# NATIONAL EMERGENCY LAPAROTOMY AUDIT (NELA)

# PARTICIPANT MANUAL

NELA Website: www.nela.org.uk

Online Web Tool: https://data.nela.org.uk

NELA Helpdesk: info@nela.org.uk

NELA
National Emergency Laparotomy Audit

# CONTENTS



HSRC Health Services Research Centre
NIAA National Institute of Academic Anaesthesia

RCS ADVANCING SURGICAL STANDARDS

HQIP Healthcare Quality Improvement Partnership

# ABOUT THIS MANUAL

This document has been created by the National Emergency Laparotomy Audit (NELA) Team to bring together all project documents in one place that is easy to access. This can act as reference for audit participants and a record of what resources are available.

Here you will find information ranging from general background to specific documents that will assist in carrying out this audit.

This is a living document and its contents will change and be updated as and when required. All these documents are also available in the Documents section of the NELA website, here http://www.nela.org.uk/NELADocs.

DOCUMENT UPDATED ON: 03/07/2015

# ABOUT THE AUDIT

## Background

The National Emergency Laparotomy Audit (NELA) is part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP), overseen by the Healthcare Quality Improvement Partnership (HQIP). NCAPOP is a closely linked set of centrally-funded national clinical audit projects that collect data on compliance with evidence based standards, and provide local trusts with benchmarked reports on the compliance and performance. They also measure and report patient outcomes.

NELA was one of the top two (of eleven) national clinical audits prioritised for immediate funding, in response to HQIP's call for new national audit topic proposals in 2011. It was commissioned following evidence of a high incidence of death, and a wide variation in the provision of care and mortality, for patients undergoing emergency laparotomy in hospitals across England and Wales.

The aim of the audit is to enable the improvement of the quality of care for patients undergoing emergency laparotomy through the provision of high quality comparative data from all providers of emergency laparotomy.
The contract for the provision of the NELA was awarded to the Royal College of Anaesthetists (RCoA) in June 2012. The Clinical Effectiveness Unit of the Royal College of Surgeons of England and the Intensive Care National Audit & Research Centre are our partners and will provide important methodological and technical input.

## Overview

The NELA is currently funded for 3 years with the potential of a further 2 year extension. In Year 1 an Organisational Audit was performed, with individual patient data collection in Years 2 and 3. All patients over the age of 18 years, having a general surgical emergency laparotomy in all NHS hospitals in England and Wales are enrolled on a prospective basis. Non-NHS hospitals and hospitals in Scotland, Northern Ireland and the Republic of Ireland are also be welcome to contribute to NELA, subject to appropriate funding, as the current HQIP funding only extends to coverage of England and Wales.

NELA will look at structure, process and risk-adjusted outcome measures for the quality of care received by patients undergoing emergency laparotomy. NELA will compare against standards of care such as those detailed in recent NCEPOD reports, and the Department of Health/Royal College of Surgeons of England's "Higher Risk General Surgical Patient (2011)" The aim of the audit is to generate data that drives Quality Improvement (QI). QI will be facilitated through dissemination of collected data as well as workshops and seminars to drive specific QI projects alongside data collection.

## Specific Objectives

- To enable secondary care providers to improve the delivery of care to patients undergoing emergency laparotomy using information produced by the audit.
- To provide comparative information on the organisation of care by providers of Emergency Laparotomy.
- To provide comparative information on patient outcomes following surgery for Emergency Laparotomy.
- To facilitate the development of effective change (quality improvement) initiatives and thereby spread examples of best practice and help local providers make the best possible use of audit results.

- To explore the potential for Patient Reported Outcome Measures to be included in the Programme if and when appropriate tools / collections become available.

NELA data will be linked to other sources of routine data including Critical Care Data (Intensive Care National Audit and Research Centre (ICNARC) case mix programme), Bowel Cancer Data (National Bowel Cancer Audit/Upper Gastro-intestinal Cancer Audit) and Hospital Episode Statistics (mortality data).
NELA will be delivered by a central Project Team from the National Institute of Academic Anaesthesia's Health Services Research Centre based at the RCoA. Formal oversight will be provided by a Project Board consisting of key stakeholders. Scientific input will be provided by a Clinical Reference Group consisting of representatives from all relevant clinical professional and speciality stakeholders (including patient groups).

## Key Dates

- June - Sept 2013: Complete organisational audit
- Dec 2013: 1st year of data collection process for patient audit commences
- May 2014: 1st Report published (organisational audit)
- Dec 2014: 2nd year of data collection for patient audit commences
- July 2015: 2nd Report Published (1st patient audit)
- Subsequent reports and data collection subject to extension of contract funding

# INCLUSION/EXCLUSION CRITERIA

## NELA will enrol the patients treated in England or Wales who meet the following criteria:

- aged 18 years and over,
- have an NHS number
- who undergo an expedited, urgent or emergency (NCEPOD definitions) abdominal procedure on the gastrointestinal tract.

## This will include

- Open, laparoscopic, or laparoscopically-assisted procedures
- Procedures involving the stomach, small or large bowel, or rectum for conditions such as perforation, ischaemia, abdominal abscess, bleeding or obstruction
- Washout/evacuation of intra-peritoneal abscess (unless due to appendicitis or cholecystitis – excluded, see below)
- Washout/evacuation of intra-peritoneal haematoma
- Bowel resection/repair due to incarcerated umbilical, inguinal and femoral hernias (but not hernia repair without bowel resection/repair)
- Bowel resection/repair due to obstructing/incarcerated incisional hernias provided the presentation and findings were acute
- Laparotomy/laparoscopy with inoperable pathology (e.g. peritoneal/hepatic metastases)
- Laparoscopic/Open **Adhesiolysis**
- Return to theatre for repair of substantial dehiscence of major abdominal wound (i.e. “burst abdomen”)
- Any reoperation/return to theatre meeting the criteria above is included, such as
    - patients returning to theatre for ischaemic bowel following elective or emergency aortic aneurysm surgery, or for ischaemic bowel following cardiac surgery
    - patients requiring non-elective GI surgery following prior gynaecological surgery

If multiple procedures are performed on different anatomical sites within the abdominal/pelvic cavity, the patient would be included if the major procedure is general surgical. E.g.

- Non-elective colonic resection with hysterectomy for a fistulating colonic cancer would be included as the bowel resection is the major procedure
- However bowel resection at the same time as emergency abdominal aortic aneurysm repair would not be included as the aneurysm repair is the major procedure

- Any reoperation/return to theatre meeting the criteria above is included, such as
    - patients returning to theatre for ischaemic bowel following elective or emergency aortic aneurysm surgery, or for ischaemic bowel following cardiac surgery
    - patients requiring any of the above non-elective GI procedures following prior gynaecological surgery
    - patients returning to theatre for post-operative complications (e.g. bleeding, sepsis) following prior urological/renal surgery (except transplant)
    - patients requiring any of the above non-elective GI procedures as a return to theatre following any other elective or emergency procedure (even if the original procedure would have been excluded)

The above criteria are not exhaustive. Any intra-abdominal procedure not identifiable within the **exclusion** criteria should be included. Please contact the project team if you require any clarification.

NELA
National Emergency Laparotomy Audit

## Patients with the following characteristics will be excluded from NELA:

1. Patients under 18
2. Do not have an NHS number
3. Elective laparotomy / laparoscopy
4. Diagnostic laparotomy/laparoscopy where no subsequent procedure is performed (NB, if no procedure is performed because of inoperable pathology, then include)
5. Appendicectomy +/- drainage of localised collection unless the procedure is incidental to a non-elective procedure on the GI tract
6. Cholecystectomy +/- drainage of localised collection unless the procedure is incidental to a non-elective procedure on the GI tract

(All surgery involving the appendix or gallbladder, including any surgery relating to complications such as abscess or bile leak is excluded. The only exception to this is if carried out as an incidental procedure to a more major procedure. We acknowledge that there might be extreme cases of peritoneal contamination, but total exclusion avoids subjective judgement calls about severity of contamination.)

7. Non-elective hernia repair without bowel resection.
8. Minor abdominal wound dehiscence unless this causes bowel complications requiring resection
9. Vascular surgery, including abdominal aortic aneurysm repair (NB: resection of ischaemic bowel as a separate visit to theatre following abdominal aortic aneurysm repair is included)
10. Caesarean section or obstetric laparotomies
11. Gynaecological laparotomy (However bowel resection performed as a non-elective procedure for obstruction due to gynaecological cancer would be included)
12. Ruptured ectopic pregnancy, or pelvic abscesses due to pelvic inflammatory disease
13. Laparotomy/laparoscopy for pathology caused by blunt or penetrating trauma
14. All surgery relating to organ transplantation (including returns to theatre for any reason following transplant surgery)
15. Surgery relating to sclerosing peritonitis
16. Surgery for removal of dialysis catheters
17. Laparotomy/laparoscopy for oesophageal pathology
18. Laparotomy/laparoscopy for pathology of the spleen, renal tract, kidneys, liver, gall bladder and biliary tree, pancreas or urinary tract

# PATIENT AUDIT PROFORMA DATASET

| 1. | **Demographics and Admission** | |
|---|---|---|
| **1.1** | NHS Number | |
| **1.2** | Pseudo-anonymisation | Computer generated |
| **1.3** | Local patient id/hospital number | |
| **1.4** | Date of birth | |
| **1.4** | Age on arrival | *Age will automatically be calculated on web tool* |
| **1.5** | Gender | ○Male / ○Female |
| **1.6** | Forename | |
| **1.7** | Surname | |
| **1.8** | Postcode | |
| **1.9** | Date and time patient admitted to this hospital | |
| **1.10** | What was the nature of this admission? | ○Elective / ○Non-elective |

| 2 | **Pre-op**<br><br>**If the patient is returning to theatre as an emergency following previous elective surgery, all answers should relate to the emergency laparotomy, not the previous elective surgery.** | |
|---|---|---|
| **2.1** | Date and time first seen by consultant surgeon following admission/referral | Date _____(DD/MM/YYYY)<br>○ Date not known<br>Time_____ (HH:MM)<br>○ Time not known<br>○ Not Seen |
| **2.2** | Date and time that the decision was made to operate<br>*If this is unavailable please enter date and time that this patient was first booked for theatre for emergency laparotomy* | Date _____(DD/MM/YYYY)<br>○ Date not known<br>Time_____ (HH:MM)<br>○ Time not known |
| **2.2i** | Which date and time is recorded? | ○ Decision to operate<br>○ First booked for theatre |
| **2.3** | Consultant responsible for surgical care at the time the decision was made to operate (this may be different to the operating consultant) | |
| **2.4** | What was the grade of the most senior person making the decision to operate? | ○ Consultant<br>○ Post-CCT non consultant<br>○ SAS grade<br>○ Research Fellow / Clinical Fellow<br>○ Specialty trainee / registrar<br>○ Core trainee / SHO<br>○ Other_____<br>○ Unknown |
| **2.5** | Did this clinician personally review the patient at the time | ○ No |

| | | |
|---|---|---|
| | of this decision? | ○ Yes<br>○ Unknown |
| **2.6** | What was the date and time that the patient was first booked for theatre?<br>NOT REQUIRED FOR ADMISSIONS AFTER 1/12/14 | Date _____(DD/MM/YYYY)<br>○ Date not known<br>Time_____ (HH:MM)<br>○ Time not known |
| **2.7** | Was an abdominal CT scan performed in the pre-operative period as part of the diagnostic work-up? | ○ No<br>○ Yes<br>○ Unknown |
| **2.8** | If performed, was this CT reported pre-operatively by a consultant radiologist? | ○ No<br>○ Yes<br>○ Unknown |
| **2.9** | Date and time first seen by consultant anaesthetist prior to entry into operating theatre/anaesthetic room (not theatre suite) | Date _____(DD/MM/YYYY)<br>○ Date not known<br>Time_____ (HH:MM)<br>○ Time not known<br>○ Not Seen |
| **2.10** | What was the date and time of the first dose of antibiotics following admission? | Date _____(DD/MM/YYYY)<br>○ Date not known<br>Time_____ (HH:MM)<br>○ Time not known<br>○ Not Administered |

| **3** | **Pre-op Risk stratification** | |
|---|---|---|
| **3.1** | What risk of death was the patient documented as having? | ○ low (<5%)<br>○ medium (5-10%)<br>○ high (>10%)<br>○ Not documented |
| **3.2** | If documented, how was this assessment of risk made? (Please select all that apply) | □ Risk prediction tool (e.g. P-POSSUM)<br>□ Clinical Judgement<br>□ Surgical APGAR<br>□ Physiologicial criteria<br>□ Other e.g. hospital policy |
| **3.3** | What was the **ASA** score? | ○ 1: No systemic disease<br>○ 2: Mild systemic disease<br>○ 3: Severe systemic disease, not life-threatening<br>○ 4: Severe, life-threatening<br>○ 5: Moribund patient |
| **3.4** | What was the pre-operative Serum Creatinine micromol/l | ○ Not performed |
| **3.5** | What was the pre-operative Blood lactate – may be arterial or venous (mmol/l) | ○ Not performed |
| | **P-POSSUM calculation** | |
| | **For questions 3.6 to 3.22 please enter values closest to time of booking for theatre in order to calculate P-POSSUM. Answers should reflect chronic *and* acute pathophysiology**. | |

| | | |
|---|---|---|
| **3.6** | Serum Sodium concentration (mmol/l) | |
| **3.7** | Serum Potassium concentration (mmol/l) | |
| **3.8** | Serum Urea concentration (mmol/l) | |
| **3.9** | Serum Haemoglobin concentration (g/dl) | |
| **3.10** | Serum White cell count (x10∧9 / l) | |
| **3.11** | Pulse rate(bpm) | |
| **3.12** | Systolic blood pressure (mmHg) | |
| **3.13** | Glasgow coma scale | |
| **3.14** | Select an option that best describes this patient's **ECG** | ○ No abnormalities<br>○ AF rate 60-90<br>○ AF rate >90/ any other abnormal rhythm/paced rhythm/ >5VE/min/ Q, ST or T wave abnormalities |
| **3.15** | Select an option that best describes this patient's **cardiac signs** and chest xray appearance | ○ No failure<br>○ Diuretic, digoxin, antianginal or antihypertensive therapy<br>○ Peripheral oedema, warfarin Therapy or CXR: borderline cardiomegaly<br>○ Raised jugular venous pressure or CXR: cardiomegaly |
| **3.16** | Select an option that best describes this patient's **respiratory history** and chest xray appearance | ○ No dyspnoea<br>○ Dyspnoea on exertion or CXR: mild COAD<br>○ Dyspnoea limiting exertion to < 1 Flight or CXR: moderate COAD<br>○ Dyspnoea at rest/rate > 30 at rest or CXR: fibrosis or consolidation |
| **3.16a** | Patient was ventilated prior to emergency laparotomy<br><br>*Online web tool will automatically calculate Physiology severity score* | ○ Yes<br>○ No |
| **3.17** | Select the **operative severity** of the intended surgical intervention (see help box for examples) | ○ Major<br>○ Major+ |
| **3.18** | Including this operation, how many operations has the patient had in the 30 day period prior to this procedure? | ○ 1<br>○ 2<br>○ >2 |
| **3.19** | Based on your clinical experience of the intended surgery, please estimate the likely ***intra*operative blood loss** (ml) | ○ <100<br>○101-500<br>○ 501-999<br>○ >=1000 |
| **3.20** | Please select a value that best describes the likely degree of **peritoneal soiling** | ○ None<br>○ Serous fluid |

| | | |
|---|---|---|
| | | ○ Localised pus<br>○ Free bowel content, pus or blood |
| **3.21** | What severity of malignancy is anticipated to be present? | ○ None<br>○ Primary only<br>○ Nodal metastases<br>○ Distant metastases |
| **3.22** | Please select **urgency** of surgical intervention<br>*(see help notes for additional information, including equivalent Possum categories)*<br><br>*Online web tool will automatically calculate Operative severity score* | ○ 3. Expedited (>18 hours)<br>○ 2B. Urgent (6-18 hours)<br>○ 2A. Urgent (2-6 hours)<br>○ 1. Immediate (<2 hours) |
| **3.23** | Pre-op P-POSSUM predicted **mortality** | Calculated ☐ |
| **3.24** | Pre-op POSSUM predicted **morbidity** | Calculated ☐ |
| **3.25** | Not all P-POSSUM investigations available | |

| **4** | **Intra-op** | |
|---|---|---|
| **4.1** | Date and time of entry in to operating theatre/anaesthetic room (not theatre suite) | Date _____(DD/MM/YYYY)<br>Time_____ (HH:MM)<br>☐ Time not known |
| **4.2** | Senior surgeon grade | ○ Consultant<br>○ Post-CCT fellow<br>○ SAS grade<br>○ Research Fellow / Clinical Fellow<br>○ Specialty trainee / registrar<br>○ Core trainee / SHO<br>○ Other |
| **4.2a** | If consultant: Name/GMC of operating consultant | (Please select consultant)<br>☐ |
| **4.3** | Senior anaesthetist grade | ○ Consultant<br>○ Post-CCT fellow<br>○ SAS grade<br>○ Research Fellow / Clinical Fellow<br>○ Specialty trainee / registrar<br>○ Core trainee / SHO<br>○ Other |
| **4.3a** | If consultant: Name/GMC of anaesthetist | (Please select consultant)<br>☐ |
| **4.4** | How did you provide goal directed fluid therapy? | ○ Not provided<br>○ Cardiac output monitor<br>○ Other |

| **5** | **Procedure** | |
|---|---|---|
| **5.1** | Is this the first surgical procedure of this admission, or a | ○ First surgical procedure after |

| | | |
|---|---|---|
| | Complication of previous surgery within the same admission? | admission<br>○ Surgery for complication of 0 previous surgical procedure within the same admission |
| **5.2** | What is the indication for surgery?<br>(Please select all that apply) | ○ Peritonitis<br>○ Perforation<br>○ Abdominal abscess<br>○ Anastomotic leak<br>○ Intestinal fistula<br>○ Sepsis (other)<br>○ Intestinal obstruction<br>○ Haemorrhage<br>○ Ischaemia<br>○ Colitis<br>○ Abdominal wound dehiscence<br>○ Abdominal compartment syndrome<br>○ Planned relook<br>○ Other (Please give details) |
| **5.3.a** | Main procedure | ○ Peptic ulcer – suture or repair of perforation<br>○ Peptic ulcer – oversew of bleed<br>○ Gastric surgery - other<br>○ Small bowel resection<br>○ Colectomy: left (including anterior resection)<br>○ Colectomy: right<br>○ Colectomy: subtotal<br>○ Hartmann's procedure<br>○ Colorectal resection - other<br>○ Abdominal wall closure<br>○ Adhesiolysis<br>○ Drainage of abscess/collection<br>○ Exploratory/relook laparotomy only<br>○ Haemostasis<br>○ Intestinal bypass<br>○ Laparostomy formation<br>○ Repair of intestinal perforation<br>○ Resection of other intra-abdominal tumour(s)<br>○ Stoma formation<br>○ Stoma revision<br>○ Washout only<br>○ Not amenable to surgery<br>○ Other (please specify) |
| **5.3.b** | Second procedure (at same laparotomy) | ○ Peptic ulcer – suture or repair of perforation<br>○ Peptic ulcer – oversew of bleed<br>○ Gastric surgery - other |
| **5.3.c** | Third procedure (at same laparotomy) | |

| | | |
|---|---|---|
| **5.3.d** | Fourth procedure (at same laparotomy) | ○ Small bowel resection<br>○ Colectomy: left (including anterior resection)<br>○ Colectomy: right<br>○ Colectomy: subtotal<br>○ Hartmann's procedure<br>○ Colorectal resection – other<br>○ Splenectomy<br>○ Abdominal wall closure<br>○ Abdominal hernia repair<br>○ Adhesiolysis<br>○ Drainage of abscess/collection<br>○ Haemostasis<br>○ Intestinal bypass<br>○ Laparostomy formation<br>○ Repair of intestinal perforation<br>○ Resection of other intra-abdominal tumour(s)<br>○ Stoma formation<br>○ Stoma revision<br>○ Washout only<br><br>○ Appendicectomy as incidental procedure<br>○ Cholecystectomy as incidental procedure<br>○ Other (please specify) |
| **5.4** | Procedure approach | ○ Open<br>○ Laparoscopic<br>○ Laparoscopic assisted<br>○ Laparoscopic converted to open |
| **5.5** | Operative findings:<br>(Please select all that apply) *If unsure whether this patient is eligible for NELA please refer to help box* | ○ Abscess<br>○ Adhesions<br>○ Anastomotic leak<br>○ Colitis<br>○ Crohn's disease<br>○ Abdominal compartment syndrome<br>○ Diverticulitis<br>○ Haemorrhage – peptic ulcer<br>○ Haemorrhage – intestinal<br>○ Haemorrhage – postoperative<br>○ Incarcerated hernia<br>○ Intestinal ischaemia<br>○ Malignancy – localised<br>○ Malignancy – disseminated<br>○ Perforation – peptic ulcer<br>○ Perforation – small bowel/colonic<br>○ Volvulus<br>○ Normal intra-abdominal findings<br>○ Other (please specify) |
| **5.6** | Please describe the peritoneal contamination present (select all that apply) | ○ None or reactive serous fluid only<br>○ Free gas from perforation +/- minimal |

| | | |
|---|---|---|
| | | contamination<br>○ Pus<br>○ Bile<br>○ Gastro-duodenal contents<br>○ Small bowel contents<br>○ Faeculent fluid<br>○ Faeces<br>○ Blood/haematoma |
| **5.7** | Please indicate if the contamination was; | ○ Localised to a single quadrant of the abdomen<br>○ More extensive / generalised |

| **6** | **Post-op Risk stratification** | |
|---|---|---|
| **6.1** | Was the patient classified as high risk at the end of surgery? | ○ No ○ Yes |
| **6.2** | How was this assessment of risk made? (Please select all that apply) | ☐ Risk prediction tool (e.g. P-POSSUM)<br>☐ Clinical Judgement<br>☐ Surgical APGAR score<br>☐ Physiologicial criteria<br>☐ Other, e.g. hospital policy |
| **6.3** | Blood lactate – may be arterial or venous (mmol/l) | ☐<br><br>☐ Not performed |
| | **Post-operative P-POSSUM calculation**<br>Please enter values closest to the end of surgery if available, otherwise pre-op figures will be used where appropriate (can be from ABGs or lab investigations). Answers should reflect chronic ***and*** acute pathophysiology. | |
| **6.4** | Serum Sodium concentration (mmol/l) | ☐ |
| **6.5** | Serum Potassium (mmol/l) | ☐ |
| **6.6** | Serum Urea (mmol/l) | ☐ |
| **6.7** | Haemoglobin concentration in g/dl | ☐ |
| **6.8** | White cell count (x10∧9/l) | ☐ |
| **6.9** | Pulse rate (bpm) | ☐ |
| **6.10** | Systolic BP (mmHg) | ☐ |
| **6.11** | Glasgow coma score | ☐ |
| **6.12** | Describe ECG findings | ○ No abnormalities<br>○ AF rate 60-90<br>○ 'AF rate >90/ any other abnormal rhythm/paced rhythm/ >5VE/min/ Q, ST or T wave abnormalities' |
| **6.13** | Describe Cardiac history / CXR appearance | ○ No failure<br>○ Diuretic, digoxin, antianginal, antihypertensive therapy<br>○ Peripheral oedema, warfarin |

| | | |
|---|---|---|
| | | Therapy or CXR: borderline cardiomegaly<br>○ Raised jugular venous pressure or CXR: cardiomegaly |
| **6.14** | Describe Respiratory history / CXR appearance<br><br>Physiology severity score: | ○ No dyspnoea<br>○ Dyspnoea on exertion or CXR:mild COAD<br>○ Dyspnoea limiting exertion to <1 Flight or CXR: moderate COAD<br>○ Dyspnoea at rest/rate >30 at rest or CXR: fibrosis or consolidation<br>Calculated ☐ |
| **6.15** | What was the operative severity? (see help box for examples) | ○ Major<br>○ Major+ |
| **6.16** | Including this operation, how many operations has the patient had in the 30 day period prior to this procedure? | ○ 1<br>○ 2<br>○ >2 |
| **6.17** | Please select this patient's measured intraoperative blood loss (ml) | ○ <100<br>○ 101-500<br>○ 501-1000<br>○ >1000 |
| **6.18** | Please select the option that best describes this patient's degree of peritoneal soiling | ○ None<br>○ Serious fluid<br>○ Local pus<br>○ Free bowel content, pus or blood |
| **6.19** | What was the level of malignancy based on surgical findings | ○ None<br>○ Primary only<br>○ Nodal metastases<br>○ Distant metastases |
| **6.20** | What is the NCEPOD urgency?<br>*(see help notes for additional information, including equivalent Possum categories)*<br><br>*Online web tool will automatically calculate Operative severity score* | ○ 3. Expedited (>18 hours)<br>○ 2B. Urgent (6-18 hours)<br>○ 2A. Urgent (2-6 hours)<br>○ 1. Immediate (<2 hours) |
| **6.21** | Post-op P-POSSUM predicted **mortality**: | Calculated ☐ |
| **6.22** | Post-op POSSUM predicted **morbidity**: | Calculated ☐ |
| **6.23** | Not all P-POSSUM investigations available | ○ |
| **6.24** | Where did the patient go for continued post-operative care following surgery? | ○ Ward<br>○ Level 2 HDU<br>○ Level 3 ICU<br>○ Died prior to discharge from theatre complex |

| | | |
|---|---|---|
| **6.24a** | At the end of surgery, was the decision made to place the patient on an end of life pathway? | ○ Yes<br>○ No |
| **6.25** | Is the patient on a vasopressor/ inotrope? | ○ No ○ Yes |

| **7** | **Post-op** | |
|---|---|---|
| **7.1** | Total length of post-operative ITU stay (days) *see help box for additional information'* | ☐<br>Number required |
| **7.2** | Total length of post-operative HDU stay (days) *see help box for additional information* | ☐<br>Number required |
| **7.3** | Was the patient assessed by a specialist from Elderly Medicine in the post-operative period? | ○ No ○ Yes<br>○ Unknown ○ Not applicable |
| **7.4** | Within this admission, did the patient return to theatre in the post-operative period following their initial emergency laparotomy? | ○ No ○ Yes ○ Unknown |
| **7.5** | Did the patient have an unplanned move **from the ward** to a higher level of care within 7 days of surgery? (do not include moves from HDU to ITU) | ○ No ○ Yes ○ Unknown |
| **7.6** | Histology | ○ Crohn's disease<br>○ Diverticulitis<br>○ Ischaemia<br>○ Malignancy<br>○ Peptic ulcer disease<br>○ Ulcerative colitis<br>○ Not applicable/Not available at time of discharge<br>○ Other |
| **7.7** | Status at discharge | ○ Dead ○ Alive<br>○ Still in hospital at 60 days |
| **7.8** | Date discharged from hospital | (DD/MM/YYYY) ☐<br>Date required |

# PROFORMA HELP BOX TEXT

| 1. | Demographics and Admission | Help Box Text |
|---|---|---|
| 1.1 | NHS Number | |
| 1.2 | Pseudo-anonymisation | |
| 1.3 | Local patient id/hospital number | |
| 1.4 | Date of birth | |
| 1.4 | Age on arrival | |
| 1.5 | Sex | |
| 1.6 | Forename | |
| 1.7 | Surname | |
| 1.8 | Postcode | |
| 1.9 | Date and time patient admitted to this hospital | Admission time is 1st presentation to hospital/A&E.<br>If the GP out of hours centre is based at the hospital A&E, then use time care was transferred from GP to the hospital. I.e. Admission time is intended to reflect the time at which the patient's care became the responsibility of the hospital. |
| 1.10 | What was the nature of this admission? | |

| 2 | Pre-op | Help Box Text |
|---|---|---|
| 2.1 | Date and time first seen by consultant surgeon following admission/referral | For acute general surgical admissions, please detail the first consultant surgical review following admission.<br>For inpatients referred to the surgical team by different specialities, please detail the first consultant surgical review following referral.<br>For patients having emergency surgery as a complication of elective surgery, please use the time that the decision was made that they needed surgery for 2.1 & 2.2. In reality, Qu 2.1 will be redundant for these patients as they will be highlighted by the fact that they were originally an elective admission (Qu1.10), and complication of previous surgery within the same admission (Qu 5.1). |
| 2.2 | Date and time that the decision was made to operate<br>*If this is unavailable please enter date and time that this patient was first booked for theatre for emergency laparotomy* | If the time is unknown for "decision made", but date and time known for "booking", please provide full details of the latter. If only date is known for both fields, please provide date for "decision made". |
| 2.2i | Which date and time is recorded? | |
| 2.3 | Consultant responsible for surgical care at the time the patient was booked for surgery (this may be different to the operating consultant) | If a consultant is being entered for the first time, please tick on the 'Consultant not on list' box and manually enter the name and GMC number. Once these have been entered, the consultant will appear on the drop down list in call cases going |

| | | |
|---|---|---|
| | | forward. |
| **2.4** | What was the grade of the most senior person making the decision to operate? | The clinician making the decision to operate may be different from that in 2.3 |
| **2.5** | Did this clinician personally review the patient at the time of this decision? | Please indicate yes only if the clinician in 2.4 reviewed the patient IN PERSON. Do not answer “yes” if the decision was verbally made over the phone |
| **2.6** | NO LONGER REQUIRED | NO LONGER REQUIRED |
| **2.7** | Was an abdominal CT scan performed in the pre-operative period as part of the diagnostic work-up? | |
| **2.8** | If performed, was this CT reported pre-operatively by a consultant radiologist? | Do not include CTs reported after the patient has gone for surgery. “Reporting” can be verbal or written. |
| **2.9** | Date and time first seen by consultant anaesthetist prior to surgery | If the patient was only seen by a trainee anaesthetist prior to surgery, then you will need to select "not seen". If the consultant first saw the patient in the anaesthetic room then you will also need to select "not seen". |
| **2.10** | What was the date and time of the first dose of antibiotics following admission? | If the patient was not originally admitted under surgery, please use date and time of antibiotic administration following referral to surgery. If the surgery is a complication of an elective procedure within the same admission, use date/time of 1st dose since the elective procedure. |

| **3** | **Pre-op Risk stratification** | **Help Box Text** |
|---|---|---|
| **3.1** | What risk of death was the patient documented as having? | If both percentage predicted mortality AND risk category are documented, please select the highest risk option |
| **3.2** | If documented, how was this assessment of risk made? (Please select all that apply) | Formal assessments of risk; this includes risk stratification tools (such as ASA) and prediction models (such as APACHE and POSSUM systems).<br>Clinical judgement; refers to the categorisation or estimation of risk, based on clinical acumen and experience.<br>Physiological criteria; either use of physiological variables in isolation (eg lactate) or incorporated into tools such as the early warning score (i.e. not incorporated into a risk stratification tool or prediction model as above) |
| **3.3** | What was the **ASA** score? | |
| **3.4** | What was the pre-operative Serum Creatinine micromol/l | Please enter values closest to time of booking for theatre |
| **3.5** | What was the pre-operative Blood lactate – may be arterial or venous (mmol/l) | Please enter values closest to time of booking for theatre.<br>Only one decimal point required. |
| | **P-POSSUM calculation** | |
| | For questions 3.6 to 3.22 please enter values closest to time of booking for theatre in order to calculate P-POSSUM. Answers should reflect chronic ***and*** acute pathophysiology. | |
| **3.6** | Serum Sodium concentration (mmol/l) | |
| **3.7** | Serum Potassium concentration (mmol/l) | |

| | | |
|---|---|---|
| **3.8** | Serum Urea concentration (mmol/l) | |
| **3.9** | Serum Haemoglobin concentration (g/dl) | Units must be in g/l. If results are presented as g/dl in your institution, the value should be multiplied by 10 to convert to g/l. |
| **3.10** | Serum White cell count (x10∧9 / l) | |
| **3.11** | Pulse rate(bpm) | |
| **3.12** | Systolic blood pressure (mmHg) | |
| **3.13** | Glasgow coma scale | |
| **3.14** | Select an option that best describes this patient's **ECG** | If no investigation have been performed AND there is no clinical detail available, please select "no abnormality" |
| **3.15** | Select an option that best describes this patient's **cardiac signs** and chest xray appearance | If CXR findings are worse than clinical findings, (or vice versa) please use worst score.<br>If no investigation have been performed AND there is no clinical detail available, please select "no abnormality" |
| **3.16** | Select an option that best describes this patient's **respiratory history** and chest xray appearance | If CXR findings are worse than clinical findings, (or vice versa) please use worst score.<br>If no investigation have been performed AND there is no clinical detail available, please select "no abnormality" |
| **3.16a** | Patient was ventilated prior to emergency laparotomy<br><br>*Online web tool will automatically calculate Physiology severity score* | This is intended to identify those patients who are intubated and ventilated prior to laparotomy, e.g. ITU patients |
| **3.17** | Select the **operative severity** of the intended surgical intervention (see help box for examples) | **Major+:**<br>All colonic resections (excluding colostomy alone)<br>All gastrectomy (but not repair perforated or bleeding ulcer)<br>Small bowel tumour resection<br>Re-operations for ongoing sepsis or bleeding<br>Laparostomy<br>Intestinal bypass<br>**Major**<br>All other procedures including:<br>Stoma formation<br>Small bowel resection<br>Division adhesions<br>Repair perforated or bleeding ulcer |
| **3.18** | Including this operation, how many operations has the patient had in the 30 day period prior to this procedure? | Do not "unbundle" procedures.<br>Examples of single procedure:<br>• Hartmann's procedure (this should not be "unbundled" as 2 procedures -sigmoid colectomy and end colostomy).<br>• Colonic resection with washout of a localised abscess would also be 1 procedure. |

| | | |
|---|---|---|
| | | Examples of 2 procedures:<br><br>• Primary colonic anastomosis with a defunctioning ileostomy.<br>• Colonic resection and extensive division of adhesions.<br>• Colonic resection and small bowel repair.<br><br>Example of >2 procedures:<br>Hartmann's procedure **with** resection of small bowel **with** insertion of tube gastrostomy |
| **3.19** | Based on your clinical experience of the intended surgery, please estimate the likely ***intra*operative blood loss** (ml) | Based on your clinical experience, please do your best to estimate the likely volume of intraoperative blood loss. |
| **3.20** | Please select a value that best describes the likely degree of **peritoneal soiling** | Based on available radiological imaging and your clinical experience, please do your best to estimate the likely degree of peritoneal soiling. |
| **3.21** | What severity of malignancy is anticipated to be present? | Based on available radiological imaging and your clinical experience, please do your best to estimate the extent of intra-abdominal malignancy. |
| **3.22** | What was global impression of the urgency of surgery at the time of booking the case?<br>*(see help notes for additional information, including equivalent Possum categories)* | Based on your clinical experience this should be the maximum time that a patient could reasonably wait for surgery. These classifications are based on NCEPOD and Surviving Sepsis. The equivalent POSSUM categories are also shown.<br><br>Examples:<br>**POSSUM: Emergency (resuscitation of > 2h possible)**<br>3. Expedited (>18 hours): No SIRS or sepsis e.g. developing large bowel obstruction<br>2B. Urgent (6-18 hours): Sepsis e.g. localised abscess or obstructed hernia<br>2A. Urgent (2-6 hours): Severe sepsis e.g. intestinal perforation<br><br>**POSSUM: Emergency (immediate surgery <2h needed)**<br>1. Immediate (<2 hours): Life threatening haemorrhage and septic shock e.g. profuse GI bleed or pan-intestinal ischaemia |
| **3.23** | Pre-op P-POSSUM predicted **mortality** | This value will be calculated automatically |
| **3.24** | Pre-op POSSUM predicted **morbidity** | This value will be calculated automatically |
| **3.25** | Not all P-POSSUM investigations available | Please select if any of the above investigations are unavailable. This will allow you to save the form with missing data |

| **4** | **Intra-op** | **Help Box Text** |
|---|---|---|
| **4.1** | Date and time of entry in to operating theatre/anaesthetic room (not theatre suite) | Please enter the date/time at which the patient enters the anaesthetic room OR operating theatre (for patients |

| | | |
|---|---|---|
| | | anaesthetisted in theatre), whichever comes first. |
| **4.2** | Senior surgeon grade | |
| **4.2a** | If consultant: Name/GMC of operating consultant | If a surgeon is being entered for the first time, please tick on the 'Consultant not on list' box and manually enter the name and GMC number. Once these have been entered, the surgeon will appear on the drop down list in call cases going forward. GMC number will not be used in clinician level outcomes analysis. Please see http://nela.org.uk/article.php?article=961 for NELA statement on this matter. |
| **4.3** | Senior anaesthetist grade | |
| **4.3a** | If consultant: Name/GMC of anaesthetist | If an anaesthetist is being entered for the first time, please tick on the 'Consultant not on list' box and manually enter the name and GMC number. Once these have been entered, the anaesthetist will appear on the drop down list in call cases going forward.<br>GMC number will not be used in clinician level outcomes analysis. Please see http://nela.org.uk/article.php?article=961 for NELA statement on this matter. |
| **4.4** | How did you provide goal directed fluid therapy? | Please select cardiac output monitor if equipment specific to this purpose is used (including, but not limited to equipment utilising pulse-contour analysis/ oesophageal doppler or dilution method)<br>Please select 'other' if fluid administration is guided by parameters such as CVP or using other equipment including TOE or TTE |

| **5** | **Procedure** | **Help Box Text** |
|---|---|---|
| **5.1** | Is this the first surgical procedure of this admission, or a Complication of previous surgery within the same admission? | |
| **5.2** | What is the indication for surgery?<br>(Please select all that apply) | |
| **5.3.a** | Main procedure | Please note that, in accordance with NELA inclusion criteria, primary and additional procedure options vary<br>Please see inclusion/exclusion criteria under the "support" tab on this data collection website. They can also be downloaded from http://www.nela.org.uk/NELA_Docs |
| **5.3.b** | Second procedure (at same laparotomy) | |
| **5.3.c** | Third procedure (at same laparotomy) | |
| **5.3.d** | Fourth procedure (at same laparotomy) | |
| **5.4** | Procedure approach | |

| | | |
|---|---|---|
| **5.5** | Operative findings:<br>(Please select all that apply) If unsure whether this patient is eligible for NELA please refer to help box | Operative findings are intended to be best guess.<br>There may be instances where the operative findings are such that, had these findings been known prior to surgery, the patient would not have been included in the audit. However since they have now had a laparotomy, they are still included. This is why there appear to be some findings/procedures that are under the exclusion criteria. |
| **5.6** | Please describe the peritoneal contamination present (select all that apply) | |
| **5.7** | Please indicate if the contamination was; | |

| 6 | **Post-op Risk stratification** | **Help Box Text** |
|---|---|---|
| **6.1** | Was the patient classified as high risk at the end of surgery? | |
| **6.2** | How was this assessment of risk made? (Please select all that apply) | Formal assessments of risk; this includes risk stratification tools (such as ASA) and prediction models (such as APACHE and POSSUM systems).<br>Clinical judgement; refers to the categorisation or estimation of risk, based on clinical acumen and experience.<br>Physiological criteria; either use of physiological variables in isolation or incorporated into tools such as the early warning score (i.e. not incorporated into a risk stratification tool or prediction model as above) |
| **6.3** | Blood lactate – may be arterial or venous (mmol/l) | Or within 30 minutes of the end of surgery. |
| | **End-operative P-POSSUM calculation**<br>Please enter values closest to the end of surgery if available, otherwise pre-op figures will be used where appropriate (can be from ABGs or lab investigations). Answers should reflect chronic ***and*** acute pathophysiology. | |
| **6.4** | Serum Sodium concentration (mmol/l) | If new values are available, these should be from within 30 mins prior to the end of surgery, NOT recovery. |
| **6.5** | Serum Potassium (mmol/l) | If new values are available, these should be from within 30 mins prior to the end of surgery, NOT recovery. |
| **6.6** | Serum Urea (mmol/l) | If new values are available, these should be from within 30 mins prior to the end of surgery, NOT recovery. |
| **6.7** | Haemoglobin concentration in g/dl | If new values are available, these should be from within 30 mins prior to the end of surgery, NOT recovery.<br>Units must be in g/l. If results are presented as g/dl in your institution, the value should be multiplied by 10 to convert to g/l. |
| **6.8** | White cell count (x10∧9/l) | If new values are available, these should be from within 30 mins prior to the end of surgery, NOT recovery. |
| **6.9** | Pulse rate (bpm) | If new values are available, these should be from within 30 mins prior to the end of surgery, NOT recovery. |

| | | |
|---|---|---|
| **6.10** | Systolic BP (mmHg) | If new values are available, these should be from within 30 mins prior to the end of surgery, NOT recovery. |
| **6.11** | Glasgow coma score | These values will be taken from pre-op if available. They do not refer to recovery. |
| **6.12** | Describe ECG findings | If no investigation have been performed AND there is no clinical detail available, please select "no abnormality"<br>These values will be taken from pre-op if available. They do not refer to recovery. |
| **6.13** | Describe Cardiac history / CXR appearance | If CXR findings are worse than clinical findings, (or vice versa) please use worst score.<br>If no investigation have been performed AND there is no clinical detail available, please select "no abnormality"<br>These values will be taken from pre-op if available. They do not refer to recovery. |
| **6.14** | Describe Respiratory history / CXR appearance<br>Physiology severity score: | If CXR findings are worse than clinical findings, (or vice versa) please use worst score.<br>If no investigation have been performed AND there is no clinical detail available, please select "no abnormality"<br>These values will be taken from pre-op if available. They do not refer to recovery. |
| **6.15** | What was the operative severity? (see help box for examples) | **Major+:**<br>All colonic resections (excluding colostomy alone)<br>All gastrectomy (but not repair perforated or bleeding ulcer)<br>Small bowel tumour resection<br>Re-operations for ongoing sepsis or bleeding<br>Laparostomy<br>Intestinal bypass<br>**Major**<br>All other procedures including:<br>Stoma formation<br>Small bowel resection<br>Division adhesions<br>Repair perforated or bleeding ulcer |
| **6.16** | Including this operation, how many operations has the patient had in the 30 day period prior to this procedure? | Do not "unbundle" procedures.<br>Examples of single procedure:<br>• Hartmann's procedure (this should not be "unbundled" as 2 procedures -sigmoid colectomy and end colostomy).<br>• Colonic resection with washout of a localised abscess would also be 1 procedure.<br>Examples of 2 procedures:<br>• Primary colonic anastomosis with a defunctioning ileostomy. |

| | | |
|---|---|---|
| | | • Colonic resection and extensive division of adhesions.<br>• Colonic resection and small bowel repair.<br><br>Example of >2 procedures:<br><br>• Hartmann's procedure **with** resection of small bowel **with** insertion of tube gastrostomy |
| **6.17** | Please select this patient's measured intraoperative blood loss (ml) | If measured blood loss is unavailable, please estimate. |
| **6.18** | Please select the option that best describes this patient's degree of peritoneal soiling | |
| **6.19** | What was the level of malignancy based on surgical findings | |
| **6.20** | What was actual urgency of surgery at the time the procedure was performed?<br>*(see help box for additional information, including equivalent Possum categories)* | Based on your clinical experience this should be the maximum time that a patient could reasonably wait for surgery. These classifications are based on NCEPOD and Surviving Sepsis. The equivalent POSSUM categories are also shown.<br><br>Examples:<br>**POSSUM: Emergency (resuscitation of > 2h possible)**<br>3. Expedited (>18 hours): No SIRS or sepsis e.g. developing large bowel obstruction<br>2B. Urgent (6-18 hours): Sepsis e.g. localised abscess or obstructed hernia<br>2A. Urgent (2-6 hours): Severe sepsis e.g. intestinal perforation<br><br>**POSSUM: Emergency (immediate surgery <2h needed)**<br>1. Immediate (<2 hours): Life threatening haemorrhage and septic shock e.g. profuse GI bleed or pan-intestinal ischaemia |
| **6.21** | Post-op P-POSSUM predicted **mortality**: | This value will be calculated automatically |
| **6.22** | Post-op POSSUM predicted **morbidity**: | This value will be calculated automatically |
| **6.23** | Not all P-POSSUM investigations available | Please select if any of the above investigations are unavailable. This will allow you to save the form with missing data |
| **6.24** | Where did the patient go for continued post-operative care following surgery? | This does not include recovery. If patient went to 'Level 1 – Surgical Observation Unit' please choose the 'ward' option. |
| **6.24a** | At the end of surgery, was the decision made to place the patient on an end of life pathway? | This is intended to identify those patients whose pathology, at the time of surgery, was such that only supportive treatment was warranted. |
| **6.25** | Is the patient on a vasopressor/ inotrope? | This refers to infusion only, not bolus administration |

| **7** | **Post-op** | **Help Box Text** |
|---|---|---|
| **7.1** | Total length of post-operative ITU stay (days) *see help box for additional information'* | Each day, or part day, counts as 1 day. Hence:<br><br>a. Admitted and discharged on same day = 1 day. |

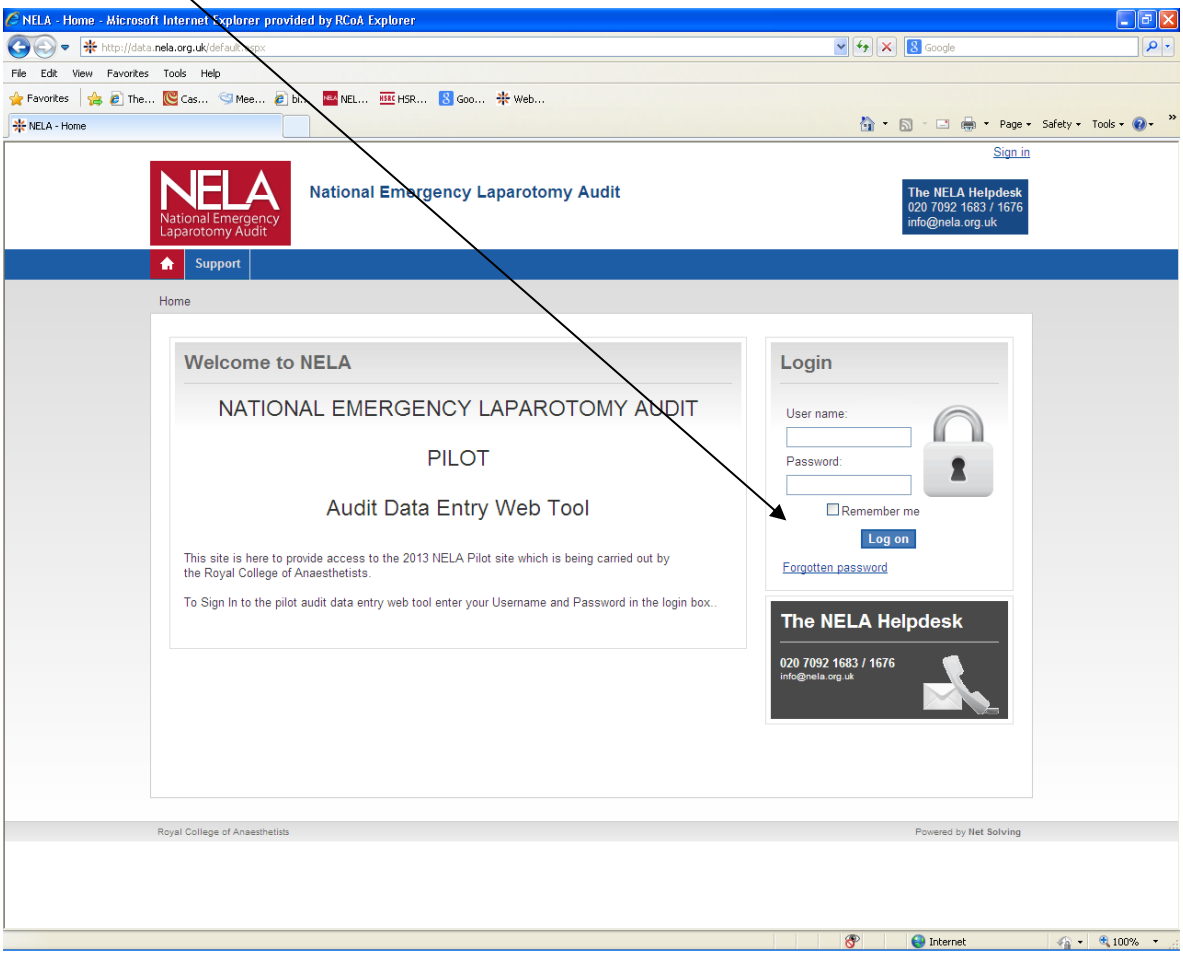
| | | |
|---|---|---|
| | | b. Admitted on Monday, discharged on Tues = 2 days<br>c. Admitted on Monday, discharged on Wed = 3 days.<br>Values should reflect actual discharge, rather than when medically fit for discharge.<br><br>Combined ITU/HDUs should be treated as if they were separate units.<br>Hence, admitted as ITU patient Monday stepped down to HDU Tuesday, then discharged Wednesday =2 days ITU and 2 days HDU. |
| **7.2** | Total length of post-operative HDU stay (days) *see help box for additional information* | Each day, or part day, counts as 1 day. Hence:<br><br>a. Admitted and discharged on same day = 1 day.<br>b. Admitted on Monday, discharged on Tues = 2 days<br>c. Admitted on Monday, discharged on Wed = 3 days.<br>Values should reflect actual discharge, rather than when medically fit for discharge.<br><br>Combined ITU/HDUs should be treated as if they were separate units.<br>Hence, admitted as ITU patient Monday stepped down to HDU Tuesday, then discharged Wednesday =2 days ITU and 2 days HDU. |
| **7.3** | Was the patient assessed by a specialist from Elderly Medicine in the post-operative period? | |
| **7.4** | Within this admission, did the patient return to theatre in the post-operative period following their initial emergency laparotomy? | |
| **7.5** | Did the patient have an unplanned move **from the ward** to a higher level of care within 7 days of surgery? (do not include moves from HDU to ITU) | This refers to within 7 days of their emergency laparotomy, not any prior surgery. |
| **7.6** | Histology | Histology is intended to be following pathology report. |
| **7.7** | Status at discharge | 'Still in hospital at 60 days' option to be used when approaching an audit deadline by which all incomplete cases need to be locked |
| **7.8** | Date discharged from hospital | Date of discharge, NOT date fit for discharge. |

# ONLINE WEB TOOL USER NOTES

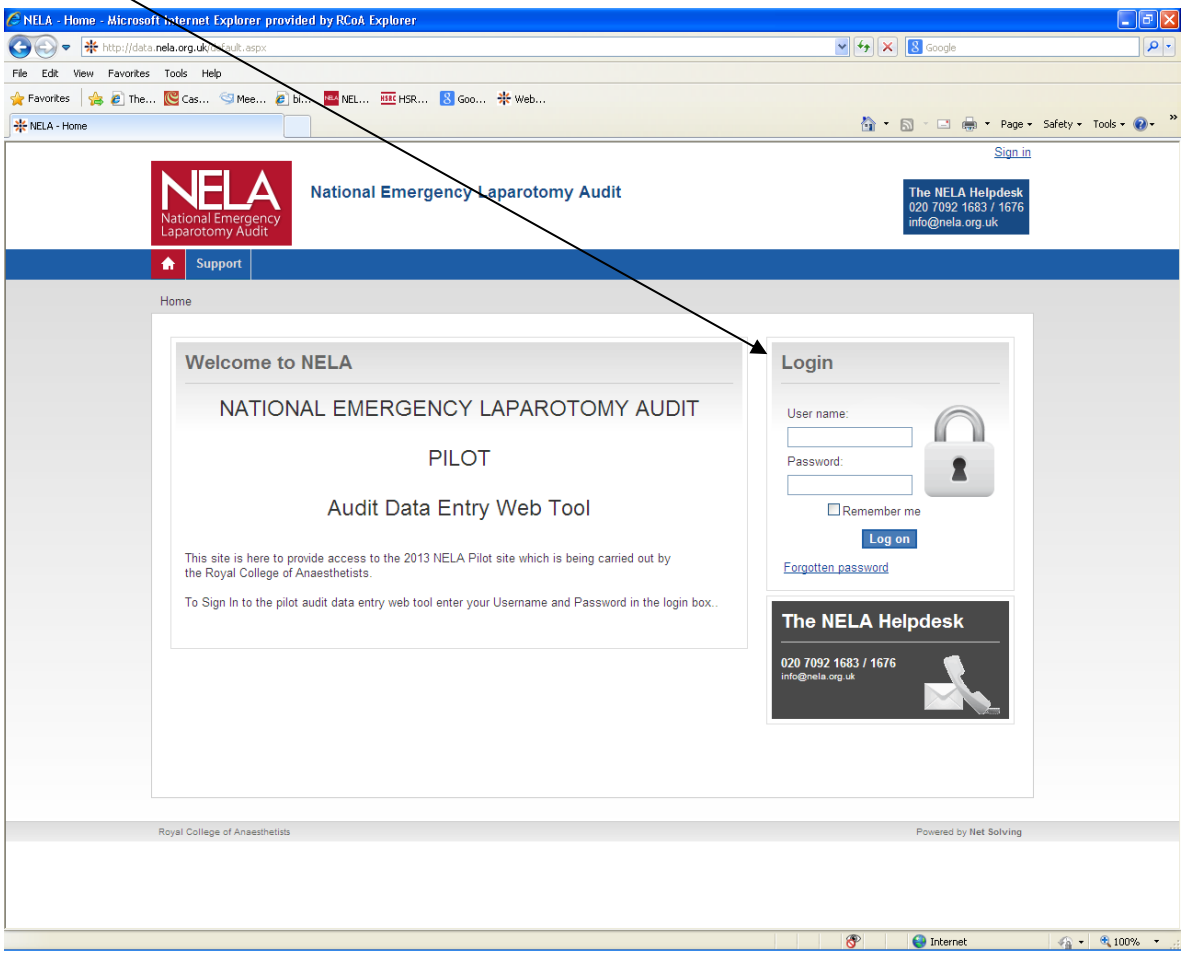
**How to access the online web tool:**

1. To access the web tool enter the following web address:
   https://data.nela.org.uk/

2. You will see the welcome page below. The first time you go to the website we suggest you click on 'Forgotten Password' and go through the process to create your own password. It will ask you to enter your email address and it will send you an email. Please use only an NHS or hospital email address and follow the process in this email. When creating a password please make sure it contains lower and uppercase letters as well as numbers.

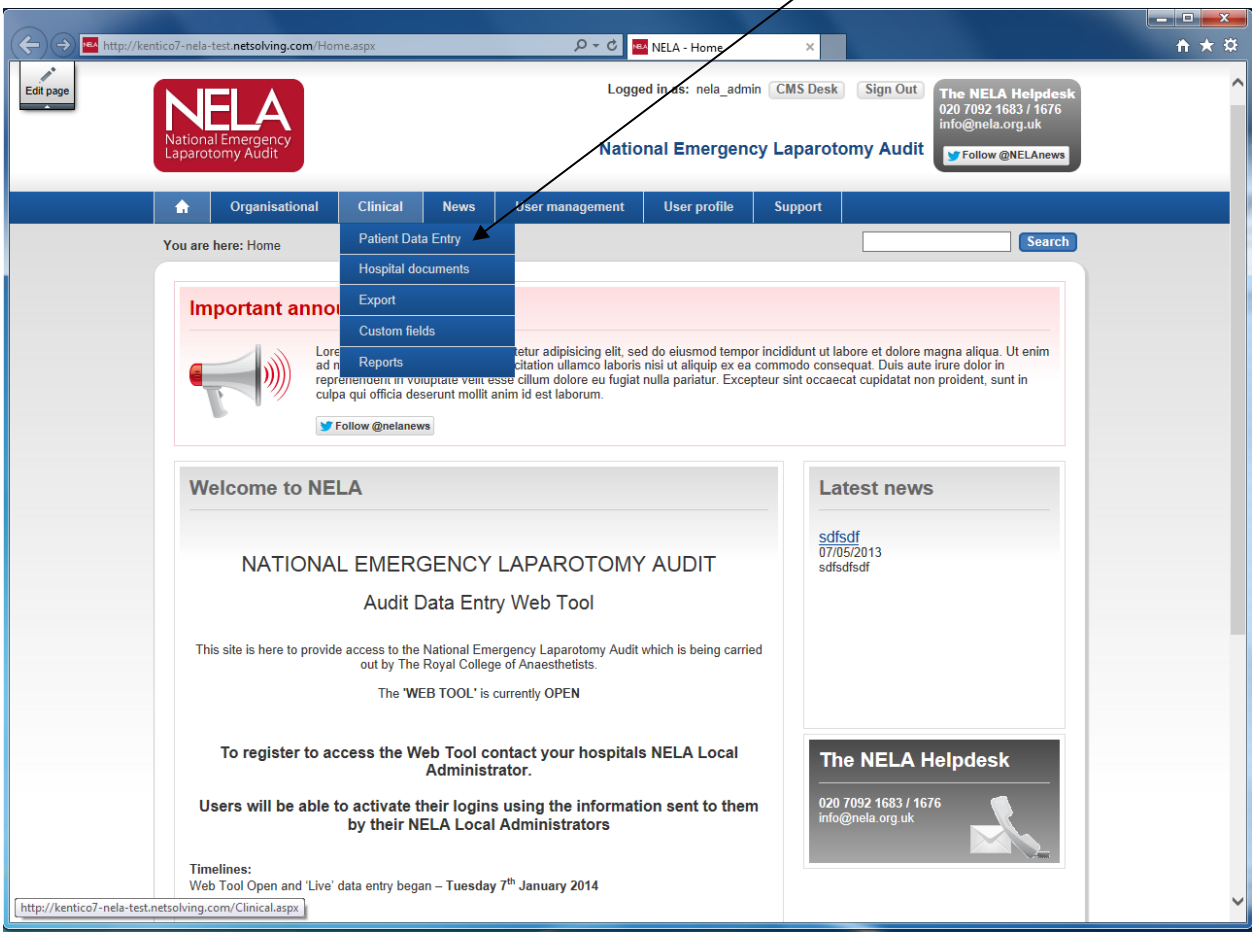


3. The next time you go to the welcome page you will have to enter your User name and Password in the login box.

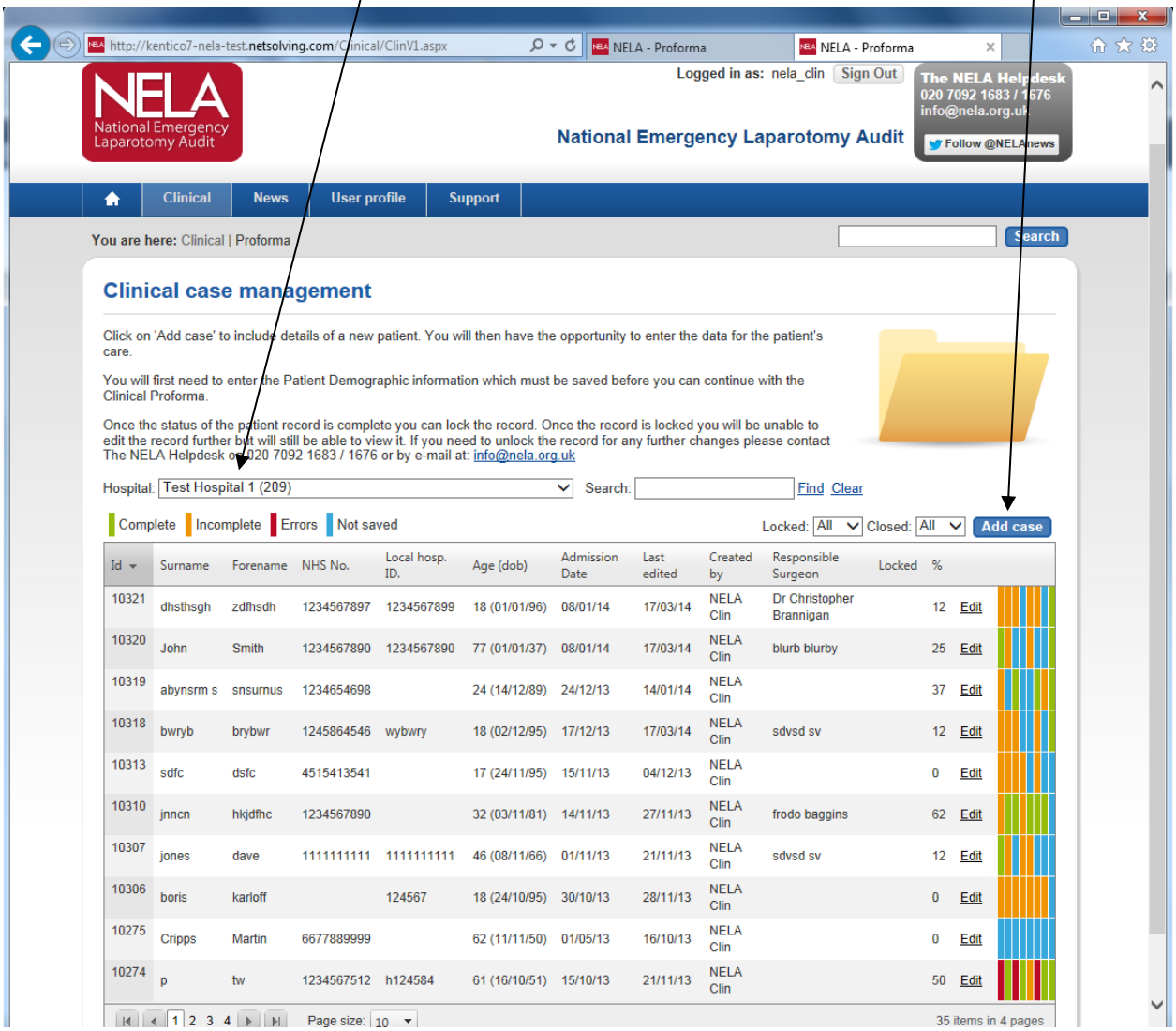


## Accessing the Patient Audit Data Entry and Case Management Screen

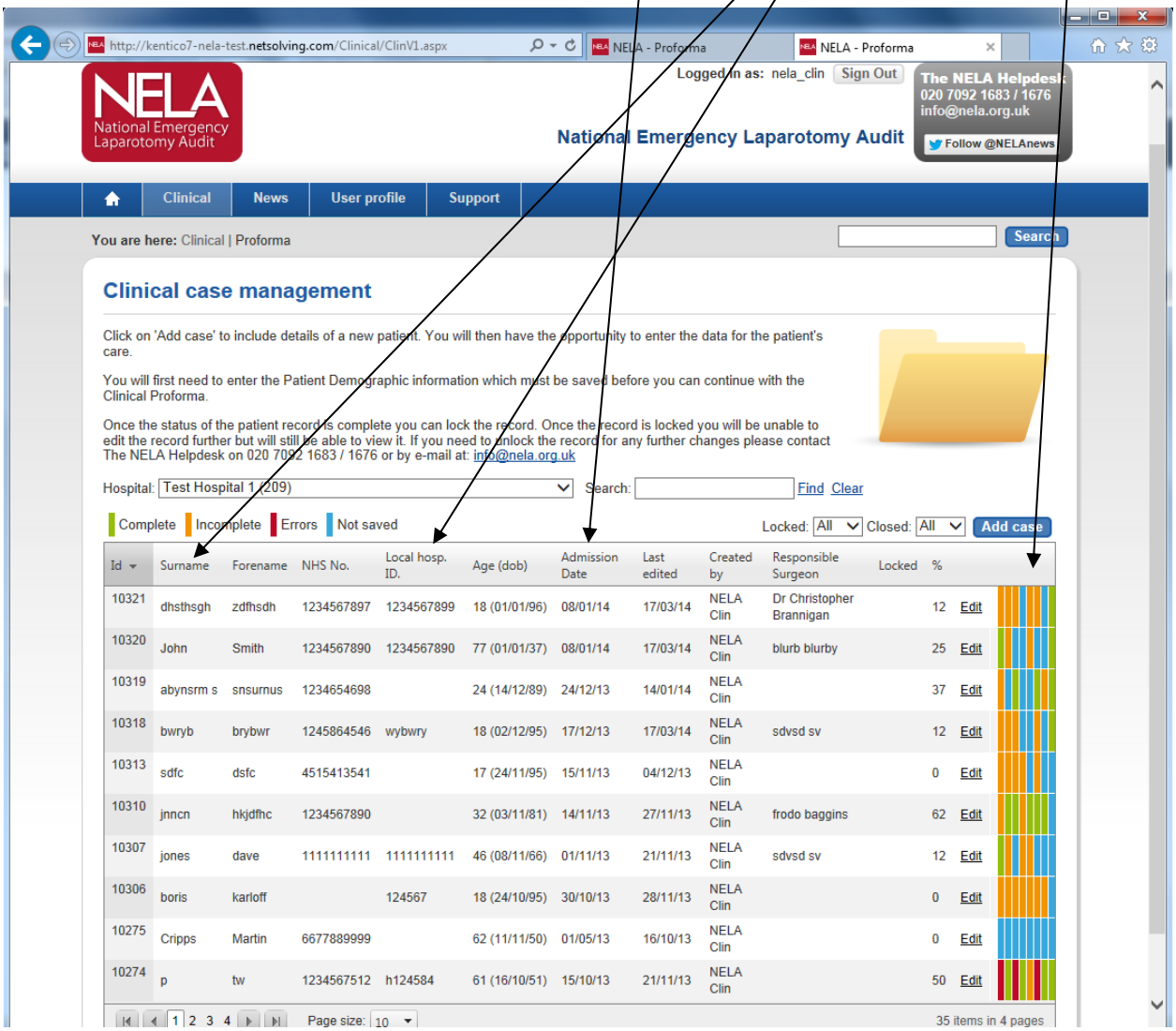
4. To access the Patient Audit data entry place the mouse curser over 'Clinical' in the main menu and click on 'Patient Data Entry'.



5. You will be sent to Case Management Screen of the Patient audit. See below.
   This allows you to see which hospital you are linked to and to add a new case press 'Add Case'. If you are registered to more than one hospital please select the appropriate one. Please be aware than any information that is entered for a particular hospital will be accessible by all other registered users for that hospital.



6. Once several cases have been entered they will appear in your Case Management Screen in a list. You will be able to see how advanced to be being complete each case is by looking at the colours on the right hand side. You will also be able to reorder the list according to admission date/surname etc. by clicking the heading at the top of each column.




Each rectangle represents a different section. Each colour represents the current state:

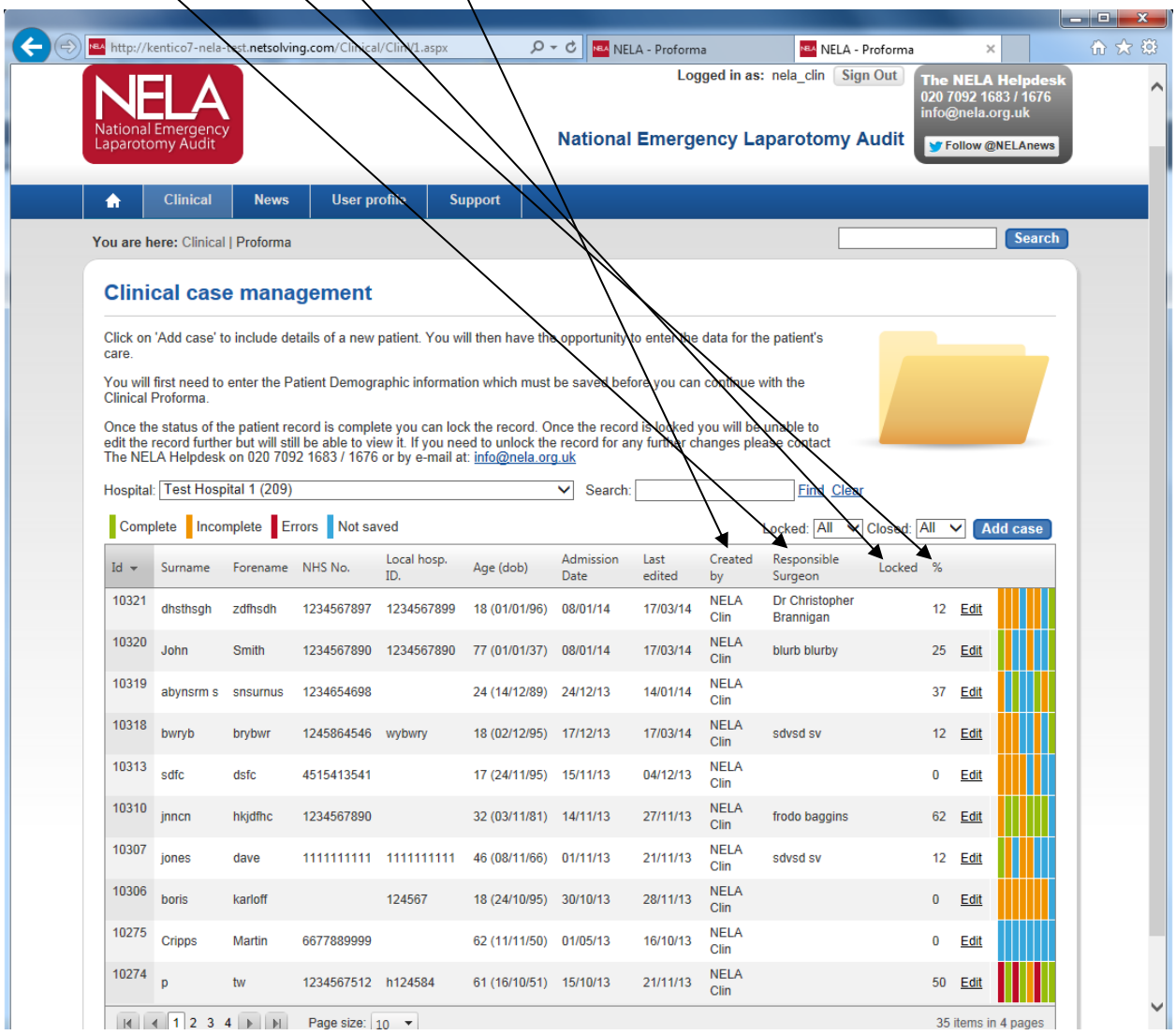
Green – Complete

Orange – Incomplete

Red – Errors

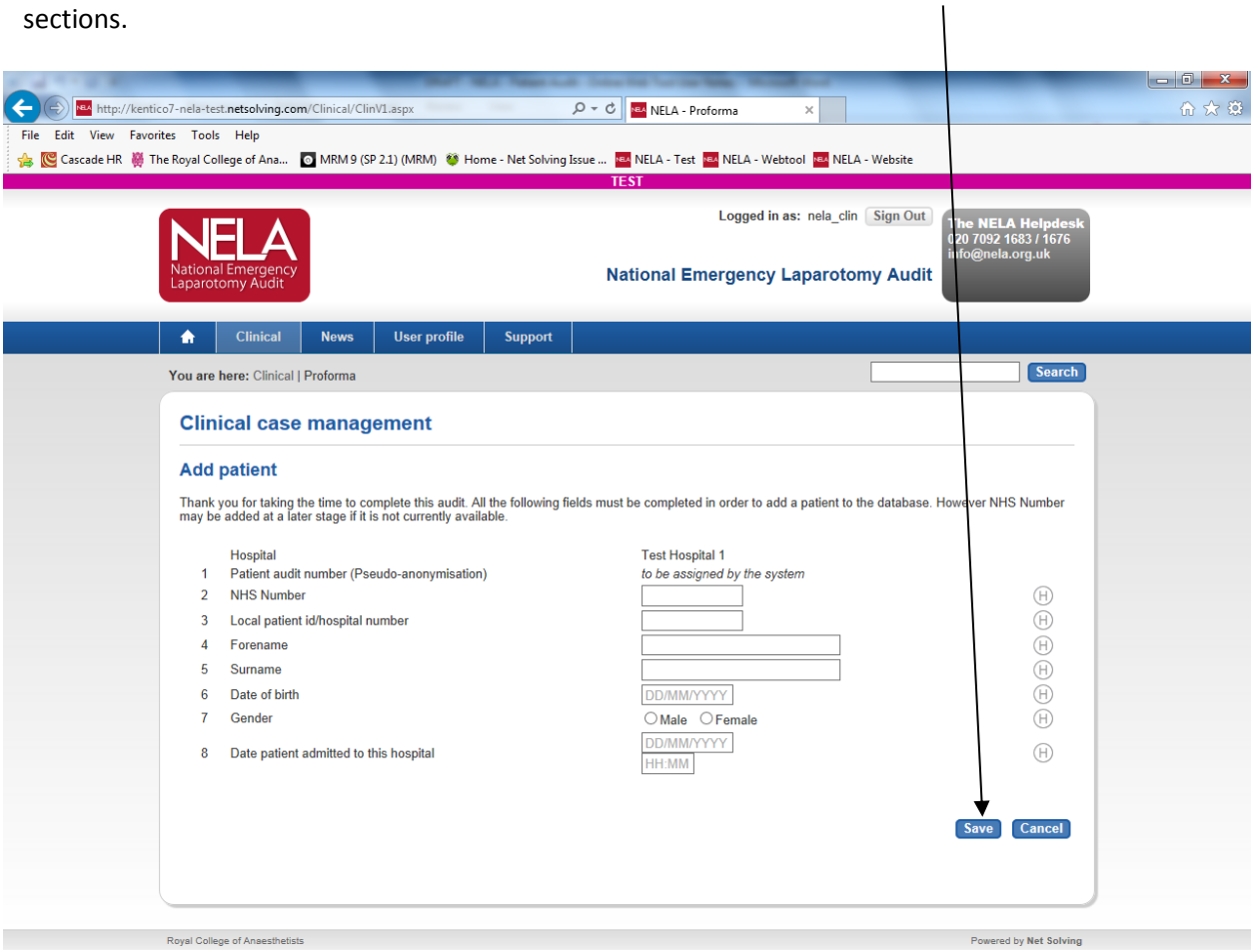
Blue – Not Saved

7. An additional way of seeing how advanced to be being complete each case is will be by looking at the percentage column. This number indicates how much of the required information has already been entered. If a date appears in the Locked column this indicates that all case information has been entered and that changes can no longer be made. The Created by column indicates which user initially created each case and the Responsible Surgeon column which consultant was responsible for surgical care at the time the decision was made to operate.

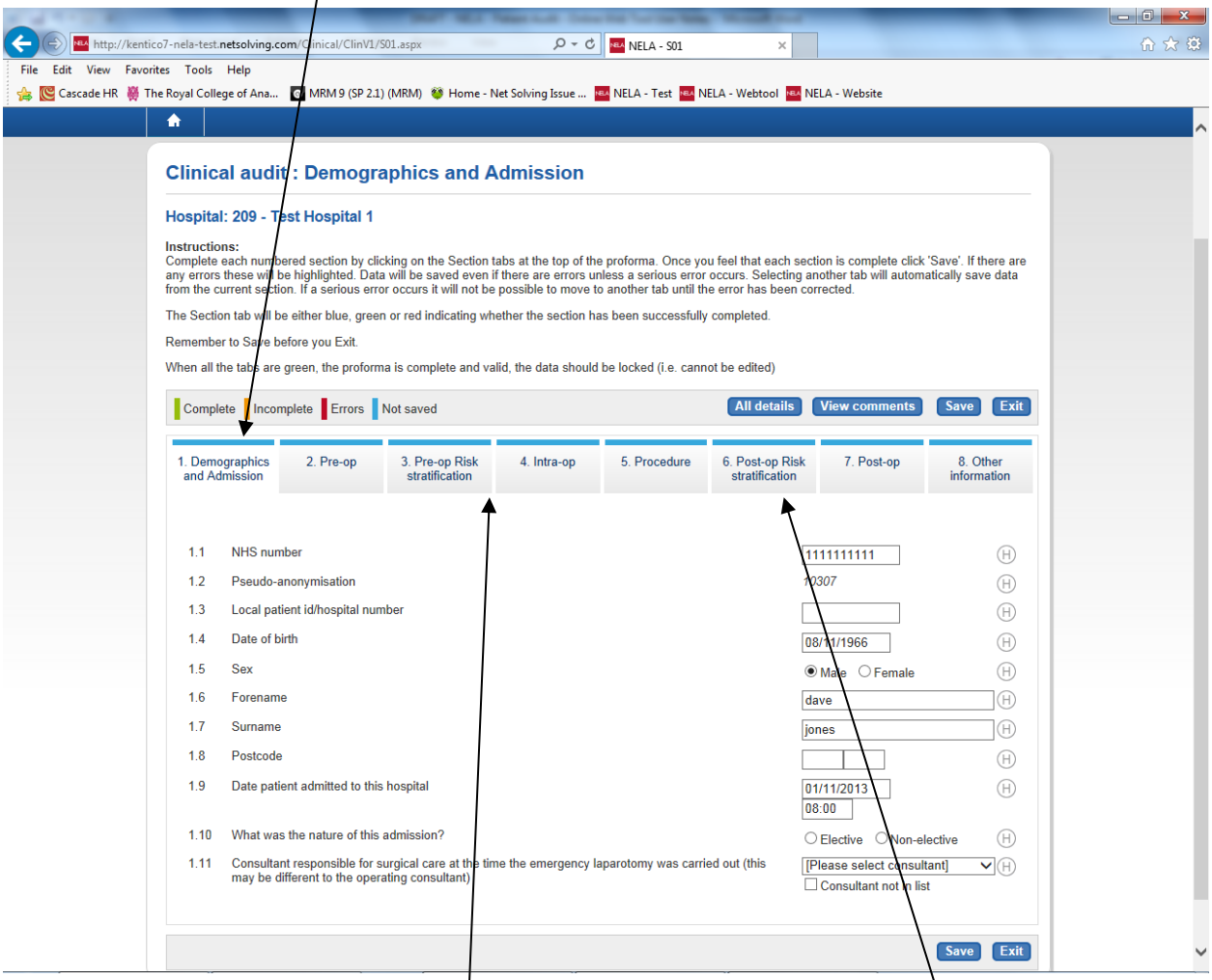


## Entering Data

8. When you click on 'Add Case' you will see the 'Add patient' screen. Here you can enter the patient information. Once you have entered the patient information and clicked Save you will be taken to the Audit sections.

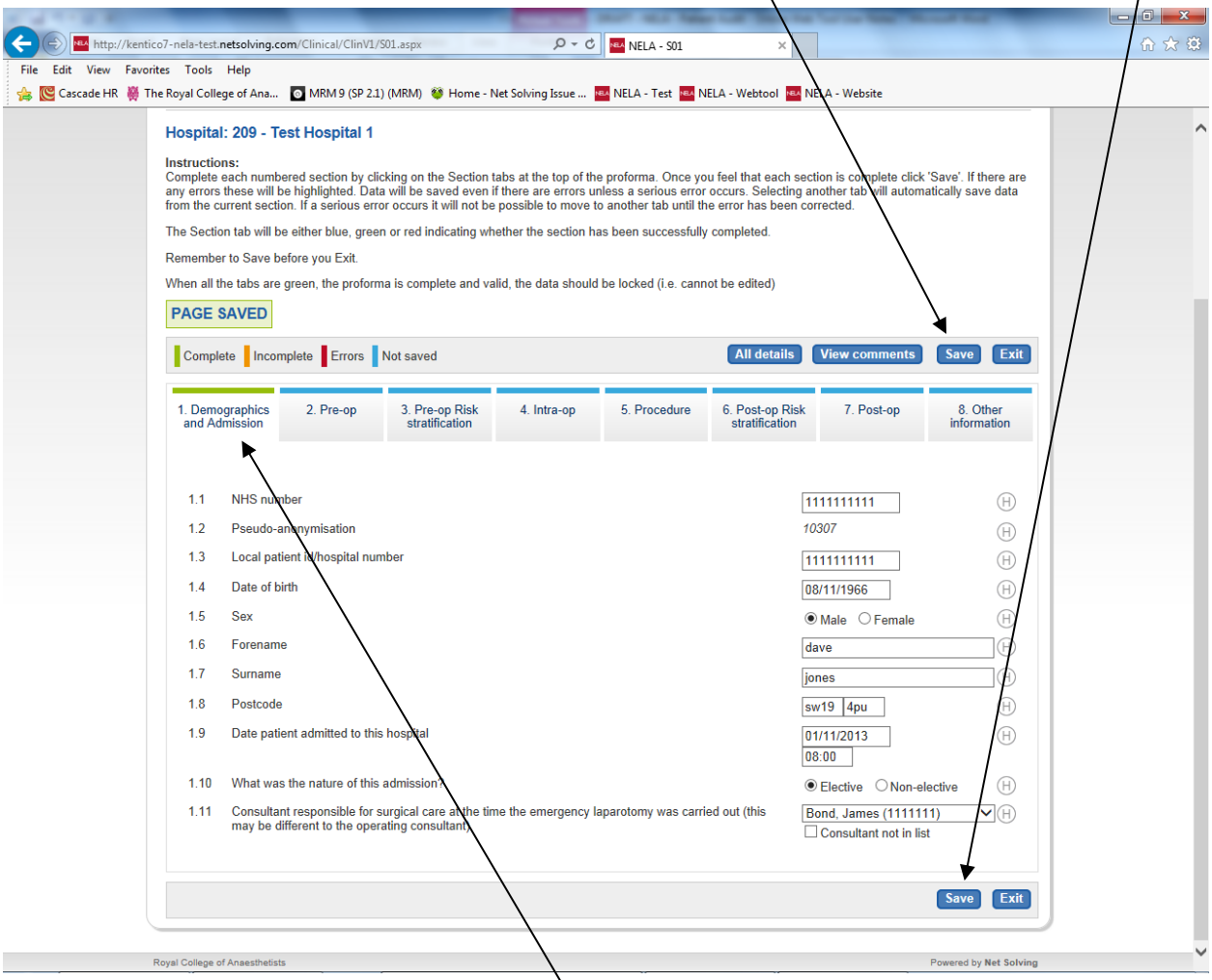


9. You will be taken to the first section of the audit.



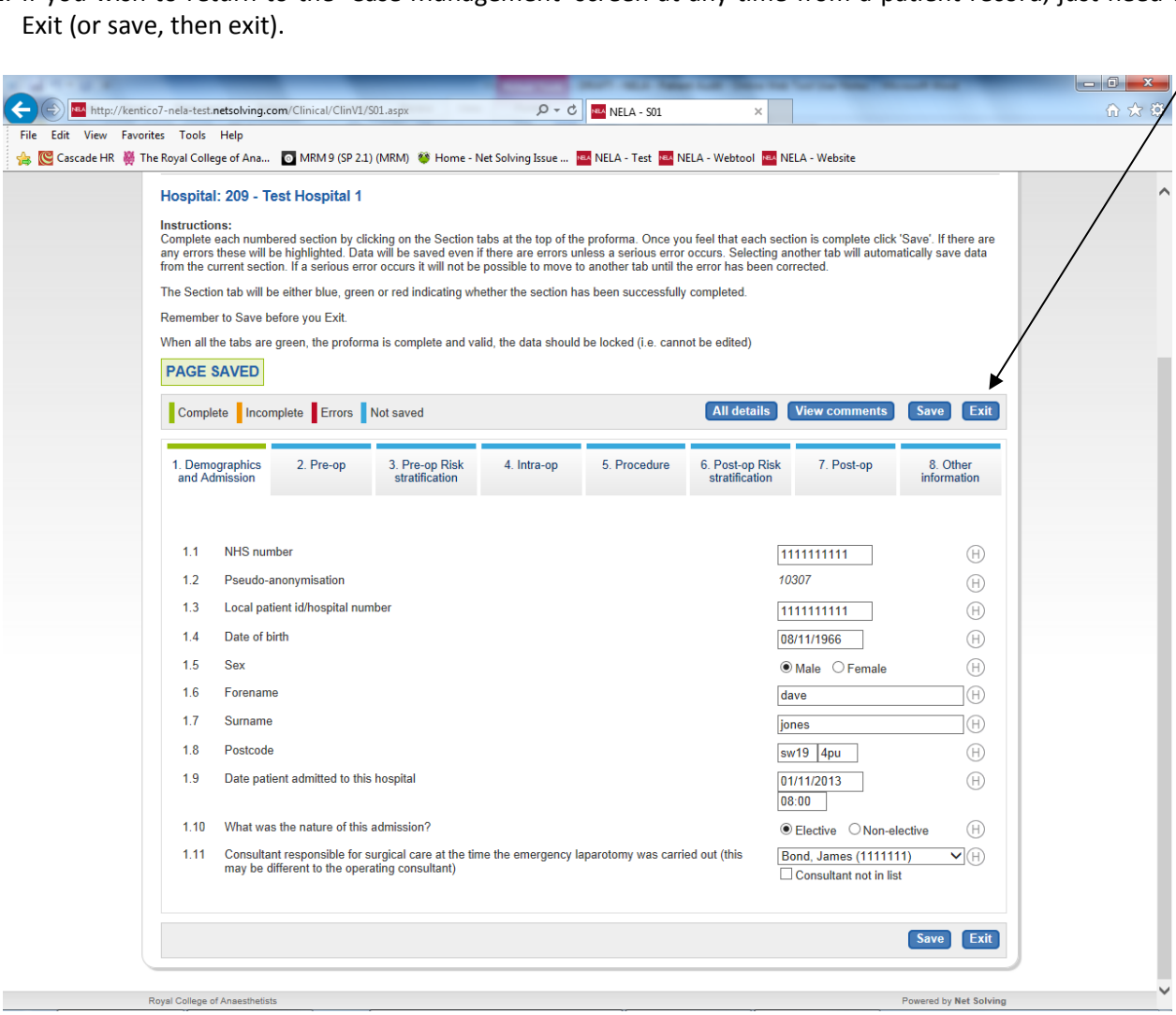

The patient audit is divided into 7 sections. To move through the data entry form click on the section tabs – which are divided into headings towards the top of the form.

10. As you enter data you can save the form by pressing the 'Save' button either at the top or the bottom of the form. The form is also automatically saved if you move on to the next page.



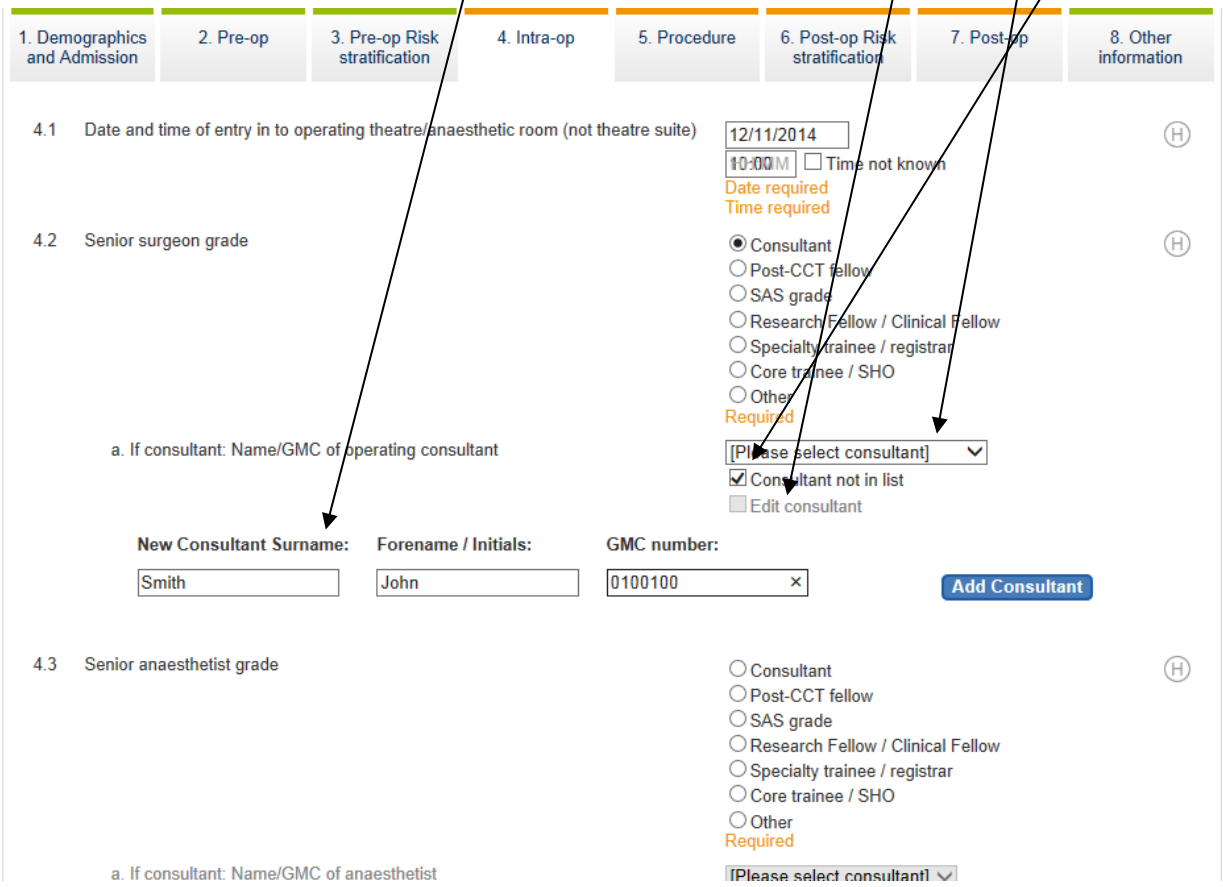

If all the data in the section is complete and saved the tab will turn green.

11. If you wish to return to the 'Case Management' screen at any time from a patient record, just need to click Exit (or save, then exit).



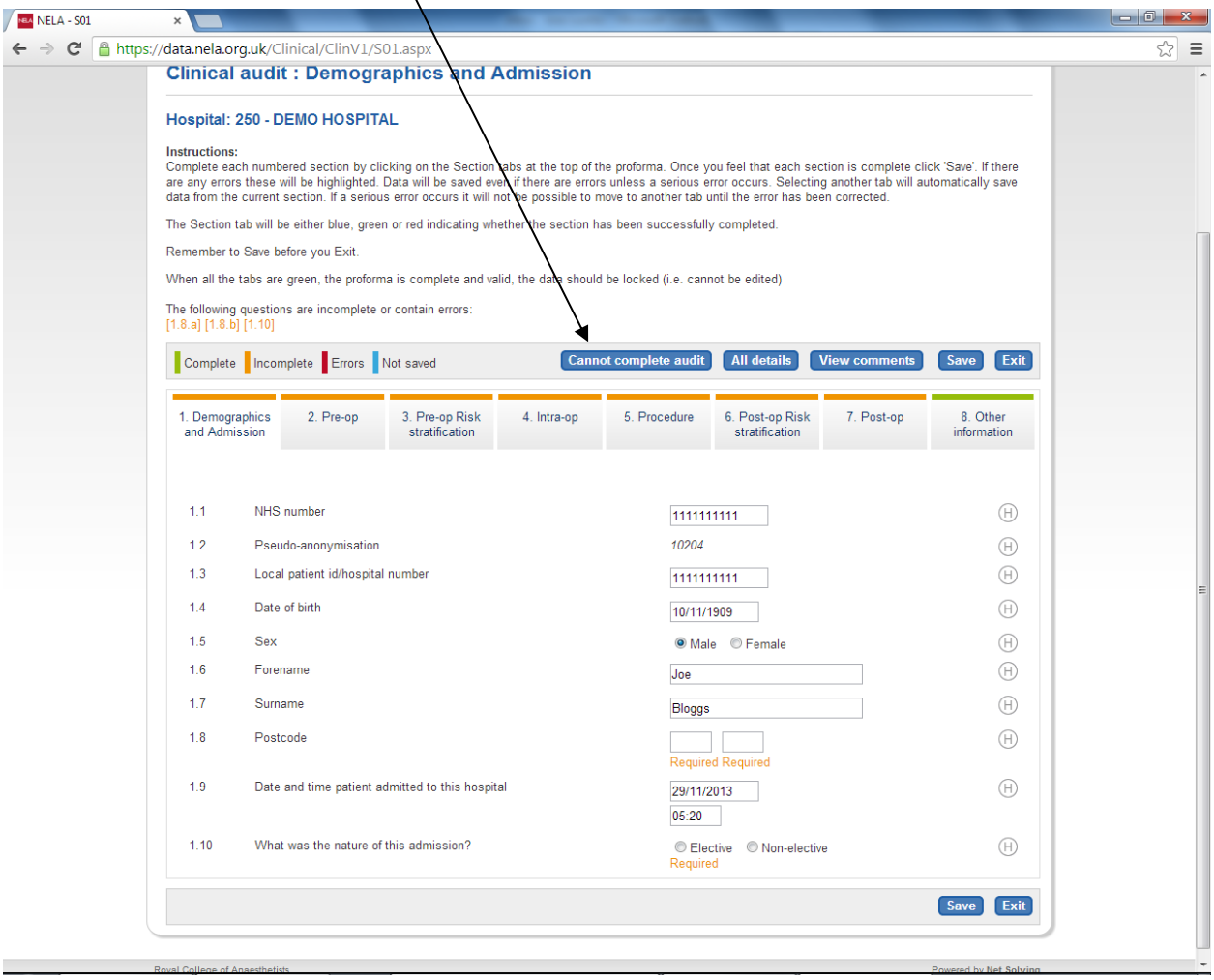
**Consultant information on the NELA web tool**

12. Sections 2 and 4 of the NELA web tool will ask you to enter the names and GMC numbers of consultant Surgeons and Anaesthetists. Your hospital's list of consultants can be found in the dropdown menu. If you do not see the name of the consultant whose information you are trying to enter please select 'Consultant not in list', enter the consultant's information manually and select 'Add Consultant'. Once added the consultant will appear on the dropdown list for your hospital's cases going forward. If the name of the consultant has been entered incorrectly please find the consultant on the list and select 'Edit consultant'. This will allow you to correct the name and to save the changes select 'Update Consultant'.

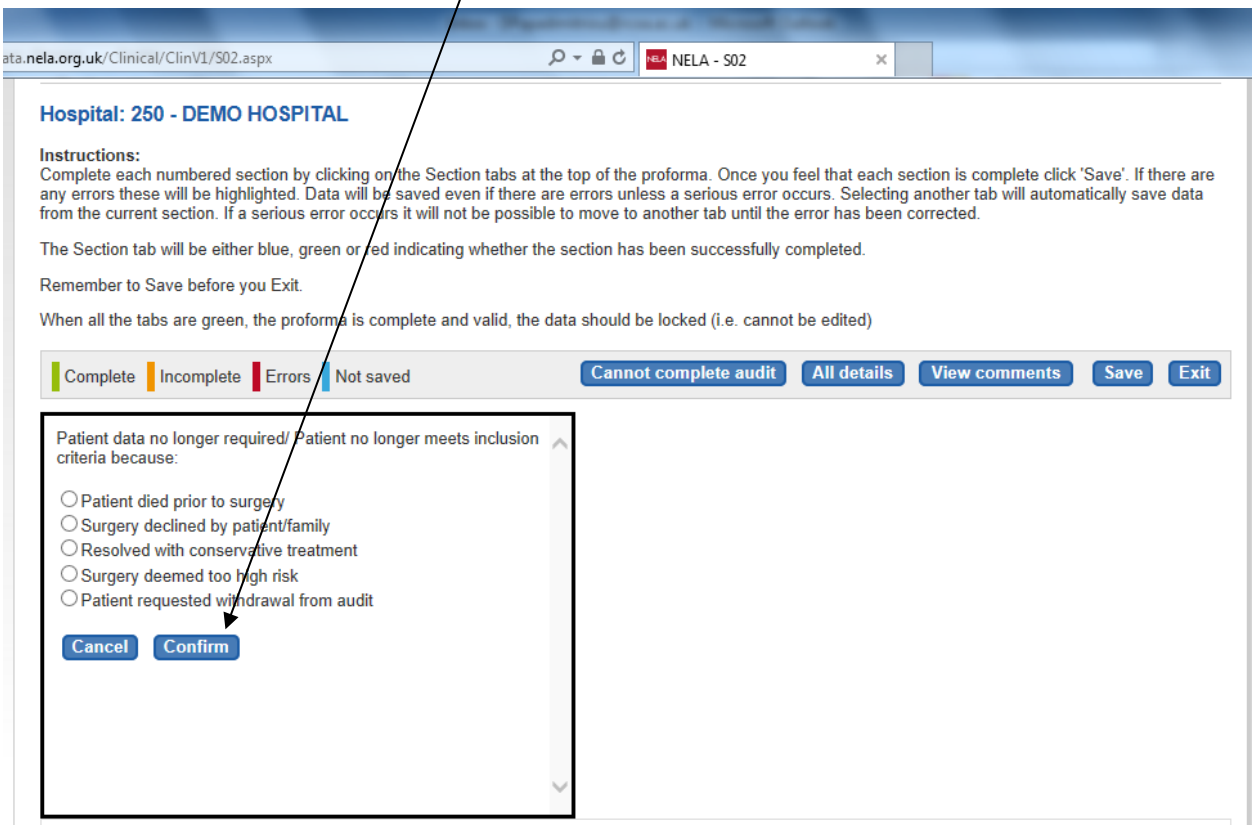


**Case not suitable for NELA**

13. If you have started to enter data on a patient case but find that this patient is no longer applicable in the audit you are able to click 'Cannot complete audit'. A pop up will ask you to confirm you would like to delete this case.

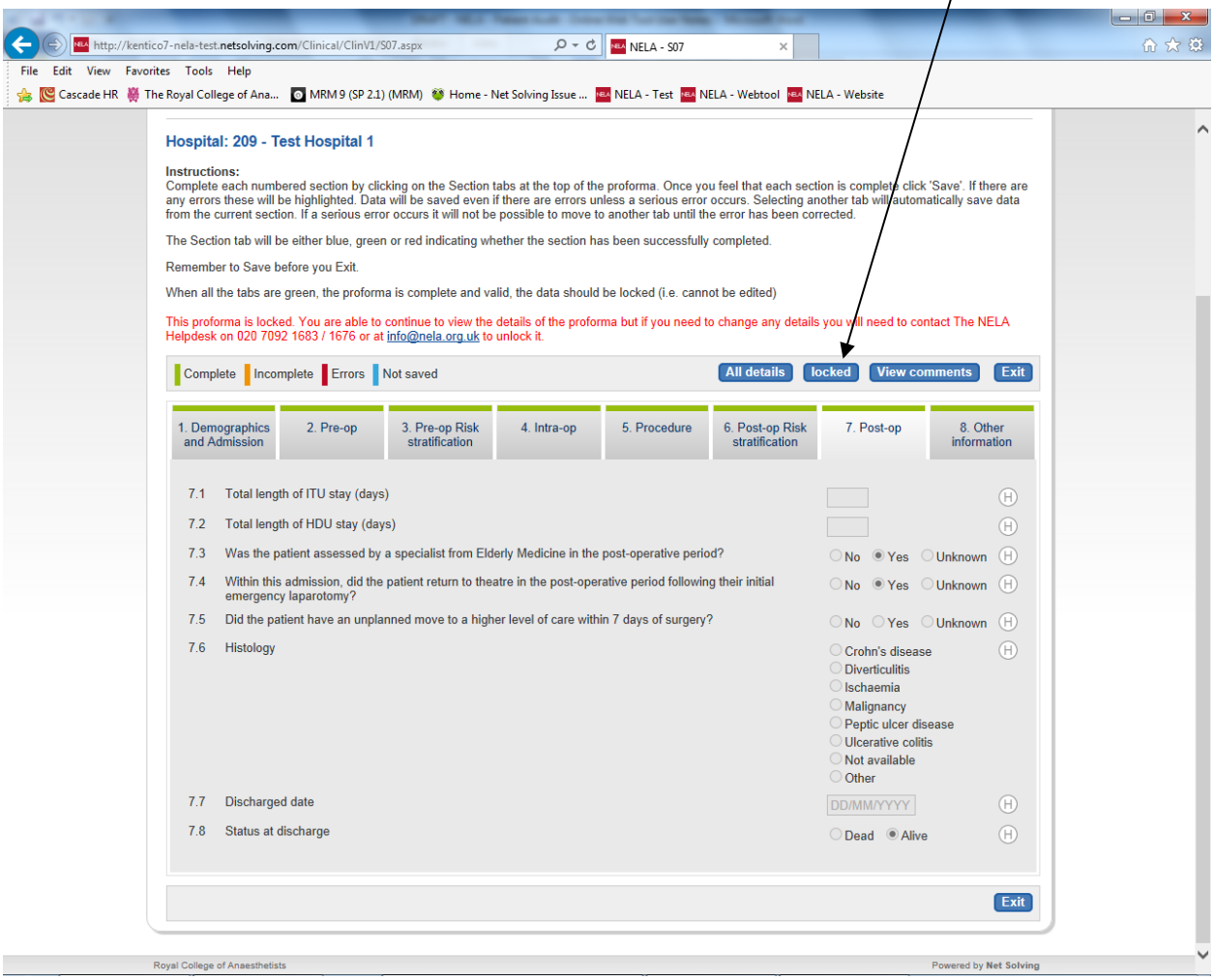


14. Once you have confirmed that you would like to delete this case you will be sent to a screen asking you for the reason the patient is no longer applicable in the audit. Select the option that best describes the reason for deleting the case and click on the 'Confirm' button.



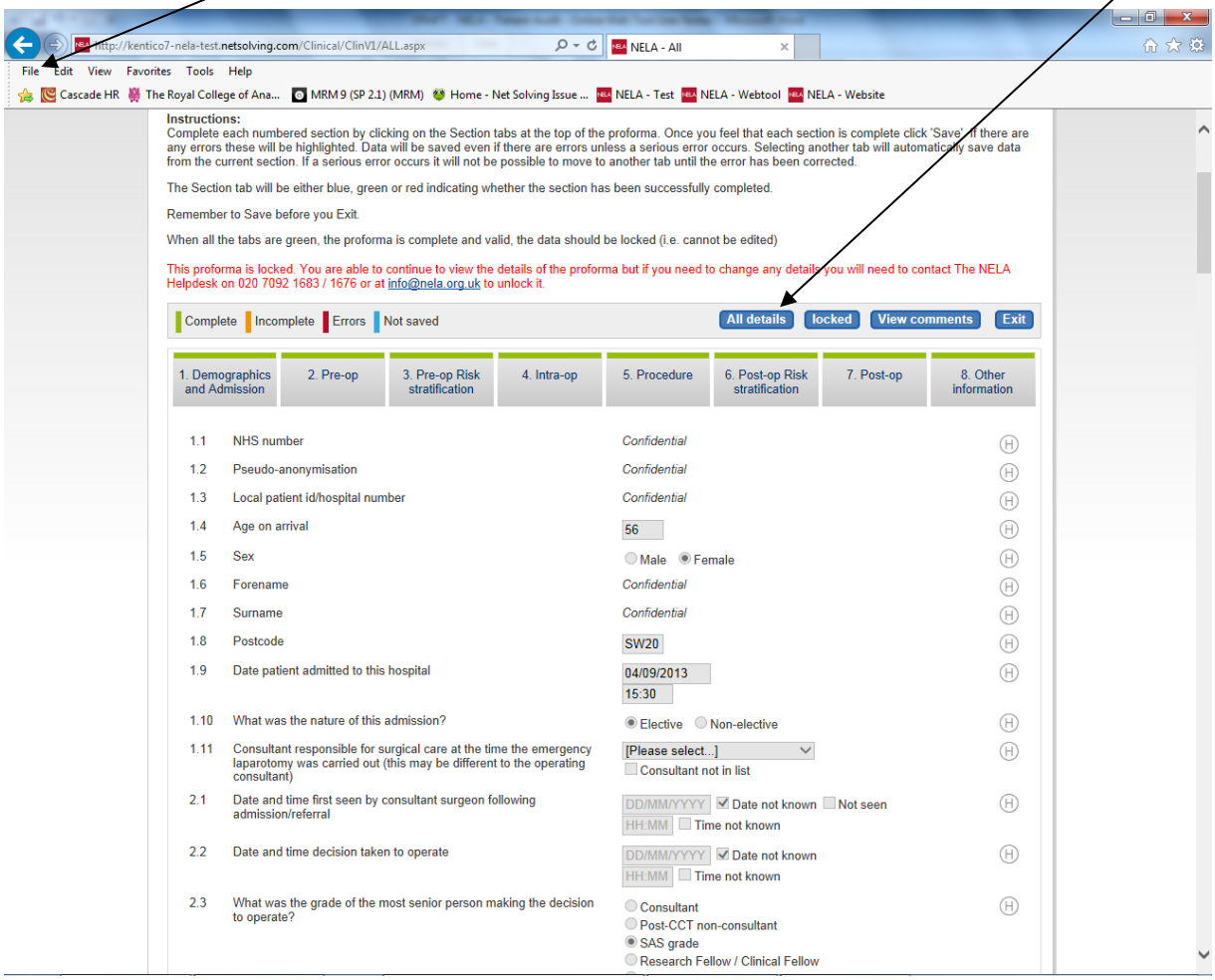
## Locking the data

15. Once all the tabs have turned green you are able to lock your data. Click on the 'Lock' button, this should lock your data and mean that you can view but no longer change the data.



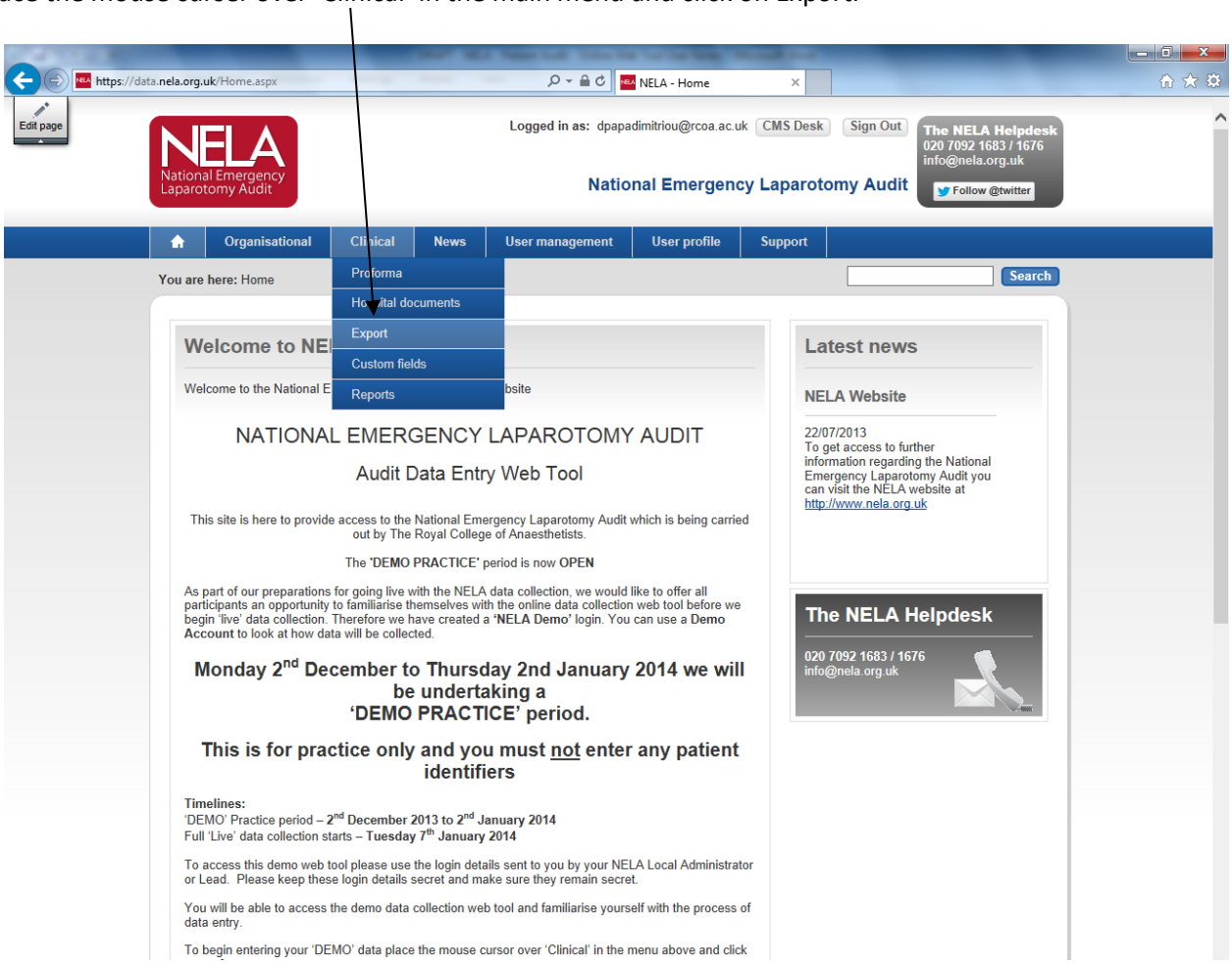
## Printing

16. At any time during the audit you are able to print the full patient case form by pressing the button ‘All details’. Once the full audit is displayed you will be able to print the page using your browsers print option. In your browser click ‘File’ and choose ‘Print’ from the menu.



## Exporting Data

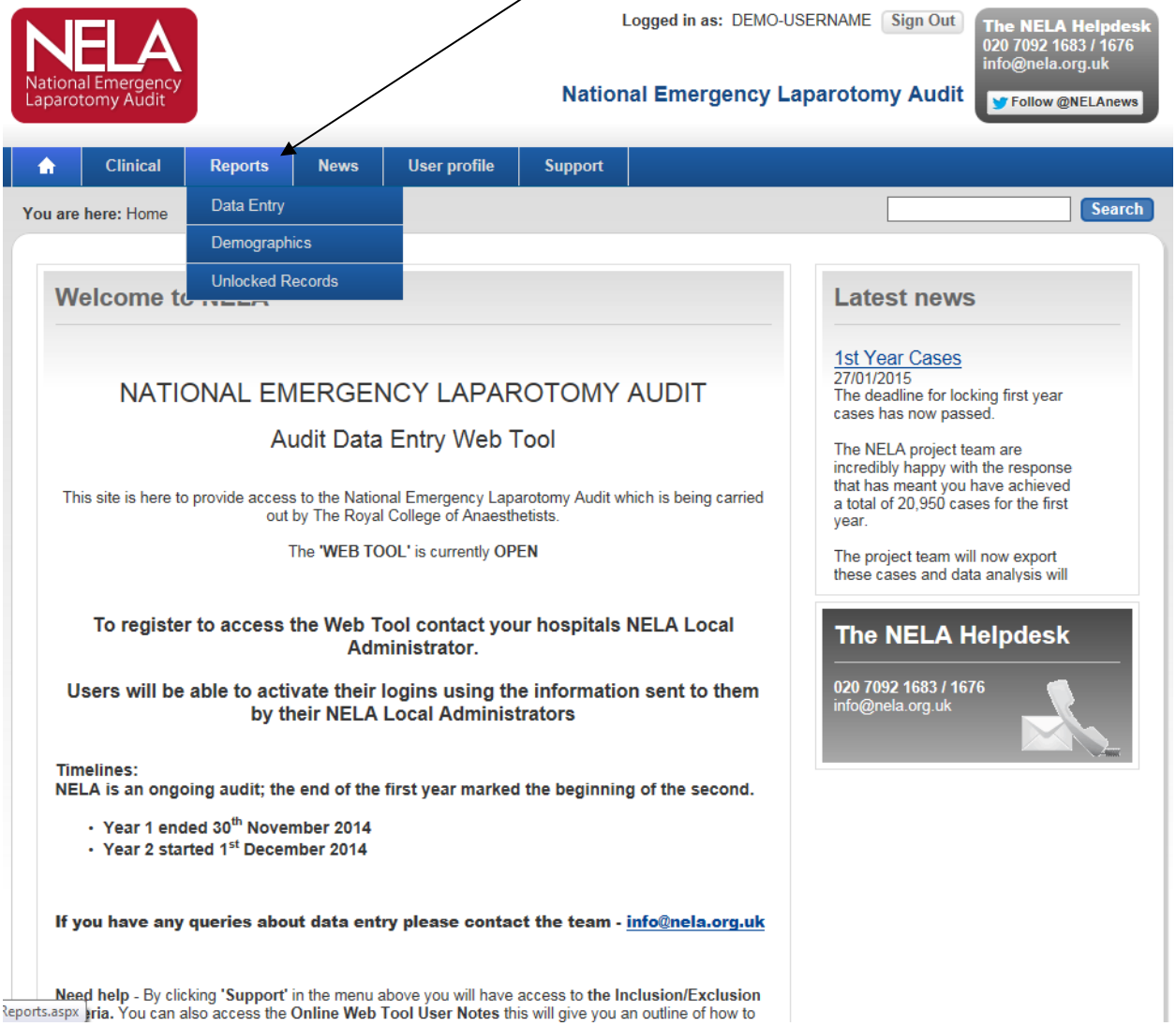
17. A data export function exists which will export data into an excel spread sheet. To access the export function place the mouse curser over 'Clinical' in the main menu and click on Export.



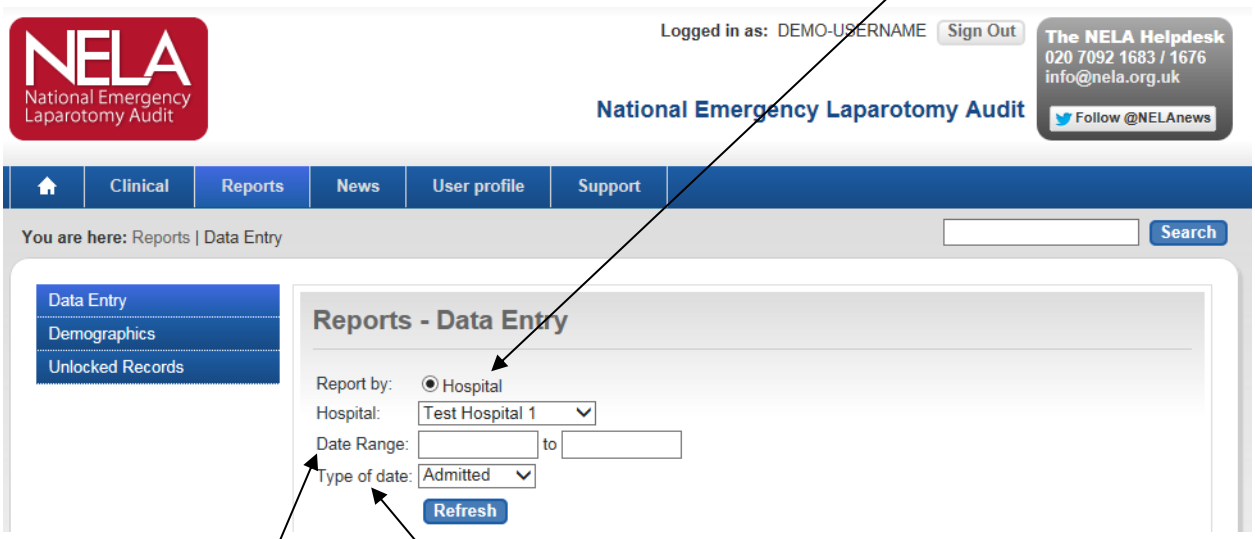

You will be sent to Clinical - Export Screen which will require you to enter the date range you wish to export based on dates patients were first admitted. Once the date range has been entered click on the 'Export to CSV' button for the spread sheet to be saved to your computer. An Export Key allowing you to analyse the export results can be found under the 'Support' tab on the web tool and in the Documents page on the NELA website.

# WEB TOOL DASHBOARD USER NOTES

1. To access to online web tool Dashboard place your mouse over the 'Reports' tab and select one of the Dashboard sub-categories;
   - **'Data Entry'** sub-category gives you an overall view of the data collection and completion progress at your hospital.
   - **'Demographics'** provides you with an understanding of how your patients' age and operative urgency compares to that of the national average.
   - **'Unlocked Records'** breaks down of all your hospital's incomplete cases, making it easier to fill in any missing information and complete and lock these cases.



2. At the top of every Dashboard sub-category page you will find a number of options which allow you to select or narrow down the cases on which you would like the dashboard to focus. If you work across two different sites taking part in the audit you can use the Hospital dropdown list to select which site's results you'd like to view.

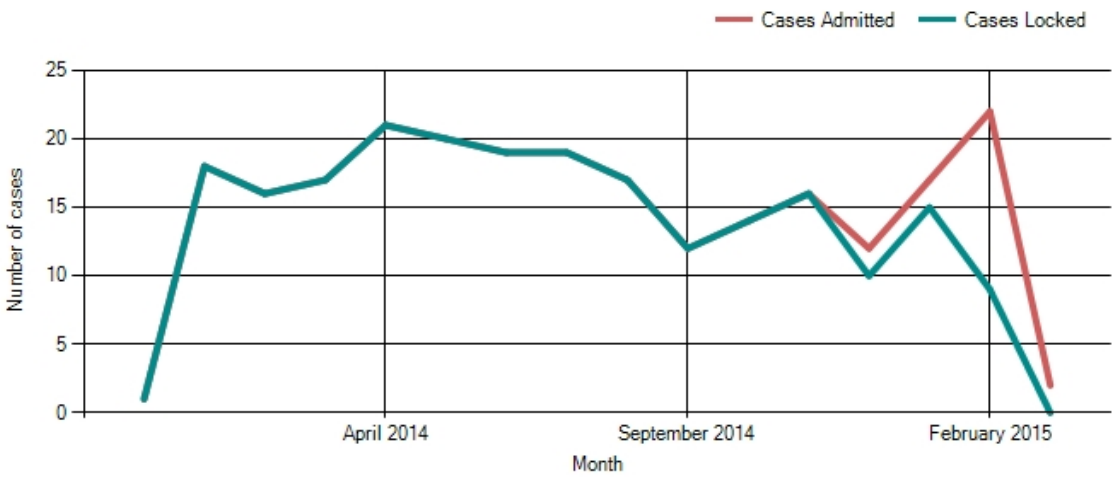



The Data Range fields allow you to view results over a specific time period in the audit, with the system allowing you to narrow down by the date a patient was admitted or discharged or the date that a case was created on the system.

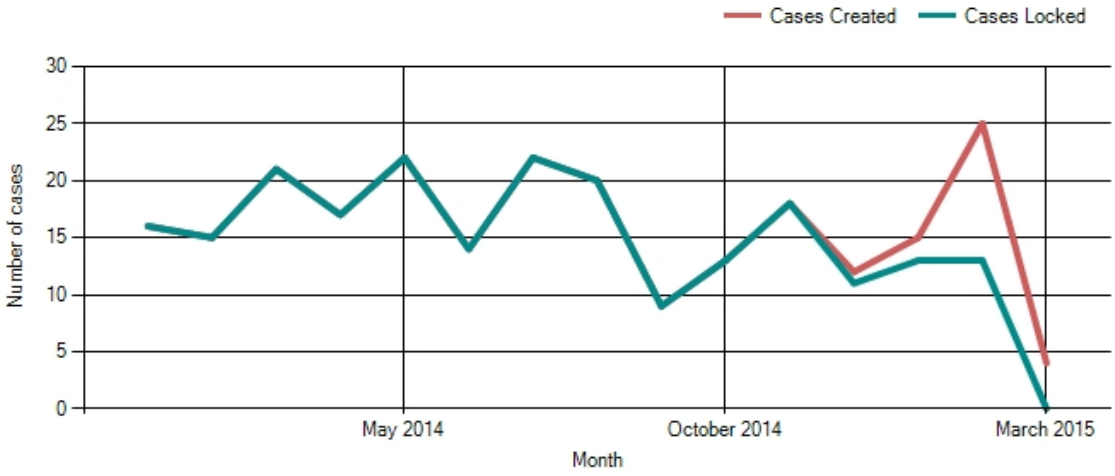
*For example if you were hoping to look solely at Year 2 results of the Patient Audit you would enter 01/12/2014 into the 'from' date range box and select Admitted in the 'Type of date' dropdown. Similarly if you wanted to see how many cases entered on the system during January 2015 are still unlocked you would enter 01/01/2015 and 31/01/2015 in the 'to' and 'from' date range boxes respectively and select Created in the 'type of date' dropdown.*

3. The first two graphs in the 'Data Entry' sub-category of the Dashboard display the rate at which cases have been created and locked on the web tool based on Admission Date and Created Date. This allows you to see if there are any months during which emergency laparotomy was especially common at your hospital. Using the Date Range fields you can focus on the amount of patients admitted and the number of cases entered during a specific period in the audit.

**Cases Entered and Locked by Admission Date**




**Cases Entered and Locked by Created Date**




Ideally you would like to see the lines in the second graphs stay as even as possible, as this would indicate consistency in the amount of cases that are being added onto the web tool each month.

The second half of the 'Data Entry' sub-category gives you a more detailed breakdown of how many emergency laparotomy patients were admitted each month, as well as how many of these cases still remain unlocked.

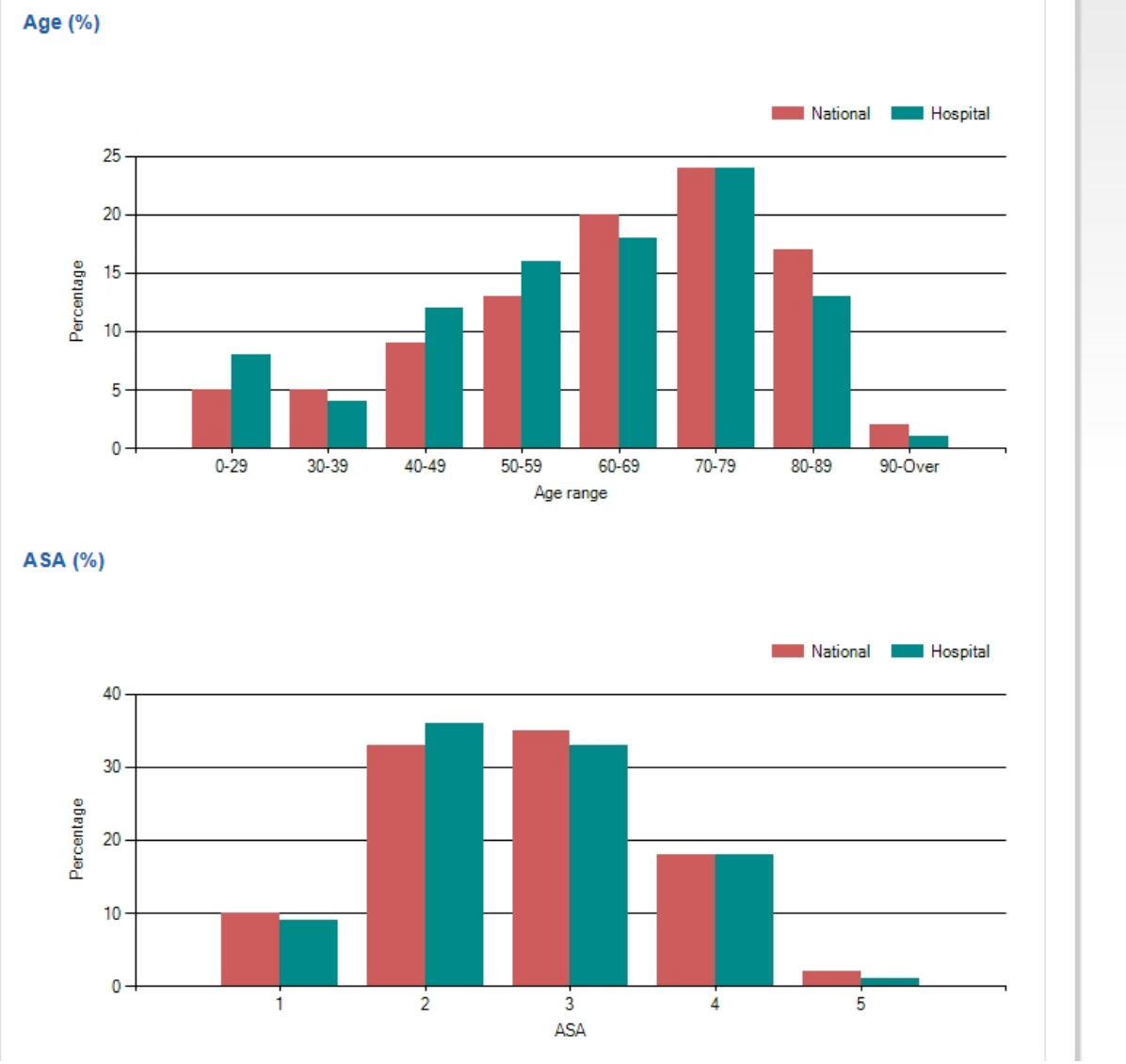
### NELA breakdown data Totals

| HospitalName | Cases Admitted | Cases Locked | Cases Unlocked |
|---|---|---|---|
| Test Hospital 1 | 76 | 3 | 73 |

### NELA breakdown data by month

| HospitalName | Month | Cases Admitted | Cases Locked | Cases Unlocked |
|---|---|---|---|---|
| Test Hospital 1 | | 2 | 0 | 2 |
| Test Hospital 1 | January 2007 | 1 | 0 | 1 |
| Test Hospital 1 | February 2013 | 1 | 0 | 1 |
| Test Hospital 1 | May 2013 | 1 | 0 | 1 |
| Test Hospital 1 | September 2013 | 17 | 2 | 15 |
| Test Hospital 1 | October 2013 | 9 | 0 | 9 |
| Test Hospital 1 | November 2013 | 3 | 0 | 3 |
| Test Hospital 1 | December 2013 | 2 | 0 | 2 |
| Test Hospital 1 | January 2014 | 2 | 0 | 2 |
| Test Hospital 1 | February 2014 | 2 | 0 | 2 |
| Test Hospital 1 | March 2014 | 2 | 0 | 2 |
| Test Hospital 1 | April 2014 | 3 | 0 | 3 |
| Test Hospital 1 | May 2014 | 3 | 0 | 3 |
| Test Hospital 1 | June 2014 | 6 | 1 | 5 |
| Test Hospital 1 | July 2014 | 2 | 0 | 2 |
| Test Hospital 1 | August 2014 | 3 | 0 | 3 |
| Test Hospital 1 | September 2014 | 1 | 0 | 1 |
| Test Hospital 1 | October 2014 | 1 | 0 | 1 |
| Test Hospital 1 | November 2014 | 9 | 0 | 9 |
| Test Hospital 1 | December 2014 | 5 | 0 | 5 |
| Test Hospital 1 | January 2015 | 1 | 0 | 1 |

4. The ‘Demographics’ sub-category of the Dashboard shows how the population of patients undergoing emergency laparotomy at your hospital compares to the audit-wide national average. The first graph displays what percentage of your site’s patients falls into what age category.

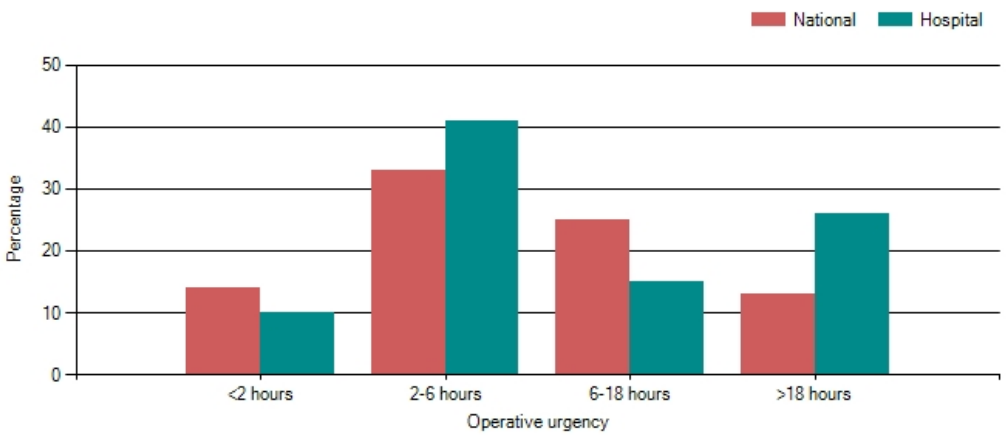



The second graph shows what percentage of your site’s patients fall into which ASA score. This is based on each case’s answer to question 3.3 in the Patient Audit Proforma.

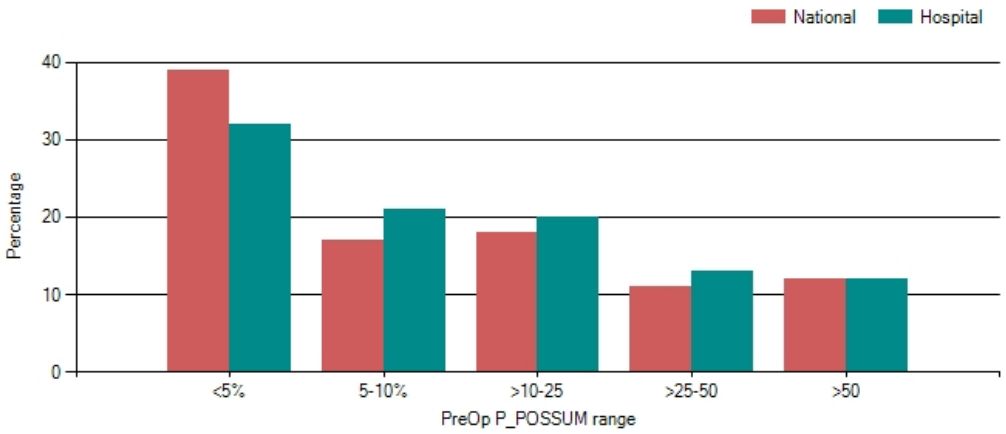
The third and fourth tables located under the 'Demographics' sub-section focus on your site's patient population operative urgency and pre-operative P-POSSUM predicted mortality respectively.

The first table below is based on each case's answer to question 3.22 in the audit Proforma. The second table is based on each patient's pre-op predicted mortality calculated in question 3.23 in the audit Proforma using the answers to questions 3.6 - 3.22.

**Operative Urgency (%)**



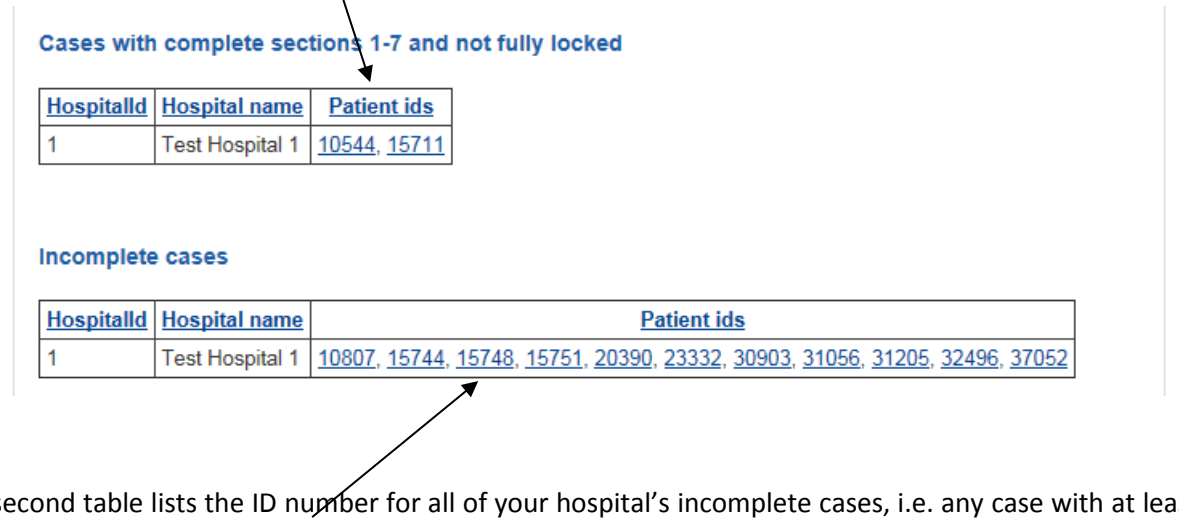

**Pre-Operative P-POSSUM Predicted Mortality**




***Please note that for a case to be included in the 'Demographics' sub-category of the dashboard it needs to be locked. Patient data from unlocked cases will not feature on any of these tables.***

5. The final sub-category of the web tool Dashboard is 'Unlocked Records', which has been designed specifically so as to make the process of completing and locking incomplete cases easier.

   The first table lists the ID numbers for your hospital's cases that are 100% complete but have yet to be locked. All ID number in this sub-category act as links, so by clicking on a case ID number you will automatically be taken directly to the case.



**Cases with complete sections 1-7 and not fully locked**

| HospitalId | Hospital name | Patient ids |
|---|---|---|
| 1 | Test Hospital 1 | 10544, 15711 |

**Incomplete cases**

| HospitalId | Hospital name | Patient ids |
|---|---|---|
| 1 | Test Hospital 1 | 10807, 15744, 15748, 15751, 20390, 23332, 30903, 31056, 31205, 32496, 37052 |

   The second table lists the ID number for all of your hospital's incomplete cases, i.e. any case with at least one section which has yet to be completed.

The final table is a much more detailed version of the one displayed above, listing the completion percentage, admission date, last edited date and responsible users for each incomplete case on the web tool. This table should hopefully be a valuable tool in determining which incomplete cases need to be addressed first and who is responsible for making sure that the information is completed.

In addition to admission date this table can also be sorted by any of the columns simply by clicking on the column header. If you therefore wanted to for example sort the table by the 'Created by' column so as to group the cases for which each online user is responsible together, you would click on 'Created by'.

**Incomplete cases detailed**

| Case ID Number | % of Case Complete | Admission Date | Last Edited | Created by | Responsible Consultant | Operating Consultant | Consultant Anaesthetist |
|---|---|---|---|---|---|---|---|
| 23332, | 25% | 01/07/2014 18:00:00 | 21/01/2015 12:55:29 | Jose Lourtie | | | |
| 31205, | 37% | 12/01/2015 10:17:00 | 13/02/2015 10:15:08 | Demo Demo | | | |
| 10807, | 50% | 07/01/2014 07:24:00 | 09/03/2015 12:22:38 | Demo Demo | Markos | Parker | Oats |
| 15744, | 50% | 04/04/2014 00:00:00 | 09/03/2015 12:24:47 | Dave Murray | Markos | | Papas |
| 15748, | 37% | 02/04/2014 11:00:00 | 09/03/2015 12:25:21 | Jose Lourtie | Rooney | Rooney | Oats |
| 15751, | 37% | 04/04/2014 13:34:00 | 09/03/2015 12:25:55 | Dave Murray | Peterson | Markos | Farage |
| 20390, | 37% | 11/06/2014 00:39:00 | 09/03/2015 12:26:16 | Jose Lourtie | Rooney | | Farage |
| 30903, | 37% | 13/11/2014 08:00:00 | 09/03/2015 12:26:39 | Demo Demo | Peterson | Markos | |
| 32496, | 12% | 02/12/2014 14:00:00 | 09/03/2015 12:27:53 | Demo Demo | Rooney | Rooney | Farage |
| 31056, | 25% | 01/12/2014 07:00:00 | 09/03/2015 12:27:59 | Mary Casserly | Parker | Parker | Papas |
| 37052, | 25% | 08/01/2015 08:00:00 | 09/03/2015 12:30:13 | Demo Demo | Markos | Markos | Oats |

# FREQUENTLY ASKED QUESTIONS - PATIENT AUDIT

**Why are no consultants from my hospital listed in the dropdown in questions 2.3, 4.2 & 4.3?**
The first time a new consultant for your hospital is being used in a NELA case they will have be entered into the web tool manually. If you click on the 'Consultant not on list' box directly below the dropdown you can enter the consultant's full name and GMC number and click on 'Add Consultant'. Once a new consultant has been added, they will be saved and included as an option in the dropdown on all cases going forward.

**What happens if a patient returns to theatre following the initial laparotomy?**
If a patient returns to theatre following an emergency laparotomy and data was entered for the initial laparotomy, then the second procedure does not need to be entered onto the web tool. The system will not in fact allow you to enter two separate cases with the same NHS number and DOB. Questions 7.4 & 7.5 however ask if the patient returned to theatre within same admission, and so the need for a second procedure should be made evident there. All we need to know is if they had a return to theatre.

However for a patient that returns to theatre as an emergency following an elective procedure, data will need to be collected as this is their first emergency laparotomy.

**How do I register on the NELA online web tool if I don't have a trust or nhs.net email address?**
For Information Governance purposes web tool users cannot register using a personal email address such as hotmail or gmail. If you do not have an nhs.net or trust email address however you can still register with a doctors.org email.

Setting up a doctors.org account is very simple and can be done by following this link http://www.doctors.net.uk/registration/. Once the email address has been set up please let your hospital's NELA Local Administrator know and they will be able to create a login for you so that you may access the NELA web tool and participate in the patient data collection process.

**What if I incorrectly enter the name of consultant in the dropdown in questions 2.3, 4.2 or 4.3?**
To edit the name of a consultant on the Surgical and Anaesthetic dropdown lists please select the name of the consultant you wish to update and click the 'Edit consultant' option found under questions 4.2 & 4.3. This will allow you to edit the consultant's first name and surname; once the edit has been made please select the 'Update Consultant' option.

Once a consultant's name has been edited the update will appear in all past cases in which the consultant has been selected, as well as in the consultant dropdown for all the hospital's web tool users going forward. All edits made to the names in the dropdown list for question 4.2 will also appear in the dropdown for question 2.3.

**What if the procedure turns out to be an appendicectomy or cholecystectomy?**
If a patient was initially entered onto the web tool as it was believed an emergency laparotomy was needed, but it was later determined that an appendicectomy or cholecystectomy was required instead, then this patient should not be included in the audit as they do not meet the inclusion criteria. If the appendicectomy or cholecystectomy is however not the main procedure performed but an incidental one, then the patient can be included in the audit and this should be reflected in answer to question 5.3.b.

To remove a case from the web tool for this reason please click on the 'Cannot complete audit' button in the case screen and under the reason for removal select the option relating to appendicectomy/cholecystectomy.

**What if a patient does not have an NHS number or a postcode?**
If a patient is a non-resident and does therefore not have an NHS number then they are not eligible for entry into the audit. If you have begun entering a case only to realise that an NHS number is not available, please send the patient ID number and a brief description of the situation in an email to the NELA inbox and we will remove the case. If a patient does not have a permanent address please use the hospital's postcode when entering the patient information onto the web tool.

**Why is Proforma not separated into 'Surgical Questions' and 'Anaesthetics Questions'?**
While this was an option that was considered when creating the audit questionnaire, this audit is meant to be a joint effort and hopes to encourage collaborative work within hospital teams.

**We have got a lot of users who need access to enter data, can we have a generic login for the site?**
Unfortunately we cannot provide a generic email to everyone at one site, this is so an audit trail for each case that is entered exists and also because of Information Governance reasons.

Some trusts will be providing us with around 100 people who will require access and these will have logins created for them.
Once this initial logins are created any additional people will be added by the NELA Local Administrator. Each administrator will be provided with the information how to do this and will have special access on to the web tool to be able to carry out this function.

**Can we enter the data using our own systems or upload by excel?**
At the moment this is not possible, not least because of the difficulties this would lead to with regard to data validation, and the need to ensure all replies match the 'allowed' responses.

**Exporting data**
A data export function exists on the online tool which will export data into an excel spreadsheet. Further information on this is available on the 'Web Tool User Notes' form.

**Can I start entering data and only part complete a section?**
Yes you can save a section at any time and then return to it to complete.

**Can more than one person access the web tool?**
Yes two people will be able to access the system at the same time and enter patients and different people will be able to access the same patient.

**Will a venous lactate suffice or are we expected to perform arterial puncture on all patients?**
We are just asking for arterial lactate. Performing an ABG towards the end of surgery is part of the End of Surgery Bundle recommended in the standards of care. The standards say that everyone who has a predicted mortality of >5% should have an ABG performed, so the standards would expect one to be performed.

**Question 2.9 – What if the patient was not seen by a consultant?**
If the patient was only seen by a trainee prior to surgery, than you will need to select "not seen". It may be that the consultant first saw the patient in the anaesthetic room, in which case please enter this time/date.

**Question 3.17 & 6.15 – What is the difference between Major & Major+ operative severity?**

**Major+:**

All colonic resections (excluding colostomy alone)
All gastrectomy (but not repair perforated or bleeding ulcer)
Small bowel tumour resection
Re-operations for ongoing sepsis or bleeding
Laparostomy
Intestinal bypass

**Major:**

All other procedures including:
Stoma formation
Small bowel resection
Division adhesions
Repair perforated or bleeding ulcer

**Question 4.3 - Why are you collecting GMC number**

GMC number is being collected for several purposes. This will allow us to see if the operating surgeon is the same as the surgeon making the decision for surgery, and investigate the effects of handing over care. It will also allow us to look at the numbers of consultants within a hospital performing emergency laparotomy, and their speciality. GMC number will also allow clinicians to use the data for revalidation purposes. Please note that we ***do not*** support publication of any data at an individual clinician level due to the nature of the clinical pathway.

**What am I not allowed to enter cases with an admission date prior to 1 September 2013?**

So as to prevent patients from being added onto the web tool with an incorrect date of admission we have set 01/09/2013 as the earliest date the system will accept. As the patient audit did not begin until January 2014 we feel that September is an adequate starting to point to include any patient information that was collected retrospectively.

**Is there external funding available for NELA?**

There is no external funding to support this project. NELA does include an element of Quality Improvement activity; we would anticipate that there will be a benefit to Trusts as the quality of care improves.

## Is NELA work valid for SPA time?

The RCoA cannot impose the allocation of SPA activity on hospitals. However, it is our view that where a clinician is taking a lead role in the delivery of NELA within their hospital, this activity, provided it is diarised and incorporated into the job plan, is valid for inclusion in SPA activity.

**Is the audit mandatory?**

NELA is one of the NCAPOP (National Clinical Audit and Patient Outcomes Programme) audits funded by the Department of Health through HQIP. The NHS standard contract requires that organisations providing NHS care must participate in all relevant NCAPOP audits and enquiries. If providers do not participate in relevant NCAPOP audits they will be in breach of their contract with their commissioner, therefore any non-participation would need to be agreed with the commissioner and CQC as the regulator.
Further information is available on the HQIP website.
http://www.hqip.org.uk/national-clinical-audits-for-inclusion-in-quality-accounts/
http://www.hqip.org.uk/quality-accounts-frequently-asked-questions-faqs/

# PATIENT AUDIT TOP TIPS

These 'top tips' were derived from current NELA audit participants and how they are making the audit work at their hospital site.

## HOW TO RAISE AWARENESS OF NELA

- Arrange multidisciplinary meetings with NELA surgery lead, ICU consultants, nursing managers etc.
    - Fortnightly meetings between clinical audit manager and lead surgeon.

  ***(Michael Spry – Countess of Chester Hospital)***

- Carry out presentations to:
    - Surgeons/Anaesthetists in their audit meetings to give background of NELA. These should be ongoing throughout the process to help spread the message. Try and arrange a joint Surgical and Anaesthetic Audit meeting to discuss NELA.
    - Trust Board governance committee for scheduled care about NELA

  ***(Kathryn Aspinwall – North Devon District Hospital)***
    - Monthly meetings of Acute Care Group
    - The whole hospital to inform them of this ongoing audit

- Provide a short report to Chief exec about the work carried out so far on this front- especially current NELA activity.

- Talk to the Communications Manager for the Trust for the intranet:
    - Put NELA on Trust main page to inform everyone.
    - Print and distribute fliers all over the hospital. Use the posters and information you can download on the NELA website. Update these regularly as you get more results as it is read by all the staff.

- Send out regular updates to surgeons and anaesthetists on NELA progress and what needs doing.
  ***(Abhi Arnold – Watford General Hospital)***

## DATA ENTRY

Below are some suggestions and ideas that are being tried out at different hospital sites to assist in the completion of the NELA audit.
Some of these may work at your hospital and hopefully provide you with ideas on what can be done.

- We have a checklist on A4 yellow paper in place for booking patients needing an emergency laparotomy. We have added the NELA questions to this checklist to be completed by clinical staff. We have also added an extra table to ensure NELA data is being entered:

| Action | By Whom | When | Name of person completing | Entered onto NELA database (Y/N) |
|---|---|---|---|---|
| Section 1 | Surgeon | Pre Op | | |

  ***(Top tip from Pauline McKinney – Northumbria NHS Trust)***

- We have laminated the inclusion/exclusion criteria and attached it to the Anaesthetic machine in Emergency Theatres.
- We use our hospital system 'ORMIS' to check potential NELA patients that have gone through emergency theatre and then see if they are on the NELA database.
- I have arranged with IT to receive a weekly report of all patients admitted & discharged during the previous 8 weeks. The data includes admission date, discharge date or date of death. I cross check each uncompleted case with this, which enables me to complete discharge or death dates.

***(Nick Harper – Blackpool Victoria Hospital)***

- Retrospectively, we ask the anaesthetists to complete their section and then send it on the surgeon, I think the fact that people do find this a lot more tiresome than temporal completion has made temporal completion more attractive, and improved compliance. We also post the incomplete patients' names by surgeon at our monthly quality and safety meetings, as a reminder, after which we do see a flurry of activity. Compliance is also improving with familiarity.
- I check the theatre book regularly to catch the missed cases as I noted you are not obtaining the equivalent of HES data from Wales, so all our cases are eventually entered.

- We have placed paper forms in the reception area of the operating theatres and keep alongside it a notebook with a record of all patients being recruited. Once these are complete they are ticked off.
- I go through the CEPOD list to pick up any relevant cases that are not already entered.

***(Abhi Arnold – Watford General Hospital)***

- We have put in place this system:
    - Make forms available in Surgical admissions Unit and Emergency Theatres
    - These are filled out by operating surgeon and anaesthetists and in left in a tray kin the emergency theatre.
    - Forms are picked up and checked by research nurses and checked for omissions
    - Omissions are followed up by email to surgeon and/or anaesthetists

***(Neil Flint – Leicester Royal infirmary)***

- Have explained to surgical teams and theatre staff that any potential case must have NELA form filed out in order to be booked into theatre.
- Adding an aide memoir to the checklist to ensure all patients are captured.

***(Phillip Dodd – Hampshire hospitals Trust)***

- The theatre clerk copies for me the daily emergency lists so that I can access patient notes to firstly see if they are to be included in the audit.
- I have devised a simple chart which indicates patient details, where I am up to with data collection, what I am waiting for to complete (e.g. histology/discharge date).

***(Christine Hughes – Macclesfield District General Hospital)***

- We are integrating the NELA dataset within our own Emergency Laparotomy Pathway. So we are now more specific about the extra information we collect routinely on anaesthetistic charts and surgical notes.
- We have a research nurse that has taken responsibility for coordinating data entry.
- We have a theatre booking system that flags emergency laporotomies, with a requirement to consider POSSUM scores.
- Having a designated NELA employee to take on the role of audit coordinator makes it more efficient overall.

***(Guy Titley – The Royal Bournemouth Hospital)***

- NELA paper proforma kept in theatre and then use an excel tracker sheet to track cases. This tracker is sent out weekly to surgical teams.

***(Michael Spry – Countess of Chester Hospital)***

- For any cases that are note complete, we review the casenotes. If there is large bit of data missing, we will ask the operating clinician or anaesthetics to complete the form with the casenotes.

***(Natalie Draper – Leicester Royal infirmary)***

- We placed 50 copies of the audit tool (which incorporates our hospital's local instructions) in Day-Glo folders in the relevant theatres. We then placed a Day-Glo folder in the theatre recovery room for completed forms (we had to sellotape this to the desk to avoid it leaving the room).

***(Sue Marshall – Airedale General Hospital)***

- Discussion between Surgeons and Anaesthetists on how best to complete the form and when each section will be complete.
    - For example the first 3 sections could be filled in before booking the case to theatre as far as possible to allow discussion of P-POSSUM predicted mortality and level of cover required
    - Sections 4 to 6 could be done in theatre jointly by surgeons and anaesthetists. Anaesthetic trainee have to get hold of operating surgeon to complete this before they leave theatre
    - Section 7 could be filled in by Surgical team at the time of discharge (when they dictate discharge letter)

***(Seema Charters - Warrington Hospital)***

- Section 7 – We have decided that it is the Audit department role to complete this section. Once a week we will go to theatres and collect the completed yellow sheets. When one comes back incomplete I send the form back to the surgeon/anaesthetist for completion where I highlight what is still missing, along with a self-addressed envelope back to my department to make it easier for them.

***(Pauline McKinney – Northumbria NHS Trust)***

- As a way to remind colleagues to enter data use a NELA sticker to be printed on patient ID label paper. This can be stuck on the patient notes and could help as a prompt to complete data

***(Seema Charters - Warrington Hospital)***

- Contact individual consultants to remind them to enter or complete data entering
- Periodic check of emergency theatre register to make sure that all eligible cases are in the database. Email trainees and consultants' reminders if some of the data are not filled in.

***(Babu Muthuswamy – Aneurin Bevin Health Board)***

# OUTLIER POLICY

This is the Outlier Policy for the National Emergency Laparotomy Audit. It sets out the process by which participating **hospital** performance will be assessed and the process the NELA Project Team will follow to manage any **hospital** that is found to fall outside the expected range of performance and therefore flagged as an outlier.

## 1. Performance Indicators

Performance indicators are intended to provide a valid measure of a provider's quality of care.
NELA will look at structure, process and risk-adjusted outcome measures for the quality of care received by patients undergoing emergency laparotomy. These are drawn from standards of care such as those detailed in recent NCEPOD reports, and the Department of Health/Royal College of Surgeons of England's "Higher Risk General Surgical Patient (2011)". A full list of standards is provided on the NELA website at - http://nela.org.uk/article.php?newsid=1192 These indicators will include, but not be limited to, use of risk assessment, seniority of attending clinicians, critical care utilisation, length of hospital stay and mortality. It is intended that such indicators will provide information on service quality for the profession and the public.

## 2. Expected Performance

The expected performance on an indicator may be defined in two ways.
In some circumstances, it will be based on external sources such as research evidence, clinical judgment or other audit data (e.g. from other national audits).
More generally, the expected level of performance will be derived from the NELA data, such that hospitals are compared against peers. This level will be calculated using statistical methods, and be presented using appropriate types of graphs, such as funnel plots.

## 3. Data Quality

We will report three aspects of data quality, namely:
• case ascertainment: This is the number of patients entered into the NELA compared to the estimated number eligible, derived from external data sources such as Hospital Episode Statistics (HES) data. This will help to inform clinicians, commissioners and the public about the generalisability of the reported outcomes.
• data completeness: this refers to the completeness of the data submitted by hospitals for each patient. Complete data is required for accurate analysis and reporting. Without complete data, indicator values for units may be unrepresentative of actual practice.
• data accuracy: this will be tested using consistency and range checks, as well as external validation against ONS/HES. It may involve other methods of validation such as peer review.

## 4. Case-mix (risk) adjustment

The comparison of outcomes across providers must take account of differences in the mix of patients treated by providers so that differences in outcomes are not due to the types of patient seen. This is achieved by adjusting for measurable factors that are associated with the performance indicator, such as age, sex, disease severity and co-morbidity.

## 5. Detection of a potential outlier

Statistically derived limits around the expected level of performance will be used to define whether or not a provider is a potential outlier. The magnitude of these limits will reflect the amount of uncertainty in the indicator estimated for each provider.

Potential outliers will be identified where indicators are more than a specified number of standard deviations (SD) from the expected performance level. Provider values that are more than 3 SD from the expected level will be flagged and are regarded as potential "outliers". Those providers who fall between the 2 and 3 SD limits will be considered as an 'alert'. These thresholds are consistent with common practice.

It is important to note that these are definitions of statistically significant differences from expected performance. Such differences may not be clinically important if the indicator value is based on large numbers of patients. Where possible, the statistical methods used to generate the control limits will be refined so that they reflect clinically important differences. There will be some hospitals whose caseload is very low, such that it will not be possible to produce statistically robust performance indicators at hospital level. The minimum caseload will be determined by appropriate statistical methods.

## 6. Management of a potential outlier

The management of a potential outlier involves various people:

- The NELA Project Team: the team responsible for managing and running the audit nationally. This comprises the Chair of the Audit, Clinical lead and the team responsible for managing and running the audit nationally.
- Project Board: This includes chair of the project board and will oversee strategic direction and be responsible for monitoring all aspects of delivery of the project.
- NELA local site leads: These are the surgeon, anaesthetist and clinical audit department leads for the audit locally.
- In addition, the provider Medical Director and Chief Executive may need to be involved.

The following table indicates the seven stages that will be followed in managing a potential outlier, the actions that need to be taken, the people involved and the maximum time scales. It aims to be feasible and fair to providers identified as potential outliers and sufficiently rapid so as not to unduly delay the publication of comparative information. The process applies to providers flagged as a potential "outlier" in the initial analysis. If after a review of their data, their level of performance is still beyond the 3 SD control limit, the provider will be flagged as an outlier.

| Stage | Action | Who? | Within how many working days? |
|---|---|---|---|
| 1 | Providers with a performance indicator suggesting 'outlier" status require careful scrutiny of the data handling and analyses performed to determine whether there is:<br>'No case to answer'<br>• potential outlier status not confirmed<br>• data and results revised in NELA records<br>• details formally recorded.<br><br>'Case to answer'<br>• potential outlier status persists<br>• proceed to stage 2 | NELA Project Team | 10 |
| 2 | The Lead Clinician in the provider organisation is informed about the potential outlier status and requested to identify any data errors or justifiable explanation/s. All relevant data and analyses will be made available to the Lead | NELA Project Team<br>NELA National Clinical Lead | 5 |

| | | | |
|---|---|---|---|
| | Clinician. A copy of the request will also be sent to the Clinical Governance Lead of the provider organisation. | | |
| 3 | Lead Clinician to provide written response to NELA Project Team. | NELA Local Leads | 25 |
| 4 | Review of Lead Clinician's response to determine:<br><br>'No case to answer'<br>• It is confirmed that the data originally supplied by the provider contained inaccuracies. Re-analysis of accurate data indicates that the level of performance is now within the 3 SD control limits, and the provider is not flagged as an outlier.<br>• Data and results will be revised in NELA records. Details of the provider's response and the review result recorded.<br>• Lead Clinician notified in writing.<br><br>'Case to answer'<br>• It is confirmed that, although the data originally supplied by the provider were inaccurate, analysis still indicates that the level of performance is still beyond the 3 SD control limits, and the provider is an outlier; or<br>• It is confirmed that the originally supplied data were accurate, thus confirming the initial designation of "outlier" status and that the provider is in fact an outlier.<br>• NELA will notify appropriate authorities of potential outlier status.<br>• proceed to stage 5 | NELA Project Team | 30 |
| 5 | Contact Lead Clinician by telephone, prior to written confirmation of outlier status; copied to Provider clinical governance lead, Medical Director and Chief Executive. Medical Director and Chief Executive will be requested to undertake a local investigation according to DH "Detection and management of outliers" document. All relevant data and statistical analyses, including previous response from the lead clinician, made available to the Medical Director and Chief Executive.<br><br>Chief executive advised to inform relevant bodies about NELA's concerns, and that NELA will proceed to publishing information | NELA Project Team<br>NELA National Clinical Lead | 5 |

| | | | |
|---|---|---|---|
| | of comparative performance that will identify providers. | | |
| 6 | Acknowledgement of receipt of the letter. NELA Project team will send a reminder within 5 days if not received within 10 day timeframe. | Provider Chief Executive | 10 |
| 7 | Public disclosure of comparative information that identifies providers (eg, NELA report). | NELA Project Team | |

**7. Management of "alert" and "outlier" triggers.**

Clinical teams and governance leads need to understand the meaning of these terms and the responses that they will require.

An "alert" indicates that the hospital site has a value that is between 2 and 3 SDs from the expected level of performance. Providers flagged as "alerts" will not be subject to the review process as outlined in section 6.

An "outlier" indicates that a hospital site has an indicator value that is more than 3 SD from the expected level of performance. As outlined in section 6, the unit/trust should invest the time and resource required to reviewing data and providing updated data to the NELA. In addition, consideration will be given to whether it is necessary to suspend the performance of certain index procedures. This will be more likely if poor performance is leading to significant patient harm. It is important to understand that these measures exist for patient safety and that such a suspension will be immediately withdrawn if it can be demonstrated after reviewing the data that performance was outside the "outlier" line because of data issues.

Hospital sites should be aware that while the NELA has a duty to report on the data it holds, the NELA is not responsible for the accuracy and completeness of the data submitted. This responsibility rests with the clinical teams/sites/NHS trust providing the service to patients. Issues with clinical audit data (either case ascertainment or data quality) must be addressed by the unit/trust concerned. The role of the NELA is to provide consistent analysis and case mix adjustment of data received from units and to make reports on the process and outcome of care publically available.

**The role the NELA Project Team**

The primary role of the NELA Project Team is to support clinical teams in providing high-quality, robust clinical audit data. It is anticipated that "outlier" status will be triggered rarely and that a regular reporting cycle will help to drive up clinical quality. Where such triggers are activated, the NELA Project Team will seek to provide additional help to providers wanting to review data entry and quality.

Hospital sites or clinicians with concerns about data quality are urged to contact the NELA Project Team at the Royal College of Anaesthetists at the earliest opportunity to discuss them.

Note: This Policy is drawn from the DH/HQIP "Detection and management of outliers. Guidance prepared by National Clinical Audit Advisory Group, 2011"

# PRINCIPAL PERFORMANCE STATISTICS/ PROCESS OUTCOME MEASURES

The following **process measures** are proposed along with quality standards indicated for each measure:

| | **PROCESS MEASURE** | **Required data** | **Stratification variable** | **Standard** | **Source** |
|---|---|---|---|---|---|
| PM1 | Elapsed time between admission/ referral and when first seen by consultant surgeon | Time/date of admission<br>Time/date first seen by consultant surgeon following admission | Admission type (Elective/emergency)<br>Admitting speciality (HES) | High risk patients are defined by a predicted hospital mortality ≥5%: they should have active consultant input in the diagnostic, surgical, anaesthetic and critical care elements of their pathway | RCS HR |
| | | | | Consultant Surgeon involved in decision making for high risk group within 1hr of identification as high risk. | RCS HR |
| | | | | Those considered at high risk are discussed with the consultant and reviewed by a consultant surgeon within four hours if the management plan remains undefined and the patient is not responding as expected. | RCS USC |
| PM2 | Elapsed time between admission and first dose of antibiotics | Time/date of admission to hospital<br>Time/date of first antibiotic administration | Assessment of sepsis from POSSUM data<br>Time entered theatre<br>Transfer of care following admission | Antibiotic treatment starts without delay once decision is made | RCS USC |
| | | | | Those with septic shock require immediate broad-spectrum antibiotics with fluid resuscitation and source control. | RCS HR |
| | | | | …administer broad-spectrum antimicrobials as early as possible, and always within the first hour of recognising severe sepsis and septic shock together with other appropriate measures | RCS HR |
| PM3 | Proportion of “decisions to operate” made by consultant surgeon | Grade of most senior clinician making decision to operate | NCEPOD Urgency<br>Mortality assessment from pre-operative risk assessment | Each patient should have his or her expected risk of death estimated and documented prior to intervention and due adjustments made in urgency of care and seniority of staff | RCS HR |

| | | | | | |
|---|---|---|---|---|---|
| | | | | involved. | |
| | | | | Each higher risk case (predicted mortality ≥5%) should have the active input of consultant surgeon and consultant anaesthetist. Surgical procedures with a predicted mortality of ≥10% should be conducted under the direct supervision of a consultant surgeon and a consultant anaesthetist unless the responsible consultants have actively satisfied themselves that junior staff have adequate experience and manpower and are adequately free of competing responsibilities | RCS HR |
| | | | | Consultant Surgeon involved in decision making for high risk group within 1hr of identification as high risk. | RCS HR |
| | | | | All patients admitted as emergencies are discussed with the responsible consultant if immediate surgery is being considered. | RCS USC |
| | | | | Surgical patients often require complex management and delay worsens outcomes. The adoption of an escalation strategy which incorporates defined time-points and the early involvement of senior staff when necessary are strongly advised. | RCS HR |
| PM4 | Proportion of patients seen in the pre-operative period by a consultant anaesthetist was appropriate to the risk of death | Time/date first seen by consultant anaesthetist prior to surgery<br>Time/date entered operating theatre | NCEPOD Urgency Mortality assessment from pre-operative risk assessment<br>P-POSSUM | The peri-operative anaesthetic care of ASA3 and above patients requiring immediate major surgery (and therefore with an expected higher mortality) is directly supervised by a consultant anaesthetist. | RCS USC |
| | | | | The time of surgery is determined by its urgency based upon the needs of the individual patient. Pre- | RCS USC |

| | | | | | |
|---|---|---|---|---|---|
| | | | | operative anaesthetic assessment and optimisation is undertaken as soon as the patient has been referred for surgery. | |
| PM5 | Elapsed time between decision to operate and entry into operating theatre | Time/date of decision to operate<br>Time/date entered operating theatre | NCEPOD Urgency Mortality assessment from pre-operative risk assessment<br>P-POSSUM | Trusts should ensure emergency theatre access matches need and ensure prioritisation of access is given to emergency surgical patients ahead of elective patients whenever necessary as significant delays are common and affect outcomes. | RCS HR |
| | | | | Hospitals accepting undifferentiated patients requiring immediate life and/or limb-preserving surgery are equipped and staffed 24/7 to manage the likely range of surgical emergencies. | RCS USC |
| | | | | All hospitals admitting emergency general surgical patients should have a dedicated, fully staffed, theatre available at all times for this clinical workload. | ASGBI EGS |
| | | | | Adequate emergency theatre time is provided throughout the day to minimise delays and avoid emergency surgery being undertaken out of hours when the hospital may have reduced staffing to care for complex postoperative patients. | RCS USC |
| | | | | Trusts should ensure emergency theatre access matches need and ensure prioritisation of access is given to emergency surgical patients ahead of elective patients whenever necessary as significant delays are common and affect outcomes. | RCS HR |
| | | | | Surgical patients often require complex management and delay worsens outcomes. The adoption of an escalation | RCS HR |

| | | | | | |
|---|---|---|---|---|---|
| | | | | strategy which incorporates defined time-points and the early involvement of senior staff when necessary are strongly advised. | |
| | | | | Patients with an intraabdominal pathology and organ dysfunction should be operated on within 6hrs of onset of organ dysfunction. | RCS HR |
| | | | | Time to operate within 2hrs of decision to operate for high risk group. | RCS HR |
| | | | | For non-high-risk group definitive operation within same working day from time of decision to operate. | RCS HR |
| | | | | The time from decision to operate to actual time of operation is recorded in patient notes and audited locally | RCS USC |
| PM6 | Elapsed time between admission and entry into operating theatre | Time/date of admission<br>Time/date entered operating theatre | NCEPOD Urgency<br>Mortality assessment from pre-operative risk assessment available at time of consent<br>P-POSSUM<br>Operative findings | *As per PM5* | |
| PM7 | Proportion of patients who received a pre-operative abdominal CT scan | Was an abdominal CT scan performed in the pre-operative period as part of the diagnostic work-up? | NCEPOD Urgency | Wherever general and regional anaesthesia is administered there is access to an appropriate range of laboratory and radiological services. | RCS USC |
| | | | | The delivery of quality clinical care is dependent on access to supporting facilities. Rapid access to CT imaging, U/S scanning and laboratory analyses are critical to the efficient diagnosis, resuscitation and prioritisation of these patients | ASGBI EGS |
| PM8 | Proportion of pre-operative abdominal CT scans reported pre-operatively by a consultant radiologist. | Was this CT reported pre-operatively by consultant radiologist? | | An individual who reports an investigation must have been trained in radiological observation and analytical skills | *RCR06* |
| | | | | Consultant radiologists should | *RCR06* |

| | | | | | |
|---|---|---|---|---|---|
| | | | | be available to provide their expert opinion on imaging investigations at all times | |
| | | | | There should be effective and timely communication of imaging reports | *RCR11* |
| | | | | High risk patients are defined by a predicted hospital mortality ≥5%: they should have active consultant input in the diagnostic, surgical, anaesthetic and critical care elements of their pathway | RCS HR |
| PM9 | Proportion of patients who have a documented pre-operative objective assessment of risk of mortality & morbidity, carried out at the time of consent. | What was the patient's risk of mortality documented as being (low/medium/high) Not documented<br><br>How was this assessment made? | | (All elective high risk patients should be seen and fully investigated in pre-assessment clinics). Arrangements should be in place to ensure more urgent surgical patients have the same robust work up. | NCEPOD KTR |
| | | | | An assessment of mortality risk should be made explicit to the patient and recorded clearly on the consent form and in the medical record | NCEPOD KTR |
| | | | | A robust method of risk assessment for elderly patients presenting with an acute intra-abdominal catastrophe should be developed. | NCEPOD age |
| | | | | Each hospital should work towards identifying patients at risk of adverse outcomes and put in place a system to try and reduce their morbidity and mortality | NCEPOD KTR |
| | | | | High risk patients are defined by a predicted hospital mortality ≥5%: they should have active consultant input in the diagnostic, surgical, anaesthetic and critical care elements of their pathway | RCS HR |
| | | | | We recommend that objective risk assessment become a mandatory part of the pre-operative checklist to be | RCS HR |

| | | | | | |
|---|---|---|---|---|---|
| | | | | discussed between surgeon and anaesthetist for all patients. This must be more detailed than simply noting the American Society of Anesthesiologists (ASA) score. | |
| PM10 | Proportion of patients in whom the seniority of the principal **operating surgeon** present for the majority of the surgical procedure was appropriate to the risk of death | Grade of most senior surgeon present in theatre for the majority of the surgical procedure | Mortality assessment from pre-operative risk assessment | Each patient should have his or her expected risk of death estimated and documented prior to intervention and due adjustments made in urgency of care and seniority of staff involved. | RCS HR |
| | | | | High risk patients are defined by a predicted hospital mortality ≥5%: they should have active consultant input in the diagnostic, surgical, anaesthetic and critical care elements of their pathway | RCS HR |
| | | | | We recommend that objective risk assessment become a mandatory part of the pre-operative checklist to be discussed between surgeon and anaesthetist for all patients. This must be more detailed than simply noting the American Society of Anesthesiologists (ASA) score. | RCS HR |
| PM11 | Proportion of patients in whom the seniority of the **anaesthetist present in theatre** for the majority of the surgical procedure was appropriate to the risk of death | Grade of most senior anaesthetist present in theatre for majority of procedure | Mortality assessment from pre-operative risk assessment | A consultant surgeon (CCT holder) and consultant anaesthetist are present for all cases with predicted mortality ≥10% and for cases with predicted mortality >5% except in specific circumstances where adequate experience and manpower is otherwise assured. | RCS USC |
| | | | | Each patient should have his or her expected risk of death estimated and documented prior to intervention and due adjustments made in urgency of care and seniority of staff involved. | RCS HR |
| | | | | Each higher risk case | RCS HR |

| | | | | | |
|---|---|---|---|---|---|
| | | | | (predicted mortality ≥5%) should have the active input of consultant surgeon and consultant anaesthetist. Surgical procedures with a predicted mortality of ≥10% should be conducted under the direct supervision of a consultant surgeon and a consultant anaesthetist unless the responsible consultants have actively satisfied themselves that junior staff have adequate experience and manpower and are adequately free of competing responsibilities | |
| | | | | Surgical procedures with a predicted mortality of ≥10% should be conducted under the direct supervision of a consultant surgeon and consultant anaesthetist unless the responsible consultants have satisfied themselves that their delegated staff have adequate competency, experience, manpower and are adequately free of competing responsibilities. | RCS HR |
| | | | | Consultant Surgeon involved in decision making for high risk group within 1hr of identification as high risk. | RCS HR |
| | | | | All patients admitted as emergencies are discussed with the responsible consultant if immediate surgery is being considered. | RCS USC |
| | | | | The [monitoring and treatment] plan must match competency of the doctor to needs of the patient | RCS HR |
| | | | | Surgical patients often require complex management and delay worsens outcomes. The adoption of an escalation strategy which incorporates defined time-points and the early involvement of senior staff when necessary are strongly advised. | RCS HR |

| | | | | | |
|---|---|---|---|---|---|
| | | | | The peri-operative anaesthetic care of ASA3 and above patients requiring immediate major surgery (and therefore with an expected higher mortality) is directly supervised by a consultant anaesthetist. | RCS USC |
| PM12 | Proportion of patients in which goal directed fluid therapy was utilised | How did you provide goal directed fluid therapy?<br>Not provided<br>CO monitor<br>other | | There is good evidence to demonstrate that inappropriate peri and post operative fluid therapy is harmful. Dynamic monitoring of stroke volume and cardiac output avoids this, and should be considered in all patients undergoing major surgery | ASGBI pt safety |
| | | | | There should be clear strategies for the management of intra-operative low blood pressure in the elderly to avoid cardiac and renal complications. Non invasive measurement of cardiac output facilitates this during major surgery in the elderly. | NCEPOD Age |
| | | | | The CardioQ-ODM should be considered for use in patients undergoing major or high-risk surgery or other surgical patients in whom a clinician would consider using invasive cardiovascular monitoring. | NICE MTG3 |
| PM13 | Proportion of patients who have a structured assessment of risk of mortality & morbidity, carried out at the end of surgery | Was the patient classified as high risk at the end of surgery? Y/N<br>How was this decision reached? | | Each patient should have their risk of death re-assessed by the surgical and anaesthetic teams at the end of surgery, using an 'end of surgery bundle' to determine optimal location for immediate post-operative care. | RCS HR |
| PM14 | Proportion of high risk patients directly admitted to critical care following surgery (level 2/3) - | Level of care following discharge theatre/recovery (see help for definitions)<br>Level 3 (ITU)<br>Level 2 (HDU)<br>Level 1 (Ward) | Mortality assessment from post- operative risk assessment | All high risk patients should be considered for critical care and as minimum, patients with an estimated risk of death of ≥10% should be admitted to a critical care location. | RCS HR |
| | | | | Intensive care requirements are considered for all patients needing emergency surgery. | RCS USC |

| | | | | | |
|---|---|---|---|---|---|
| | | | | There is close liaison and communication between the surgical, anaesthetic and intensive care teams peri-operatively with the common goal of ensuring optimal safe care in the best interests of the patient. | |
| | | | | The outcome of high-risk general surgical patients could be improved by the adequate and effective use of critical care in addition to a better pre-operative risk stratification protocol. | ASGBI pt safety |
| | | | | Given the high incidence of postoperative complications demonstrated in the review of high risk patients, and the impact this has on outcome there is an urgent need to address postoperative care | NCEPOD KTR |
| | | | | High risk patients are defined by a predicted hospital mortality ≥5%: they should have active consultant input in the diagnostic, surgical, anaesthetic and critical care elements of their pathway | RCS HR |
| | | | | All patients with a predicted mortality of ≥10% should be admitted to a level 2 or 3 critical care area after surgery and all patients should have an updated management plan which incorporates haemodynamic and blood gas parameters, on-going antibiotics, nutrition and thromboembolic prophylaxis. | RCS HR |
| PM15 | Proportion of eligible patients who were reviewed by specialist from Elderly Medicine in the post-operative period | Patient was reviewed by specialist from Elderly Medicine in the post-operative period | Age at operation (or admission?) | Clear protocols for the post-operative management of elderly patients undergoing abdominal surgery should be developed which include where appropriate routine review by a MCOP (Medicine for care of older people) consultant and nutritional assessment | NCEPOD Age |
| | | | | Older people's care in hospital is delivered through | NSF older people |

| | | | | | |
|---|---|---|---|---|---|
| | | | | appropriate specialist care and by hospital staff who have the right set of skills to meet their needs. | |

The following **outcome measures** are proposed and will be refined and ratified by the Clinical Reference Group in Year 1. The quality standards are indicated for each measure.

| | OUTCOME MEASURES | Required data | Standard | Source of standard / evidence |
|---|---|---|---|---|
| OM1 | Short-term mortality (30-day) (derive from ONS) | Date of surgery<br>Date of discharge<br>Status at discharge | ASGBI supports the development of outcome related standards of care in Emergency General Surgery | ASGBI EGS |
| OM2 | Unplanned escalation of care from ward | IF WENT TO WARD FROM THEATRE Did the patient have an unplanned move to a higher level of care within 7 days of surgery?<br><br>Place of admission following surgery | The outcome of high-risk general surgical patients could be improved by the adequate and effective use of critical care in addition to a better pre-operative risk stratification protocol. | ASGBI PS |
| | | | Given the high incidence of postoperative complications demonstrated in the review of high risk patients, and the impact this has on outcome there is an urgent need to address postoperative care | NCEPOD KTR |
| | | | Trusts should formalise their pathways for unscheduled adult general surgical care. The pathway should include the timing of diagnostic tests, timing of surgery and post-operative location for patients. | RCS HR |
| OM3 | Proportion of patients who have an unplanned return to theatre following their emergency laparotomy within same | At discharge: within this admission, did the patient return to | *As per OM2* | |

| | | | | |
|---|---|---|---|---|
| | admission | theatre in the post-operative period following their initial emergency laparotomy? | | |
| OM4 | Length of post-operative hospital stay | Date entered operating theatre<br>Date of hospital discharge | ASGBI supports the development of outcome related standards of care in Emergency General Surgery | ASGBI EGS |
| OM5 | 30-day unplanned readmission | Date entered operating theatre<br>Subsequent date of admission (HES) | *As per OM2* | |


[ASGBI EGS] ASGBI emergency general surgery consensus statement (2007)
http://www.asgbi.org.uk/en/publications/consensus_statements.cfm
[ASGBI PS] ASGBI patient safety: a consensus statement (2009)

[NCEPOD Age] Wilkinson K et al. An age old problem: A review of the care received by elderly patients undergoing surgery. *NCEPOD*, London 2010
http://www.ncepod.org.uk/2010report3/downloads/EESE_fullReport.pdf
[NCEPOD KTR] Findlay GP, Goodwin APL, Protopapa K, Smith NCE, Mason M. Knowing the risk: a review of the perioperative care of surgical patients. *NCEPOD*, 2011
http://www.ncepod.org.uk/2011report2/downloads/POC_fullreport.pdf
[NICE CG50] National Institute for Health and Care Excellence Clinical Guideline 50: Acutely ill patients in hospital, 2007
http://publications.nice.org.uk/acutely-ill-patients-in-hospital-cg50
[NICE MTG3] National Institute for Health and Care Excellence medical technologies guidance: CardioQ-ODM
http://www.nice.org.uk/guidance/MTG3

[NSF older people] Department of Health. The National Service Framework for older people. 2001. Crown Copyright
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/198033/National_Service_Framework_for_Older_People.pdf

[RCS HR] Anderson ID. The Higher Risk General Surgical Patient: towards improved care for a forgotten group. RCSEng and DH, London 2011.
http://www.rcseng.ac.uk/publications/docs/higher-risk-surgical-patient/

[RCS USC] "Emergency Surgery Standards for unscheduled surgical care" RCSEng 2011
http://www.rcseng.ac.uk/publications/docs/emergency-surgery-standards-for-unscheduled-care

[RCR11] "Standards & recommendations for the reporting & interpretation of imaging investigations by non-radiologist medically qualified practitioners and teleradiologists"
RCR 2011
http://www.rcr.ac.uk/docs/radiology/pdf/BFCR(11)2_Reporting.pdf

[RCR06] "Standards for the reporting and interpretation of imaging investigations." RCR 2006
http://www.rcr.ac.uk/docs/radiology/pdf/StandardsforReportingandInetrpwebvers.pdf

# PUBLICATIONS
# NELA ORGANISATIONAL REPORT – EXECUTIVE SUMMARY

The National Emergency Laparotomy Audit (NELA) was established to examine the inpatient care and outcomes of patients undergoing emergency laparotomy in England and Wales and to then provide comparative data to hospitals, thereby promoting local quality improvement. The Audit was commissioned by the Healthcare Quality Improvement Partnership (HQIP), funded by NHS England and the Welsh Government and began in December 2012. The commissioning of NELA is a landmark in the ongoing 20 year journey to improve the quality of care that these patients receive. It represents a natural development of the work of the multidisciplinary Emergency Laparotomy Network (ELN) in highlighting the variation in quality of care and outcomes across NHS hospitals.

A proportion of emergency general surgical (EGS) patients have life-threatening intra-abdominal conditions requiring prompt investigation and management. Unlike elective presentations, there is often limited time in which to optimise these patients before surgery. Emergency laparotomy is a term used to describe the group of abdominal surgical procedures that are commonly performed at short notice to treat these conditions; there are, however, occasions when non-surgical intervention may be more appropriate.

Approximately 30,000 patients undergo an emergency laparotomy each year in England and Wales. Post-operative complications and death are unfortunately common; several studies in recent years have shown that 15% of all patients die within a month of having an emergency laparotomy, and that this varies by hospital and patient group.

Concerns about the quality of care received by patients requiring an emergency laparotomy have been raised repeatedly over the last 20 years. This has culminated in the publication of a variety of multidisciplinary recommendations and standards that are intended to safeguard the quality of care of all patients undergoing emergency laparotomy. These standards should be adhered to by every hospital where emergency laparotomy is performed (the full list of standards is shown in Appendix 1 of the main report). These include:

- The timely review by a senior surgeon following admission.
- A formal assessment of risk of death.
- A pathway of defined peri-operative care.
- The prompt administration of antibiotics.
- The ready availability of diagnostic investigations.
- Prompt access to an operating theatre.
- Surgery performed under the direct care of a consultant surgeon and consultant anaesthetist.
- The admission of high-risk patients to a critical care unit following surgery.

Patient outcomes are generally improved with prompt investigation and treatment, which can only be achieved through the appropriate prioritisation of resources. The clinical pathway is complex, requiring input from clinicians across multiple specialties. This brings challenges in itself, both in terms of delivery of care on a day to day basis, and also bringing about long-term service improvement. Change will require coordinated improvement across multiple areas.

Emergency laparotomies are performed at 191 English and Welsh hospitals. All 191 hospitals have registered with NELA and identified clinical leads. In October 2013, 190 hospitals provided information regarding their

structures and processes of care that relate to the treatment of patients undergoing emergency laparotomy. The high level of engagement with this audit is testament to the readiness of clinicians and managers across specialties to engage with this challenging issue.

These self-reported data indicated that the provision of facilities required to perform emergency laparotomy varies substantially between hospitals. Many hospitals meet several of the key recommended standards of care. However, in some cases, the organisation of services falls short of the recommended standards. As this Audit represents the first systematic assessment of these issues, this shortfall is perhaps understandable, and provides the opportunity to bring about much needed improvement.

The immediate availability of operating-theatre, imaging and laboratory facilities and of appropriately trained staff is fundamental to the prompt and effective care of emergency general surgical patients. However, 24-hour availability of these essential resources varies widely.

- Four out of five hospitals admitting unscheduled adult general surgical patients provide one or more fully staffed operating theatres in which emergency laparotomy may be performed at all times.
- 24-hour contemporaneous CT reporting is available at 9 out of 10 hospitals.
- 24-hour on-site interventional radiology (a non-surgical treatment) is not provided at two-thirds of hospitals.
- 24-hour on-site endoscopy (a non-surgical treatment) is available at two-thirds of hospitals.
- 24-hour availability of consultant advice for biochemistry, haematology and transfusion services is available at 9 out of 10 hospitals.

There are diverse models of clinical staffing and organisation of essential supporting clinical services. The recommended four-tier surgical EGS rota is in use at all times at less than half of hospitals; the number and type of consultant surgeons on the rota varies widely. The provision of consultant anaesthetists dedicated to emergency theatres varies by time of day and between institutions. During weekday daytime hours three quarters of hospitals have dedicated consultant anaesthetist sessions to support operating theatres for EGS cases.

In addition to the prompt availability of these fundamental facilities and staff, patient outcomes are influenced by the treatments received and the timeliness with which they are delivered. Clear pathways have been developed for the care of the unscheduled surgical patient to facilitate timely senior review, formal assessment of risk, consultant delivered peri-operative care and transfer to critical care. Such pathways have been implemented in only one-third of institutions, although pathways for severe infections (sepsis) are available at 84% of hospitals.

Half of the hospitals had recently audited the adequacy of emergency theatre provision. It is reassuring that all 191 hospitals have registered to provide the patient level data that is currently being collected.

Additional information about individual hospitals' provision is available in Appendix 2 of the main report.

Hospitals are currently collecting data on individual patients and a report describing the patterns of care will be published in summer 2015. This report will provide comparative information on processes of care and outcomes at a hospital level. The data submitted to the Audit by a hospital is currently available to its clinicians and managers to download on-demand. This information can be used to inform local quality improvement programmes that can and should be implemented now. The responsibility for implementing these quality improvement programmes lies with local Clinical Commissioning Groups (CCGs) and Trust Boards, as well as clinical managers and front line clinicians across multiple specialties. We hope that the current high level of engagement for this difficult multidisciplinary topic will continue in order to bring about the required improvements in the quality of care received by patients requiring emergency laparotomy.

# RECOMMENDATIONS

The provision of essential facilities and staff required for the high quality care of patients requiring emergency laparotomy does not meet current standards at many hospitals. This requires urgent action in order to ensure safe care is being delivered. We make 11 key recommendations to address this, and comment on who needs to be involved in improving quality of care.

## What facilities are required?

Hospitals should review the adequacy of their own facilities and infrastructure to ensure that individual standards of care are met and that the care of emergency laparotomy patients is appropriately prioritised. Participation in the ongoing patient data collection will allow this to be assessed.

- Hospitals should ensure 24-hour access to fully staffed operating theatres so that surgery can take place without undue delay.
- Surgical staffing levels should be sufficient to safely cover acute and inpatient clinical workloads. A four-tier surgical rota is recommended.
- Consultant anaesthetists must be available to provide direct care at all times. During daytime hours this is facilitated by ensuring that emergency theatres are staffed by consultant anaesthetists with job-planned sessions.
- Critical care and outreach services need to be staffed at adequate levels to ensure 24-hour specialist input.
- Emergency and elective surgical workload should be organised within a hospital so that the care of EGS patients may be appropriately prioritised without competition for facilities from the elective workload. Hospitals should explore which models of care are most appropriate for local circumstances.
- A sustained multidisciplinary effort is required to provide 24-hour interventional radiology which is essential for units providing an EGS service.
- Every hospital providing emergency laparotomy care should ensure 24-hour availability of essential support services including experienced radiology and pathology reporting.
- Routine daily input from elderly medicine should be available to elderly patients undergoing emergency laparotomy.
- Pathways for the care of unscheduled surgical patients, and for the early identification and management of sepsis should be universally incorporated into the routine care of all EGS patients. Pathways facilitate the reliable delivery of optimal care to all emergency laparotomy patients.

## Action by multidisciplinary teams

- Multidisciplinary reviews of processes and patient outcomes (morbidity and mortality meetings) should be held for all emergency laparotomy patients. This is a basic requirement of professional practice.
- Structured handover of care is required at all times by all clinicians treating emergency laparotomy patients. This is a basic requirement of professional practice.

## Who needs to be involved in improving quality of care?

### 1 Local clinical teams

Some of these issues may be addressed within the hospital by teams with direct responsibility for providing clinical care. In many cases, this will require a co-ordinated multidisciplinary approach in order to determine why a particular element of care is not available or not provided. This will also need to include the relevant medical managers, supported by local quality improvement/service improvement teams. Specialties that need to be involved include:

- Surgery
- Anaesthesia
- Critical Care
- Radiology
- Endoscopy
- Pathology
- Elderly Medicine

### 2 Commissioners and trust boards

Some areas will require discussion at a higher level, as additional services may need to be commissioned in order to meet standards. Some solutions may require the pooling of local resources and development of networks with other hospitals. This is particularly relevant where the workload for an individual hospital is insufficient to sustain a service in its own right, or where minimum numbers of clinicians are required in order to provide sustainable rotas.

## The importance of patient data collection

This organisational audit report does not provide patient level outcome data, and hence the interpretation of some data is limited. Patient level data is currently being collected and is available on-demand for hospitals to download in order to inform local quality improvement programmes. All hospitals should ensure full, ongoing participation in the collection of patient data for the National Emergency Laparotomy Audit. Regional Quality Observatories can play a role in the analysis and monitoring of care at hospital and regional level. Patient level data will also allow identification of hospitals with the best outcomes, in order that best practice may be shared throughout the NHS.

Care of the patient undergoing emergency laparotomy requires a multidisciplinary approach. All of these disciplines need to be involved in improving the quality of care delivered. We are reassured by the high level of engagement to date, which suggests that the existing concerns about emergency laparotomy care are appreciated by many others.

We hope to see clinical and non-clinical colleagues working with each other across specialties to collect data and bring about improvements in the quality of care for this high-risk group of patients.

# FIRST NELA PATIENT REPORT – EXECUTIVE SUMMARY

## Overview

**1.1** The National Emergency Laparotomy Audit (NELA) was established to describe and compare inpatient care and outcomes of patients undergoing emergency bowel surgery in England and Wales in order to promote quality improvement. NELA was commissioned by the Healthcare Quality Improvement Partnership (HQIP) and funded by NHS England and the Welsh government.

**1.2** The majority of patients undergoing emergency bowel surgery have potentially life-threatening conditions that require prompt investigation and management. Emergency laparotomy and emergency bowel surgery are terms used to describe the group of surgical procedures that are performed at short notice to treat these conditions. Unlike elective (planned) care, there is often limited time to investigate and prepare these patients before surgery.

**1.3** More than 30,000 patients undergo an emergency laparotomy each year in NHS hospitals within England and Wales. These procedures are associated with high rates of postoperative complications and death; recent studies have reported that overall 15% of patients die within one month of having an emergency laparotomy but that this rate varies between hospitals and patient groups. The clinical pathway for patients undergoing emergency bowel surgery is complex, and requires input from clinicians from several specialties. This creates challenges in the delivery of care on a day-to-day basis and in bringing about long-term service improvement.

**1.4** A number of recommendations and Standards have already been developed to safeguard and improve the quality of care of all patients undergoing emergency laparotomy. This NELA report compares each hospital's performance against these Standards (presented alongside abbreviated document names in Appendix 1), as well as the findings and recommendations of the NELA Organisational Audit of hospital infrastructure published in May 2014 (Appendix 5).

**1.5** Standards and recommendations cover the following elements of care:

**i Before surgery**

- Clinical review and formulation of a care plan by a consultant surgeon soon after admission to hospital.
- Ready availability of diagnostic investigations to help define the need for and type of surgery.
- Formal assessment of a patient's risk of death and complications.
- Prompt administration of antibiotics where there is evidence of infection.
- Prompt access to an operating theatre.

**ii During surgery**

- Direct care by a consultant surgeon and consultant anaesthetist.

**iii After surgery**

- Planned admission to critical care for patients when the estimated risk of death exceeds 5%.
- Review of patients older than 70 years by specialists in Medicine for Care of the Older Person (MCOP).

**1.6** The Audit results provide each hospital with an individual breakdown of performance against these Standards. This allows the best performing hospitals to be identified in order that good practice can be disseminated. It also allows hospitals to see areas in which they can bring about improvement through local

Quality Improvement initiatives. Differences between hospitals mean that it is unlikely that generic solutions will be applicable to all hospitals. Each hospital should examine its own circumstances to identify reasons for their current situation and solutions that can be implemented to bring about improvement.

**1.7** Some Standards are only applicable to particularly urgent surgery or to patients at high risk of complications and death. Consequently, 100% compliance is not expected for all Standards because of the range of urgency and risk in patients undergoing emergency bowel surgery.

**1.8** The aim of this executive summary is to:

- Provide an overview of findings from the 1st year of patient data collection (December 2013 to November 2014).
- Summarise generic themes.
- Make recommendations for commissioners, hospitals and clinicians.

**1.9** Detailed comparative data for individual hospitals is presented throughout the main report and in Appendix 2.

## Patient characteristics

**2.1** Data were provided on over 20,000 patients (83% of eligible patients) during the first year of data collection (1 December 2013 to 30 November 2014). Data were submitted from 192 of the 195 eligible NHS hospitals in England and Wales.

## Patient outcomes

### 3.1 Mortality

Thirty-day inpatient mortality was 11%. This estimate is based on data provided directly by local reporters in each hospital. This may reflect a real reduction in mortality compared to mortality of around 15% reported by previous studies; however, it is possible that mortality was under-reported in our data. Independently verified mortality data from the Office for National Statistics are not yet available; therefore caution is required in interpreting these results. We will be able to report more fully in this area when this information becomes available.

**3.2** Notwithstanding these caveats, it is evident that the mortality rate for emergency bowel surgery remains up to five times greater than in high-risk elective surgery such as cardiac, cancer and vascular surgery.

### 3.3 Length of hospital stay

The time that patients spent in hospital after surgery varied substantially with patient age. While more than half of patients who survived to leave hospital were in hospital for less than 12 days after surgery, more than a quarter had yet to leave 20 days after surgery.

## Key themes

### 4.1 Timeliness of Care

For patients undergoing emergency bowel surgery, survival is improved if delays to diagnosis and treatment are minimised. The urgency with which consultations and treatments should be provided before, during and after surgery is related to the nature and severity of an individual patient's condition.

#### i Early input by senior clinicians

- Early consultant input allows the sickest patients to benefit from experienced decision making. Standards state that a consultant surgeon should review patients who may require emergency bowel surgery within 12 hours of hospital admission.

- Half (48%) of patients who were admitted as an emergency and underwent emergency bowel surgery were reviewed within 12 hours of admission by a consultant surgeon.
- Two-thirds (68%) of patients admitted to hospital between midnight and 8.00 am were reviewed by a consultant surgeon within 12 hours of admission, but only a third (34%) were reviewed within this time if they had been admitted between mid-day and 6.00 pm.
- There was variation between hospitals. A consultant surgeon reviewed more than 80% of patients within 12 hours at only one hospital; in contrast less than 40% of patients were reviewed within 12 hours at 49 hospitals (28%).

**ii Prompt administration of antibiotics in patients admitted with peritonitis**

Some patients requiring emergency bowel surgery will have peritonitis (severe infection within the abdomen) and sepsis. These are life-threatening conditions, in which survival is improved when antibiotics are given and necessary surgical treatment carried out without delay.

- Many patients at high risk of sepsis did not receive timely antibiotic therapy.
- For patients who were admitted as an emergency with peritonitis and had surgery within 24 hours.
    - Almost half waited more than four hours for their first dose of antibiotics.
    - A quarter waited more than seven hours.

## 4.2 Assessment and Appreciation of Risk

The risk of death and complications varies between individuals. Standards state that an objective assessment of risk should be made and documented before surgery. This helps patients and their relatives appreciate the implications of different treatment options. Assessment of risk also aids communication between clinicians, so that plans can be made by the multidisciplinary team to provide appropriate levels of care based on each patient's risk.

- Risk of death was documented before surgery in just over half (56%) of all patients.
- Risk was documented for at least 80% of patients at only 14% of hospitals, and at 22% of hospitals risk was documented for less than 40% of patients.

Where risk was documented before surgery, more patients received the required standards of care:

- Two-thirds of high-risk patients were reviewed before surgery by both a consultant surgeon and a consultant anaesthetist, but only half of similarly high-risk patients were reviewed by both consultants if risk had not been documented before surgery.
- Two-thirds of high-risk patients were admitted directly to a critical care unit following surgery if risk had been documented, but half of similarly high-risk patients were cared for on a general ward directly after surgery if risk had not been documented before surgery.

## 4.3 Resources

Mortality following emergency bowel surgery is up to five times greater than that seen in patients undergoing major elective surgery (cardiac, cancer, vascular). It is well established that these high-risk elective patients benefit from consultant-delivered care and admission to critical care following surgery, but what is less well appreciated is that the same applies to patients undergoing high-risk emergency surgery, including emergency bowel surgery. These key resources also need to be available without delay in order to maximise the chances of survival, due to the time sensitive nature of the surgery.

**i Input by consultant surgeons, anaesthetists and radiologists**

Patients who need emergency bowel surgery often require complex management decisions. Standards state that any patient with a predicted risk of death of 5% or more should have active input from a consultant surgeon and consultant anaesthetist.

- Overall, two thirds of operations were directly supervised by both a consultant surgeon and a consultant anaesthetist.
- Both consultants were present for at least 80% of operations at only a quarter (27%) of hospitals; and at ten hospitals at least 20% of operations were performed without either consultant being present.
- More high- and highest-risk patients had emergency bowel surgery 'out of hours'. Despite this both consultants were present for just 41% of operations carried out after midnight and 61% of operations started in the evenings and at weekends, whereas 'in hours' (8.00 am to 6.00 pm, Monday to Friday) both were present for 75% of operations.

Preoperative CT scanning and reporting by a consultant radiologist aids diagnosis and treatment planning and is associated with improved survival. The majority of patients received a CT scan, but not all were reported by a consultant radiologist.

- Two-thirds (68%) of patients had a CT scan which had been reported by a consultant radiologist before surgery.
- More than 80% of patients had a CT scan that was reported by a consultant radiologist before surgery at a quarter (26%) of hospitals. This was achieved in less than 40% of patients at 4% of hospitals.

**ii Access to theatres**

Many operations are time sensitive and survival is increased if delays to arrival in theatre can be minimised. For patients with peritonitis, delay of a few hours can substantially increase the risk of death. Clinicians typically categorise patients according to urgency. When the time between decision to operate and arrival in theatre was compared with operative urgency, the Audit found:

- Overall, one in six patients did not arrive within the appropriate timeframe.
- 80% of patients arrived in theatre within a timescale appropriate to their operative urgency at 75% of hospitals.
- Clinicians had the greatest difficulty getting the most urgent patients to theatre; 77% of patients requiring surgery within two hours reached theatre within the recommended timeframe, compared with those patients who required surgery within either six or 18 hours (86% and 84% of patients respectively).

**iii Critical care after surgery**

Critical care allows close observation of those at risk of deterioration following surgery, and, when necessary, offers advanced treatments or organ support. It is well established that high-risk elective surgical patients should not be nursed on a general ward immediately after surgery, and the same standards of care should be provided for patients undergoing emergency bowel surgery.

- 60% of all patients were admitted directly to a critical care unit following emergency bowel surgery.
- There was variation between hospitals. At 12% of hospitals more than 80% of patients were admitted directly to a critical care unit after surgery, whereas at 9% of hospitals fewer than 40% were.

## Older people

**5.1** Almost half of patients undergoing emergency laparotomy were over 70 years of age. One in five patients over the age of 70 died within 30 days of surgery, making their mortality rate six times greater than that of patients aged 50 and under. They also had a longer length of stay. Comorbidity, disability and frailty are common and older people tolerate acute surgical illness less well. Recommendations state that there should be early involvement of a Medicine for Care of the Older Person (MCOP) specialist in the care of older patients.

- Provision of MCOP support was generally poor. Only one in ten (10%) of patients over the age of 70 and one in five (21%) of patients over the age of 90 had an assessment by an MCOP specialist after surgery.

- At 94% of hospitals fewer than 40% of individuals aged 70 years or older were assessed postoperatively by an MCOP specialist.

## Seven-day services

**6.1** There was little variation in provision of care by day of week or time of day for the following measures:

- Preoperative CT scanning and reporting by a consultant radiologist.
- Time to delivery of antibiotics after emergency hospital admission.
- Time to arrival in theatre for surgery after a decision was made to operate.
- Direct admission to a critical care unit after surgery.

However, variation in the delivery of the following processes of care was seen by time of day of admission and if surgery was started 'in-hours' rather than 'out-of-hours':

- Review by a consultant surgeon within 12 hours of emergency hospital admission.
- A decision to operate made in person by a consultant surgeon and preoperative review by a consultant anaesthetist.
- Presence of consultant surgeons and consultant anaesthetists in theatre for emergency laparotomy.

## Bringing about improvement

**7.1** This is the first time that emergency laparotomy care has been investigated in a consistent fashion across all providers. Compared to the data published by the Emergency Laparotomy Network (ELN), there have been improvements in care.1 Consultant presence during surgery has increased such that perioperative care is now largely consultant driven, a substantial change from historical practice. Some hospitals are consistently delivering very high levels of service, meeting Standards for over 80% of their patients; therefore these standards are achievable within the NHS. Examples of good practice have been collated within this report and on the NELA website so that hospitals can adapt them for their own use.

**7.2** However, variation exists between hospitals. With regard to future improvement, many hospitals currently meet standards of care for 60–70% of patients. Clinicians, hospital managers and commissioners need to determine why Standards are met on some occasions, but not others. The existence of a hospital policy does not guarantee that the patient will actually receive the intended care.
Multidisciplinary teams should be collecting data to ensure that Standards of care are being provided to all patients. Clinicians should aim to study and improve local practice to reduce variability and to ensure that every patient's care meets recognised Standards. The NELA dataset facilitates this, since it collects data on key processes and outcomes, and provides hospitals with the facility to explore their own data (via the NELA website) to support local Quality Improvement initiatives. However, if data are missing, hospitals cannot properly evaluate their own care.

**7.3** In order to reduce variation in care, hospitals should implement appropriate pathways for the care of emergency general surgical patients, starting at the time of admission to hospital or of referral by another team. Care pathways should prioritise emergency resources and ensure that **all** processes of care are provided for every patient. Standardised pathways of care also facilitate audit and thereby highlight key areas for improvement.

**7.4** Several hospitals have made their pathways available to NELA. These are provided on the NELA website: www.nela.org.uk/Pathway-Examples.

# RECOMMENDATIONS

Emergency laparotomy carries a higher overall mortality than any adult elective surgery. The following 24 recommendations are based on published Standards and our findings of wide variation in the provision of care between hospitals. They are aimed at addressing the themes outlined above and described in this NELA Report.

## For Commissioners and provider Chief Executives

There is inter-hospital variation in the provision of important elements of care, and in many cases provision falls short of that provided for high-risk elective patients. Commissioners and Chief Executives should review the Audit results for their hospital to assure themselves of the quality of care provided to patients undergoing emergency laparotomy.

**1** Hospital-level audit data should be examined to determine if national Standards for **postoperative critical care admission** are being adhered to. Where compliance is poor, a change of local policies and reconfiguration of services should be considered to enable all high-risk emergency laparotomy patients to be cared for on a critical care unit after surgery (Chapter 14).

**2** Increased **Medicine for Care of the Older Person** input may require service level agreements with other hospitals if expertise is not available on site (Chapter 15).

## For Medical and Clinical Directors

Medical and clinical directors should review the Audit data for their own hospitals to ensure that sufficient resources and personnel are available and appropriately allocated to provide high-quality care for this high-risk surgical population.

**3** Local protocols should be developed which ensure a **consultant-delivered service** for emergency laparotomy patients. This includes consultant-delivered preoperative decision making and direct intraoperative management. Rotas, job plans and staffing levels for surgeons and anaesthetists should allow a consultant-delivered service 24 hours per day, seven days per week (Chapter 7 and 12).

**4** **Consultant surgeon rota patterns and job plans** should be reviewed to ensure a consultant surgeon is always available to see patients within 12 hours of emergency admission, seven days per week (Chapter 7).

**5** Departments of surgery should use local NELA data to determine if the **availability of on-call consultant surgeons** could be improved by relieving them of elective duties (Chapters 7 and 12).

**6** Any areas of the hospital that admit emergency general surgical patients need to have robust mechanisms in place to **identify patients with signs of sepsis and ensure prompt prescription and administration of antibiotics** (Chapter 10).

**7** **Pathways for the identification and escalation of care** of patients who would benefit from the opinion of a consultant surgeon before the next scheduled ward round should be implemented. In almost all units, this will require duty consultant surgeons to be freed of routine commitments such as clinics or elective operating lists (Chapter 7).

**8** Policies should be developed and implemented which use **individual risk assessment to allocate resources** (e.g. critical care) appropriate to the patient's need (Chapter 9).

**9** Pathways should be developed locally which require **consultant anaesthetist and surgeon presence for all high-risk patients undergoing emergency laparotomy**, 24 hours per day, seven days per week (Chapter 12).

**10** Facilitating a **consultant-delivered anaesthetic service** 24 hours per day, seven days per week may require an increase in the number of consultants available for emergency operating theatre work. This may be of particular relevance to hospitals in which on-call anaesthetists also cover other busy emergency services such as trauma, maternity or critical care (Chapter 12).

**11** Medical and clinical directors should examine their **emergency theatre provision** in the context of their local Audit results, in order to determine whether sufficient resources are available to enable patients to receive emergency surgical treatment without undue delay (Chapters 10 and 11).

## For Multidisciplinary Teams

Improved communication within multidisciplinary teams (MDTs) and implementation of protocols which cover the entire patient pathway can help to improve compliance with established Standards for emergency laparotomy patients.

**12** Pathways should be implemented which facilitate rapid **request and conduct of CT scans** for patients who may require emergency laparotomy. These pathways should also support contemporaneous reporting by consultant or senior radiologists with expertise in interpreting emergency abdominal CT scans, so as not to delay subsequent treatment (Chapter 8).

**13** Any areas of the hospital that admit emergency general surgical patients need to have robust mechanisms in place to **identify patients with signs of sepsis and ensure prompt prescription and administration of antibiotics** (Chapter 10).

**14** Multidisciplinary Teams should review their pathways of care for the **administration of antibiotics** in order to identify why delays occur (Chapter 10).

**15** Pathways should be developed locally which require **consultant anaesthetist and surgeon presence for all high-risk patients undergoing emergency laparotomy**, 24 hours per day, seven days per week (Chapter 12).

**16** When surgery is contemplated, a **formal assessment of the risk of death and complications** should be undertaken by a clinician and documented in the patient record. This information should be communicated to all members of the MDT in order to prioritise care and allocate appropriate resources.
If surgery is undertaken, this risk assessment should be documented on the patient consent form (Chapters 9 and 14).

**17** **Multidisciplinary pathways** should be established to prevent inappropriate delays in a patient undergoing surgery, especially once a consultant decision has been made. This will require cross disciplinary cooperation between surgeons, anaesthetists, radiological and laboratory services and theatre and critical care staff (Chapters 8 and 11).

**18** All patients aged over 70 years should undergo an **assessment of multimorbidity, frailty and cognition** to guide further input from MCOP (Chapter 15).

**19** Pathways should be implemented to ensure that **all patients aged over 70 years who undergo an emergency laparotomy receive postoperative screening and assessment by an MCOP consultant** (Chapter 15).

**20 Clinicians should regularly review Audit data** on timing of administration of antibiotics and time to theatre in order to ensure that aims are being achieved (Chapter 10).

**21 Multidisciplinary teams should hold regular joint meetings** to continuously review essential processes of care (using the NELA Quality Improvement Dashboard) and review perioperative morbidity and mortality in emergency laparotomy.

## For NELA Leads

We are grateful to NELA participants for ensuring that data completeness was generally good. However, at some hospitals data entry for many cases was started but not completed. In addition, fields relating to the timing of key points in the patient pathway (including time of consultant surgeon review, decision to operate and arrival in theatre) were poorly completed by many hospitals (Chapter 17).

**22** NELA leads should review their local data to ascertain **case-submission and data completeness** (Chapter 17)**.**

**23** NELA Leads should actively promote **completion of P-POSSUM data fields** to ensure that risk estimation is accurate and avoid falsely elevated risk adjusted hospital mortality rates (Chapter 17).

**24 Where data completeness is a problem**, NELA Leads should work with clinical teams to improve this, to facilitate future audit and quality improvement (Chapter 17).

NELA
National Emergency Laparotomy Audit

# ONLINE WEBTOOL EXPORT KEY

| Field Name | Excel Column | Question No. | Item Values |
|---|---|---|---|
| TrustName | A | | |
| HospitalName | B | | |
| HospitalId | C | | |
| PatientId | D | | |
| Locked | E | | |
| S01NHSNumber | F | 1.1 | |
| S01LOPATID | G | 1.3 | |
| S01DOBDate | H | 1.4 | |
| S01AgeOnArrival | I | 1.4.a | |
| S01Sex | J | 1.5 | 1 = Male<br>2 = Female |
| S01Forename | K | 1.6 | |
| S01Surname | L | 1.7 | |
| S01PostcodeOut | M | 1.8.a | |
| S01PostcodeIn | N | 1.8.b | |
| S01Adm_Datetime | O | 1.9 | |
| S01Adm_TimeNotEntered | P | 1.9.b.i | 1 = Ticked |
| S01Adm_Type | Q | 1.10 | 1 = Elective<br>2 = Non-elective |
| S02Date_1StsurgDatetime | R | 2.1 | |
| S02Date_1StsurgDateNotKnown | S | 2.1.a | 1 = Ticked |
| S02Date_1StsurgTimeNotKnown | T | 2.1.b | 1 = Ticked |
| S02Date_1StsurgTimeNotEntered | U | 2.1.b.i | 1 = Ticked |
| S02Date_1StsurgNotSeen | V | 2.1.c | 1 = Ticked |
| S02Date_DecopDatetime | W | 2.2 | |
| S02Date_DecopDateNotKnown | X | 2.2.a | 1 = Ticked |
| S02Date_DecopTimeNotKnown | Y | 2.2.b | 1 = Ticked |
| S02Date_DecopTimeNotEntered | Z | 2.2.b.i | 1 = Ticked |
| S02Date_DecopDatetimeType (2015) | AA | 2.2.i | DTO = Decision to operate<br>FBT = First booked for theatre |
| S02Resp_Cons_Id | AB | 2.3 | |
| ResponsibleConsultant | AC | | |
| S02GradeOfMostSeniorPersonMakingDecisionToOperate | AD | 2.4 | 1 = Consultant<br>2 = Post-CCT non-consultant<br>3 = SAS grade<br>4 = Research Fellow / Clinical Fellow |

HSRC Health Services Research Centre
NIAA National Institute of Academic Anaesthesia

RCS ADVANCING SURGICAL STANDARDS

HQIP Healthcare Quality Improvement Partnership

| Field Name | Excel Column | Question No. | Item Values |
|---|---|---|---|
| | | | 5 = Specialty trainee / registrar<br>6 = Core trainee / SHO<br>9 = Other<br>0 = Unknown |
| S02DidThisClinicianPersonallyReviewThePatientAtTheTimeOfThisDecision | AE | 2.5 | 1 = Yes<br>0 = No<br>9 = Unknown |
| S02Date_BookedDatetime (2014) | AF | 2.6 | |
| S02Date_BookedDateNotKnown (2014) | AG | 2.6.a (N/A) | 1 = Ticked |
| S02Date_BookedTimeNotKnown (2014) | AH | 2.6.b (N/A) | 1 = Ticked |
| S02Date_BookedTimeNotEntered (2014) | AI | 2.6.b.i (N/A) | 1 = Ticked |
| S02PreOpCTPerformed | AJ | 2.7 | 1 = Yes<br>0 = No<br>9 = Unknown |
| S02CTReporting | AK | 2.8 | 1 = Yes<br>0 = No<br>9 = Unknown |
| S02FirstSeenByConsultantAnaesthetistPriorToSurgeryDatetime | AL | 2.9 | |
| S02FirstSeenByConsultantAnaesthetistPriorToSurgeryDateNotKnown | AM | 2.9.a | 1 = Ticked |
| S02FirstSeenByConsultantAnaesthetistPriorToSurgeryTimeNotKnown | AN | 2.9.b | 1 = Ticked |
| S02FirstSeenByConsultantAnaesthetistPriorToSurgeryTimeNotEntered | AO | 2.9.b.i | 1 = Ticked |
| S02FirstSeenByConsultantAnaesthetistPriorToSurgeryNotSeen | AP | 2.9.c | 1 = Ticked |
| S02Abx_Datetime | AQ | 2.10 | |
| S02Abx_DateNotKnown | AR | 2.10.a | 1 = Ticked |
| S02Abx_TimeNotKnown | AS | 2.10.b | 1 = Ticked |
| S02Abx_TimeNotEntered | AT | 2.10.b.i | 1 = Ticked |
| S02Abx_NotAdministered | AU | 2.10.c | 1 = Ticked |
| S03PreOpRiskOfDeath | AV | 3.1 | 1 = Low (<5%)<br>2 = Medium (5-10%)<br>3 = High (>10%)<br>0 = Not documented |
| S03PreOpRiskAssessment_FormalRiskAssessment | AW | 3.2.a | 1 = Ticked |
| S03PreOpRiskAssessment_ClinicalJudgement | AX | 3.2.b | 1 = Ticked |
| S03PreOpRiskAssessment_SurgicalAPGAR | AY | 3.2.c | 1 = Ticked |
| S03PreOpRiskAssessment_PhysiologicalCriteria | AZ | 3.2.d | 1 = Ticked |

| Field Name | Excel Column | Question No. | Item Values |
|---|---|---|---|
| S03PreOpRiskAssessment_Other | BA | 3.2.e | 1 = Ticked |
| S03ASAScore | BB | 3.3 | 1 = 1: No systemic disease<br>2 = 2: Mild systemic disease<br>3 = 3: Severe systemic disease, not life-threatening<br>4 = 4: Severe, life-threatening<br>5 = 5: Moribund patient |
| S03SerumCreatinine | BC | 3.4 | |
| S03SerumCreatinineNotPerformed | BD | 3.4.a | 1 = Ticked |
| S03PreOpArterialBloodLactate | BE | 3.5 | |
| S03PreOpArterialBloodLactateNotPerformed | BF | 3.5.a | 1 = Ticked |
| S03Sodium | BG | 3.6 | |
| S03Potassium | BH | 3.7 | |
| S03Urea | BI | 3.8 | |
| S03Haemoglobin | BJ | 3.9 | |
| S03WhiteCellCount | BK | 3.10 | |
| S03Pulse | BL | 3.11 | |
| S03SystolicBloodPressure | BM | 3.12 | |
| S03GlasgowComaScore | BN | 3.13 | |
| S03ECG | BO | 3.14 | 1 = No abnormalities<br>4 = AF rate 60-90<br>8 = AF rate >90/ any other abnormal rhythm/paced rhythm/ >5VE/min/ Q, ST or T wave abnormalities |
| S03CardiacSigns | BP | 3.15 | 1 = No failure<br>2 = Diuretic, digoxin, antianginal or antihypertensive therapy<br>4 = Peripheral oedema, warfarin therapy or CXR: borderline cardiomegaly<br>8 = Raised jugular venous pressure or CXR: cardiomegaly |
| S03RespiratorySigns | BQ | 3.16 | 1 = No dyspnoea<br>2 = Dyspnoea on exertion or CXR: mild COAD<br>4 = Dyspnoea limiting exertion to <1 flight or CXR: moderate COAD<br>8 = Dyspnoea at rest/rate >30 at rest or CXR: fibrosis or consolidation |
| S03PatientWasVentilatedPriorToEmergencyLaparotomy (2015) | BR | 3.16.a | 1 = Yes<br>0 = No |
| S03WhatIsTheOperativeSeverity | BS | 3.17 | 4 = Major |

| Field Name | Excel Column | Question No. | Item Values |
|---|---|---|---|
| | | | 8 = Major+ |
| S03NumberOfOperativeProcedures | BT | 3.18 | |
| S03Pred_TBL | BU | 3.19 | 1 = =<100<br>2 = 101-500<br>4 = 501-999<br>8 = >=1000 |
| S03Pred_Peritsoil | BV | 3.20 | 1 = None<br>2 = Serous fluid<br>4 = Localised pus<br>8 = Free pus, blood or bowel contents |
| S03DiagnosedMalignancy | BW | 3.21 | 1 = None<br>2 = Primary only<br>4 = Nodal metastases<br>8 = Distant metastases |
| S03NCEPODUrgency | BX | 3.22 | 1 = 3. Expedited (>18 hours)<br>2 = 2B. Urgent (6-18 hours)<br>3 = 2A. Urgent (2-6 hours)<br>8 = 1.Immediate (<2 hours)<br>4 = Emergency: resuscitation of > 2h possible(this option is no longer available for new entries) |
| S03PreOpPPOSSUMPredictedMortality | BY | 3.23 | |
| S03PreOpPPOSSUMPredictedMorbidity | BZ | 3.24 | |
| S03WereAllAbovePreOperativeInvestigationsPerformed | CA | 3.25 | 1 = Ticked<br>2 = Not ticked |
| S04EntryInToOperatingTheatreDatetime | CB | 4.1 | |
| S04EntryInToOperatingTheatreDateNotKnown | CC | 4.1.a | 1 = Ticked |
| S04EntryInToOperatingTheatreTimeNotKnown | CD | 4.1.b | 1 = Ticked |
| S04EntryInToOperatingTheatreTimeNotEntered | CE | 4.1.b.i | 1 = Ticked |
| S04Surg_Grade | CF | 4.2 | 1 = Consultant<br>2 = Post-CCT fellow<br>3 = SAS grade<br>4 = Research Fellow / Clinical Fellow<br>5 = Specialty trainee / registrar<br>6 = Core trainee / SHO<br>9 = Other |
| S04OperatingConsultant_Id | CG | 4.2.a | |
| OperatingConsultant | CH | | |
| S04Anaes_Grade | CI | 4.3 | 1 = Consultant<br>2 = Post-CCT fellow |

| Field Name | Excel Column | Question No. | Item Values |
|---|---|---|---|
| | | | 3 = SAS grade<br>4 = Research Fellow / Clinical Fellow<br>5 = Specialty trainee / registrar<br>6 = Core trainee / SHO<br>9 = Other |
| S04AnaesthetistConsultant_Id | CJ | 4.3.a | |
| AnaesthetistConsultant | CK | | |
| S04Fluid_Therapy | CL | 4.4 | 0 = Not provided<br>1 = Cardiac output monitor<br>2 = Other |
| S05IsThisTheFirstSurgicalProcedureOfThisAdmissionOrAComplicationOfPreviousSurgeryWithinTheSameAdmission | CM | 5.1 | 1 = First surgical procedure after admission<br>2 = Surgery for complication of previous surgical procedure within same admission |
| S05IndicationForSurgery_Peritonitis | CN | 5.2.a | 1 = Ticked |
| S05IndicationForSurgery_Perforation | CO | 5.2.b | 1 = Ticked |
| S05IndicationForSurgery_AbdominalAbscess | CP | 5.2.c | 1 = Ticked |
| S05IndicationForSurgery_AnastomoticLeak | CQ | 5.2.d | 1 = Ticked |
| S05IndicationForSurgery_IntestinalFistula | CR | 5.2.e | 1 = Ticked |
| S05IndicationForSurgery_SepsisOther | CS | 5.2.f | 1 = Ticked |
| S05IndicationForSurgery_IntestinalObstruction | CT | 5.2.g | 1 = Ticked |
| S05IndicationForSurgery_Haemorrhage | CU | 5.2.h | 1 = Ticked |
| S05IndicationForSurgery_Ischaemia | CV | 5.2.i | 1 = Ticked |
| S05IndicationForSurgery_Colitis | CW | 5.2.j | 1 = Ticked |
| S05IndicationForSurgery_AbdominalWoundDehiscence | CX | 5.2.k | 1 = Ticked |
| S05IndicationForSurgery_AbdominalCompartmentSyndrome | CY | 5.2.l | 1 = Ticked |
| S05IndicationForSurgery_PlannedRelook | CZ | 5.2.m | 1 = Ticked |
| S05IndicationForSurgery_Other | DA | 5.2.n | 1 = Ticked |
| S05IndicationForSurgery_OtherDetails | DB | 5.2.n.i | |
| S05Proc_1_Highlevel | DC | 5.3.a | = [Please select...]<br>1 = Peptic ulcer - suture or repair of perforation<br>2 = Peptic ulcer oversew of bleed<br>3 = Gastric surgery - other<br>4 = Small bowel resection<br>5 = Colectomy: left (including anterior resection)<br>6 = Colectomy: right |

| Field Name | Excel Column | Question No. | Item Values |
|---|---|---|---|
| | | | 7 = Colectomy: subtotal<br>8 = Hartmann's procedure<br>9 = Colorectal resection - other<br>20 = Abdominal wall closure<br>22 = Adhesiolysis<br>23 = Drainage of abscess/collection<br>24 = Exploratory/relook laparotomy only<br>25 = Haemostasis<br>26 = Intestinal bypass<br>27 = Laparostomy formation<br>28 = Repair of intestinal perforation<br>29 = Resection of other intra-abdominal tumour(s)<br>30 = Stoma formation<br>31 = Stoma revision<br>32 = Washout only<br>88 = Not amenable to surgery<br>99 = Other (Please specify) |
| S05Proc_1_OtherDetails | DD | 5.3.a.i | |
| S05Proc_2_Highlevel | DE | 5.3.b | = [Please select...]<br>1 = Peptic ulcer - suture or repair of perforation<br>2 = Peptic ulcer oversew of bleed<br>3 = Gastric surgery - other<br>4 = Small bowel resection<br>5 = Colectomy: left (including anterior resection)<br>6 = Colectomy: right<br>7 = Colectomy: subtotal<br>8 = Hartmann's procedure<br>9 = Colorectal resection - other<br>10 = Splenectomy<br>20 = Abdominal wall closure<br>21 = Abdominal hernia repair<br>22 = Adhesiolysis<br>23 = Drainage of abscess/collection<br>25 = Haemostasis<br>26 = Intestinal bypass<br>27 = Laparostomy formation<br>28 = Repair of intestinal perforation<br>29 = Resection of other intra-abdominal tumour(s)<br>30 = Stoma formation<br>31 = Stoma revision |

| Field Name | Excel Column | Question No. | Item Values |
|---|---|---|---|
| | | | 99 = Other (Please specify) |
| S05Proc_2_OtherDetails | DF | 5.3.b.i | |
| S05Proc_2_Notknown | DG | 5.3.b.ii | 1 = Ticked |
| S05Proc_3_Highlevel | DH | 5.3.c | = [Please select...]<br>1 = Peptic ulcer - suture or repair of perforation<br>2 = Peptic ulcer oversew of bleed<br>3 = Gastric surgery - other<br>4 = Small bowel resection<br>5 = Colectomy: left (including anterior resection)<br>6 = Colectomy: right<br>7 = Colectomy: subtotal<br>8 = Hartmann's procedure<br>9 = Colorectal resection - other<br>10 = Splenectomy<br>20 = Abdominal wall closure<br>21 = Abdominal hernia repair<br>22 = Adhesiolysis<br>23 = Drainage of abscess/collection<br>25 = Haemostasis<br>26 = Intestinal bypass<br>27 = Laparostomy formation<br>28 = Repair of intestinal perforation<br>29 = Resection of other intra-abdominal tumour(s)<br>30 = Stoma formation<br>31 = Stoma revision<br>99 = Other (Please specify) |
| S05Proc_3_OtherDetails | DI | 5.3.c.i | |
| S05Proc_3_Notknown | DJ | 5.3.c.ii | 1 = Ticked |
| S05Proc_4_Highlevel | DK | 5.3.d | = [Please select...]<br>1 = Peptic ulcer - suture or repair of perforation<br>2 = Peptic ulcer oversew of bleed<br>3 = Gastric surgery - other<br>4 = Small bowel resection<br>5 = Colectomy: left (including anterior resection)<br>6 = Colectomy: right<br>7 = Colectomy: subtotal<br>8 = Hartmann's procedure<br>9 = Colorectal resection - other<br>10 = Splenectomy |

| Field Name | Excel Column | Question No. | Item Values |
|---|---|---|---|
| | | | 20 = Abdominal wall closure<br>21 = Abdominal hernia repair<br>22 = Adhesiolysis<br>23 = Drainage of abscess/collection<br>25 = Haemostasis<br>26 = Intestinal bypass<br>27 = Laparostomy formation<br>28 = Repair of intestinal perforation<br>29 = Resection of other intra-abdominal tumour(s)<br>30 = Stoma formation<br>31 = Stoma revision<br>99 = Other (Please specify) |
| S05Proc_4_OtherDetails | DL | 5.3.d.i | |
| S05Proc_4_Notknown | DM | 5.3.d.ii | |
| S05Proc_Approach | DN | 5.4 | 1 = Open<br>2 = Laparoscopic<br>3 = Laparoscopic converted to open<br>4 = Laparoscopic assisted |
| S05Op_Find_Abscess | DO | 5.5.a | 1 = Ticked |
| S05Op_Find_Adhesions | DP | 5.5.b | 1 = Ticked |
| S05Op_Find_AnastomoticLeak | DQ | 5.5.c | 1 = Ticked |
| S05Op_Find_Colitis | DR | 5.5.d | 1 = Ticked |
| S05Op_Find_CrohnsDisease | DS | 5.5.e | 1 = Ticked |
| S05Op_Find_AbdominalCompartmentSyndrome | DT | 5.5.f | 1 = Ticked |
| S05Op_Find_Diverticulitis | DU | 5.5.g | 1 = Ticked |
| S05Op_Find_HaemorrhagePepticUlcer | DV | 5.5.h | 1 = Ticked |
| S05Op_Find_HaemorrhageIntestinal | DW | 5.5.i | 1 = Ticked |
| S05Op_Find_HaemorrhagePostoperative | DX | 5.5.j | 1 = Ticked |
| S05Op_Find_IncarceratedHernia | DY | 5.5.k | 1 = Ticked |
| S05Op_Find_IntestinalIschaemia | DZ | 5.5.l | 1 = Ticked |
| S05Op_Find_MalignancyLocalised | EA | 5.5.m | 1 = Ticked |
| S05Op_Find_MalignancyDisseminated | EB | 5.5.n | 1 = Ticked |
| S05Op_Find_PerforationPepticUlcer | EC | 5.5.o | 1 = Ticked |
| S05Op_Find_PerforationSmallBowelColonic | ED | 5.5.p | 1 = Ticked |
| S05Op_Find_Volvulus | EE | 5.5.q | 1 = Ticked |
| S05Op_Find_NormalIntraAbdominalFindings | EF | 5.5.r | 1 = Ticked |
| S05Op_Find_Other | EG | 5.5.s | 1 = Ticked |
| S05Op_Find_OtherDetails | EH | 5.5.s.i | |
| S05PeritonealContaminationPresent_None | EI | 5.6.a | 1 = Ticked |

| Field Name | Excel Column | Question No. | Item Values |
|---|---|---|---|
| OrReactiveSerousFluidOnly | | | |
| S05PeritonealContaminationPresent_FreeGasFromPerforation | EJ | 5.6.b | 1 = Ticked |
| S05PeritonealContaminationPresent_Pus | EK | 5.6.c | 1 = Ticked |
| S05PeritonealContaminationPresent_Bile | EL | 5.6.d | 1 = Ticked |
| S05PeritonealContaminationPresent_GastroDuodenalContents | EM | 5.6.e | 1 = Ticked |
| S05PeritonealContaminationPresent_SmallBowelContents | EN | 5.6.f | 1 = Ticked |
| S05PeritonealContaminationPresent_FaeculentFluid | EO | 5.6.g | 1 = Ticked |
| S05PeritonealContaminationPresent_Faeces | EP | 5.6.h | 1 = Ticked |
| S05PeritonealContaminationPresent_BloodHaematoma | EQ | 5.6.i | 1 = Ticked |
| S05ContaminationWas | ER | 5.7 | 1 = Localised to a single quadrant of the abdomen<br>2 = More extensive / generalised |
| S06PostOpRiskOfDeath | ES | 6.1 | 1 = Yes<br>0 = No |
| S06PostOpRiskAssessment_FormalRiskAssessment | ET | 6.2.a | 1 = Ticked |
| S06PostOpRiskAssessment_ClinicalJudgement | EU | 6.2.b | 1 = Ticked |
| S06PostOpRiskAssessment_SurgicalApgarScore | EV | 6.2.c | 1 = Ticked |
| S06PostOpRiskAssessment_PhysiologicalCriteria | EW | 6.2.d | 1 = Ticked |
| S06PostOpRiskAssessment_Other | EX | 6.2.e | 1 = Ticked |
| S06PostOpArterialBloodLactate | EY | 6.3 | |
| S06PostOpArterialBloodLactateNotPerformed | EZ | 6.3.a | 1 = Ticked |
| S06Sodium | FA | 6.4 | |
| S06Potassium | FB | 6.5 | |
| S06Urea | FC | 6.6 | |
| S06Haemoglobin | FD | 6.7 | |
| S06WhiteCellCount | FE | 6.8 | |
| S06Pulse | FF | 6.9 | |
| S06SystolicBloodPressure | FG | 6.10 | |
| S06GlasgowComaScore | FH | 6.11 | |
| S06ECG | FI | 6.12 | 1 = No abnormalities<br>4 = AF rate 60-90<br>8 = AF rate >90/ any other abnormal |

| Field Name | Excel Column | Question No. | Item Values |
|---|---|---|---|
| | | | rhythm/paced rhythm/ >5VE/min/ Q, ST or T wave abnormalities |
| S06CardiacSigns | FJ | 6.13 | 1 = No failure<br>2 = Diuretic, digoxin, antianginal or antihypertensive therapy<br>4 = Peripheral oedema, warfarin therapy or CXR: borderline cardiomegaly<br>8 = Raised jugular venous pressure or CXR: cardiomegaly |
| S06RespiratorySigns | FK | 6.14 | 1 = No dyspnoea<br>2 = Dyspnoea on exertion or CXR: mild COAD<br>4 = Dyspnoea limiting exertion to <1 flight or CXR: moderate COAD<br>8 = Dyspnoea at rest/rate >30 at rest or CXR: fibrosis or consolidation |
| S06WhatIsTheOperativeSeverity | FL | 6.15 | 4 = Major<br>8 = Major+ |
| S06NumberOfOperativeProcedures | FM | 6.16 | 1 = 1<br>4 = 2<br>8 = >2 |
| S06Act_TBL | FN | 6.17 | 1 = < 100<br>2 = 101-500<br>4 = 501-1000<br>8 = >1000 |
| S06Act_Peritsoil | FO | 6.18 | 1 = None<br>2 = Serous fluid<br>4 = Localised pus<br>8 = Free pus, blood or bowel contents |
| S06Act_Malig | FP | 6.19 | 1 = None<br>2 = Primary only<br>4 = Nodal metastases<br>8 = Distant metastases |
| S06NCEPODUrgency | FQ | 6.20 | 4 = Emergency: resuscitation of > 2h possible<br>8 = Emergency (immediate surgery <2h needed) |
| S06PostOpPPOSSUMPredictedMortality | FR | 6.21 | |
| S06PostOpPPOSSUMPredictedMorbidity | FS | 6.22 | |
| S06WereAllAbovePostOperativeInvestigationsPerformed | FT | 6.23 | 1 = Ticked<br>2 = Not ticked |
| S06Proc_Dest | FU | 6.24 | 1 = Ward<br>2 = Level 2 HDU |

| Field Name | Excel Column | Question No. | Item Values |
|---|---|---|---|
| | | | 3 = Level 3 ICU<br>4 = Died prior to discharge from theatre complex |
| S06ActiveDecisionMadeNotToSendPatientToCriticalCarePostop (2015) | FV | 6.24.a | 1 = Yes<br>0 = No |
| S06PatientOnAVasopressorInotrope | FW | 6.25 | |
| S07Level3_Stay | FX | 7.1 | |
| S07Level2_Stay | FY | 7.2 | |
| S07Geriatric_Postop | FZ | 7.3 | 1 = Yes<br>0 = No<br>9 = Unknown<br>8 = Not applicable |
| S07Comp_Theatre | GA | 7.4 | 1 = Yes<br>0 = No<br>9 = Unknown |
| S07Comp_Level | GB | 7.5 | 1 = Yes<br>0 = No<br>9 = Unknown |
| S07Histology | GC | 7.6 | 01 = Crohn's disease<br>02 = Diverticuliti<br>03 = Ischaemia<br>04 = Malignancy<br>05 = Peptic ulcer disease<br>06 = Ulcerative colitis<br>98 = Not applicable/Not available at time of discharge<br>99 = Other |
| S07Histology_CrohnsDisease (N/A) | GD | (N/A) | 1 = Ticked |
| S07Histology_Diverticulitis (N/A) | GE | (N/A) | 1 = Ticked |
| S07Histology_Ischaemia (N/A) | GF | (N/A) | 1 = Ticked |
| S07Histology_Malignancy (N/A) | GG | (N/A) | 1 = Ticked |
| S07Histology_PepticUlcerDisease (N/A) | GH | (N/A) | 1 = Ticked |
| S07Histology_UlcerativeColitis (N/A) | GI | (N/A) | 1 = Ticked |
| S07Histology_NotAvailable (N/A) | GJ | (N/A) | 1 = Ticked |
| S07Histology_Other (N/A) | GK | (N/A) | 1 = Ticked |
| S07Status_Disch | GL | 7.7 | 0 = Dead<br>1 = Alive<br>60 = Still in hospital at 60 days |
| S07Date_DischDate | GM | 7.8 | |

# INFORMATION FOR PATIENTS

While NELA does not require a patient's consent to be included in the audit, it is important to the Project Team that patients are aware of their inclusion in NELA and that it works closely with patient liaison groups. For this reason a patient representative is present on both the Project Board and the Clinical Reference Group and the audit's website features a page designed to educate patients on what NELA is and how the audit is being conducted, http://www.nela.org.uk/Patient-Information#pt.

The NELA Project Team has put together the following form to address any queries patients taking part in the audit may have:

**What is an Emergency Laparotomy?**
An emergency laparotomy is a major operation where the surgeon has to cut open the abdomen (stomach area). It is called "emergency" because it must be done very soon or even immediately and cannot wait until a later date. It might be carried out for several reasons including internal bleeding, perforation (burst), obstruction (a blockage) or infection. In many cases it might be the only option available in order for the patient to get better.

**What is NELA?**
NELA stands for National Emergency Laparotomy Audit. A clinical audit like NELA is where an independent body assesses the quality of care in hospitals by looking at how it treats the patients and the outcomes of those patients. NELA is a national clinical audit, so that means it is being carried out in over 190 hospitals in England and Wales. NELA will look at the quality of care received by patients undergoing emergency laparotomy.

**Why are we carrying out the NELA at this hospital?**
We want to improve the care that patients undergoing emergency surgery receive. To do this we will collect important information on how well your hospital is providing care to you. We will then give hospitals all the valuable information we have obtained. This will highlight areas of their service where they are doing well, and areas in which they can improve. It will also allow hospitals to compare themselves with others all around the country. All hospitals in England and Wales that carry out emergency laparotomy are expected to participate in this audit.

**What information is collected?**
We will be collecting information about the care you received whilst you were in hospital. This will include information about the investigations and treatment you received, how long it took for different parts of your treatment to be given, and whether you went to a critical care bed after your surgery. Full details of what is being collected can be found the NELA website - www.nela.org.uk.

**What confidential information is collected?**
The confidential information we are collecting is your name, date of birth, NHS number (everyone in the country has a unique number), postcode and sex. This will allow us to match our information with other sources of information that can give us a fuller picture of how well you recovered.

**What happens to the confidential information?**
We will be collecting this information through a very secure website. Only the hospitals participating, the doctors and nurses working on the NELA in the hospital and the NELA project team will have access to the website. The confidential information will be coded when it is transferred and your information is stored safely in accordance with NHS recommendations and standards. None of your personal information will be made public. Some of your non-personal information will be shared for the purposes of research. You cannot be identified from this information.

**Why haven't I been asked for permission to use my information?**
Because some patients are very sick before and after they have had an emergency laparotomy, it would be very hard to ask all patients for their consent. It is important that we get information from all patients, not just those that are well enough to give consent. That's how we can provide an accurate overview of quality. It can be a distressing time for patients and their families, and asking them about this project at this time would not be their most important priority.

**What if I do not want to have my confidential information included?**
Please email info@nela.org.uk and put "Patient request to opt-out" in the subject line. We will then contact the hospital to make sure that they do not enter your details into the audit. If they have already entered your details, we will ask for them to be removed.
Alternatively, please notify a member of your local care team that you wish to opt out. We will then ensure that your details are not entered in the audit. If they have already been entered, we will ask for them to be removed.