



Seventh Patient Report of the National Emergency Laparotomy Audit (NELA)

December 2019 to November 2020
Supplementary Tables and Figures

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1 The NELA key messages and recommendations: improving outcomes and reducing complications

Please view the **Seventh NELA Annual Report** for key messages and recommendations.

2 Introduction

Figure 2.1 Patients included in the Year 7 analysis

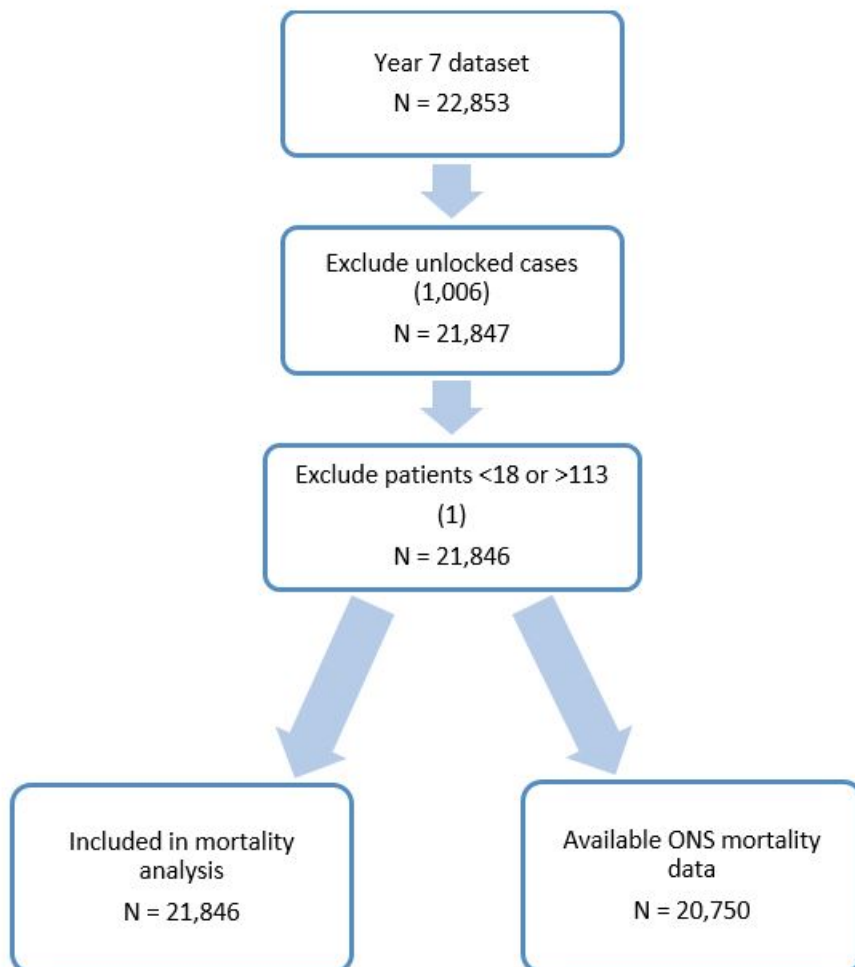
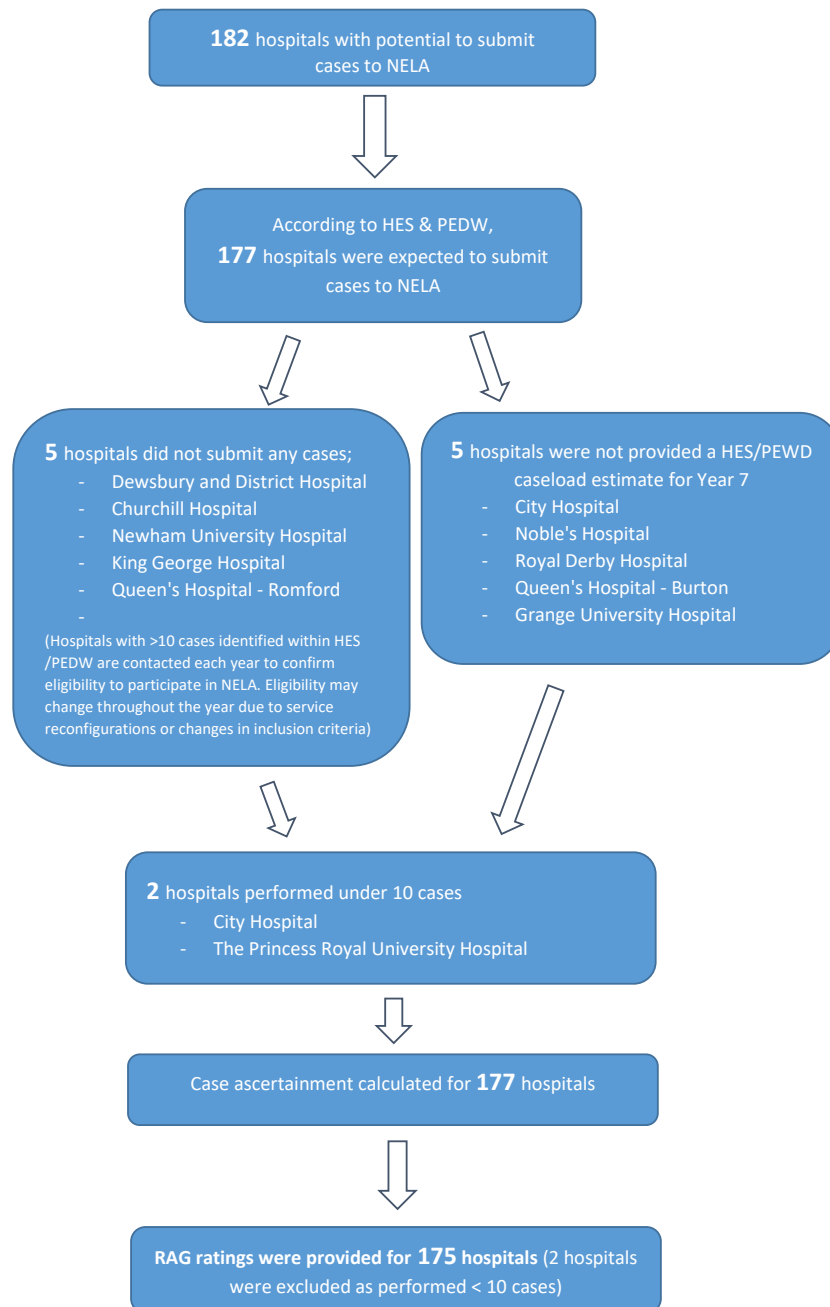


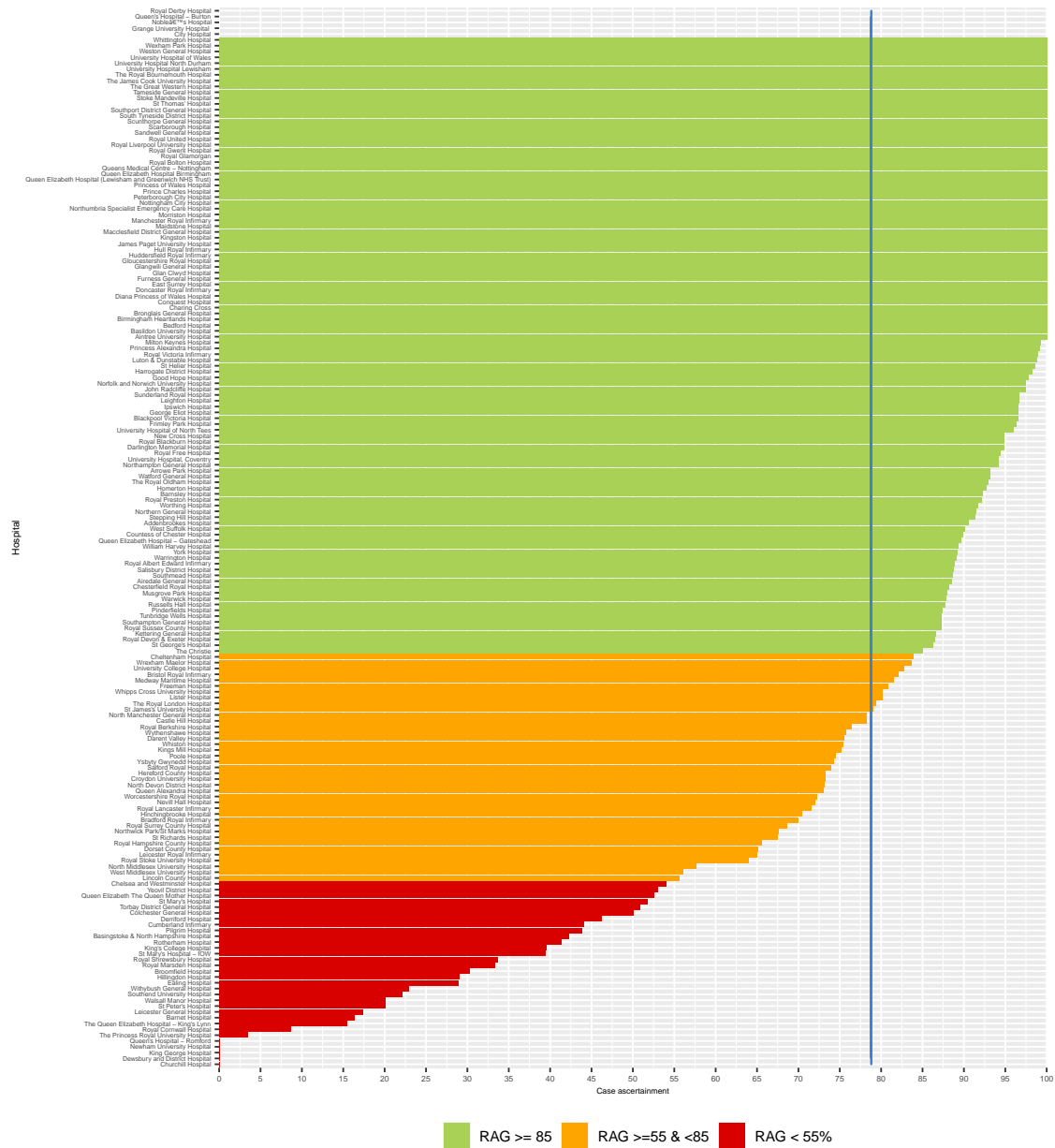
Figure 2.2 Participating Hospitals



3 Key findings of the Seventh Year of the National Emergency Laparotomy Audit

This report includes **21846 cases** from **177 participating hospitals**, with surgeries performed between **1 December 2019 and 31 November 2020**. 2 Hospitals submitted fewer than 10 cases:

Figure 3.1 Case ascertainment in each participating hospital with indication of National mean (blue line)



4 Preoperative care

4.1 Who has emergency laparotomy?

Table 4.1.1 Gender by NELA audit year

Gender	Year 4 n(%)	Year 5 n(%)	Year 6 n(%)	Year 7 n(%)
Female	12529 (51.4)	12750 (51.4)	13202 (52.4)	11106 (50.8)
Male	11853 (48.6)	12038 (48.6)	12012 (47.6)	10740 (49.2)

Table 4.1.2 Number of patients by Age group, in each NELA Audit year

Age (years)	Year 4 n(%)	Year 5 n(%)	Year 6 n(%)	Year 7 n(%)
18-24	728 (3)	628 (2.5)	588 (2.3)	534 (2.4)
25-34	1234 (5.1)	1252 (5.1)	1279 (5.1)	1089 (5)
35-44	1679 (6.9)	1815 (7.3)	1778 (7.1)	1553 (7.1)
45-54	3023 (12.4)	3077 (12.4)	3101 (12.3)	2686 (12.3)
55-64	4069 (16.7)	4292 (17.3)	4330 (17.2)	3886 (17.8)
>=65	13649 (56)	13724 (55.4)	14138 (56.1)	12098 (55.4)

Table 4.1.3 Number of patients by ASA Score, in each NELA Audit year

ASA Score	Year 4 n(%)	Year 5 n(%)	Year 6 n(%)	Year 7 n(%)
1	2401 (9.8)	2292 (9.2)	2430 (9.6)	1923 (8.8)
2	8659 (35.5)	8887 (35.9)	9111 (36.1)	8139 (37.3)

ASA Score	Year 4 n(%)	Year 5 n(%)	Year 6 n(%)	Year 7 n(%)
3	8788 (36)	8929 (36)	9180 (36.4)	8294 (38)
4	4092 (16.8)	4225 (17)	4137 (16.4)	3236 (14.8)
5	442 (1.8)	455 (1.8)	356 (1.4)	254 (1.2)

Table 4.1.4 Urgency of Surgery by NELA audit year

Urgency of Surgery	Year 4 n(%)	Year 5 n(%)	Year 6 n(%)	Year 7 n(%)
Immediate < 2hrs	2792(11.5)	2881(11.6)	2844(11.3)	2218(10.2)
Urgency 2-6hrs	9154(37.5)	9524(38.4)	9772(38.8)	8409(38.5)
Urgency 6-18hrs	8227(33.7)	8112(32.7)	8274(32.8)	7537(34.5)
Expedited > 18hrs	4149(17)	4221(17)	4318(17.1)	3678(16.8)
Missing	60(0.2)	50(0.2)	6(0)	4(0)

Table 4.1.5 Elective and Emergency admission, by NELA audit year

Admission Type	Year 4 n(%)	Year 5 n(%)	Year 6 n(%)	Year 7 n(%)
Elective	1525 (6.3)	1477 (6)	1496 (5.9)	1006 (4.6)
Emergency	22839 (93.7)	23297 (94)	23718 (94.1)	20840 (95.4)

4.2 Timeliness of arrival in theatre

Table 4.2.1 Timeliness of arrival in theatre by Urgency of Surgery

NCEPOD Category	Year 4 n(%)	Year 5 n(%)	Year 6 n(%)	Year 7 n(%)
Immediate < 2hrs	1841 (73.1)	1884 (72.6)	1875 (72.8)	1369 (68.4)
Urgency 2-6hrs	6919 (86.4)	7343 (86.6)	7612 (86.6)	6386 (85.2)
Urgency 6-18hrs	5645 (81.3)	5610 (81.3)	5867 (81.5)	5063 (79.7)

Table 4.2.2 Delay from decision to operate to arrival to theatre by Age Group

Age Group	NCEPOD <2h	NCEPOD 2h-6h	NCEPOD 6h-18h
18-24	54; delay = 14 (25.9%)	159; delay = 21 (13.2%)	154; delay = 34 (22.1%)
25-34	116; delay = 31 (26.7%)	332; delay = 53 (16%)	314; delay = 73 (23.2%)
35-44	180; delay = 50 (27.8%)	533; delay = 72 (13.5%)	371; delay = 72 (19.4%)
45-54	289; delay = 103 (35.6%)	967; delay = 141 (14.6%)	703; delay = 138 (19.6%)
55-64	334; delay = 99 (29.6%)	1398; delay = 210 (15%)	1077; delay = 233 (21.6%)
>=65	1027; delay = 334 (32.5%)	4110; delay = 616 (15%)	3731; delay = 737 (19.8%)

Table 4.2.3 Delay from decision to operate to arrival to theatre for patients over 65 years old

Age Group	NCEPOD <2h	NCEPOD 2h-6h	NCEPOD 6h-18h
<65	973; delay = 297 (30.5%)	3389; delay = 497 (14.7%)	2619; delay = 550 (21%)

Age Group	NCEPOD <2h	NCEPOD 2h-6h	NCEPOD 6h-18h
>=65	1027; delay = 334 (32.5%)	4110; delay = 616 (15%)	3731; delay = 737 (19.8%)

Table 4.2.4 Proportion of cases with time of arrival in theatre within Urgency of Surgery, by ASA score

ASA Score	Immediate < 2hrs (total patients)	Immediate < 2hrs n(%)	Urgency 2-6hrs (total patients)	Urgency 2-6hrs n(%)	Urgency 6-18hrs (total patients)	Urgency 6-18hrs n(%)
1	161	111 (68.9)	702	605 (86.2)	586	489 (83.4)
2	476	308 (64.7)	2,634	2234 (84.8)	2,583	2061 (79.8)
3	571	368 (64.4)	2,722	2272 (83.5)	2,579	2009 (77.9)
4	658	478 (72.6)	1,371	1210 (88.3)	587	490 (83.5)
5	134	104 (77.6)	70	65 (92.9)	15	14 (93.3)

Table 4.2.5 Proportion of cases with time of arrival in theatre within Urgency of Surgery, by Preoperative Risk of Death

Preoperative Risk of Death	Immediate < 2hrs (total patients)	Immediate < 2hrs n(%)	Urgency 2-6hrs (total patients)	Urgency 2-6hrs n(%)	Urgency 6-18hrs (total patients)	Urgency 6-18hrs n(%)
High	1,341	940 (70.1)	3,567	3093 (86.7)	2,247	1818 (80.9)
Low	443	285 (64.3)	2,996	2537 (84.7)	3,171	2531 (79.8)
Not Documented	216	144 (66.7)	936	756 (80.8)	932	714 (76.6)

Table 4.2.6 Proportion of cases with time to theatre within Urgency of Surgery, by Time of the day decision to operate.

Decision to operate (time of day)	Immediate < 2hrs (total patients)	Immediate < 2hrs n(%)	Urgency 2-6hrs (total patients)	Urgency 2-6hrs n(%)	Urgency 6-18hrs (total patients)	Urgency 6-18hrs n(%)
0000-0759	489	370 (75.7)	1,131	926 (81.9)	467	446 (95.5)
0800-1159	356	216 (60.7)	2,372	1959 (82.6)	3,032	2537 (83.7)
1200-1759	588	387 (65.8)	2,311	2027 (87.7)	1,743	1177 (67.5)
1800-2359	567	396 (69.8)	1,685	1474 (87.5)	1,108	903 (81.5)

Table 4.2.7 Time of the day of decision to operate by preoperative risk of death and timeliness of arrival in theatre

Time of Day decision to operate	High Risk	High Risk NCEPOD met (%)	Low Risk	Low Risk NCEPOD met (%)	Not Documented	Not Documented NCEPOD met (%)
0000-0759	1,096	924 (84.3)	757	629 (83.1)	234	189 (80.8)
0800-1159	2,282	1855 (81.3)	2,622	2176 (83)	856	681 (79.6)
1200-1759	2,149	1724 (80.2)	1,891	1435 (75.9)	602	432 (71.8)
1800-2359	1,628	1348 (82.8)	1,340	1113 (83.1)	392	312 (79.6)

Table 4.2.8 Missing date and/or time in arrival to theatre or decision to operate dates

Audit Year	Total patients	Date or time missing in Arrival to theatre	Date or time missing in Decision to operate	Date or time missing in Arrival to theatre or Decision to operate	Total missing (%)
NELA Year 4	24,382	857	2,954	3,470	14.2

Audit Year	Total patients	Date or time missing in Arrival to theatre	Date or time missing in Decision to operate	Date or time missing in Arrival to theatre or Decision to operate	Total missing (%)
NELA Year 5	24,788	806	2,809	3,265	13.2
NELA Year 6	25,214	772	2,511	2,992	11.9
NELA Year 7	21,846	1,011	2,332	2,939	13.5

Table 4.2.9 Missing time in arrival to theatre or decision to operate dates

Audit year	Time missing - Arrival to theatre n(%)	Time missing - Decision to operate n(%)
NELA Year 4	857 (3.5)	2954 (12.1)
NELA Year 5	806 (3.3)	2809 (11.3)
NELA Year 6	773 (3.1)	2511 (10)
NELA Year 7	1011 (4.6)	2332 (10.7)

4.3 Radiology

Figure 4.3.1 Trend in the overall proportion of patients receiving a CT scan preoperatively and CT scans being reported by a consultant radiologist preoperatively

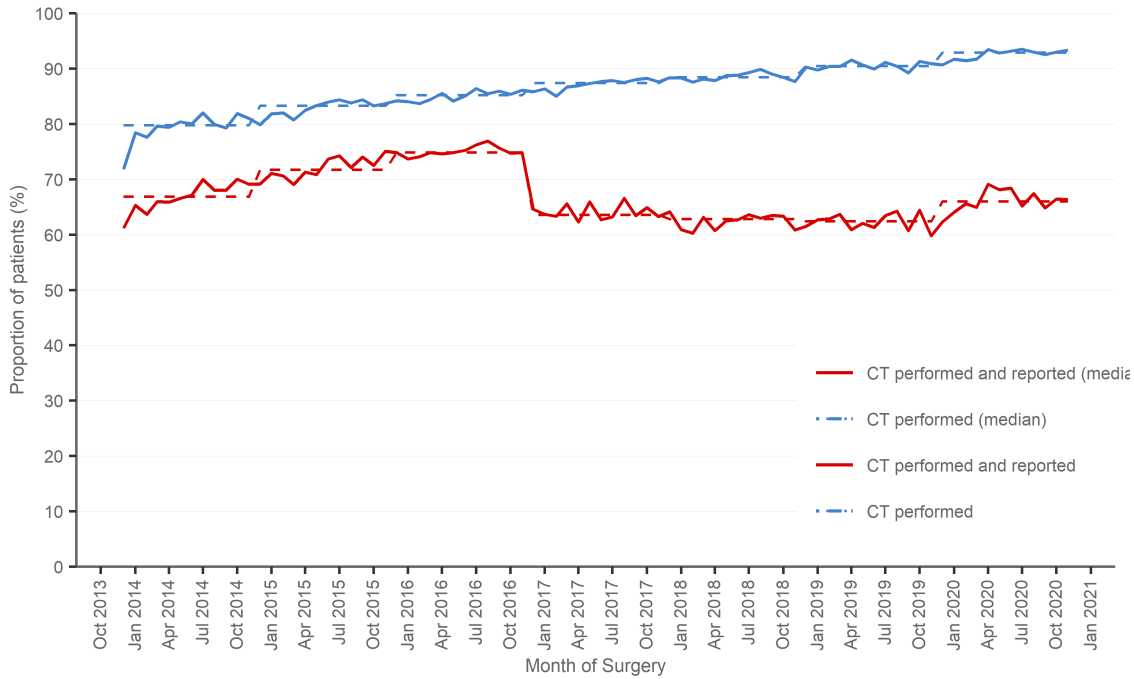


Table 4.3.1 Proportion of patients who underwent a preoperative CT scan per year of NELA data collection

Audit Year	Total patients	CT scan performed (n)	CT performed (%)
NELA Year 4	24,382	21,231	87.1
NELA Year 5	24,788	21,943	88.5
NELA Year 6	25,214	22,819	90.5
NELA Year 7	21,846	20,202	92.5

Table 4.3.2 Proportion of patients who had a preoperative CT scan reported per year of NELA data collection

Audit Year	Total patients	CT scan reported (n)	CT reported (%)
NELA Year 4	24,382	15,640	64.1
NELA Year 5	24,788	15,468	62.4

Audit Year	Total patients	CT scan reported (n)	CT reported (%)
NELA Year 6	25,214	15,717	62.3
NELA Year 7	21,846	14,394	65.9

Table 4.3.3 Preoperative CT scan reporting methods

CT Reporting Method	NELA Year 4	NELA Year 5	NELA Year 6	NELA Year 7
In-house Consultant	15459 (63.4)	15471 (62.4)	15716 (62.3)	14395 (65.9)
In-house Registrar	1725 (7.1)	1881 (7.6)	1825 (7.2)	1545 (7.1)
Not performed	2977 (12.2)	2638 (10.6)	2279 (9)	1501 (6.9)
Outsourced service	2876 (11.8)	3685 (14.9)	4485 (17.8)	4179 (19.1)
Performed Not reported	957 (3.9)	904 (3.6)	792 (3.1)	83 (0.4)
Unknown	174 (0.7)	207 (0.8)	116 (0.5)	143 (0.7)
Missing	214 (0.9)	2 (0)	1 (0)	

Table 4.3.4 Preoperative CT scan reporting method, by Urgency of Surgery

NCEPOD Category	In-house Consultant	In-house Registrar	Outsourced service	Performed Not reported
Immediate < 2hrs	1172 (8.1)	284 (18.4)	477 (11.4)	19 (22.9)
Urgency 2-6hrs	5186 (36)	782 (50.6)	1930 (46.2)	39 (47)
Urgency 6-18hrs	5289 (36.7)	374 (24.2)	1388 (33.2)	18 (21.7)

NCEPOD Category	In-house Consultant	In-house Registrar	Outsourced service	Performed Not reported
Expedited > 18hrs	2747 (19.1)	105 (6.8)	382 (9.1)	7 (8.4)
NCEPOD - Missing	1 (0)		2 (0)	

Table 4.3.5 CT Discrepancies by CT reporting method

Audit Year	Ct scan reported	In-house Consultant	In-house Registrar	Outsourced service	Performed Not reported
NELA Year 4	Discrepancy	799 (5.2)	93 (5.4)	178 (6.2)	24 (2.5)
NELA Year 4	No discrepancy	12984 (84)	1425 (82.6)	2408 (83.7)	479 (50.1)
NELA Year 4	Unknown	1676 (10.8)	207 (12)	290 (10.1)	454 (47.4)
NELA Year 5	Discrepancy	818 (5.3)	102 (5.4)	233 (6.3)	26 (2.9)
NELA Year 5	No discrepancy	13164 (85.1)	1559 (82.9)	3090 (83.9)	413 (45.7)
NELA Year 5	Unknown	1488 (9.6)	220 (11.7)	362 (9.8)	465 (51.4)
NELA Year 6	Discrepancy	834 (5.3)	84 (4.6)	278 (6.2)	21 (2.7)
NELA Year 6	No discrepancy	13477 (85.8)	1529 (83.8)	3740 (83.4)	366 (46.2)
NELA Year 6	Unknown	1405 (8.9)	212 (11.6)	467 (10.4)	405 (51.1)
NELA Year 7	Discrepancy	698 (4.8)	79 (5.1)	297 (7.1)	1 (1.2)
NELA Year 7	No discrepancy	12762 (88.7)	1310 (84.8)	3615 (86.5)	2 (2.4)
NELA Year 7	Unknown	934 (6.5)	156 (10.1)	266 (6.4)	1 (1.2)

Table 4.3.6 CT discrepancies in Findings

Audit year	Cancer	Sepsis	Ischaemia Haemorrhage	Osbtuction	Postop Complication
NELA Year 5	233 (5.4)	512 (5.7)	222 (7.8)	459 (4.6)	46 (4.8)
NELA Year 6	207 (4.7)	504 (5.7)	240 (8.1)	516 (4.7)	42 (4.3)
NELA Year 7	206 (5)	415 (5.3)	183 (7.4)	485 (5)	34 (4.2)

Table 4.3.7 CT discrepancies by Urgency of Surgery

Urgency of Surgery	Discrepancy	No discrepancy	Unknown	Missing
Expedited > 18hrs (CT perf: 3241)	141 (4.4%)	2913 (89.9%)	182 (5.6%)	5 (0.2%)
Immediate < 2hrs (CT perf: 1952)	127 (6.5%)	1654 (84.7%)	153 (7.8%)	18 (0.9%)
NCEPOD - Missing (CT perf: 3)		3 (100%)		
Urgency 2-6hrs (CT perf: 7937)	463 (5.8%)	6880 (86.7%)	555 (7%)	39 (0.5%)
Urgency 6-18hrs (CT perf: 7067)	344 (4.9%)	6239 (88.3%)	467 (6.6%)	17 (0.2%)

4.4 Management of patient sepsis

Table 4.4.1 Number of patients with Sepsis on Admission

Audit Year	Total NELA cases (excl. Sepsis status Missing & Unknown)	Sepsis suspected on Admission - n (%)	No Sepsis suspected on Admission - n (%)	Total NELA cases	Unknown/Missing - n (% of Total NELA cases)
NELA Year 4	21,614	7319 (33.9%)	14295 (66.1%)	24,382	2768 (11.4%)
NELA Year 5	22,481	8131 (36.2%)	14350 (63.8%)	24,788	2307 (9.3%)
NELA Year 6	22,700	6297 (27.7%)	16403 (72.3%)	25,214	2514 (10%)
NELA Year 7	20,100	5435 (27%)	14665 (73%)	21,846	1746 (8%)

Table 4.4.2 - Number of patients with Sepsis on decision to surgery

Audit Year	Total NELA cases (excl. Sepsis dec status Missing & Unknown)	Sepsis suspected on Decision to Surgery - n (%)	No Sepsis suspected on Decision to Surgery - n (%)	Sepsis suspected on Decision to Surgery and not suspected on admission - n(%)	Total NELA cases	Unknown Sepsis status on Decision to Surgery - n (%)
NELA Year 4	21,685	8672 (40%)	13013 (60%)	2160 (10%)	24,382	2697 (11.1%)
NELA Year 5	23,888	10252 (42.9%)	13636 (57.1%)	3024 (12.7%)	24,788	900 (3.6%)
NELA Year 6	24,179	8481 (35.1%)	15698 (64.9%)	2890 (12%)	25,214	1035 (4.1%)
NELA Year 7	21,090	6965 (33%)	14125 (67%)	2178 (10.3%)	21,846	756 (3.5%)

Table 4.4.3 Sepsis suspected on decision to surgery broken down by sepsis suspected on admission

Audit Year	Total patients with suspected sepsis on decision to surgery	Sepsis on admission	No Sepsis on admission	Unknown sepsis status on admission
NELA Year 6	8,481	5591 (65.9%)	1927 (22.7%)	963 (11.4%)
NELA Year 7	6,965	4787 (68.7%)	1547 (22.2%)	631 (9.1%)

Table 4.4.4 - Number of patients with suspected sepsis on admission, by documented risk

Documented risk	Number of patients with susp. sepsis on admission Year 6 - n	Year 6 (%)	Number of patients with susp. sepsis on admission Year 7 - n	Year 7 (%)
High	3,719	59.1	3,086	56.8
Low	1,793	28.5	1,693	31.1
Not Documented	785	12.5	656	12.1

Table 4.4.5 - Consultant presence in theatre for patients with suspected sepsis on admission, by documented risk

Documented risk	Patients with sepsis on admission Year 6	Consultant presence (n %) Year 6	Patients with sepsis on admission Year 7	Consultant presence (n %) Year 7
High	3,719	3340 (89.8%)	3,086	2844 (92.2%)
Low	1,793	1366 (76.2%)	1,693	1363 (80.5%)
Not Documented	785	638 (81.3%)	656	554 (84.5%)

Table 4.4.6 - Admission to CCU for patients with suspected sepsis on admission, by documented risk

Documented risk	Patients with sepsis on admission Year 6	Admission to CCU (n %) Year 6	Patients with sepsis on admission Year7	Admission to CCU (n %) Year 7
High	3,719	3385 (91%)	3,086	2780 (90.1%)
Low	1,793	926 (51.6%)	1,693	811 (47.9%)
Not Documented	785	514 (65.5%)	656	394 (60.1%)

Table 4.4.7 - Unplanned return to theatre for patients with suspected sepsis on admission, by documented risk

Documented risk	Number of High Risk (NELA calculated risk) patients Year 6	Unplanned return to theatre (n %) Year 6	Number of High Risk (NELA calculated risk) patients Year 7	Unplanned return to theatre (n %) Year 7
High	3,719	255 (6.9%)	3,086	180 (5.8%)
Low	1,793	56 (3.1%)	1,693	79 (4.7%)
Not Documented	785	37 (4.7%)	656	46 (7%)

Table 4.4.8 - Unplanned return to theatre **for high risk (NELA calculated risk) patients** with suspected sepsis on admission, by documented risk

Documented risk	Patients with sepsis on admission Year 6	Unplanned return to theatre (n %) Year 6	Patients with sepsis on admission Year 7	Unplanned return to theatre (n %) Year 7
High	3,067	210 (6.8%)	2,623	145 (5.5%)
Low	233	7 (3%)	187	10 (5.3%)

Documented risk	Patients with sepsis on admission Year 6	Unplanned return to theatre (n %) Year 6	Patients with sepsis on admission Year 7	Unplanned return to theatre (n %) Year 7
Not Documented	333	20 (6%)	276	26 (9.4%)

Table 4.4.9 - Unplanned return to CCU for patients with suspected sepsis on admission, by documented risk

Documented risk	Patients with sepsis on admission Year 6	Unplanned return to CCU (n %) Year 6	Patients with sepsis on admission Year 7	Unplanned return to CCU (n %) Year 7
High	3,719	129 (3.5%)	3,086	122 (4%)
Low	1,793	37 (2.1%)	1,693	52 (3.1%)
Not Documented	785	24 (3.1%)	656	28 (4.3%)

Table 4.4.10 - Unplanned return to CCU **for high risk (NELA calculated risk) patients** with suspected sepsis on admission, by documented risk

Documented risk	Number of High Risk (NELA calculated risk) patients Year 6	Unplanned return to CCU (n %) Year 6	Number of High Risk (NELA calculated risk) patients Year 7	Unplanned return to CCU (n %) Year 7
High	3,067	108 (3.5%)	2,623	103 (3.9%)
Low	233	11 (4.7%)	187	8 (4.3%)
Not Documented	333	14 (4.2%)	276	13 (4.7%)

Table 4.4.11 Timeliness of arrival in theatre for patients undergoing emergency laparotomy with signs of sepsis

Audit year	Patients with suspected sepsis on admission (with complete dates & NCEPOD)	arrival to theatre within urgency of surgery (%)
NELA Year 6	4,429	84.5
NELA Year 7	3,666	82.8

Table 4.4.12 - Length of Stay for high risk (NELA calculated risk) patients with suspected sepsis on admission, by documented risk

Documented risk	Number of High Risk (NELA calculated risk) patients Year 6	LOS (n %) Year 6	Number of High Risk (NELA calculated risk) patients Year 7	LOS (n %) Year 7
High	2,141	2141 (24.7)	1,842	1842 (23.9)
Low	202	202 (18.3)	160	160 (19.2)
Not Documented	244	244 (21.6)	227	227 (21.8)

Table 4.4.13 - ONS Mortality for patients with suspected sepsis on admission, by documented risk

Documented risk	Patients with sepsis on admission Year 6	30-day Mortality (n %) Year 6	Patients with sepsis on admission Year 7	30-day Mortality (n %) Year 7
High	3,719	827 (22.2%)	3,086	718 (23.3%)
Low	1,793	37 (2.1%)	1,693	34 (2%)
Not Documented	785	80 (10.2%)	656	50 (7.6%)

Table 4.4.14 - ONS Mortality for patients with suspected sepsis on admission and on decision to operate

Audit Year	Sepsis on admission 30-day mortality n(%)	Sepsis on decision to operate 30-day mortality n(%)	No Suspected sepsis (on admission or decision to operate) 30-day mortality n(%)
NELA Year 6	944 (15%)	428 (14.8%)	812 (5.7%)
NELA Year 7	802 (14.8%)	298 (13.7%)	705 (5.4%)

Table 4.4.15 Time intervals between key milestones for patients with suspected sepsis

	No Suspected Sepsis, N = 13,030¹	Sepsis suspected on admission, N = 5,435¹	Sepsis suspected on decision to operate (only), N = 2,178¹
From admission to decision to operate	20.9 (8.0, 62.0)	9.8 (4.5, 39.8)	36.3 (10.2, 121.4)
From decision to operate to theatre	5.0 (2.5, 17.0)	2.8 (1.5, 5.5)	2.5 (1.5, 5.0)
From admission to theatre	31.3 (15.6, 75.6)	15.3 (7.3, 49.6)	44.8 (14.8, 132.2)
From admission to antibiotics	22.0 (8.0, 55.0)	3.2 (1.3, 7.8)	9.3 (4.2, 27.9)
¹Median (IQR) (in hours)			

Table 4.4.16 Admission time to administration of antibiotics for patients with suspected sepsis

Audit year	total patients	Suspected sepsis at admission (n)	Time to Antibiotics missing	Mean - Time to Antibiotics	Median [IQR] - Time to Antibiotics
NELA Year 5	24,788	8,131	1,217	19.3	3.5 [1.5-7.5]
NELA Year 6	25,214	6,297	859	25.8	3.6 [1.4-8]
NELA Year 7	21,846	5,435	937	16.4	3.2 [1.3-7.8]

Table 4.4.17 Antibiotics given within the hour to patients with suspected sepsis on admission and 30-day & 90-day Mortality (Missing Antibiotic time or incorrect time excluded from denominator)

Audit Year	Total suspec. sepsis	Abx <= 1h	Abx <= 1h 30d mortality	Abx <= 1h 90d mortality
NELA Year 5	6,914	1352 (19.6%)	235 (17.4%)	254 (18.8%)
NELA Year 6	5,438	1098 (20.2%)	197 (17.9%)	215 (19.6%)
NELA Year 7	4,498	971 (21.6%)	168 (17.3%)	182 (18.7%)

4.5 Risk assessment

Table 4.5.1 Documented risk by NELA audit year

Preoperative Risk of death	Audit year 5	Audit year 6	Audit year 7
High	11012 (44.4%)	11114 (44.1%)	9172 (42%)
Low	8121 (32.8%)	10016 (39.7%)	9408 (43.1%)
Not Documented	5655 (22.8%)	4084 (16.2%)	3266 (15%)

Table 4.5.2 Documented risk by Preoperative risk (NELA)

Preop Risk Assessment	Preop NELA risk - High	Preop NELA risk - Low	Preop NELA risk - Missing
High	7514 (79.1%)	1549 (12.8%)	109 (45.6%)
Low	894 (9.4%)	8449 (69.8%)	65 (27.2%)
Not Documented	1095 (11.5%)	2106 (17.4%)	65 (27.2%)

Table 4.5.3 Preoperative Risk assessment by age group

Preoperative risk of death	18-24	25-34	35-44	45-54	55-64	>=65
High	78 (14.6%)	123 (11.3%)	250 (16.1%)	613 (22.8%)	1276 (32.8%)	6832 (56.5%)
Low	346 (64.8%)	739 (67.9%)	1006 (64.8%)	1631 (60.7%)	2001 (51.5%)	3685 (30.5%)
Not Documented	110 (20.6%)	227 (20.8%)	297 (19.1%)	442 (16.5%)	609 (15.7%)	1581 (13.1%)

Table 4.5.4 Preoperative Risk assessment by age group

Preoperative risk of death	<65	>=65
High	2340 (24%)	6832 (56.5%)
Low	5723 (58.7%)	3685 (30.5%)
Not Documented	1685 (17.3%)	1581 (13.1%)

Table 4.5.5 Preoperative Risk assessment according to ASA score

Preoperative risk of death	ASA grade 1	ASA grade 2	ASA grade 3	ASA grade 4	ASA grade 5
High	151 (7.9%)	1474 (18.1%)	4542 (54.8%)	2774 (85.7%)	231 (90.9%)

Preoperative risk of death	ASA grade 1	ASA grade 2	ASA grade 3	ASA grade 4	ASA grade 5
Low	1491 (77.5%)	5339 (65.6%)	2430 (29.3%)	143 (4.4%)	5 (2%)
Not Documented	281 (14.6%)	1326 (16.3%)	1322 (15.9%)	319 (9.9%)	18 (7.1%)

Table 4.5.6 Preoperative Risk assessment by Urgency of Surgery

Preoperative risk of death	Immediate < 2hrs	Urgency 2-6hrs	Urgency 6-18hrs	Expedited > 18hrs	NCEPOD - Missing
High	1469 (66.2%)	3951 (47%)	2635 (35%)	1117 (30.4%)	
Low	481 (21.7%)	3298 (39.2%)	3674 (48.7%)	1953 (53.1%)	2 (50%)
Not Documented	268 (12.1%)	1160 (13.8%)	1228 (16.3%)	608 (16.5%)	2 (50%)

Table 4.5.7 Preoperative documented risk by frailty (CFS>=5) for year 7

Note: Frailty assessment scoring system changed from December 2018

Preoperative risk of death	Not Frail	Frail	Unknown
High	4809 (32%)	3672 (70.7%)	691 (42.9%)
Low	7935 (52.7%)	945 (18.2%)	528 (32.8%)
Not Documented	2302 (15.3%)	574 (11.1%)	390 (24.2%)

Table 4.5.8 Documented risk assessment according to consultant surgeon presence

Preoperative Documented Risk	Surgeon in theatre (yr5)	Surgeon in theatre (yr6)	Surgeon in theatre (yr7)
High	10320 (93.7)	10593 (95.3)	8865 (96.7)
Low	7288 (89.7)	9213 (92)	8774 (93.3)

Preoperative Documented Risk	Surgeon in theatre (yr5)	Surgeon in theatre(yr6)	Surgeon in theatre (yr7)
Not Documented	5052 (89.3)	3722 (91.1)	3060 (93.7)

Table 4.5.9 Documented risk assessment according to consultant anaesthetist presence

Preoperative Documented Risk	Anaesthetist in theatre (yr5)	Anaesthetist in theatre (yr6)	Anaesthetist in theatre (yr7)
High	9921 (90.1)	10334 (93)	8607 (93.8)
Low	6618 (81.5)	8426 (84.1)	8064 (85.7)
Not Documented	4592 (81.2)	3458 (84.7)	2808 (86)

Table 4.5.10 Documented risk assessment according to Consultant Surgeon and Anaesthetist presence

Preoperative Documented Risk	Surgeon & Anaesthetist in theatre (yr5)	Surgeon & Anaesthetist in theatre (yr6)	Surgeon & Anaesthetist in theatre (yr7)
High	10320 (93.7)	10593 (95.3)	8865 (96.7)
Low	7288 (89.7)	9213 (92)	8774 (93.3)
Not Documented	5052 (89.3)	3722 (91.1)	3060 (93.7)

Table 4.5.11 Documented risk assessment according to CCU admission

Documented risk assessment	Not admitted to CCU	Admitted to CCU	Missing
High	1546 (16.4)	7592 (61.2)	34 (89.5)
Low	6092 (64.8)	3316 (26.7)	

Documented risk assessment	Not admitted to CCU	Admitted to CCU	Missing
Not Documented	1762 (18.7)	1500 (12.1)	4 (10.5)

Table 4.5.13 30-day and 90-day Mortality by preoperative documented risk of death

Audit year	Preoperative Documented risk	Total patients (n)	30-day mortality n(%)	90-day mortality n(%)
NELA Year 5	High	11,012	1955 (17.8%)	2517 (22.9%)
NELA Year 5	Low	8,121	144 (1.8%)	254 (3.1%)
NELA Year 5	Not Documented	5,655	329 (5.8%)	518 (9.2%)
NELA Year 6	High	11,114	1926 (17.3%)	2553 (23%)
NELA Year 6	Low	10,016	163 (1.6%)	325 (3.2%)
NELA Year 6	Not Documented	4,084	242 (5.9%)	377 (9.2%)
NELA Year 7	High	9,172	1567 (17.1%)	2135 (23.3%)
NELA Year 7	Low	9,408	165 (1.8%)	327 (3.5%)
NELA Year 7	Not Documented	3,266	173 (5.3%)	281 (8.6%)

Table 4.5.14 Population risk profiles according to preoperative NELA predicted 30 day mortality, by NELA Audit Year

Preoperative NELA predicted risk	NELA Year 4	NELA Year 5	NELA Year 6	NELA Year 7
>=50%	3.2	3.0	2.7	2.2
>=25%-50%	8.9	9.1	8.8	7.9
>=10%-25%	17.5	17.6	17.9	17.4

Preoperative NELA predicted risk	NELA Year 4	NELA Year 5	NELA Year 6	NELA Year 7
>=5%-10%	16.1	15.8	16.6	17.0
<5%	51.9	53.1	53.4	54.7
Missing	2.4	1.5	0.6	0.8

5 Care during surgery

5.1 What are the indications for emergency laparotomy?

Table 5.1.1 Proportion of patients in each indication for surgery groups

Audit year	Total patients (n)	Sepsis n(%)	Obstruction n(%)	Ischaemia n(%)	Bleeding n(%)	Other n(%)
NELA Year 5	24,788	10691 (43.1%)	14329 (57.8%)	2118 (8.5%)	731 (2.9%)	174 (0.7%)
NELA Year 6	25,214	10481 (41.6%)	15112 (59.9%)	2194 (8.7%)	673 (2.7%)	152 (0.6%)
NELA Year 7	21,846	8841 (40.5%)	13357 (61.1%)	1850 (8.5%)	542 (2.5%)	174 (0.8%)

Table 5.1.2 Indication for surgery (group) by documented risk of death

Audit year	Preoperative Documented Risk	Sepsis (n(%))	Obstruction (n(%))	Ischaemia (n(%))	Bleeding (n(%))	Other (n(%))
NELA Year 5	High	5556 (52)	5569 (38.9)	1376 (65)	419 (57.3)	83 (47.7)
NELA Year 5	Low	2829 (26.5)	5437 (37.9)	380 (17.9)	105 (14.4)	37 (21.3)
NELA Year 5	Not Documented	2306 (21.6)	3323 (23.2)	362 (17.1)	207 (28.3)	54 (31)
NELA Year 6	High	5260 (50.2)	5973 (39.5)	1421 (64.8)	393 (58.4)	68 (44.7)
NELA Year 6	Low	3606 (34.4)	6688 (44.3)	510 (23.2)	123 (18.3)	44 (28.9)
NELA Year 6	Not Documented	1615 (15.4)	2451 (16.2)	263 (12)	157 (23.3)	40 (26.3)
NELA Year 7	High	4130 (46.7)	5173 (38.7)	1212 (65.5)	302 (55.7)	71 (40.8)
NELA Year 7	Low	3477 (39.3)	6168 (46.2)	434 (23.5)	124 (22.9)	58 (33.3)

Audit year	Preoperative Documented Risk	Sepsis (n(%))	Obstruction (n(%))	Ischaemia (n(%))	Bleeding (n(%))	Other (n(%))
NELA Year 7	Not Documented	1234 (14)	2016 (15.1)	204 (11)	116 (21.4)	45 (25.9)

Table 5.1.3 Consultant Surgeon and Anaesthetist presence in each indication for surgery (group)

Audit year	Total patients (n)	Sepsis n(%)	Obstruction n(%)	Ischaemia n(%)	Bleeding n(%)
NELA Year 5	8655 (81)	11292 (78.8)	1736 (82)	638 (87.3)	127 (73)
NELA Year 6	8877 (84.7)	12596 (83.4)	1859 (84.7)	601 (89.3)	113 (74.3)
NELA Year 7	7626 (86.3)	11364 (85.1)	1609 (87)	504 (93)	141 (81)

5.2 What are the surgical findings at emergency laparotomy?

Table 5.2.1 Proportion of patients in each finding (group)

Audit year	Sepsis n(%)	Obstruction n(%)	Ischaemia and Haemorrhage n(%)	Ischaemia n(%)	Haemorrhage n(%)	Cancer n(%)	Postop complications n(%)
NELA Year 4	9986 (41%)	10756 (44.1%)	3301 (13.5%)	2888 (11.8%)	434 (1.8%)	4656 (19.1%)	1253 (5.1%)
NELA Year 5	10072 (40.6%)	11236 (45.3%)	3340 (13.5%)	2936 (11.8%)	417 (1.7%)	4625 (18.7%)	1280 (5.2%)
NELA Year 6	9810 (38.9%)	11940 (47.4%)	3397 (13.5%)	3046 (12.1%)	368 (1.5%)	4703 (18.7%)	1249 (5%)

Audit year	Sepsis n(%)	Obstruction n(%)	Ischaemia and Haemorrhage n(%)	Ischaemia n(%)	Haemorrhage n(%)	Cancer n(%)	Postop complications n(%)
NELA Year 7	8411 (38.5%)	10399 (47.6%)	2724 (12.5%)	2437 (11.2%)	302 (1.4%)	4292 (19.6%)	1027 (4.7%)

Table 5.2.2 Consultant Surgeon and Anaesthetist presence by findings

Audit year	Total patients (n)	Sepsis n(%)	Obstruction n(%)	Ischaemia n(%)	Bleeding n(%)
NELA Year 5	8655 (81)	11292 (78.8)	1736 (82)	638 (87.3)	127 (73)
NELA Year 6	8877 (84.7)	12596 (83.4)	1859 (84.7)	601 (89.3)	113 (74.3)
NELA Year 7	7626 (86.3)	11364 (85.1)	1609 (87)	504 (93)	141 (81)

5.3 What are the procedures performed at emergency laparotomy?

Table 5.3.1 patients who have undergone a negative laparotomy

Audit year	Total ELs	Negative Laparotomy (n)	%
NELA Year 1	20,621	218	1.1
NELA Year 2	23,591	263	1.1
NELA Year 3	25,306	374	1.5
NELA Year 4	24,382	393	1.6
NELA Year 5	24,788	356	1.4

Audit year	Total ELs	Negative Laparotomy (n)	%
NELA Year 6	25,214	355	1.4
NELA Year 7	21,846	262	1.2

Table 5.3.2 Consultant presence for patients who have undergone a negative laparotomy

Negative Laparotomy	Total patients	Consultant presence (Surgeon and Anaesthetist) - n	%
NELA Year 7	262	221	84.4

Table 5.3.3 30-day and 90-day ONS mortality in negative laparotomy

Negative Laparotomy	ONS 30-day mortality	ONS 90-day mortality
262	13.7	17.9

Table 5.3.4 Mortality in the top 10 main procedures

Main procedure	Total patients n(%)	30-day Mortality n(%)	90-day Mortality n(%)
Adhesiolysis	4109 (18.8%)	206 (5%)	278 (6.8%)
Small Bowel Resection	3163 (14.5%)	340 (10.7%)	467 (14.8%)
Right Hemicolectomy	3000 (13.7%)	196 (6.5%)	333 (11.1%)
Hartmann's Procedure	2800 (12.8%)	225 (8%)	298 (10.6%)

Main procedure	Total patients n(%)	30-day Mortality n(%)	90-day Mortality n(%)
Colectomy Subtotal	1160 (5.3%)	128 (11%)	155 (13.4%)
Perforated Peptic Ulcer Repair	1043 (4.8%)	112 (10.7%)	140 (13.4%)
Stoma Formation	954 (4.4%)	117 (12.3%)	251 (26.3%)
Left Hemicolectomy	863 (4%)	70 (8.1%)	99 (11.5%)
Large Incisional Hernia	612 (2.8%)	18 (2.9%)	30 (4.9%)
Exploratory or Relook Laparotomy	398 (1.8%)	87 (21.9%)	111 (27.9%)

Table 5.3.5 Main procedures in high-risk patients and ONS 30-day mortality (Top 4 main procedures included in Annual report)

Main procedures	Total High risk n %	High risk 30-day mortality	Total Low risk n %	Low risk 30-day mortality
Small bowel resection	1603 (16.9%)	19.2	1526 (12.6%)	1.8
Adhesiolysis	1531 (16.1%)	11.8	2539 (21%)	1.0
Hartmanns procedure	1332 (14%)	15.5	1446 (11.9%)	1.2
Colectomy: right (including ileocaecal resection)	1157 (12.2%)	14.8	1816 (15%)	1.2
Stoma formation	536 (5.6%)	18.5	413 (3.4%)	4.4
Colectomy: subtotal or panproctocolectomy	469 (4.9%)	22.8	677 (5.6%)	2.2

Main procedures	Total High risk n %	High risk 30-day mortality	Total Low risk n %	Low risk 30-day mortality
Peptic ulcer - suture or repair of perforation	404 (4.3%)	24.5	620 (5.1%)	1.6
Colectomy: left (including sigmoid colectomy and anterior resection)	353 (3.7%)	17.0	497 (4.1%)	1.8
Exploratory/relook laparotomy only	212 (2.2%)	38.2	180 (1.5%)	2.2
Large Incisional hernia repair with division of adhesions	166 (1.7%)	6.0	261 (2.2%)	0.8
Repair of intestinal perforation	151 (1.6%)	31.1	198 (1.6%)	2.5
Colorectal resection - other	148 (1.6%)	18.9	175 (1.4%)	2.9
Enterotomy	144 (1.5%)	6.9	125 (1%)	0.8
Drainage of abscess/collection	130 (1.4%)	19.2	223 (1.8%)	0.9
Washout only	130 (1.4%)	29.2	221 (1.8%)	1.4
Intestinal bypass	114 (1.2%)	18.4	83 (0.7%)	4.8
Gastric surgery - other	108 (1.1%)	20.4	128 (1.1%)	2.3
Not amenable to surgery	97 (1%)	73.2	29 (0.2%)	20.7

Main procedures	Total High risk n %	High risk 30-day mortality	Total Low risk n %	Low risk 30-day mortality
Large Incisional hernia repair with bowel resection	89 (0.9%)	6.7	89 (0.7%)	0.0
Gastrectomy: partial or total	70 (0.7%)	14.3	40 (0.3%)	7.5
Peptic ulcer oversew of bleed	66 (0.7%)	25.8	21 (0.2%)	0.0
Evacuation of haematoma	62 (0.7%)	11.3	44 (0.4%)	0.0
Haemostasis	62 (0.7%)	14.5	39 (0.3%)	0.0
Reduction of volvulus	59 (0.6%)	11.9	130 (1.1%)	0.8
Laparostomy formation	50 (0.5%)	28.0	27 (0.2%)	14.8
Repair of para-oesophageal hernia	48 (0.5%)	18.8	53 (0.4%)	0.0
Stoma revision	48 (0.5%)	8.3	90 (0.7%)	0.0
Repair or revision of anastomosis	34 (0.4%)	11.8	62 (0.5%)	0.0
Abdominal wall closure	32 (0.3%)	12.5	50 (0.4%)	4.0
Abdominal wall reconstruction	28 (0.3%)	3.6	47 (0.4%)	4.3

Main procedures	Total High risk n %	High risk 30-day mortality	Total Low risk n %	Low risk 30-day mortality
Removal of foreign body	18 (0.2%)	11.1	72 (0.6%)	0.0
Resection of Meckels diverticulum	15 (0.2%)	6.7	68 (0.6%)	0.0
Resection of other intra-abdominal tumour(s)	10 (0.1%)	0.0	28 (0.2%)	3.6

5.4 Laparoscopic emergency bowel surgery

Table 5.4.1 Operative approach used in Emergency Laparotomy, by NELA audit year

Operative approach	Audit year 5 n(%)	Audit year 6 n(%)	Audit year 7 n(%)
Open	20132 (81.2%)	20145 (79.9%)	17604 (80.6%)
Laparoscopic converted to open	1914 (7.7%)	2203 (8.7%)	1660 (7.6%)
Laparoscopic	2357 (9.5%)	2520 (10%)	2245 (10.3%)
Laparoscopic assisted	385 (1.6%)	346 (1.4%)	337 (1.5%)

Table 5.4.2 Main procedures by operative approach

Main procedures	Open	Laparoscopic converted to open	Laparoscopic	Laparoscopic assisted
Abdominal wall closure	85 (100%)			
Repair of intestinal fistula	16 (100%)			
Large Incisional hernia repair with division of adhesions	415 (96.1%)	4 (0.9%)	11 (2.5%)	2 (0.5%)
Peptic ulcer oversew of bleed	83 (95.4%)		4 (4.6%)	
Abdominal wall reconstruction	72 (94.7%)		2 (2.6%)	2 (2.6%)
Stoma revision	130 (94.2%)	2 (1.4%)	5 (3.6%)	1 (0.7%)
Large Incisional hernia repair with bowel resection	169 (93.9%)	7 (3.9%)	2 (1.1%)	2 (1.1%)
Strictureplasty	23 (92%)	1 (4%)	1 (4%)	
Debridement	19 (90.5%)		2 (9.5%)	
Haemostasis	94 (90.4%)	5 (4.8%)	4 (3.8%)	1 (1%)
Hartmanns procedure	2517 (89.9%)	172 (6.1%)	92 (3.3%)	19 (0.7%)
Repair or revision of anastomosis	83 (86.5%)	3 (3.1%)	10 (10.4%)	

Main procedures	Open	Laparoscopic converted to open	Laparoscopic	Laparoscopic assisted
Removal of foreign body	79 (85.9%)	6 (6.5%)	4 (4.3%)	3 (3.3%)
Colectomy: left (including sigmoid colectomy and anterior resection)	733 (84.9%)	51 (5.9%)	67 (7.8%)	12 (1.4%)
Small bowel resection	2685 (84.9%)	307 (9.7%)	95 (3%)	76 (2.4%)
Gastrectomy: partial or total	93 (84.5%)	10 (9.1%)	7 (6.4%)	
Laparostomy formation	65 (83.3%)	2 (2.6%)	11 (14.1%)	
Exploratory/relook laparotomy only	330 (82.9%)	37 (9.3%)	30 (7.5%)	1 (0.3%)
Enterotomy	223 (82.6%)	18 (6.7%)	16 (5.9%)	13 (4.8%)
Stoma formation	785 (82.3%)	78 (8.2%)	81 (8.5%)	10 (1%)
Colorectal resection - other	261 (79.8%)	29 (8.9%)	28 (8.6%)	9 (2.8%)
Colectomy: right (including ileocaecal resection)	2364 (78.8%)	271 (9%)	259 (8.6%)	106 (3.5%)
Colectomy: subtotal or pan-proctocolectomy	900 (77.6%)	50 (4.3%)	186 (16%)	24 (2.1%)

Main procedures	Open	Laparoscopic converted to open	Laparoscopic	Laparoscopic assisted
Reduction of volvulus	149 (77.6%)	17 (8.9%)	24 (12.5%)	2 (1%)
Repair of intestinal perforation	274 (77.6%)	36 (10.2%)	39 (11%)	4 (1.1%)
Adhesiolysis	3157 (76.8%)	341 (8.3%)	586 (14.3%)	25 (0.6%)
Not amenable to surgery	96 (73.8%)	13 (10%)	21 (16.2%)	
Resection of other intra-abdominal tumour(s)	28 (73.7%)	6 (15.8%)	2 (5.3%)	2 (5.3%)
Peptic ulcer - suture or repair of perforation	756 (72.5%)	63 (6%)	219 (21%)	5 (0.5%)
Intestinal bypass	143 (71.1%)	6 (3%)	48 (23.9%)	4 (2%)
Evacuation of haematoma	77 (70.6%)	14 (12.8%)	18 (16.5%)	
Drainage of abscess/collection	253 (70.3%)	46 (12.8%)	58 (16.1%)	3 (0.8%)
Gastric surgery - other	151 (63.2%)	13 (5.4%)	74 (31%)	1 (0.4%)
Washout only	202 (57.1%)	25 (7.1%)	127 (35.9%)	

Main procedures	Open	Laparoscopic converted to open	Laparoscopic	Laparoscopic assisted
Resection of Meckels diverticulum	47 (54.7%)	18 (20.9%)	12 (14%)	9 (10.5%)
Repair of para-oesophageal hernia	43 (42.2%)	8 (7.8%)	50 (49%)	1 (1%)
Removal of gastric band	4 (7.4%)	1 (1.9%)	49 (90.7%)	
Other (Please specify)			1 (100%)	

Table 5.4.3 Time of arrival in the operating in theatre by Operative approach

Time of surgery	Open	Laparoscopic converted to open	Laparoscopic	Laparoscopic assisted
00:00 to 08:00	1719 (9.8%)	113 (6.8%)	134 (6%)	12 (3.6%)
08:00 to 12:00	4299 (24.4%)	440 (26.5%)	657 (29.3%)	111 (32.9%)
12:00 to 18:00	6924 (39.3%)	676 (40.7%)	933 (41.6%)	128 (38%)
18:00 to 00:00	3907 (22.2%)	351 (21.1%)	374 (16.7%)	57 (16.9%)
Missing	755 (4.3%)	80 (4.8%)	147 (6.5%)	29 (8.6%)

Table 5.4.4 Day of week of arrival in the operating theatre by operative approach

Day of surgery	Open	Laparoscopic converted to open	Laparoscopic	Laparoscopic assisted
Mon	2292 (13%)	253 (15.2%)	284 (12.7%)	48 (14.2%)
Tue	2627 (14.9%)	233 (14%)	346 (15.4%)	52 (15.4%)
Wed	2690 (15.3%)	216 (13%)	358 (15.9%)	55 (16.3%)
Thu	2781 (15.8%)	258 (15.5%)	337 (15%)	54 (16%)
Fri	2659 (15.1%)	257 (15.5%)	390 (17.4%)	54 (16%)
Sat	2267 (12.9%)	211 (12.7%)	273 (12.2%)	41 (12.2%)
Sun	2288 (13%)	232 (14%)	257 (11.4%)	33 (9.8%)

Table 5.4.5 Operative approach by documented risk of death

Perioperative Documented Risk	Open	Laparoscopic converted to open	Laparoscopic	Laparoscopic assisted
High	8090 (46%)	484 (29.2%)	515 (22.9%)	83 (24.6%)
Low	7079 (40.2%)	837 (50.4%)	1292 (57.6%)	200 (59.3%)
Not Documented	2435 (13.8%)	339 (20.4%)	438 (19.5%)	54 (16%)

Table 5.4.6 Operative approach by Urgency of surgery

Urgency of Surgery	Open	Laparoscopic converted to open	Laparoscopic	Laparoscopic assisted
Immediate < 2hrs	1962 (11.1%)	134 (8.1%)	114 (5.1%)	8 (2.4%)
Urgency 2-6hrs	7057 (40.1%)	612 (36.9%)	656 (29.2%)	84 (24.9%)

Urgency of Surgery	Open	Laparoscopic converted to open	Laparoscopic	Laparoscopic assisted
Urgency 6-18hrs	5916 (33.6%)	641 (38.6%)	838 (37.3%)	142 (42.1%)
Expedited > 18hrs	2665 (15.1%)	273 (16.4%)	637 (28.4%)	103 (30.6%)

Table 5.4.7 Operative approach by Consultant presence

Operative approach	Total patients (n)	Consultant surgeon presence n (%)	Consultant Anaesthetist presence n (%)	Surgeon and Anaesthetist presence n (%)
Open	17,604	16627 (94.5)	15819 (89.9)	15124 (85.9)
Laparoscopic converted to open	1,660	1580 (95.2)	1433 (86.3)	1381 (83.2)
Laparoscopic	2,245	2161 (96.3)	1935 (86.2)	1873 (83.4)
Laparoscopic assisted	337	331 (98.2)	292 (86.6)	287 (85.2)

Table 5.4.8 Length of Stay by operative approach. (Includes patients alive at discharge or with a locked record while still in hospital at 60 days)

Operative approach	Total patients (n)	Mean LOS	Median [IQR] LOS
Open	17,604	16.1	11 [7-19]
Laparoscopic converted to open	1,660	14.0	9 [6-16]

Operative approach	Total patients (n)	Mean LOS	Median [IQR] LOS
Laparoscopic	2,245	9.4	6 [4-10]
Laparoscopic assisted	337	10.4	7 [5-11.5]

Table 5.4.9 ONS 30-day and 90-day mortality by operative approach

Audit year	Operative approach	Total patients	30-day mortality n(%)	90-day mortality n(%)
NELA Year 5	Open	20,132	2196 (10.9%)	2928 (14.5%)
NELA Year 5	Laparoscopic converted to open	1,914	122 (6.4%)	174 (9.1%)
NELA Year 5	Laparoscopic	2,357	98 (4.2%)	164 (7%)
NELA Year 5	Laparoscopic assisted	385	12 (3.1%)	23 (6%)
NELA Year 6	Open	20,145	2082 (10.3%)	2876 (14.3%)
NELA Year 6	Laparoscopic converted to open	2,203	148 (6.7%)	201 (9.1%)
NELA Year 6	Laparoscopic	2,520	90 (3.6%)	159 (6.3%)
NELA Year 6	Laparoscopic assisted	346	11 (3.2%)	19 (5.5%)
NELA Year 7	Open	17,604	1704 (9.7%)	2417 (13.7%)

Audit year	Operative approach	Total patients	30-day mortality n(%)	90-day mortality n(%)
NELA Year 7	Laparoscopic converted to open	1,660	116 (7%)	167 (10.1%)
NELA Year 7	Laparoscopic	2,245	71 (3.2%)	137 (6.1%)
NELA Year 7	Laparoscopic assisted	337	14 (4.2%)	22 (6.5%)

5.5 Consultant presence in theatre

Table 5.5.1 Consultant Surgeon and Anaesthetist present in theatre when High risk of death ($\geq 5\%$)

Audit Year	Total High risk patients (n)	Consultant surgeon presence (n)	Consultant Anaesthetist presence (n)	Surgeon and Anaesthetist presence (n)
NELA Year 1	11,635	9983 (86%)	9005 (77.6%)	8004 (68.9%)
NELA Year 2	12,793	11254 (88%)	10446 (81.7%)	9404 (73.5%)
NELA Year 3	13,005	11768 (90.5%)	11154 (85.8%)	10287 (79.1%)
NELA Year 4	12,260	11237 (91.7%)	10818 (88.2%)	10092 (82.3%)
NELA Year 5	12,069	11171 (92.6%)	10739 (89%)	10097 (83.7%)
NELA Year 6	12,091	11461 (94.8%)	11165 (92.3%)	10699 (88.5%)
NELA Year 7	10,525	10139 (96.3%)	9804 (93.1%)	9488 (90.1%)

Table 5.5.2 Consultant Surgeon and Anaesthetist present in theatre by documented risk of death

Preoperative Documented risk	Total patients (n)	Consultant surgeon presence (n %)	Consultant Anaesthetist presence (n %)	Surgeon and Anaesthetist presence (n %)
High	9,172	8865 (96.7)	8607 (93.8)	8344 (91)
Low	9,408	8774 (93.3)	8064 (85.7)	7659 (81.4)
Not Documented	3,266	3060 (93.7)	2808 (86)	2662 (81.5)

Table 5.5.3 Consultant Surgeon and Anaesthetist present in theatre by time of day of surgery

Audit year	Time of surgery	Total patients (n)	Consultant surgeon presence (n %)	Consultant Anaesthetist presence (n %)	Surgeon and Anaesthetist presence (n %)
NELA Year 5	00:00 to 08:00	1,395	1187 (85.1)	1090 (78.1)	985 (70.6)
NELA Year 5	08:00 to 12:00	2,562	2430 (94.8)	2362 (92.2)	2259 (88.2)
NELA Year 5	12:00 to 18:00	4,711	4429 (94)	4356 (92.5)	4115 (87.3)
NELA Year 5	18:00 to 00:00	2,998	2742 (91.5)	2600 (86.7)	2424 (80.9)
NELA Year 5	Missing	403	383 (95)	331 (82.1)	314 (77.9)
NELA Year 6	00:00 to 08:00	1,339	1189 (88.8)	1120 (83.6)	1035 (77.3)
NELA Year 6	08:00 to 12:00	2,625	2524 (96.2)	2485 (94.7)	2398 (91.4)
NELA Year 6	12:00 to 18:00	4,805	4629 (96.3)	4540 (94.5)	4390 (91.4)
NELA Year 6	18:00 to 00:00	2,979	2795 (93.8)	2712 (91)	2582 (86.7)
NELA Year 6	Missing	343	324 (94.5)	308 (89.8)	294 (85.7)
NELA Year 7	00:00 to 08:00	1,179	1112 (94.3)	1051 (89.1)	1005 (85.2)

Audit year	Time of surgery	Total patients (n)	Consultant surgeon presence (n %)	Consultant Anaesthetist presence (n %)	Surgeon and Anaesthetist presence (n %)
NELA Year 7	08:00 to 12:00	2,354	2284 (97)	2252 (95.7)	2188 (92.9)
NELA Year 7	12:00 to 18:00	4,005	3874 (96.7)	3770 (94.1)	3659 (91.4)
NELA Year 7	18:00 to 00:00	2,523	2420 (95.9)	2324 (92.1)	2241 (88.8)
NELA Year 7	Missing	464	449 (96.8)	407 (87.7)	395 (85.1)

6 Postoperative care

6.1 Postoperative admission to critical care

Table 6.1.1 Number of patients by type of postoperative destination (included in Annual report)

Postoperative destination	Audit year 4 - n(%)	Audit year 5 - n(%)	Audit year 6 - n(%)	Audit year 7 - n(%)
CCU	14980 (61.4)	15133 (61)	15892 (63)	12408 (56.8)
Died in theatre	50 (0.2)	58 (0.2)	47 (0.2)	38 (0.2)
Enhanced care area on a normal ward				608 (2.8)
Extended recovery area within theatres (eg PACU or OIR)				887 (4.1)
Other Enhanced care area (eg PACU)	1109 (4.5)	1461 (5.9)	1369 (5.4)	15 (0.1)
Ward	8243 (33.8)	8136 (32.8)	7906 (31.4)	7890 (36.1)

Table 6.1.2 Postoperative destination for patients with no documented risk.

Postoperative destination	Audit year 5 n(%)	Audit year 6 n(%)	Audit year 7 n(%)
CCU	2873 (50.8)	2117 (51.8)	1500 (45.9)
Died in theatre	7 (0.1)	7 (0.2)	4 (0.1)

Postoperative destination	Audit year 5 n(%)	Audit year 6 n(%)	Audit year 7 n(%)
Enhanced care area on a normal ward			88 (2.7)
Extended recovery area within theatres (eg PACU or OIR)			123 (3.8)
Other Enhanced care area (eg PACU)	322 (5.7)	202 (4.9)	2 (0.1)
Ward	2453 (43.4)	1758 (43)	1549 (47.4)

Table 6.1.3 Postoperative destination by Age group

Age group	Postoperative destination	Audit year 5 n(%)	Audit year 6 n(%)	Audit year 7 n(%)
18-24	CCU	247 (39.3)	232 (39.5)	188 (35.2)
18-24	Enhanced care area on a normal ward			14 (2.6)
18-24	Extended recovery area within theatres (eg PACU or OIR)			28 (5.2)
18-24	Other Enhanced care area (eg PACU)	37 (5.9)	38 (6.5)	1 (0.2)

Age group	Postoperative destination	Audit year 5 n(%)	Audit year 6 n(%)	Audit year 7 n(%)
18-24	Ward	344 (54.8)	318 (54.1)	303 (56.7)
25-34	CCU	494 (39.5)	506 (39.6)	355 (32.6)
25-34	Enhanced care area on a normal ward			42 (3.9)
25-34	Extended recovery area within theatres (eg PACU or OIR)			48 (4.4)
25-34	Other Enhanced care area (eg PACU)	90 (7.2)	93 (7.3)	
25-34	Ward	667 (53.3)	680 (53.2)	644 (59.1)
35-44	CCU	806 (44.5)	817 (46)	631 (40.7)
35-44	Enhanced care area on a normal ward			45 (2.9)
35-44	Extended recovery area within theatres (eg PACU or OIR)			80 (5.2)
35-44	Other Enhanced care area (eg PACU)	134 (7.4)	114 (6.4)	1 (0.1)
35-44	Ward	872 (48.1)	847 (47.6)	793 (51.2)

Age group	Postoperative destination	Audit year 5 n(%)	Audit year 6 n(%)	Audit year 7 n(%)
45-54	CCU	1572 (51.1)	1596 (51.5)	1274 (47.5)
45-54	Enhanced care area on a normal ward			101 (3.8)
45-54	Extended recovery area within theatres (eg PACU or OIR)			100 (3.7)
45-54	Other Enhanced care area (eg PACU)	185 (6)	192 (6.2)	2 (0.1)
45-54	Ward	1317 (42.8)	1309 (42.3)	1206 (44.9)
55-64	CCU	2541 (59.3)	2550 (59)	2032 (52.4)
55-64	Enhanced care area on a normal ward			127 (3.3)
55-64	Extended recovery area within theatres (eg PACU or OIR)			166 (4.3)
55-64	Other Enhanced care area (eg PACU)	257 (6)	261 (6)	2 (0.1)
55-64	Ward	1484 (34.7)	1513 (35)	1549 (40)
>=65	CCU	9473 (69.2)	10191 (72.3)	7928 (65.7)

Age group	Postoperative destination	Audit year 5 n(%)	Audit year 6 n(%)	Audit year 7 n(%)
>=65	Enhanced care area on a normal ward			279 (2.3)
>=65	Extended recovery area within theatres (eg PACU or OIR)			465 (3.9)
>=65	Other Enhanced care area (eg PACU)	758 (5.5)	671 (4.8)	9 (0.1)
>=65	Ward	3452 (25.2)	3239 (23)	3395 (28.1)

Table 6.1.4 Postoperative destination by Age group (<65 & ≥ 65)

Age group	Postoperative destination	Audit year 5 n(%)	Audit year 6 n(%)	Audit year 7 n(%)
<65	CCU	5660 (51.2)	5701 (51.5)	4480 (46)
<65	Died in theatre	17 (0.2)	10 (0.1)	16 (0.2)
<65	Enhanced care area on a normal ward			329 (3.4)
<65	Extended recovery area within theatres (eg PACU or OIR)			422 (4.3)

Age group	Postoperative destination	Audit year 5 n(%)	Audit year 6 n(%)	Audit year 7 n(%)
<65	Other Enhanced care area (eg PACU)	703 (6.4)	698 (6.3)	6 (0.1)
<65	Ward	4684 (42.3)	4667 (42.1)	4495 (46.1)
>=65	CCU	9473 (69)	10191 (72.1)	7928 (65.5)
>=65	Died in theatre	41 (0.3)	37 (0.3)	22 (0.2)
>=65	Enhanced care area on a normal ward			279 (2.3)
>=65	Extended recovery area within theatres (eg PACU or OIR)			465 (3.8)
>=65	Other Enhanced care area (eg PACU)	758 (5.5)	671 (4.7)	9 (0.1)
>=65	Ward	3452 (25.2)	3239 (22.9)	3395 (28.1)

Table 6.1.5 Postoperative destination by Age group (<65 & ≥ 65), for patients for whom risk was not documented.

Age group	Postoperative destination	Audit year 5 n(%)	Audit year 6 n(%)	Audit year 7 n(%)
<65	CCU	1270 (43.2)	906 (43.1)	662 (39.3)
<65	Died in theatre	3 (0.1)	1 (0)	2 (0.1)

Age group	Postoperative destination	Audit year 5 n(%)	Audit year 6 n(%)	Audit year 7 n(%)
<65	Enhanced care area on a normal ward			47 (2.8)
<65	Extended recovery area within theatres (eg PACU or OIR)			62 (3.7)
<65	Other Enhanced care area (eg PACU)	175 (5.9)	100 (4.8)	2 (0.1)
<65	Ward	1494 (50.8)	1093 (52)	910 (54)
>=65	CCU	1603 (59.1)	1211 (61)	838 (53)
>=65	Died in theatre	4 (0.1)	6 (0.3)	2 (0.1)
>=65	Enhanced care area on a normal ward			41 (2.6)
>=65	Extended recovery area within theatres (eg PACU or OIR)			61 (3.9)
>=65	Other Enhanced care area (eg PACU)	147 (5.4)	102 (5.1)	
>=65	Ward	959 (35.3)	665 (33.5)	639 (40.4)

Table 6.1.6 Postoperative destination by ASA Score

ASA Score	Postoperative destination	Audit year 5 n(%)	Audit year 6 n(%)	Audit year 7 n(%)
1	CCU	718 (31.3)	820 (33.7)	544 (28.3)
1	Died in theatre	1 (0)		
1	Enhanced care area on a normal ward			65 (3.4)
1	Extended recovery area within theatres (eg PACU or OIR)			107 (5.6)
1	Other Enhanced care area (eg PACU)	190 (8.3)	165 (6.8)	1 (0.1)
1	Ward	1383 (60.3)	1445 (59.5)	1206 (62.7)
2	CCU	4018 (45.2)	4319 (47.4)	3280 (40.3)
2	Died in theatre	3 (0)	5 (0.1)	5 (0.1)
2	Enhanced care area on a normal ward			289 (3.6)
2	Extended recovery area within theatres (eg PACU or OIR)			403 (5)
2	Other Enhanced care area (eg PACU)	641 (7.2)	659 (7.2)	5 (0.1)

ASA Score	Postoperative destination	Audit year 5 n(%)	Audit year 6 n(%)	Audit year 7 n(%)
2	Ward	4225 (47.5)	4128 (45.3)	4157 (51.1)
3	CCU	6226 (69.7)	6689 (72.9)	5485 (66.1)
3	Died in theatre	8 (0.1)	6 (0.1)	6 (0.1)
3	Enhanced care area on a normal ward			222 (2.7)
3	Extended recovery area within theatres (eg PACU or OIR)			324 (3.9)
3	Other Enhanced care area (eg PACU)	519 (5.8)	445 (4.8)	7 (0.1)
3	Ward	2176 (24.4)	2040 (22.2)	2250 (27.1)
4	CCU	3763 (89.1)	3736 (90.3)	2862 (88.4)
4	Died in theatre	27 (0.6)	18 (0.4)	20 (0.6)
4	Enhanced care area on a normal ward			31 (1)
4	Extended recovery area within theatres (eg PACU or OIR)			50 (1.5)

ASA Score	Postoperative destination	Audit year 5 n(%)	Audit year 6 n(%)	Audit year 7 n(%)
4	Other Enhanced care area (eg PACU)	109 (2.6)	97 (2.3)	2 (0.1)
4	Ward	326 (7.7)	286 (6.9)	271 (8.4)
5	CCU	408 (89.7)	328 (92.1)	237 (93.3)
5	Died in theatre	19 (4.2)	18 (5.1)	7 (2.8)
5	Enhanced care area on a normal ward			1 (0.4)
5	Extended recovery area within theatres (eg PACU or OIR)			3 (1.2)
5	Other Enhanced care area (eg PACU)	2 (0.4)	3 (0.8)	
5	Ward	26 (5.7)	7 (2)	6 (2.4)

Table 6.1.7 Documented Assessment of Risk by destination for postoperative care

Preoperative Documented Risk	Postoperative destination	Audit year 5 n(%)	Audit year 6 n(%)	Audit year 7 n(%)
High	CCU	9050 (82.2)	9614 (86.5)	7592 (82.8)
High	Died in theatre	51 (0.5)	37 (0.3)	34 (0.4)

Preoperative Documented Risk	Postoperative destination	Audit year 5 n(%)	Audit year 6 n(%)	Audit year 7 n(%)
High	Enhanced care area on a normal ward			133 (1.5)
High	Extended recovery area within theatres (eg PACU or OIR)			232 (2.5)
High	Other Enhanced care area (eg PACU)	460 (4.2)	345 (3.1)	2 (0)
High	Ward	1451 (13.2)	1118 (10.1)	1179 (12.9)
Low	CCU	3210 (39.5)	4161 (41.5)	3316 (35.2)
Low	Died in theatre		3 (0)	
Low	Enhanced care area on a normal ward			387 (4.1)
Low	Extended recovery area within theatres (eg PACU or OIR)			532 (5.7)
Low	Other Enhanced care area (eg PACU)	679 (8.4)	822 (8.2)	11 (0.1)
Low	Ward	4232 (52.1)	5030 (50.2)	5162 (54.9)
Not Documented	CCU	2873 (50.8)	2117 (51.8)	1500 (45.9)

Preoperative Documented Risk	Postoperative destination	Audit year 5 n(%)	Audit year 6 n(%)	Audit year 7 n(%)
Not Documented	Died in theatre	7 (0.1)	7 (0.2)	4 (0.1)
Not Documented	Enhanced care area on a normal ward			88 (2.7)
Not Documented	Extended recovery area within theatres (eg PACU or OIR)			123 (3.8)
Not Documented	Other Enhanced care area (eg PACU)	322 (5.7)	202 (4.9)	2 (0.1)
Not Documented	Ward	2453 (43.4)	1758 (43)	1549 (47.4)

Table 6.1.8 Postoperative destination by Assessment of Risk

Postoperative destination	Preoperative Documented Risk	Audit year 5 n(%)	Audit year 6 n(%)	Audit year 7 n(%)
CCU	High	9050 (59.8)	9614 (60.5)	7592 (61.2)
CCU	Low	3210 (21.2)	4161 (26.2)	3316 (26.7)
CCU	Not Documented	2873 (19)	2117 (13.3)	1500 (12.1)
Enhanced care area on a normal ward	High			133 (21.9)

Postoperative destination	Preoperative Documented Risk	Audit year 5 n(%)	Audit year 6 n(%)	Audit year 7 n(%)
Enhanced care area on a normal ward	Low			387 (63.7)
Enhanced care area on a normal ward	Not Documented			88 (14.5)
Extended recovery area within theatres (eg PACU or OIR)	High			232 (26.2)
Extended recovery area within theatres (eg PACU or OIR)	Low			532 (60)
Extended recovery area within theatres (eg PACU or OIR)	Not Documented			123 (13.9)
Other Enhanced care area (eg PACU)	High	460 (31.5)	345 (25.2)	2 (13.3)
Other Enhanced care area (eg PACU)	Low	679 (46.5)	822 (60)	11 (73.3)
Other Enhanced care area (eg PACU)	Not Documented	322 (22)	202 (14.8)	2 (13.3)

Postoperative destination	Preoperative Documented Risk	Audit year 5 n(%)	Audit year 6 n(%)	Audit year 7 n(%)
Ward	High	1451 (17.8)	1118 (14.1)	1179 (14.9)
Ward	Low	4232 (52)	5030 (63.6)	5162 (65.4)
Ward	Not Documented	2453 (30.1)	1758 (22.2)	1549 (19.6)

Table 6.1.9 Frail patients by postoperative destination

Postoperative destination	Preoperative Documented Risk	Audit year 5 n(%)	Audit year 6 n(%)	Audit year 7 n(%)
Frail	CCU	1187 (78.4)	4537 (79.8)	3815 (73.5)
Frail	Died in theatre	4 (0.3)	17 (0.3)	16 (0.3)
Frail	Enhanced care area on a normal ward			99 (1.9)
Frail	Extended recovery area within theatres (eg PACU or OIR)			164 (3.2)
Frail	Other Enhanced care area (eg PACU)	80 (5.3)	216 (3.8)	5 (0.1)
Frail	Ward	243 (16.1)	917 (16.1)	1092 (21)
Not Frail	CCU	1500 (59.8)	9524 (57.2)	7682 (51.1)
Not Frail	Died in theatre	6 (0.2)	25 (0.2)	17 (0.1)

Postoperative destination	Preoperative Documented Risk	Audit year 5 n(%)	Audit year 6 n(%)	Audit year 7 n(%)
Not Frail	Enhanced care area on a normal ward			467 (3.1)
Not Frail	Extended recovery area within theatres (eg PACU or OIR)			658 (4.4)
Not Frail	Other Enhanced care area (eg PACU)	191 (7.6)	994 (6)	9 (0.1)
Not Frail	Ward	813 (32.4)	6116 (36.7)	6213 (41.3)

7 Care of the older patient

7.1 Frailty, age and patients having emergency laparotomy

Table 7.1.1 Proportion of patients aged 65 or over, who had an Emergency Laparotomy

Audit year	Age group	Total patients (n)	Total patients (%)
NELA Year 5	<65	11,064	44.6
NELA Year 5	>=65	13,724	55.4
NELA Year 6	<65	11,076	43.9
NELA Year 6	>=65	14,138	56.1
NELA Year 7	<65	9,748	44.6
NELA Year 7	>=65	12,098	55.4

Table 7.1.2 Proportion of patients over the age of 80 and over, who had an Emergency Laparotomy

Audit year	Total patients (n)	Total patients (%)
NELA Year 5	4,797	19.4
NELA Year 6	4,775	18.9
NELA Year 7	3,963	18.1

Table 7.1.3 Proportion of patients aged 65 and frail and 80 years old or over

Total patients (n)	Patients over 65 years old n(%)	Patients over 65 years old and frail n(%)	Patients over 80 n(%)	Patients over 80 and frail n(%)
21,846	12098 (55.4)	4194 (34.7)	3963 (18.1)	1965 (49.6)

Table 7.1.4 Proportion of patients aged 65 and frail (CFS >= 5) were assessed by a Geriatrician

Audit year	Total patients (n)	Assessed by Geriatrician (n)	Assessed by Geriatrician (%)
NELA Year 5	1,335	488	36.6
NELA Year 6	4,709	1,394	29.6
NELA Year 7	4,194	1,144	27.3

Table 7.1.5 Proportion of patients aged 80 years old or over who were assessed by a geriatrician

Audit year	Total patients (n)	Assessed by Geriatrician (n)	Assessed by Geriatrician (%)
NELA Year 5	4,797	1,284	26.8
NELA Year 6	4,775	1,449	30.3
NELA Year 7	3,963	1,138	28.7

Table 7.1.6 Proportion of Patients aged 65 and frail (CFS \geq 5) or over 80 years old assessed by a geriatrician

Audit Year	Total patients (n)	Assessed by Geriatrician (n)	Assessed by Geriatrician (%)
NELA Year 1	4,136	558	13.5
NELA Year 2	4,684	659	14.1
NELA Year 3	4,904	938	19.1
NELA Year 4	4,667	1,198	25.7
NELA Year 5	5,322	1,465	27.5
NELA Year 6	7,139	2,084	29.2
NELA Year 7	6,175	1,675	27.1

Table 7.1.7 Proportion of patients aged over 65 who had frailty assessment

Audit Year	Total patients (n)	Frailty assessed (n)	Frailty assessed (%)
NELA Year 6	14,138	12,315	87.1
NELA Year 7	12,098	11,105	91.8

Table 7.1.8 Length of stay for patients over 65 and frail and 80 years old or over (Only includes patients who survived to discharge or with a locked record while still in hospital at 60 days)

Audit year	Aged 80 or over - Mean LOS	Aged 80 or over - Median LOS	Aged 80 or over - IQR LOS	Aged 65 or over and frail - Mean LOS	Aged 65 or over and frail - Median LOS	Aged 65 or over and frail - IQR LOS
NELA Year 5	19.7	14	[9-24]	21.9	16	[10-28]
NELA Year 6	18.8	14	[9-23]	20.6	15	[9-26]
NELA Year 7	17.4	13	[8-22]	18.3	14	[8-23]

Table 7.1.9 ONS 30-day mortality for patients aged 65 and frail and 80 and over

Audit year	Aged 80 or over n	Aged 80 or over - 30-day mortality	Aged 65 or over n	Aged 65 or over - 30-day mortality	Aged 65 or over and frail n	Aged 65 or over and frail - 30-day mortality
NELA Year 5	4,797	816 (17%)	13,724	1890 (13.8%)	1,335	310 (23.2%)
NELA Year 6	4,775	769 (16.1%)	14,138	1831 (13%)	4,709	927 (19.7%)
NELA Year 7	3,963	564 (14.2%)	12,098	1435 (11.9%)	4,194	782 (18.6%)

Table 7.1.10 Proportion of patients over the age of 65 years who had a frailty assessment by mortality

Frailty Assessment	Number of patients in total	30-day mortality	90-day mortality
Frail (CFS \geq 5)	4,194	18.6	26.1
Not Frail (CFS < 5)	6,911	7.6	11.5
Unknown/Missing	993	12.8	17.7

Table 7.1.11 Patients with frailty assessment CFS \geq 5 by Documented Risk and 30-day mortality **in Year 7**

Preoperative Risk of death	Frail (Year 7 n)	Frail (Year 7 %)	30-day Mortality for frail patient (Year 7 n)	30-day Mortality for frail patient (Year 7 %)
High	3,672	70.7	818	22.3
Low	945	18.2	46	4.9
Not Documented	574	11.1	78	13.6

Table 7.1.12 Patients with frailty assessment CFS \geq 5 by Documented Risk and 30-day mortality **in Year 6**

Preoperative Risk of death	Frail (Year 6 n)	Frail (Year 6 %)	30-day Mortality for frail patient (Year 6 n)	30-day Mortality for frail patient (Year 6 %)
High	4,134	72.7	950	23.0
Low	937	16.5	49	5.2
Not Documented	616	10.8	91	14.8

7.2 Deaths during surgery and end of life care pathways

Table 7.2.1 Patients who died in theatre or were on End of Life pathway

Audit Year	Total patients (n)	In-hospital death (n)	Died in theatre (n)	Patients on End of life Pathway (n)
NELA Year 6	25,214	2,430	47	359
NELA Year 7	21,846	1,970	38	335

Table 7.2.2 Indication for Surgery for patients who died in theatre

Audit Year	Patients who died in theatre	Indication for Surgery - Sepsis
NELA Year 6	47	59.6
NELA Year 7	38	60.5

Table 7.2.3 Patients who died in theatre by age group

Audit Year	Age group	Died in theatre (n)	Died in theatre (%)
NELA Year 6	<65	10	21.3
NELA Year 6	>=65	37	78.7
NELA Year 7	<65	16	42.1
NELA Year 7	>=65	22	57.9

Table 7.2.4 Consultant presence for patients who died in theatre

Consultant surgeon presence n(%)	Consultant Anaesthetist presence n(%)	Consultant Surgeon and Anaesthetist presence n(%)
37 (97.4%)	38 (100%)	37 (97.4%)

Figure 7.3.1 Number of patients placed on end of life pathway (EoL) by operative finding

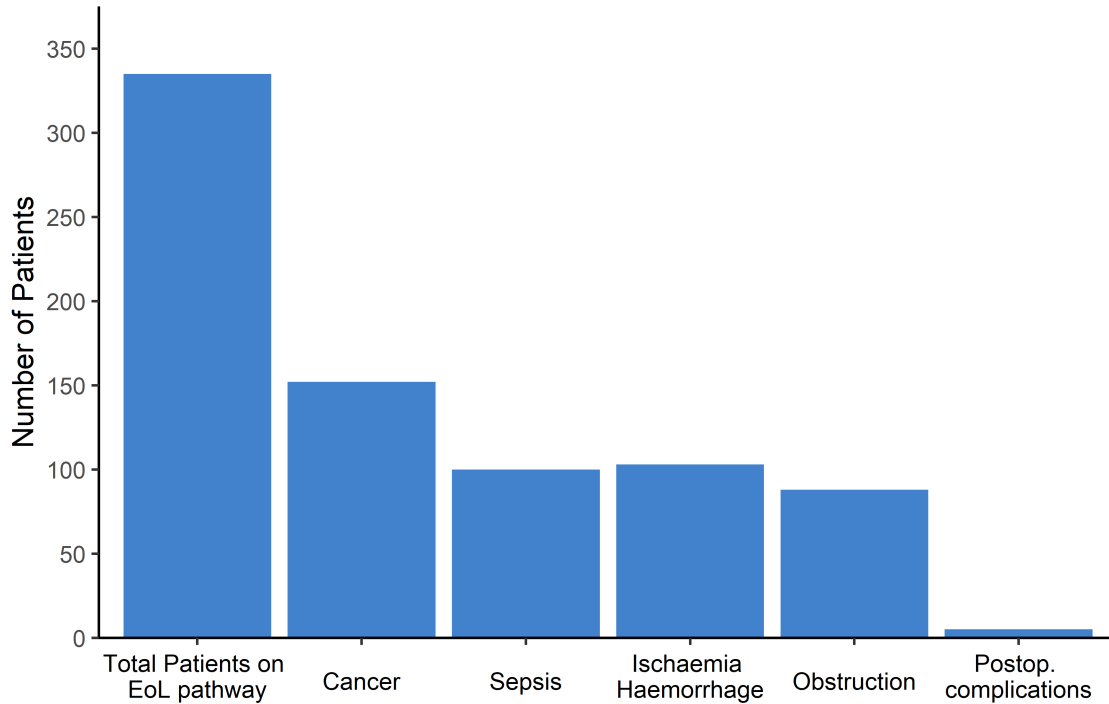


Table 7.2.5 Postoperative destination for care following surgery by time of surgery

Time of surgery	CCU	Died in theatre	Enhanced care area on a normal ward	Extended recovery area within theatres (eg PACU or OIR)	Other Enhanced care area (eg PACU)	Ward
00:00 to 08:00	70.2	0.1	1.7	3.6	0.1	24.3
08:00 to 12:00	51.1	0.1	3.3	4.6	0.0	40.8
12:00 to 18:00	54.2	0.1	3.1	4.3	0.1	38.2
18:00 to 00:00	63.9	0.2	2.2	3.5	0.0	30.1
Missing	50.9	0.6	2.0	2.8		43.7

Table 7.2.6 End of life pathway by age group (<65 & ≥ 65)

Age group	End of Life Pathway (n)
<65	103
>=65	232

Table 7.2.7 Proportion of patients on End of Life Pathway according to Findings

Audit Year	End of Life Pathway	Total patients	Cancer n(%)	Sepsis n(%)	Ischaemia Haemorrhage n(%)	Obstructio n(%)	Postop complications n(%)
NELA Year 7	No	19,230	3669 (19.1%)	7482 (38.9%)	2339 (12.2%)	9257 (48.1%)	887 (4.6%)
NELA Year 7	Yes	335	152 (45.4%)	100 (29.9%)	103 (30.7%)	88 (26.3%)	5 (1.5%)
NELA Year 7	Missing	2,281	471 (20.6%)	829 (36.3%)	282 (12.4%)	1054 (46.2%)	135 (5.9%)

8 Outcomes

8.1 Risk-adjusted mortality

Figure 8.1.1 Trendline of 30-day inpatient and mortality rates over time, by date of operation (ONS Combined - when ONS mortality when not available, it was supplemented with in-hospital mortality)

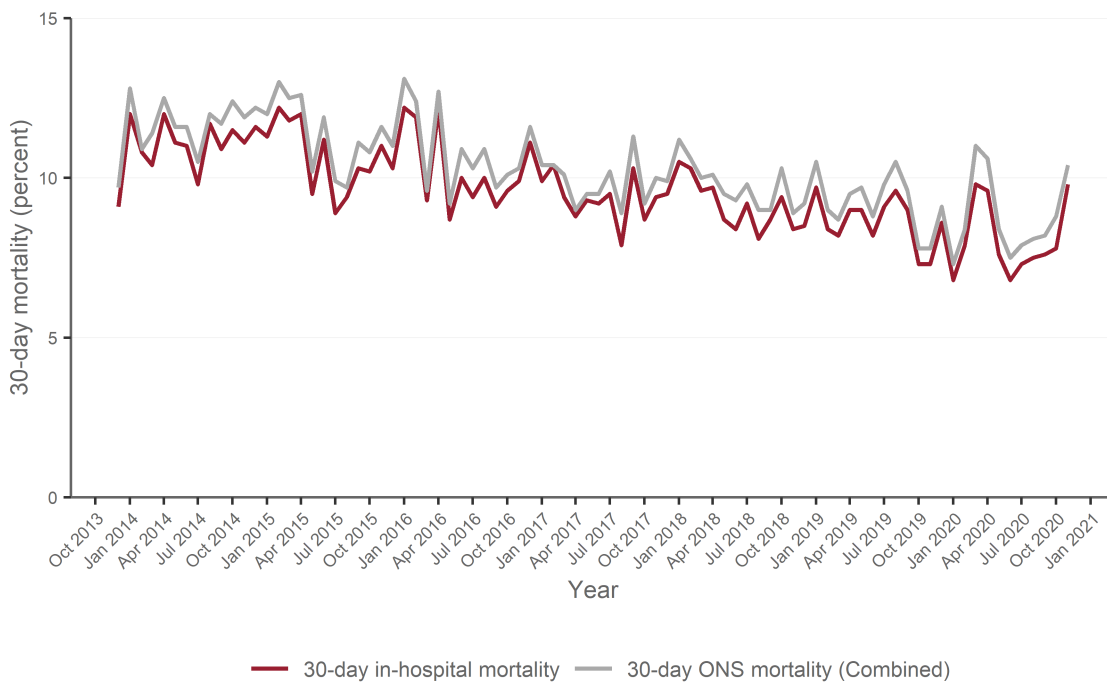


Table 8.1.3 mortality by Audit Year

Audit Year	Total patients	30-day mortality n(%)	90-day mortality n(%)
NELA Year 4	24,382	2442 (10%)	3317 (13.6%)
NELA Year 5	24,788	2428 (9.8%)	3289 (13.3%)
NELA Year 6	25,214	2331 (9.2%)	3255 (12.9%)
NELA Year 7	21,846	1905 (8.7%)	2743 (12.6%)

Table 8.1.4 Mortality rate by operative finding

Operative Findings	Total patients	30-day mortality	90-day mortality
Adhesions	6,397	6.1	9.0
Perforation Small Bowel / Colon	4,291	13.2	17.0
Intestinal Ischaemia	2,437	19.1	23.1
Abscess	2,191	8.2	11.1
Colorectal Cancer	2,130	7.7	15.3
Malignancy Localised	2,048	6.8	11.4
Incarcerated Hernia	1,573	7.4	9.5
Diverticulitis	1,422	6.3	8.3
Perforation Peptic Ulcer	1,288	11.5	14.7
Internal Hernia	1,269	6.7	9.1
Malignancy Disseminated	1,193	15.4	34.3
Stricture	1,151	5.9	9.6
Volvulus	1,008	7.1	10.6
Crohn's Disease	683	1.8	2.9
Anastomotic Leak	445	8.8	12.1
Intestinal Fistula	413	6.5	10.7

Operative Findings	Total patients	30-day mortality	90-day mortality
Ulcerative Colitis	393	2.8	4.8
Stoma Complications	273	7.7	11.7
Gallstone Ileus	266	4.9	7.9
Colitis	265	12.1	13.6
Normal Findings	262	13.7	17.9
Meckels Diverticulum	210	2.9	4.8
Foreign Body	208	1.4	3.4
Haemorrhage Intestinal	194	13.9	18.6
Haemorrhage Post-Op	188	10.1	14.4
Intussusception	185	3.2	5.9
Pseudo-obstruction	145	12.4	18.6
Wound Dehiscence	124	8.1	11.3
Haemorrhage Peptic Ulcer	110	21.8	24.5
Gastric Cancer	79	8.9	30.4
Necrotising Fasciitis	37	16.2	18.9

Operative Findings	Total patients	30-day mortality	90-day mortality
Abdominal Compartment Syndrome	20	40.0	45.0

8.2 Length of stay (LOS)

Table 8.2.1 Postoperative length of stay (in days), by Audit Year

(Only includes patients who survived to discharge or with a locked record while still in hospital at 60 days)

Audit year	Total patients (n)	LOS (Mean and Standard deviation))	LOS (Median and IQR)
NELA Year 4	21,790	16.9 SD (18.4)	11 (7-20)
NELA Year 5	22,214	16.7 SD (18.4)	11 (7-19)
NELA Year 6	22,784	16.2 SD (17)	11 (7-19)
NELA Year 7	19,876	15.1 SD (16)	10 (6-18)

Table 8.2.2 Postoperative length of stay (in days), by Age

(Only includes patients who survived to discharge or with a locked record while still in hospital at 60 days)

Age interval	LOS (Mean and Standard deviation))	LOS (Median and IQR)
18-24	11.7 SD (14.5)	7 (5-12)
25-34	10.9 SD (13)	7 (5-11)
35-44	12.7 SD (16.9)	8 (5-14)

Age interval	LOS (Mean and Standard deviation))	LOS (Median and IQR)
45-54	13.7 SD (15.1)	9 (6-15)
55-64	15.2 SD (17.9)	9 (6-17)
>=65	16.4 SD (15.6)	11 (7-20)

Table 8.2.3 Postoperative length of stay (in days), by Age group

(Only includes patients who survived to discharge or with a locked record while still in hospital at 60 days)

Age interval	LOS (Mean and Standard deviation))	LOS (Median and IQR)
40_49	13 SD (15.7)	8 (5-14)
50_59	14.3 SD (15.7)	9 (6-16)
60_69	15.7 SD (18.6)	10 (6-18)
70_79	16.1 SD (15.5)	11 (7-19)
80_89	17.4 SD (14.9)	13 (8-22)
>=90	17.4 SD (12.5)	14 (9-22)
18_39	11.6 SD (14.3)	7 (5-12)

Table 8.2.4 Postoperative length of stay (in days), by Documented Risk

(Only includes patients who survived to discharge or with a locked record while still in hospital at 60 days)

Preop. Documented Risk	LOS (Mean and Standard deviation))	LOS (Median and IQR)
High	20.3 SD (18.5)	14 (9-25)

Preop. Documented Risk	LOS (Mean and Standard deviation)	LOS (Median and IQR)
Low	11.3 SD (12.3)	8 (5-13)
Not Documented	13.9 SD (16)	9 (6-15)

Table 8.2.5 Postoperative length of stay (in days), by ASA Score

(Only includes patients who survived to discharge or with a locked record while still in hospital at 60 days)

ASA Score	LOS (Mean and Standard deviation)	LOS (Median and IQR)
1	9.5 SD (13.3)	7 (5-10)
2	11.9 SD (13)	8 (5-13)
3	16.6 SD (15.8)	12 (7-20)
4	24.6 SD (20.3)	18 (10-33)
5	37.9 SD (35.2)	29 (14-60)

8.3 Unplanned returns to theatre

Table 8.3.1 Return to theatre

Return to theatre	Audit Year 4 n(%)	Audit Year 5 n(%)	Audit Year 6 n(%)	Audit Year 7 n(%)
Missing	50 (0.2%)	58 (0.2%)	47 (0.2%)	38 (0.2%)
No return to theatre	22576 (92.6%)	22232 (89.7%)	22752 (90.2%)	19859 (90.9%)

Return to theatre	Audit Year 4 n(%)	Audit Year 5 n(%)	Audit Year 6 n(%)	Audit Year 7 n(%)
One or more returns	1463 (6%)	2189 (8.8%)	2188 (8.7%)	1779 (8.1%)
Unknown	293 (1.2%)	309 (1.2%)	227 (0.9%)	170 (0.8%)

Table 8.3.2 Unplanned return to theatre

Unplanned return to theatre	Audit Year 4 n(%)	Audit Year 5 n(%)	Audit Year 6 n(%)	Audit Year 7 n(%)
Missing	50 (0.2%)	58 (0.2%)	47 (0.2%)	38 (0.2%)
No return	22576 (92.6%)	22232 (89.7%)	22752 (90.2%)	19859 (90.9%)
Planned return		745 (3%)	798 (3.2%)	607 (2.8%)
Unknown	293 (1.2%)	309 (1.2%)	227 (0.9%)	170 (0.8%)
Unpl. & planned return		120 (0.5%)	122 (0.5%)	129 (0.6%)
Unplanned return	1463 (6%)	1324 (5.3%)	1268 (5%)	1043 (4.8%)

Table 8.3.3 Unplanned return to theatre, by Documented Risk

Unplanned return to theatre	High	Low	Not Documented
Missing	34 (0.4%)		4 (0.1%)
No return	8062 (87.9%)	8844 (94%)	2953 (90.4%)
Planned return	407 (4.4%)	116 (1.2%)	84 (2.6%)
Unknown	68 (0.7%)	66 (0.7%)	36 (1.1%)

Unplanned return to theatre	High	Low	Not Documented
Unpl. & planned return	95 (1%)	19 (0.2%)	15 (0.5%)
Unplanned return	506 (5.5%)	363 (3.9%)	174 (5.3%)

Table 8.3.4 Unplanned return to theatre by Urgency of Surgery (cases with NCEPOD missing removed)

Unplanned return to theatre	Immediate < 2hrs	Urgency 2-6hrs	Urgency 6-18hrs	Expedited > 18hrs
Missing	23 (1%)	9 (0.1%)	6 (0.1%)	
No return	1799 (81.1%)	7584 (90.2%)	7013 (93%)	3459 (94%)
Planned return	189 (8.5%)	275 (3.3%)	109 (1.4%)	34 (0.9%)
Unknown	25 (1.1%)	50 (0.6%)	66 (0.9%)	29 (0.8%)
Unpl. & planned return	32 (1.4%)	54 (0.6%)	30 (0.4%)	13 (0.4%)
Unplanned return	150 (6.8%)	437 (5.2%)	313 (4.2%)	143 (3.9%)

Table 8.3.5 Unplanned return to theatre by consultant presence

Unplanned return to theatre	Consultant Surgeon presence	Consultant Anaesthetist presence	Surgeon and Anaesthetist presence
Missing	37 (97.4%)	38 (100%)	37 (97.4%)
No return	18788 (94.6%)	17678 (89%)	16920 (85.2%)
Planned return	590 (97.2%)	560 (92.3%)	546 (90%)
Unknown	160 (94.1%)	148 (87.1%)	142 (83.5%)

Unplanned return to theatre	Consultant Surgeon presence	Consultant Anaesthetist presence	Surgeon and Anaesthetist presence
Unpl.& planned return	128 (99.2%)	117 (90.7%)	116 (89.9%)
Unplanned return	996 (95.5%)	938 (89.9%)	904 (86.7%)

Table 8.3.6 Postoperative length of stay (in days) for patients who had an unplanned return to theatre (Only includes patients who survived to discharge or with a locked record while still in hospital at 60 days)

Unplanned return to theatre	LOS (Mean and Standard deviation))	LOS (Median and IQR)
Missing	4 SD (NA)	4 (4-4)
No return	13.5 SD (13.7)	9 (6-16)
Planned return	35.9 SD (28.2)	29 (16-51)
Unknown	20.6 SD (30.6)	11 (7-21.5)
Unpl.& planned return	47.8 SD (26.4)	48 (30-60)
Unplanned return	33.6 SD (22.8)	28 (16-48)

Table 8.3.7 Postoperative length of stay (in days) for patients who had a return to theatre (Only includes patients who survived to discharge or with a locked record while still in hospital at 60 days)

Return to theatre	LOS (Mean and Standard deviation))	LOS (Median and IQR)
Missing	4 SD (NA)	4 (4-4)

Return to theatre	LOS (Mean and Standard deviation))	LOS (Median and IQR)
No return to theatre	13.5 SD (13.7)	9 (6-16)
One or more returns	35.3 SD (25.2)	29 (17-51)
Unknown	20.6 SD (30.6)	11 (7-21.5)

Table 8.3.8 Unplanned return to theatre by 30-day and 90-day mortality

Unplanned return to theatre	Total patients	30-day mortality n(%)	90-day mortality n(%)
Missing	38 (0.2%)	37 (97.4%)	37 (97.4%)
No return	19859 (90.9%)	1573 (7.9%)	2289 (11.5%)
Planned return	607 (2.8%)	102 (16.8%)	135 (22.2%)
Unknown	170 (0.8%)	15 (8.8%)	29 (17.1%)
Unpl.& planned return	129 (0.6%)	31 (24%)	41 (31.8%)
Unplanned return	1043 (4.8%)	147 (14.1%)	212 (20.3%)

8.4 Unplanned admission to critical care

Table 8.4.1 Postoperative destination following original laparotomy for patients who had an unplanned admission to critical care

Postoperative Destination for Patients with unplanned admission to critical care	Audit Year 4 n(%)	Audit Year 5 n(%)	Audit Year 6 n(%)	Audit Year 7 n(%)
CCU	596 (72.6)	617 (73.7)	566 (76.2)	495 (70.9)
Enhanced care area on a normal ward				12 (1.7)
Extended recovery area within theatres (eg PACU or OIR)				18 (2.6)
Other Enhanced care area (eg PACU)	50 (6.1)	46 (5.5)	30 (4)	
Ward	175 (21.3)	174 (20.8)	147 (19.8)	173 (24.8)

Table 8.4.2 Proportion of patients with unplanned admission to critical care

Unplanned Critical Care Admission	Audit Year 4 n(%)	Audit Year 5 n(%)	Audit Year 6 n(%)	Audit Year 7 n(%)
No unplanned admission to ccu	23343 (95.7)	23727 (95.7)	24314 (96.4)	21017 (96.2)
Unknown/Missing	218 (0.9)	224 (0.9)	157 (0.6)	131 (0.6)
Unplanned admission to ccu	821 (3.4)	837 (3.4)	743 (2.9)	698 (3.2)

Table 8.4.3 Postoperative length of stay (in days) for patients who had an unplanned admission to critical

care

(Only includes patients who survived to discharge or with a locked record while still in hospital at 60 days)

Unplanned Admission to Critical Care	LOS (Mean and Standard deviation))	LOS (Median and IQR)
No unplanned admission to ccu	14.7 SD (15.4)	10 (6-17)
Unknown/Missing	22.3 SD (36.3)	12 (6-23.5)
Unplanned admission to ccu	30.2 SD (24.9)	22.5 (13-40)

Table 8.4.4 Proportion of patients who had an unplanned admission to critical care and ONS 30-day mortality

Unplanned Critical Care Admission	Total patients n(%)	30-day Mortality n(%)
No unplanned admission to ccu	21017 (96.2)	1734 (8.3)
Unknown/Missing	131 (0.6)	48 (36.6)
Unplanned admission to ccu	698 (3.2)	123 (17.6)

9 Appendices

The indication for surgery groups include the following variables:

Group name	field in database
Sepsis	S05Ind_Peritonitis
Sepsis	S05Ind_Perforation
Sepsis	S05Ind_AbdominalAbscess
Sepsis	S05Ind_AnastomoticLeak
Sepsis	S05Ind_SepsisOther
Sepsis	S05Ind_IntestinalFistula
Sepsis	S05Ind_Phlegmon
Sepsis	S05Ind_Colitis
Sepsis	S05Ind_Acidosis
Sepsis	S05Ind_IatrogenicInjury
Sepsis	S05Ind_Pneumoperitoneum
Obstruction	S05Ind_IntestinalObstruction
Obstruction	S05Ind_SmallBowelObstruction
Obstruction	S05Ind_LargeBowelObstruction
Obstruction	S05Ind_Volvulus
Obstruction	S05Ind_InternalHernia
Obstruction	S05Ind_PseudoObstruction
Obstruction	S05Ind_Intussusception
Obstruction	S05Ind_IncarceratedHernia
Obstruction	S05Ind_ForeignBody

Group name	field in database
Obstruction	S05IndicationForSurgery_HiatusHernia
Obstruction	S05Ind_ObstructingIncisionHernia
Ischaemia	S05Ind_Necrosis
Ischaemia	S05Ind_Ischaemia
Bleeding	S05Ind_Haemorrhage
Other	S05Ind_PlannedRelook
Other	S05Ind_Other
Other	S05Ind_OtherDetails
Other	S05Ind_WoundDehiscence
Other	S05Ind_AbdoCompartmentSynd

The findings groups include the following variables:

Group name	field in database
Sepsis	S05Find_Abscess
Sepsis	S05Find_OtherColitis
Sepsis	S05Find_PerforationPepticUlcer
Sepsis	S05Find_PerforationSBColonc
Sepsis	S05Find_Diverticulitis
Sepsis	S05Find_IntestinalFistula
Sepsis	S05Find_UlcerativeColitis

Group name	field in database
Sepsis	S05Find_Colitis
Sepsis	S05Find_CrohnsDisease
Sepsis	S05Find_NecrotisingFasciitis
Sepsis	S05Find_MeckelsDiverticulum
Obstruction	S05Find_ForeignBody
Obstruction	S05Find_Adhesions
Obstruction	S05Find_IncarceratedHernia
Obstruction	S05Find_Volvulus
Obstruction	S05Find_InternalHernia
Obstruction	S05Find_Intussusception
Obstruction	S05Find_Stricture
Obstruction	S05Find_PseudoObstruction
Obstruction	S05Find_GallstoneIleus
Cancer	S05Find_MalignancyLocalised
Cancer	S05Find_ColorectalCancer
Cancer	S05Find_MalignancyDisseminated
Cancer	S05Find_GastricCancer
Post-op complications	S05Find_StomaComplications
Post-op complications	S05Find_WoundDehiscence
Post-op complications	S05Find_HaemorrhagePostOp

Group name	field in database
Post-op complications	S05Find_AnastomoticLeak
Post-op complications	S05Find_AbdoCompartmentSynd
Ischaemia and Haemorrhage	S05Find_HaemorrhagePepticUlcer
Ischaemia and Haemorrhage	S05Find_IntestinalIschaemia
Ischaemia and Haemorrhage	S05Find_HaemorrhageIntestinal
Ischaemia	S05Find_IntestinalIschaemia
Haemorrhage	S05Find_HaemorrhagePepticUlcer
Haemorrhage	S05Find_HaemorrhageIntestinal



10 Contacts

Please contact the **NELA team** for any questions about the audit or data collection.

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