Eliot Hospital
Betsi Cadwaladr University Health Board	Glan Clwyd Hospital
Hywel Dda Health Board	Glangwili General Hospital
University Hospitals of Leicester NHS Trust	Glenfield Hospital
Gloucestershire Hospitals NHS Foundation Trust	Gloucestershire Royal Hospital
University Hospitals Birmingham NHS Foundation Trust	Good Hope Hospital
Aneurin Bevan University Health Board	Grange University Hospital
Imperial College Healthcare NHS Trust	Hammersmith Hospital
Harrogate and District NHS Foundation Trust	Harrogate District Hospital
Wye Valley NHS Trust	Hereford County Hospital
The Hillingdon Hospitals NHS Foundation Trust	Hillingdon Hospital
North West Anglia NHS Foundation Trust	Hinchingbrooke Hospital
Homerton University Hospital NHS Foundation Trust	Homerton Hospital
Calderdale and Huddersfield NHS Foundation Trust	Huddersfield Royal Infirmary
Hull and East Yorkshire Hospitals NHS Trust	Hull Royal Infirmary
East Suffolk and North Essex Foundation Trust	Ipswich Hospital
James Paget University Hospitals NHS Foundation Trust	James Paget University Hospital
Oxford University Hospitals NHS Trust	John Radcliffe Hospital
Kettering General Hospital NHS Foundation Trust	Kettering General Hospital
Barking Havering and Redbridge University Hospitals NHS Trust	King George Hospital
King's College Hospital NHS Foundation Trust	King's College Hospital
Sherwood Forest Hospitals NHS Foundation Trust	Kings Mill Hospital
Kingston Hospital NHS Trust	Kingston Hospital
University Hospitals of Leicester NHS Trust	Leicester Royal Infirmary
Mid Cheshire Hospitals NHS Foundation Trust	Leighton Hospital
United Lincolnshire Hospitals NHS Trust	Lincoln County Hospital
East and North Hertfordshire NHS Trust	Lister Hospital
Luton and Dunstable Hospital NHS Foundation Trust	Luton & Dunstable Hospital
East Cheshire NHS Trust	Macclesfield District General Hospital
Maidstone and Tunbridge Wells NHS Trust	Maidstone Hospital

Trust/Health Board	Hospital
Manchester University NHS Foundation Trust	Manchester Royal Infirmary
Medway NHS Foundation Trust	Medway Maritime Hospital
Milton Keynes Hospital NHS Foundation Trust	Milton Keynes Hospital
Abertawe Bro Morgannwg University Health Board	Morriston Hospital
Somerset NHS Foundation Trust	Musgrove Park Hospital
The Royal Wolverhampton Hospitals NHS Trust	New Cross Hospital
Barts Health NHS Trust	Newham University Hospital
Isle of Man Government Department of Health and Social Care	Noble's Hospital
Norfolk and Norwich University Hospitals NHS Foundation Trust	Norfolk and Norwich University Hospital
Royal Devon University Healthcare NHS Foundation Trust	North Devon District Hospital
Manchester University Hospitals NHS Trust	North Manchester General Hospital
North Middlesex University Hospital NHS Trust	North Middlesex University Hospital
Northampton General Hospital NHS Trust	Northampton General Hospital
Sheffield Teaching Hospitals NHS Foundation Trust	Northern General Hospital
Northumbria Healthcare NHS Foundation Trust	Northumbria Specialist Emergency Care Hospital
London North West Healthcare NHS Trust	Northwick Park/St Marks Hospital
Nottingham University Hospitals NHS Trust	Nottingham City Hospital
North West Anglia NHS Foundation Trust	Peterborough City Hospital
United Lincolnshire Hospitals NHS Trust	Pilgrim Hospital
The Mid Yorkshire Hospitals NHS Trust	Pinderfields Hospital
Poole Hospital NHS Foundation Trust	Poole Hospital
Cwm Taf Health Board	Prince Charles Hospital
The Princess Alexandra Hospital NHS Trust	Princess Alexandra Hospital
Cwm Taf Health Board	Princess of Wales Hospital
Portsmouth Hospitals NHS Trust	Queen Alexandra Hospital
Gateshead Health NHS Foundation Trust	Queen Elizabeth Hospital
Lewisham and Greenwich NHS Trust	Queen Elizabeth Hospital
University Hospitals Birmingham NHS Foundation Trust	Queen Elizabeth Hospital
East Kent Hospitals University NHS Foundation Trust	Queen Elizabeth The Queen Mother Hospital
University Hospitals of Derby and Burton NHS Foundation Trust	Queen's Hospital
Barking Havering and Redbridge University Hospitals NHS Trust	Queen's Hospital
Nottingham University Hospitals NHS Trust	Queens Medical Centre
The Rotherham NHS Foundation Trust	Rotherham Hospital
Wrightington, Wigan and Leigh NHS Foundation Trust	Royal Albert Edward Infirmary
Royal Berkshire NHS Foundation Trust	Royal Berkshire Hospital
East Lancashire Hospitals NHS Trust	Royal Blackburn Hospital
Bolton NHS Foundation Trust	Royal Bolton Hospital
Royal Cornwall Hospitals NHS Trust	Royal Cornwall Hospital

Trust/Health Board	Hospital
University Hospitals of Derby and Burton NHS Foundation Trust	Royal Derby Hospital
Royal Devon and Exeter NHS Foundation Trust	Royal Devon and Exeter Hospital*
Royal Free London NHS Foundation Trust	Royal Free Hospital
Cwm Taf Health Board	Royal Glamorgan
Hampshire Hospitals NHS Foundation Trust	Royal Hampshire County Hospital*
University Hospitals of Morecambe Bay NHS Foundation Trust	Royal Lancaster Infirmary
Royal Liverpool and Broadgreen University Hospitals NHS Trust	Royal Liverpool University Hospital
The Royal Marsden NHS Foundation Trust	Royal Marsden Hospital
Lancashire Teaching Hospitals NHS Foundation Trust	Royal Preston Hospital
The Shrewsbury and Telford Hospital NHS Trust	Royal Shrewsbury Hospital
Royal Surrey County Hospital NHS Foundation Trust	Royal Surrey County Hospital
University Hospitals Sussex NHS Foundation Trust	Royal Sussex County Hospital
Royal United Hospital Bath NHS Trust	Royal United Hospital
The Newcastle upon Tyne Hospitals NHS Foundation Trust	Royal Victoria Infirmary
The Dudley Group NHS Foundation Trust	Russells Hall Hospital
Northern Care Alliance NHS Foundation Trust	Salford Royal Hospital
Salisbury NHS Foundation Trust	Salisbury District Hospital
Sandwell and West Birmingham Hospitals NHS Trust	Sandwell General Hospital
York Teaching Hospital NHS Foundation Trust	Scarborough Hospital
Northern Lincolnshire and Goole Hospitals NHS Foundation Trust	Scunthorpe General Hospital
South Tyneside and Sunderland NHS Foundation Trust	South Tyneside District Hospital
University Hospital Southampton NHS Foundation Trust	Southampton General Hospital
Southend University Hospital NHS Foundation Trust	Southend University Hospital
North Bristol NHS Trust	Southmead Hospital
Mersey and West Lancashire Teaching Hospitals NHS Trust	Southport District General Hospital
St George's Healthcare NHS Trust	St George's Hospital
Epsom and St Helier University Hospitals NHS Trust	St Helier Hospital
The Leeds Teaching Hospitals NHS Trust	St James's University Hospital
Imperial College Healthcare NHS Trust	St Mary's Hospital
Isle of Wight NHS Trust	St Mary's Hospital
Ashford and St Peter's Hospital NHS Foundation Trust	St Peter's Hospital
University Hospitals Sussex NHS Foundation Trust	St Richards Hospital
Guy's and St Thomas' NHS Foundation Trust	St Thomas' Hospital
Stockport NHS Foundation Trust	Stepping Hill Hospital
Buckinghamshire Healthcare NHS Trust	Stoke Mandeville Hospital
South Tyneside and Sunderland NHS Foundation Trust	Sunderland Royal Hospital
Tameside Hospital NHS Foundation Trust	Tameside General Hospital
The Christie NHS Foundation Trust	The Christie

Trust/Health Board	Hospital
Great Western Hospitals NHS Foundation Trust	The Great Western Hospital
South Tees Hospitals NHS Foundation Trust	The James Cook University Hospital
King's College Hospital NHS Foundation Trust	The Princess Royal University Hospital
The Queen Elizabeth Hospital King's Lynn NHS Foundation Trust	The Queen Elizabeth Hospital
The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust	The Royal Bournemouth Hospital*
Barts Health NHS Trust	The Royal London Hospital
Northern Care Alliance NHS Foundation Trust	The Royal Oldham Hospital
Torbay and South Devon NHS Foundation Trust	Torbay District General Hospital
Maidstone and Tunbridge Wells NHS Trust	Tunbridge Wells Hospital
University College London Hospitals NHS Foundation Trust	University College Hospital
Lewisham and Greenwich NHS Trust	University Hospital Lewisham
County Durham and Darlington NHS Foundation Trust	University Hospital North Durham
North Tees and Hartlepool NHS Foundation Trust	University Hospital of North Tees
Cardiff and Vale University Health Board	University Hospital of Wales
University Hospitals Coventry and Warwickshire NHS Trust	University Hospital, Coventry
Walsall Healthcare NHS Trust	Walsall Manor Hospital
Warrington and Halton Hospitals NHS Foundation Trust	Warrington Hospital
South Warwickshire NHS Foundation Trust	Warwick Hospital
West Hertfordshire Hospitals NHS Trust	Watford General Hospital
Chelsea and Westminster Hosp NHS Foundation Trust	West Middlesex University Hospital
West Suffolk NHS Foundation Trust	West Suffolk Hospital
Weston Area Health NHS Trust	Weston General Hospital
Frimley Health NHS Foundation Trust	Wexham Park Hospital
Barts Health NHS Trust	Whipps Cross University Hospital
Mersey and West Lancashire Teaching Hospitals NHS Trust	Whiston Hospital
Whittington Health	Whittington Hospital
East Kent Hospitals University NHS Foundation Trust	William Harvey Hospital
Hywel Dda Health Board	Withybush General Hospital
Worcestershire Acute Hospitals NHS Trust	Worcestershire Royal Hospital
University Hospitals Sussex NHS Foundation Trust	Worthing Hospital
Betsi Cadwaladr University Health Board	Wrexham Maelor Hospital
Manchester University NHS Foundation Trust	Wythenshawe Hospital
Somerset NHS Foundation Trust	Yeovil District Hospital
York Teaching Hospital NHS Foundation Trust	York Hospital
Betsi Cadwaladr University Health Board	Ysbyty Gwynedd Hospital*

*Indicates hospitals for which national data sources indicate more than 10 eligible operations were performed, but who did not submit any data to NELA in Year 10

5 Acknowledgements

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