Care of the older patient undergoing emergency laparotomy

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Royal College of Anaesthetists

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What are our challenges?

- Challenges of patient selection – who should we operate on?
- Challenge of realistically defining the goals of treatment
- Challenge of understanding “what makes a good outcome?”
- Challenge of how best to assess frailty by non-specialists?
- Challenge of optimizing frail older patients before major abdominal surgery
- Challenge of mobilizing the multidicisplinary team – consultant geriatricians at the right time for each patient (pre-op/post-op)

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Where did it all begin?

Using ‘big’ data to confirm hypotheses

Credit: Institute of astronomy library, University of Cambridge + Professor Chris Lintott

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ELSEVIER

Revalidation FOR ANAESTHETISTS
RCA Revalidation matrix
Matrix codes: 1105, 2A07, 3100

BJA Education, 19(10): 334–341 (2019)

doi: 10.1016/j.bjae.2019.05.004
Advance Access Publication Date: 5 July 2019

What do perioperative national clinical audits tell us? The evolving role of national audits in changing practice and improving outcomes

C.M. Oliver[1,2,*] and S. Hare[2,3]

[1]Royal Free Hospital, London, UK, [2]National Emergency Laparotomy Audit, Royal College of Anaesthetists, London, UK and [3]Medway Maritime Hospital, Gillingham, UK

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Without data, you're just another person with an opinion

W. Edwards Deming

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Where did it all begin?

British Journal of Anaesthesia **109** (3): 368–75 (2012)
Advance Access publication 22 June 2012 · doi:10.1093/bja/aes165

BJA

Variations in mortality after emergency laparotomy: the first report of the UK Emergency Laparotomy Network

D. I. Saunders[1], D. Murray[2*], A. C. Pichel[3], S. Varley[3], C. J. Peden[4], on behalf of the members of the UK Emergency Laparotomy Network

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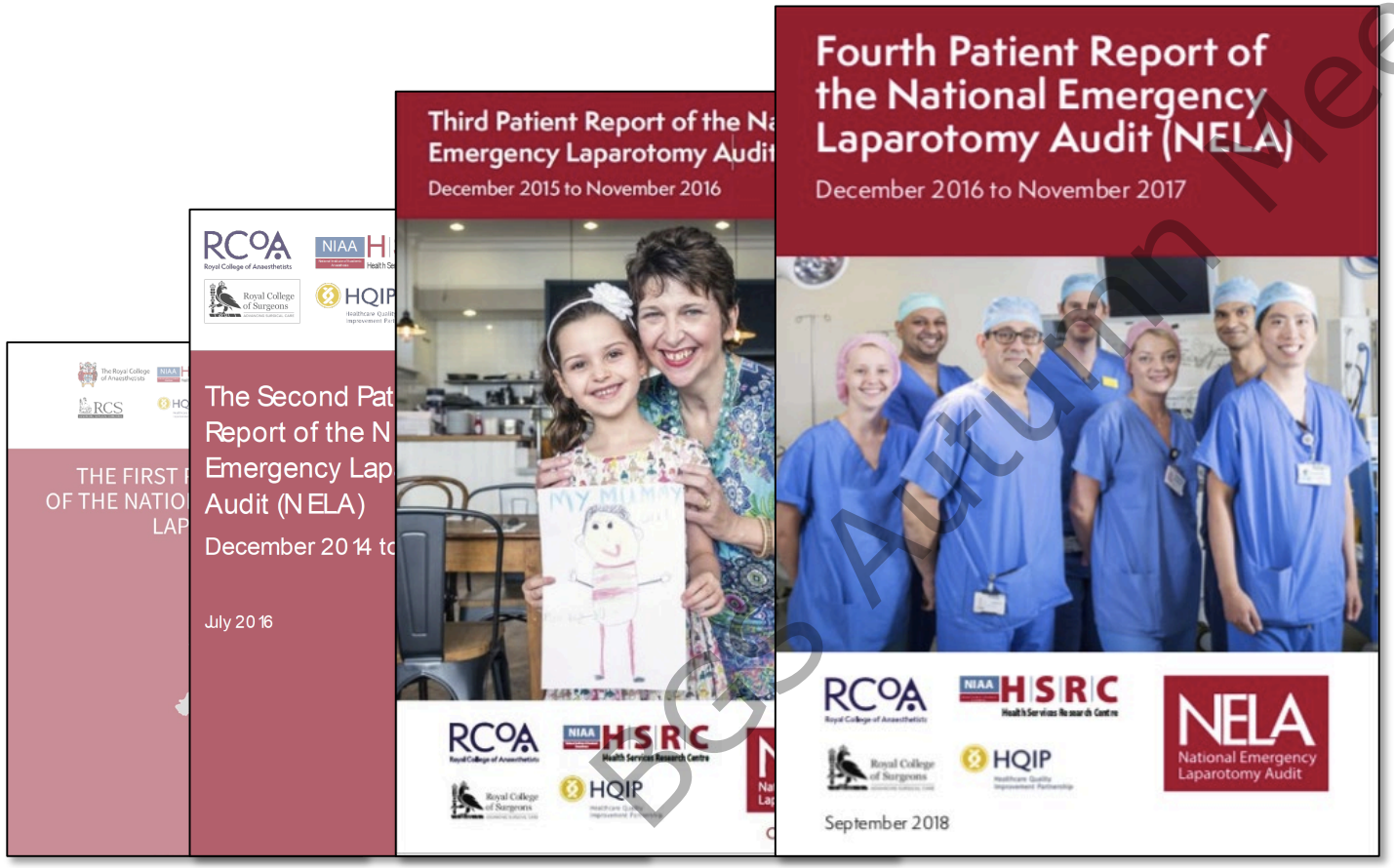
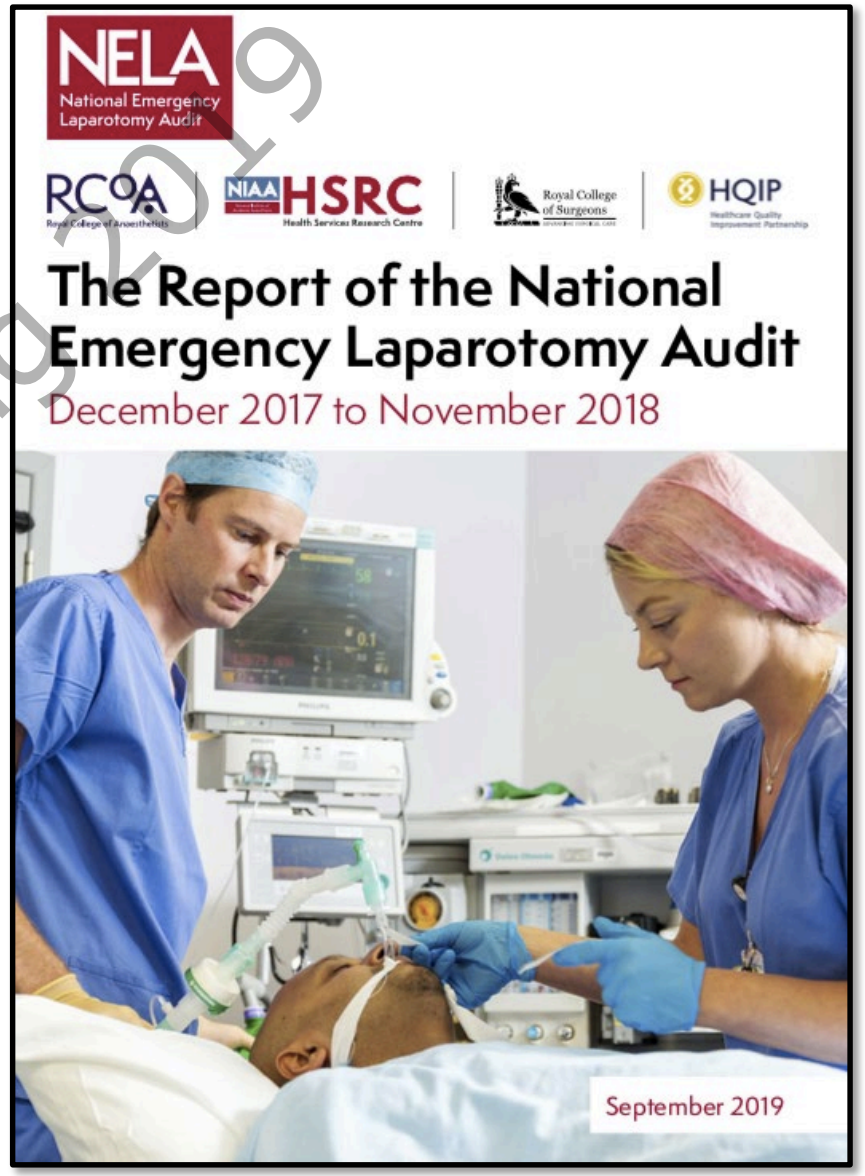
NELA (N-eh-la not N-ee–lah – sorry Dave Murray)

NELA has collected data on nearly 120,000 patients in England and Wales





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Outcomes: Mortality & length of Stay

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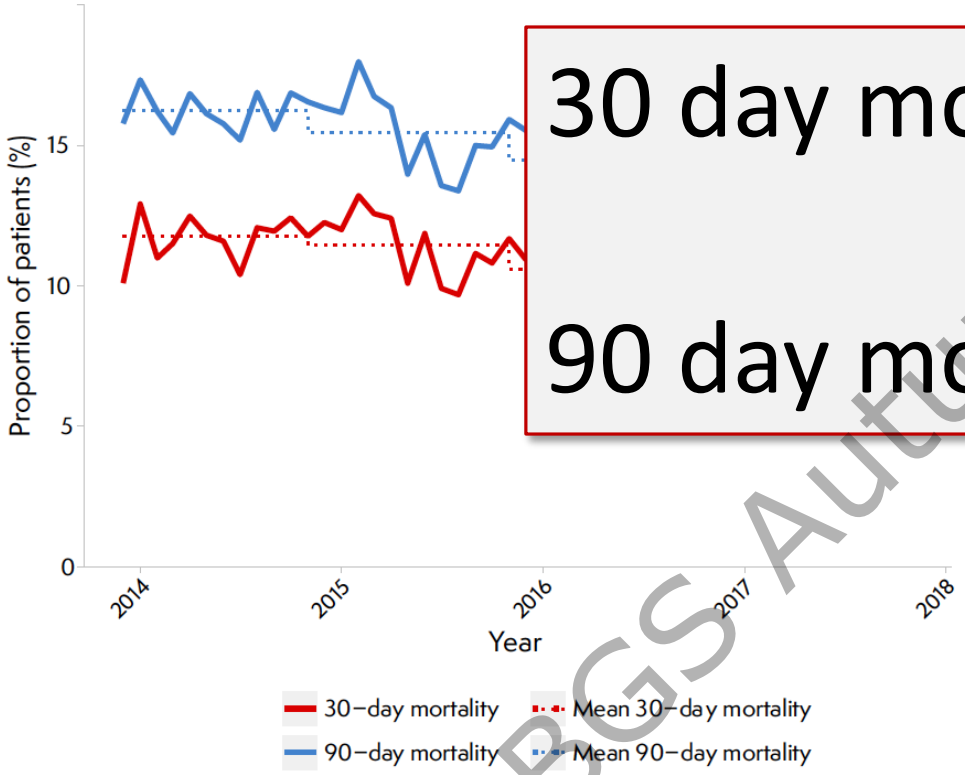
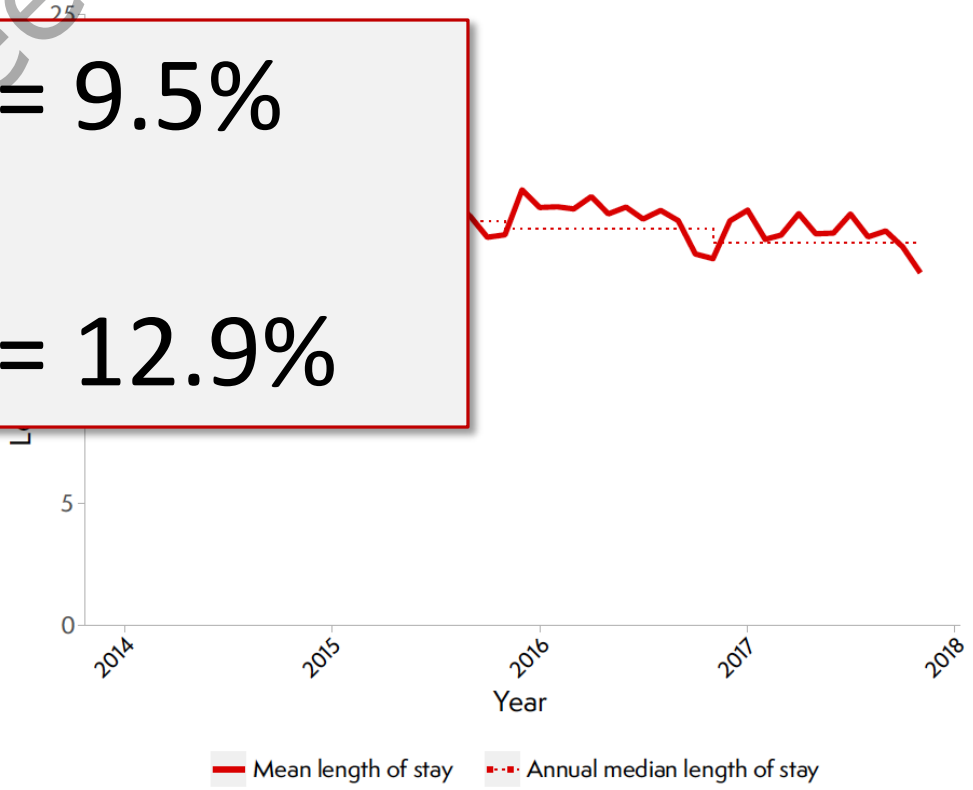
Figure 6.1.1 Trend in the overall 30-day and 90-day ONS mortality rates by NELA dataset year



30 day mortality = 9.5%

90 day mortality = 12.9%

Figure 6.2.1 Trend in the mean length of stay over time in patients surviving to hospital discharge



THE LANCET

ARTICLES | ONLINE FIRST

Effectiveness of a national quality improvement programme to improve survival after emergency abdominal surgery (EPOCH): a stepped-wedge cluster-randomised trial

Prof Carol J Peden, MD • Tim Stephens, MSc • Prof Graham Martin, PhD • Brennan C Kahan, MSc • Ann Thomson, MSc • Kate Rivett • et al. Show all authors • Show footnotes

Published: April 25, 2019 • DOI: https://doi.org/10.1016/S0140-6736(18)32521-2 • Check for updates

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JAMA Surgery | Original Investigation

Evaluation of the Collaborative Use of an Evidence-Based Care Bundle in Emergency Laparotomy

Geeta Aggarwal, MBBS; Carol J. Peden, MD; Mohammed A. Mohammed, PhD; Anne Pullyblank, MD; Ben Williams; Timothy Stephens, MSc; Suzanne Kellett, MBBS; James Kirkby-Bott, MBBS; Nial Quiney, MBBS; for the Emergency Laparotomy Collaborative

THE LANCET

ARTICLES | ONLINE FIRST

Effectiveness of a national quality improvement programme to improve survival after emergency abdominal surgery (EPOCH): a stepped-wedge

-Aimed to reframe the high mortality for such patients as a social problem requiring re organization of existing care processes rather than technical innovation

- Support QI leads to engage frontline staff and executives
- Train local QI leads in the methodology needed
- Support teams in feeding back their data

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Geeta Aggarwal, MBBS; Carol J. Peden, MD; Mohammed A. Mohammed, PhD; Anne Pullyblank, MD; Ben Williams; Timothy Stephens, MSc; Suzanne Kellett, MBBS; James Kirkby-Bott, MBBS; Nial Quiney, MBBS; for the Emergency Laparotomy Collaborative

- Included in depth QI training
- Leadership, sustainability and negotiation skills training
- Smaller discrete care bundle

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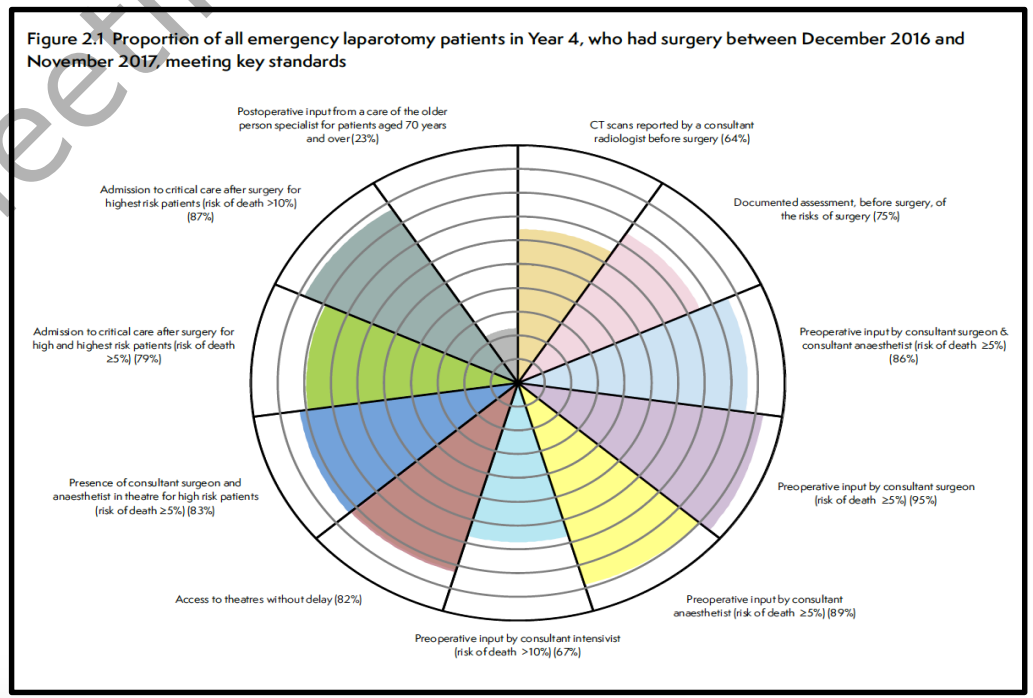
The key standards NELA reports

- Documented risk assessment
- Preop input by consultant team
- Timeliness to theatres
- Consultant presence in theatres
- Admission to critical care



- **Geriatrician input for older patients**

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Services for older patients

Do you have geriatric services on site?

First organisational audit (2013) n = 190	Second organisational audit (2016) n = 184
178 (94%)	171 (93%)

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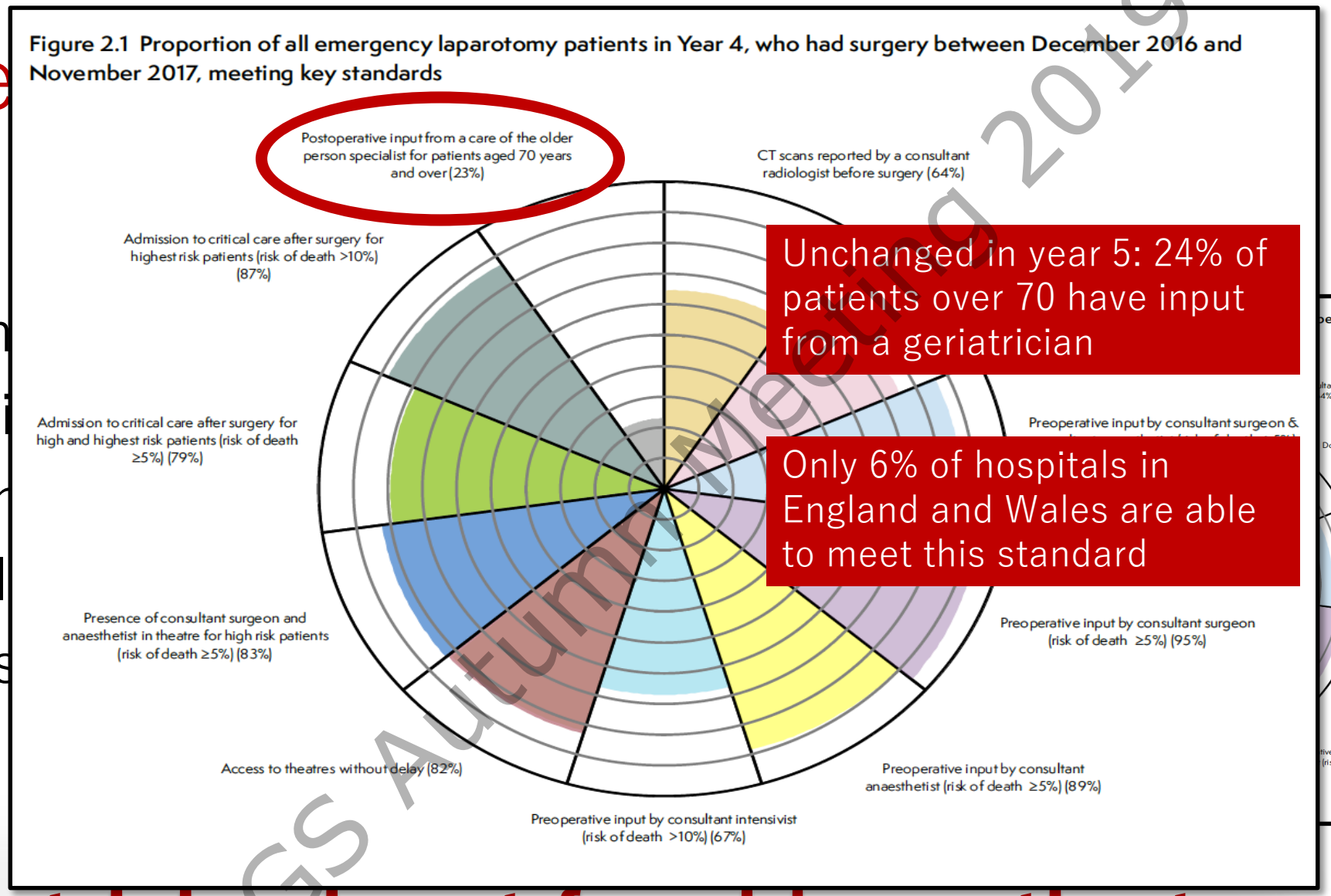

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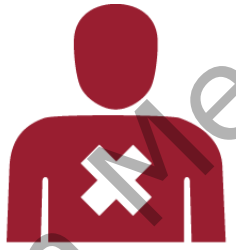
- **Geriatrician input for older patients**

What are the outcomes older patients having Emergency Laparotomy surgery?

44.7% of all patients in NELA are **over the age of 70**



Patients older than 70 years have a higher **30-day mortality** (14.5% v 5.6%)

Mean length of stay for patients over the age of 70 is **18 days compared with 12 days for patients aged 18–24 years**

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Risk-adjusted mortality

Table 6.1.4 ONS 30-day and 90-day mortality by patient characteristics

	Number of patients (n(%))	ONS 30-day mortality (%)	ONS 90-day mortality (%)
Age (years)			
18–39	2,684 (11.2)	1.9	2.3
40–49	2,232 (9.3)	3.3	5.1
50–59	3,529 (14.8)	4.5	7.4
60–69	4,831 (20.2)	8.8	12.4
70–79	6,054 (25.3)	12.8	17.0
80–89	4,063 (17.0)	17.1	21.9
≥90	536 (2.2)	18.5	25.2

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Older patients are more likely to have perioperative consultant input

- Patients aged over 70 are more likely to have a consultant anaesthetist pre-operative review (63% vs 53%)
- Patients over aged 70 more likely to have a consultant anaesthetist present in theatres (87% v 82%)
- Consultant Intensivist input is higher (65% vs 40%)

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Impact of geriatrician involvement in emergency laparotomy

- Good news – over 4 years of NELA, proportion of older patients seen has increased from 8.5% to 16.5% (years 1 -4 NELA)
- Preoperative vs Postoperative reviews
- Preoperative: Longer to reach theatre, higher risk patients
- Postoperative: Longer length of stay, lower mortality rates

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"Older Patients Undergoing Emergency Laparotomy – observations from the National Emergency Laparotomy Audit (NELA) Years 1-4 (submitted for publication)
Rachel Aitken[1,2], Judith S. L. Partridge[1,3], C. M. Oliver[2] Dave Murray[2], Sarah Hare[2], Sonia Lockwood[2], Nick Beckley-Hoelscher[4], Jugdeep K. Dhesi[1,5,6].

Defining 'High Risk'

High-risk patients are defined by a predicted hospital mortality of ≥ 5%.[1] The purpose of defining 'high risk' is to enable ready identification of a group of patients liable to experience an adverse outcome[3] and to optimise their care. The definition of high-risk and the resulting interventions should apply to patients irrespective of whether they present electively or as an emergency. The greatest shortfall is in emergency care.

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Royal College of Surgeons, The High-Risk General Surgical Patient: Raising the Standard, 2018

The High-Risk General Surgical Patient: Raising the Standard

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Commonly used risk prediction tools NELA risk score do not include indices of frailty

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Royal College of Surgeons, The High-Risk General Surgical Patient: Raising the Standard, 2018

- National recommendation from the HRSP: Patients who are aged over 65 should have an assessment of frailty
- If frail, should have the input of consultant geriatricians

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Frailty and emergency laparotomy patients

- The majority of older patients in NELA did **not** have their frailty assessed

➢19% patients over age of 65 underwent a frailty assessment

➢50% of patients assessed were found to be frail

- Frailty was associated with increased mortality, independent of age

If aged >70 + frail, 30 day mortality was 23%

Source: NELA year 5 report, due for publication Dec 2019

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How is frailty being assessed?

Frailty assessment tool	Total patients (%)
No assessment	17,374 (71.4%)
Edmonton frail scale	45 (0.2%)
Electronic frailty index	122 (0.5%)
Other objective scoring system	349 (1.4%)
Rockwood score	664 (2.7%)
Subjective assessment	2,272 (9.3%)
Missing	3502 (14.4%)

The fifth report of the National Emergency Laparotomy Audit, Royal College of Anesthetists, due for publication December 2019

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High risk patients should

- Have their care provided by Consultants
- Be admitted to critical care after their surgery
- Have their risk reassessed at the end of surgery; clinical conditions and scenarios change and must be responded to appropriately.

When patients being considered for operative intervention have a predicted in-hospital mortality greater than 25% by any measure, including frailty, they should be assessed preoperatively in person by a consultant surgeon, consultant anaesthetist and critical care consultant to provide multidisciplinary advice to the patient about operative and non-operative treatment options and to discuss postoperative ceilings of care. This may require a wider discussion with other specialists, including specialists in care of the elderly.

Determining that a patient is at too high a risk to undergo lifesaving surgery should normally be a decision taken with multidisciplinary consultant involvement.

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Proportion of patients who were assessed as being frail who were assessed by a geriatrician (unpublished data, year 5 NELA report)

Age group	Total assessed as frail	Assessed by geriatricians
65-69	101	17 (16.8%)
70-74	188	61 (32.4%)
75-79	243	101 (41.6%)
80-84	344	127 (36.9%)
85-89	286	119 (41.6%)
>90	141	56 (39.7%)

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Outcomes patients over 70 who had frailty assessed (unpublished data, year 5 NELA report)

Frailty assessment result	Number of patients in total	30 day mortality	90 day mortality
Not frail	1790	5.1%	8.3%
frail	1476	21.7%	28.1%
Unknown/missing	186	13.3%	22%

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Frailty in Older Patients Undergoing Emergency Laparotomy

Results From the UK Observational Emergency Laparotomy and Frailty (ELF) Study

Kat L. Parmar, BSc, MB ChB, MSc, PGCE, FRCSEng, Jennifer Law, BMBS, BMedSci, MSc,†*
Ben Carter, PhD, MSc,‡ Jonathan Hewitt, MB BS, MSc, FRCPGlas, PhD,§
Jemma M. Boyle, MB ChB, PGCE, MRCS,¶ Patrick Casey, MB ChB, MRCS,||
*Ishaan Maitra, BSc (Hons), MB ChB, MRCS,** Ian S. Farrell, MB ChB, MPharm, MRCS,††*
Lyndsay Pearce, BMedSci, BMBS, FRCSEng,‡‡ and Susan J. Moug, BSc (Hons), MB ChB, PhD, FRCS§§✉,
on behalf of the ELF Study Group

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5 – Mildly frail	**With limited dependence on others for instrumental activities of daily living.**
6 – Moderately frail	**Help is needed with both instrumental and non-instrumental activities of daily living.**
7 – Severely frail	**Dependent on others for activities of daily living, or terminally ill.**

Given the high incidence of frailty amongst older patients undergoing emergency laparotomy, and that it is an independent predictor of poor outcomes –

patients over the age of 65 who are not frailty assessed should be treated as being high risk, and should expect to receive the associated standards of care

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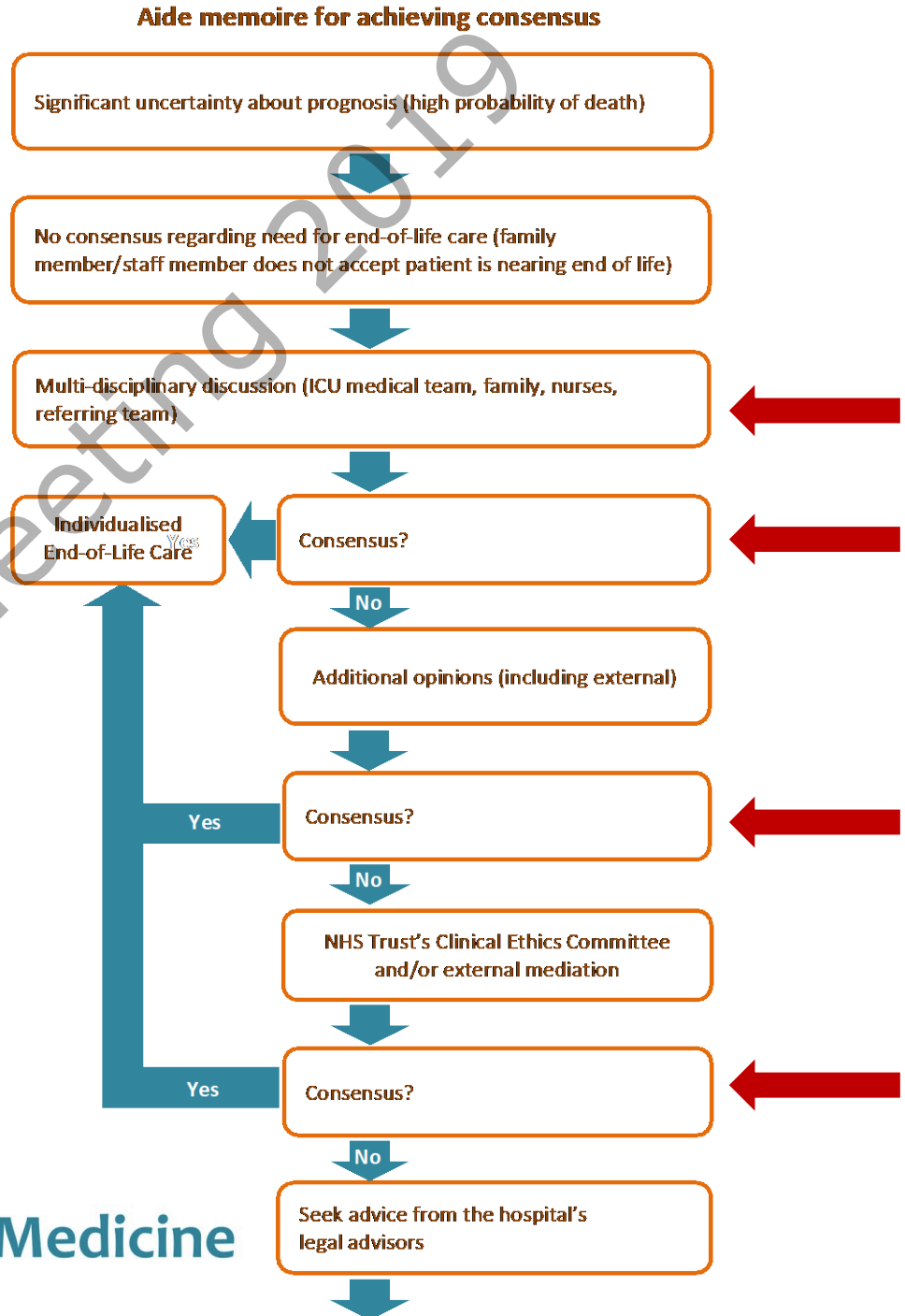
Saying ‘no’ to emergency laparotomy



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The Faculty of Intensive Care Medicine

Older patients undergoing laparotomy

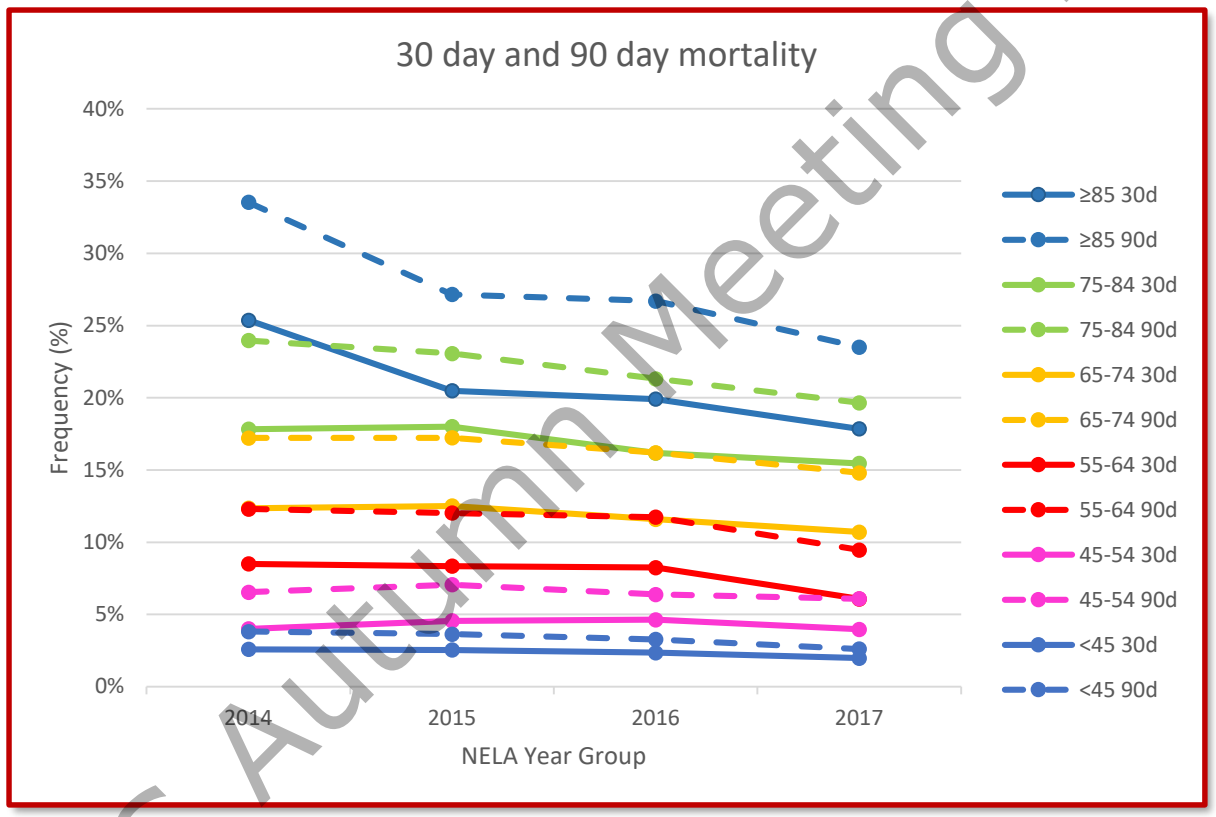

Figure: 30-day and 90-day mortality: by age and NELA year.

Taken from "Older Patients Undergoing Emergency Laparotomy – observations from the National Emergency Laparotomy Audit (NELA) Years 1-4 (submitted for publication)
Rachel Aitken[1,2], Judith S. L. Partridge[1,3], C. M. Oliver[2] Dave Murray[2], Sarah Hare[2], Sonia Lockwood[2], Nick Beckley-Hoelscher[4], Jugdeep K. Dhesi[1,5,6].

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Next steps – defining the denominator

- Chief investigator: Miss Susan Moug, Consultant Surgeon & Honorary Associate Professor, University of Glasgow

NELA National Emergency Laparotomy Audit

ELF Defining the Denominator

ELLSA Emergency Laparoscopic and Laparotomy Scottish Audit

OPSOC OLDER PERSONS SURGICAL OUTCOMES COLLABORATION

SSRG Scottish Surgical Research Group

Welsh Barbers Research Group

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BMJ Open

Does achieving the best practice tariff improve outcomes in hip fracture patients? An observational cohort study

B Oakley,[1] J Nightingale,[1] CG Moran,[1] IK Moppett[2,3]

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Table 1 Best practice tariff criteria

Best practice tariff criteria[10]
1 Time to surgery with 36 hours from arrival in the A&E department to the start of anaesthesia (or from time of diagnosis if an admitted patient)
2 Admitted under the joint care of a consultant geriatrician and consultant orthopaedic surgeon
3 Admitted using an assessment protocol agreed by geriatric medicine, orthopaedic surgery and anaesthesia
4 Perioperative assessment by geriatrician in the perioperative period (within 72 hours of admission)
5 Postoperative geriatrician guided multiprofessional rehabilitation team
6 Fracture prevention assessments (falls and bone health)
7 Two AMT scores performed, and all the scores recorded in the NHFD with the first test being carried out prior to surgery and the second post-surgery but within the same spell

The Emergency Laparotomy BPT

Bundled at patient level

80% of high risk patients get:

- Consultant presence

AND

- Admission to recognised critical care (not PACU)

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Average difference £700 x 187 patients….

HRG name	Non-BPT (£)	BPT (£)	Extra
Very Major Small Intestine Procedures, ≥19 with CC Score 8+	11,080	12,284	1,204
Very Major Small Intestine Procedures, ≥19 with CC Score 5-7	7,502	8,318	816
Very Major Small Intestine Procedures, ≥19 with CC Score 2-4	5,744	6,368	624
Very Major Small Intestine Procedures, ≥19 with CC Score 0-1	4,657	5,163	506
Complex Large Intestine Procedures, ≥19, with CC Score 9+	11,344	12,577	1,233
Complex Large Intestine Procedures, ≥19, with CC Score 6-8	8,585	9,518	933
Complex Large Intestine Procedures, ≥19, with CC Score 3-5	6,996	7,756	760
Complex Large Intestine Procedures, ≥19, with CC Score 0-2	5,994	6,645	651
Proximal Colon Procedures, ≥19, with CC Score 0-2	5,128	5,685	557
Major General Abdominal Procedures, ≥19, with CC Score 3-5	4,815	5,338	523
Major General Abdominal Procedures, ≥19, with CC Score 1-2	3,499	3,879	380
Major General Abdominal Procedures, ≥19, with CC Score 0	2,697	2,990	293

NELA National Emergency Laparotomy Audit

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£130,900

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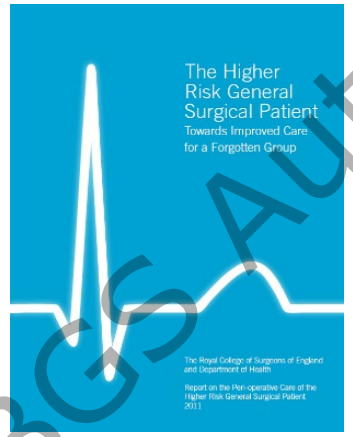
An agreed pathway for emergency laparotomy patients is required as a pre-condition for accessing the BPT

Diagnostic & Treatment

Agreed by clinicians involved in delivery of care:

- ED
- Radiology
- Surgery
- Anaesthesia
- Critical care
- Geriatricians



Emergency Laparotomy Peri-operative Care Pathway

This pathway should be used for all patients presenting with acute abdominal pain that require emergency laparotomy or laparoscopic surgery.

Time Frame from first surgical referral					
	Patient presents with acute abdominal condition that may require emergency laparotomy				
Within 1 hour	Base line investigations	FBC, U&E, LFTs, CRP, G&S Lactate Urinalysis including βHCG in all women ECG Blood Cultures			
	CT Abdomen	CODE LAPAFROTOMY CT		To be reported & reviewed with 1 hour of ordering	
	SEPSIS 6	Blood Cultures	Antibiotics within 1 hour	NEWS 2	
Within 4 hours	SURGICAL ST3 + REVIEW				
	Patient requires emergency Laparotomy				
	CONSULTANT SURGEON REVIEW	**FORMAL ASSESSENT OF RISK** by Surgical ST3+ (using NELA risk assessment tool) & DOCUMENTATION ON CONSENT FORM			
	BOOK PATIENT WITH CEPOD THEATRE CO-ORDINATOR -Define NCEPOD category of urgency - 1 - Immediate < 2 hours - 2a – urgency 2 – 6 hours - 2b urgent 6- 18 hours Surgical Team complete NELA section 1,2,3 to green or case **cannot** be booked				
	- Surgical team inform Anaesthetic SpR & SHO for CEPOD				
	- Ongoing optimization of emergency laparotomy patient by surgical SHO, Anaesthetic SHO +/- ICU/ART team				
	MDT conversation between & preoperative review by	Consultant Surgeon	Consultant Anaesthetist	Consultant Intensivist	

Within 6 hours MAX	Arrival in theatre within NCEPOD time frame	Theatre Band 7/Flo-Co & CEPOD consultant Anaesthetist	RECRUIT TO FLOELA if >50 years
Intraoperative	If predicted to be high risk of death (>5% predicted 30 day mortality using NELA/clinical judgement	Consultant Surgeon AND Consultant Anaesthetist present in theatre Anaesthetist complete section 4 NELA in theatre	
	ADMIT TO CRITICAL CARE POST OPERATIVELY		
Post-operative	If aged >65 refer directly to Surgical Frailty / Geriatrician Team		Complete Frailty assessment on Metavision
	Follow ERAS Em Lap pathway		GIVE PATIENT PATIENT INFORMATION LEAFLETS
	STEPDOWN TO WARD		
	DISCHARGE PLANNING & Discharge		• Refer to hot clinic • Invitation to patient support group
Post-Discharge	Patient Support Group "survivors club"	Hot clinic follow up within 4 weeks of discharge	

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Final thoughts – what are our challenges?

- Challenges of patient selection – who should we operate on?

-Time critical patients
-Changing the system
-Lack of Money
-Infrastructure
-Staffing

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Thankyou

For more information

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