NELA Quality Improvement Plan
2022-2025

1. Introduction

NELA aims to enable the improvement of the quality of care for patients undergoing emergency laparotomy through the provision of high-quality comparative data to all providers of emergency laparotomy.

Emergency laparotomy has one of the highest associated mortality rates of all types of surgery performed, almost ten times greater than that of major elective gastrointestinal surgery. NELA investigates processes of care and outcomes, and provides this data to hospitals in real-time to allow continuous monitoring of the effectiveness of care pathways. This data benchmarks hospital performance against national standards, national performance, regional performance and peers.

NELA supports quality improvement (QI) through:

- Real-time local access to nationally benchmarked process and outcome data via automated run-charts, control charts and dashboards
- Regular (quarterly, progressing to monthly) reporting of process measures
- Delivery of workshops/webinars to share good practice and build clinical capability to use NELA data for QI
- Supporting clinical research collaborations

Improvement goals
NELA have the following improvement goals for 2022-2025:

Improvement goals in key outcome measures

- Reduce national 30-day mortality to less than 8.7%
- Reduce postoperative length of hospital stay to less than 15 days

Improvement goals in process measures:

- Increase the proportion of patients with severe sepsis receiving antibiotics within 1 hour to 90%
- Improve timely access to theatres such that 90% of patients to arrive within the appropriate timeframe 'from decision to operate' or 'from admission to hospital'.
- Increase to 90% the proportion of elderly and/or frail patients who receive input by perioperative teams experienced in the management of older patients (patients aged 80 or older, and those 65 and older and frail)

What does NELA data tell us about the current quality of care?

In-hospital postoperative mortality has improved from 12.7% when the audit started in 2013, to 9.2% (Year 8 audit, Dec 2020 – Nov 2021). Longer-term patient survival was reported in 2017: mortality rates were 23% at 1-year after surgery, 29% at 2 years, and 34% at 3 years following surgery, but were substantially higher in high-risk groups. Average (mean) length of stay has fallen to 15.4 days, from 19.2 days in the first year of reporting (2013). The rate of improvement in these goals has stabilised in the last 2 years of the audit despite the pressures of the COVID pandemic, but improvements in mortality may have plateaued.

Process measures that can be influenced by individual behaviour (rates of risk assessment, consultant presence in theatre for high-risk cases) have seen the greatest improvement. Process measures included in NHS England's Best Practice Tariff (consultant delivered care and admission to critical care for high-risk patients) also improved during the period of the tariff.

Care of the elderly and management of sepsis continue to be areas for further improvement. Only 30% of those aged 65 or over and frail, or those aged 80 or over, received multidisciplinary care including early involvement of a geriatrician over the past few years of the audit. While this has improved over successive years of the audit, much work remains to be done. Similarly, the Year 8 NELA data show little improvement in the time taken to given antibiotics, or the time to take patients with suspected or confirmed sepsis to theatre for surgery. 25% of patients have sepsis suspected on admission to hospital, but only 22% of these received antibiotics within 1 hour. The NELA team will continue to focus on these aspects as key areas for improvement in the next year of the audit.

- How do we know what good looks like?

Audit standards are based on recommendations from the Royal College of Surgeons, Royal College of Anaesthetists, Centre for Perioperative Care (CPOC), Academy of Medical Royal Colleges, National Confidential Enquiry into Patient Outcome and Death (NCEPOD) and the National Institute for Health Care Excellence (NICE). NELA-adopted standards have recently been updated by the project team to ensure these reflect the current and latest guidance. Sources of standards are listed in the Audit's annual report, summarised in the executive summary, and can be viewed here: https://www.nela.org.uk/Standards-Documents#pt. Annual reports have highlighted improvement opportunities using NELA data, and the NELA QI webinar series has included expert invited speakers from national organisations describing new research findings and describing recommended standards of care.

- What are your stakeholders telling you are the priorities for improvement?

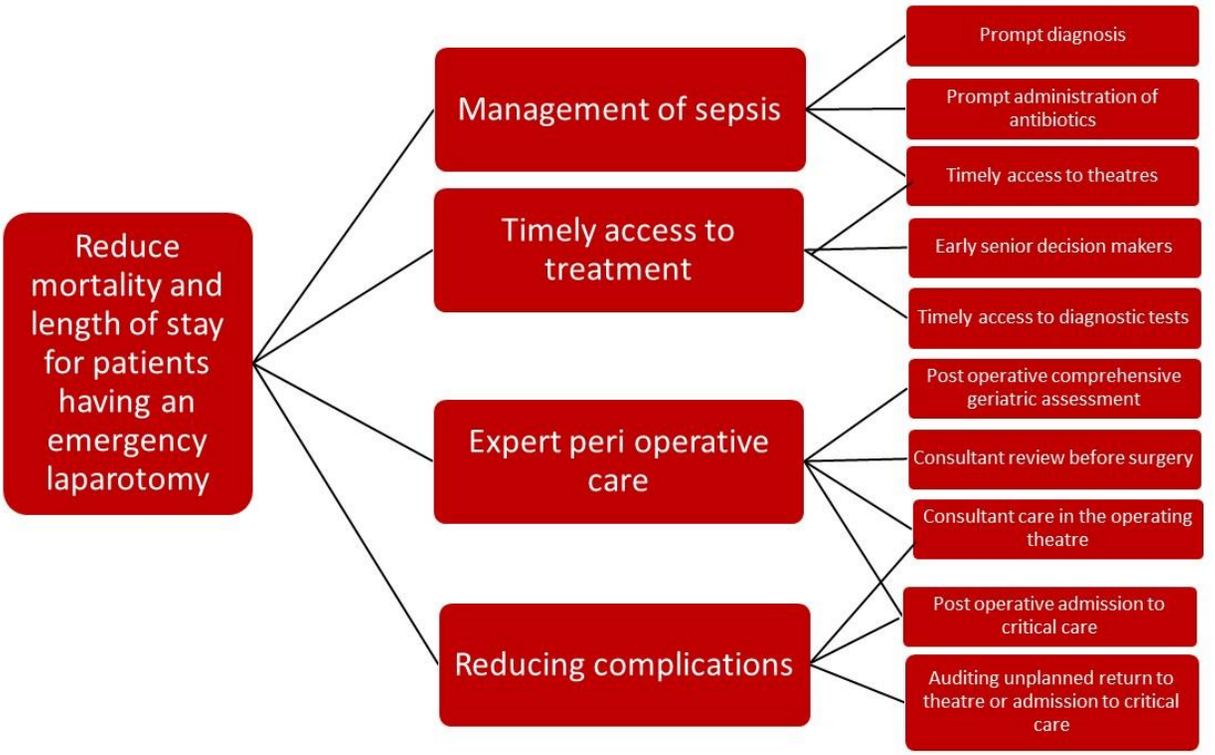
Our keys stakeholders, including patient representatives, advise the audit via our Clinical Reference Group. They provide feedback on the focus for the annual report, changes to the dataset and review of recommended standards of care.

Stakeholders have emphasized the importance of timely care- both in the administration of antibiotics and of access to diagnostic tests and to emergency theatres, based on the existing data and their knowledge of the clinical pathway. Stakeholders representing perioperative medicine and elderly care have recommended updating the recommendations on post-operative care for frail or older patients. This has been reflected in our updated recommendations and is also incorporated into the Best Practice Tariff.

Key Standard	**Process Measure**
Proportion of patients who had a CT scan that was reported by senior radiologist and communicated with the team in the correct time scale before surgery	Proportion of patients who receive (or should have received) immediate surgery (as per RCS definitions of immediate surgery) who had a CT scan that was reported by senior radiologist (ST3 or above) within one hour of being undertaken
	Proportion of all high-risk emergency laparotomy patients who undergo preop CT scanning and where there is direct communication between radiologist (ST3 and above) and surgeon (ST3 or above), either via phone or in person to discuss CT findings

Proportion of patients with suspected infection or sepsis that have antibiotic administration within the correct clinical timeframe	Proportion of patients with suspected infection at arrival and at decision to operate who receive antibiotics within 3 hours of first recorded NEWS2 abnormality (NEWS2 1-4).
	Proportion of patients with suspected sepsis at arrival and at decision to operate who receive antibiotics within 1 hour of first recorded NEWS2 abnormality of 5+ or >=3 in any one variable
Proportion of patients arriving in theatres according to correct clinical timeframe	Proportion of patients who received (or should have received) immediate surgery (as per RCS definitions of immediate surgery) within 6 hours of arrival in hospital
	Proportion of all patients where it is recorded that access to theatre was delayed beyond original intended urgency
Proportion of patients in whom a risk assessment was documented preoperatively AND postoperatively	Proportion of patients with a formal preoperative assessment of mortality risk
	Proportion of patients with a mortality risk assessment recorded at the end of surgery
Proportion of high-risk patients (risk of death of ≥5%) with consultant surgeon and consultant anaesthetist present in theatre	Proportion of preoperative high-risk patients (risk of death of ≥5%)
	Proportion of high-risk patients with consultant surgeon present in theatre
	Proportion of high-risk patients with consultant anaesthetist present in theatre
Proportion of high-risk patients admitted directly to critical care postoperatively	Proportion of postoperative high-risk patients
	Proportion of postoperative high-risk patients admitted directly to critical care postoperatively
Proportion of patients aged 65 or older and frail, or aged 80 and older who receive postoperative assessment and management by a member of a perioperative team with expertise in comprehensive geriatric assessment (CGA)	Proportion of patients aged 65 or older and frail, or aged 80 and older who receive postoperative assessment and management by a member of a perioperative team with expertise in CGA
Proportion of patients aged 65 or older where a formal assessment of frailty was made	Proportion of patients with a formal preoperative assessment of mortality risk
Case Ascertainment	
Mortality	
Length of stay	

- Ensure the audit indicators align to your improvement goals by including a driver diagram



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3. Improvement methods

a. National

An emergency laparotomy Best Practice Tariff (BPT), which targeted consultant delivered care (anaesthetist and surgeon) and critical care admission for high-risk patients, was active between 2018 and 2023. Sites were required to attain >80% of patients receiving ALL these elements to be eligible for the higher tariff. Since April 2023, focus has moved to optimising care for elderly and frail patients, with a new BPT in emergency laparotomy. All patients need to have received a formal assessment of mortality risk (with a target of 85%), and frail and elderly patients should receive multidisciplinary input postoperatively from the hospital's perioperative frailty team (initial target 40%).

NELA also shares data with the Getting It Right First Time (GIRFT) programme in general surgery, anaesthesia and critical care.

NELA data is presented in the Model Healthcare System.

NELA has strong links with the Association of Surgeons of Great Britain and Ireland (ASGBI) who hold an Annual Emergency Surgery Symposium and webinar series featuring several speakers from the NELA project team. NELA also has links with the British Geriatrics Society, Royal College of Emergency Medicine, Royal College of Radiology and Royal College of Nursing via the Clinical Reference Group. Many of these bodies also contribute to forming the key recommendations of the NELA annual report and disseminating learning from the audit amongst their peers.

NELA host a programme of national webinars promoted through national associations, social media and learned societies. These webinars are recorded and available on the Royal College of Anaesthetists YouTube channel and the NELA website. These webinars are delivered in one hour over lunchtime and are free to view. The programme includes:

- Demonstration webinar on how to access and use NELA data visualisation tools, and including exponentially weighted moving average (EWMA) mortality charts.

- Summary of national performance data and treatment recommendations for patients with sepsis. Examples of sepsis flagging and antibiotic delivery from a top-performing site (delivered with the Sepsis Trust and emergency medicine physicians).
- Summary of the evidence and good practice examples from top performing sites in managing patients with frailty (delivered with the British Geriatrics Society).
- Overview of the whole patient pathway highlighting key recommendations for care, including four speakers sharing innovative practice examples.
- Launch webinars for each annual report and Covid special report.
- Updates on current review of standards, Best Practice Tariff and corresponding changes to the registry dataset.
- Future webinars will also cover using NELA data to inform local improvements, patient experience, launching the updated risk score, and the care of patients who do not proceed to surgery.

We will continue to disseminate research findings of national projects using the NELA dataset with a focus on clinical significance and potential for quality improvement projects at a local, regional and national level.

Future annual reports will include a shorter 'state of the nation' style report with specific recommendations for policy makers.

b. Regional

NELA data is reported at Academic Health Science Network (AHSN)-level, which will be updated to report at Integrated Care System (ICS)-level. These data are reported quarterly (moving to monthly) and are publicly available on the NELA website.

NELA will work with ICSs to understand how NELA data is used to inform ICS actions, and co-design data outputs that best meet their needs. Future annual reports will include specific recommendations for commissioners to improve the organisation of care at a regional and local level.

c. Local

NELA has a comprehensive real-time QI dashboard, which reports all the key standards of care as statistical process control charts and run charts. The dashboard also reports patient-level graphical data on data completeness, length of stay, sepsis, and EWMA mortality charts. Sites can compare their performance with national and regional data as well as against hospitals of a similar size. The dashboard charts can be downloaded as images for sharing in local reports. FAQs are available on the webtool to provide support for these features. NELA have run two participant webinars to help local leads make best use of the data available on their webtool; the recording of this is available on the NELA website and Royal College of Anaesthetists YouTube channel.

Updates to the webtool will include enhanced reporting of patient mortality to facilitate morbidity and mortality analysis at site level.

NELA also produces quarterly (moving to monthly) PDF reports of run charts and RAG ratings for sites (intended to allow local leads to feedback data easily) on key standards of care.

- Improvement Tools

NELA has made its own QI animations explaining how to interpret run charts, how to create driver diagrams and process maps, and good data feedback practices to empower sites to use their data effectively. These are available on the NELA website and YouTube. There are also FAQs on the NELA webtool to support sites in using the real-time QI reports. The NELA team have included links on the NELA website to 'Plot the Dots' and our own explanation of statistical process control (SPC) chart interpretation. Our website upgrade will include an expanded set of links to QI tools and guides.

The NELA webtool includes an automated poster generator, which presents local data on key NELA standards at a user-specified interval, so local leads can easily display key metrics to clinical colleagues.

NELA is also listed in the new edition of the 'RCoA QI recipe book' which will guide improvement activity for anaesthetists and anaesthetic departments, and participation in NELA is assessed as part of the RCoA accreditation Anaesthesia Clinical Services Accreditation (ACSA) scheme.

d. Patient and public involvement

The NELA Project Board and Clinical Reference Group have PPI representation and we are working to refresh the membership of our patient panel for additional input from those with a lived experience of emergency laparotomy.

The NELA report is accompanied by an executive summary demonstrating key messages for clinical and non-clinical colleagues as well as for patients and lay readers.

We are creating patient-specific resources, including an emergency laparotomy patient leaflet, and a dedicated patient area of the NELA webpage with further resources for emergency laparotomy patients, carers or relatives.

e. Communications

NELA produces a regular newsletter for subscribers, including all local leads and any other interested subscribers, which contains links and information to our QI resources. The improvement plan and our actions to meet it will be detailed on a page within our updated website. We also have an active Twitter feed @NELAnews. The NELA website has a dedicated 'For patients' page listing key information about the audit relevant to patients, including an FAQ section. QI events/webinars will be communicated via these channels.

4. Evaluation

Performance against the improvement plan is reported regularly as a standing item in monthly NELA project team meetings and will be included in our future annual reports.

Analytics of the usage of the QI webtool and internet resources are available to review at NELA monthly project team meetings.