Future Provision of Emergency Surgery in the UK

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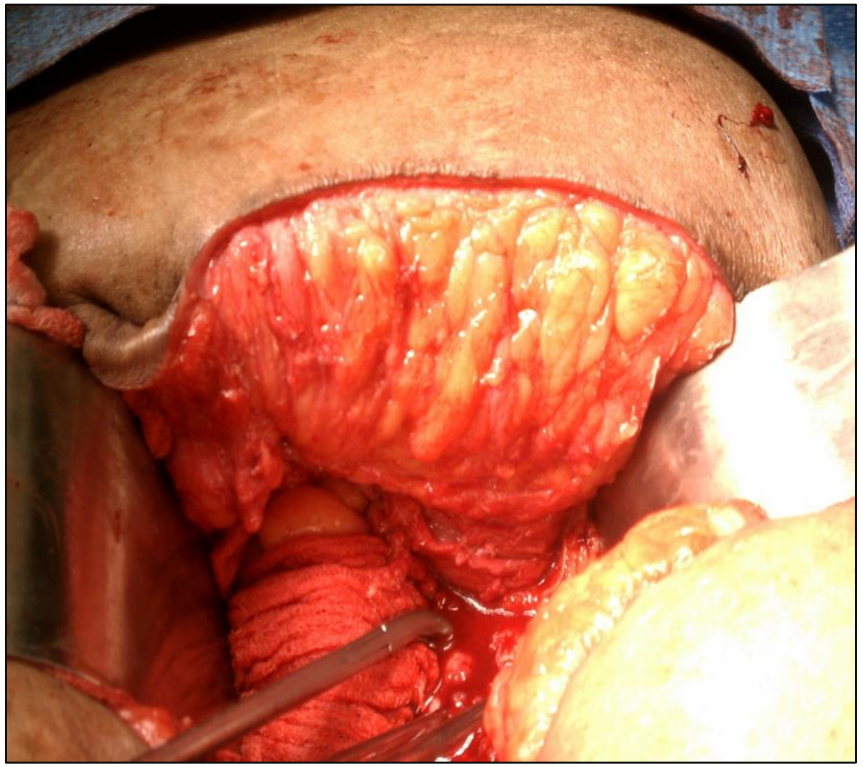
UEMS
Belfast
May 2016

Emergency surgery 1990's

- Trainee delivered
- Fitted around the elective service
- Experience +++
- Minimal oversight
- Variable outcomes



Emergency general surgery - UK

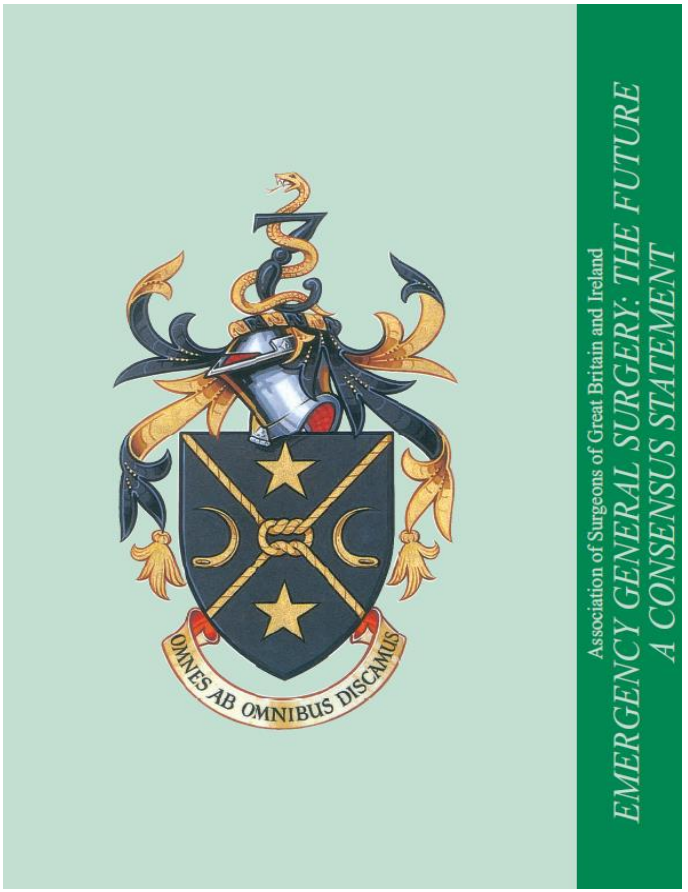
Early 21st century surgery UK

- Times of plenty….
- Cash injection into NHS
- Focus on reduction of waiting times
- Increased elective resources
- Relative under funding of acute care
- Wide variation in quality of emergency general surgery

Future provision of emergency general surgery

Variations in outcome

- Failure to prioritise
- Inadequate senior input
- Inadequate clinical leadership
- Unsatisfactory resources of infrastructure
- Unsatisfactory resources of manpower
- Poor management of service



Original article

Mortality in high-risk emergency general surgical admissions

N. R. A. Symons[1], K. Moorthy[1], A. M. Almoudaris[1], A. Bottle[2], P. Aylin[2], C. A. Vincent[1] and O. D. Faiz[3]

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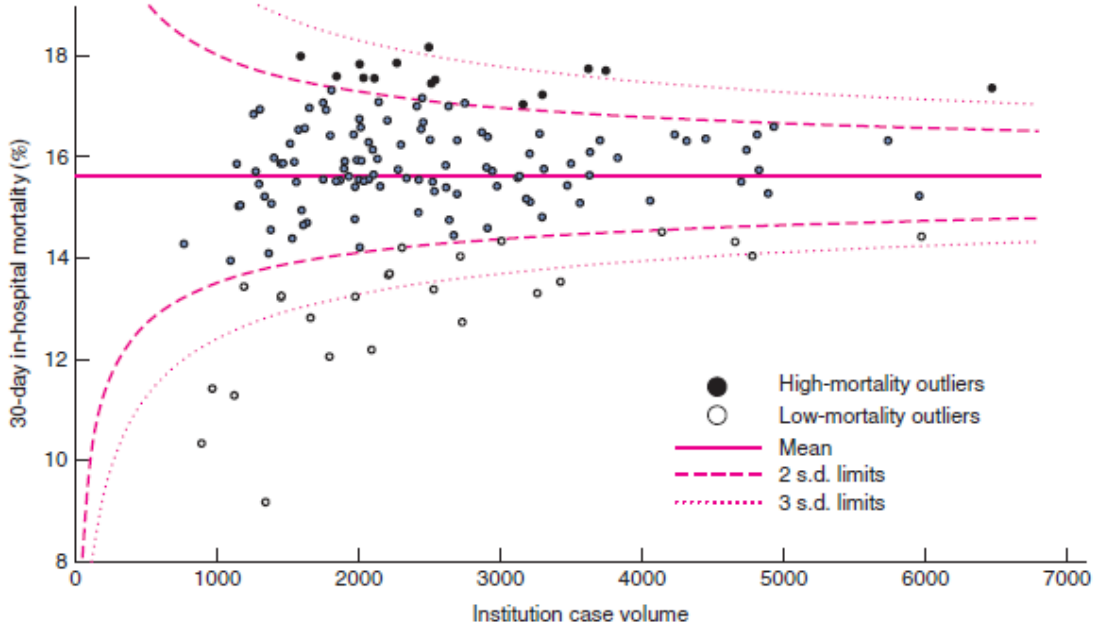

Fig. 1 Funnel plot showing all-cause risk-adjusted in-hospital 30-day mortality for English National Health Service hospital Trusts. Institutions above and below the upper and lower two standard deviation (s.d.) limits represent the respective high- and low-mortality outlying Trusts

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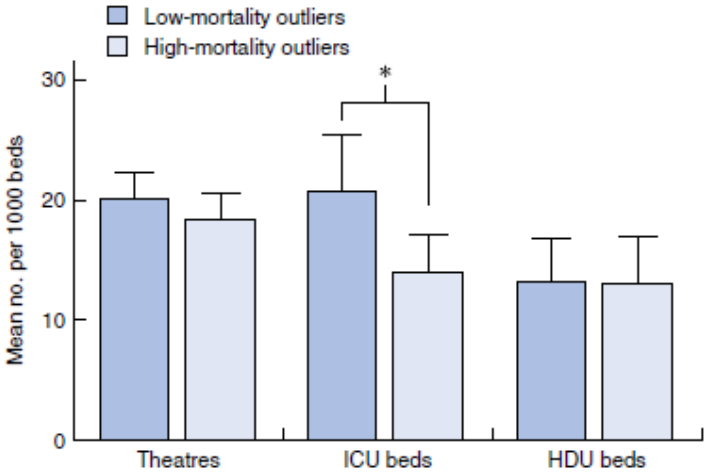

Fig. 2 Hospital operating theatre and critical care provision for high- and low-mortality outlying National Health Service hospital Trusts. Values are mean with 95 per cent confidence intervals. ICU, intensive care unit; HDU, high-dependency unit. *$P = 0{\cdot}017$ (independent-samples t test)

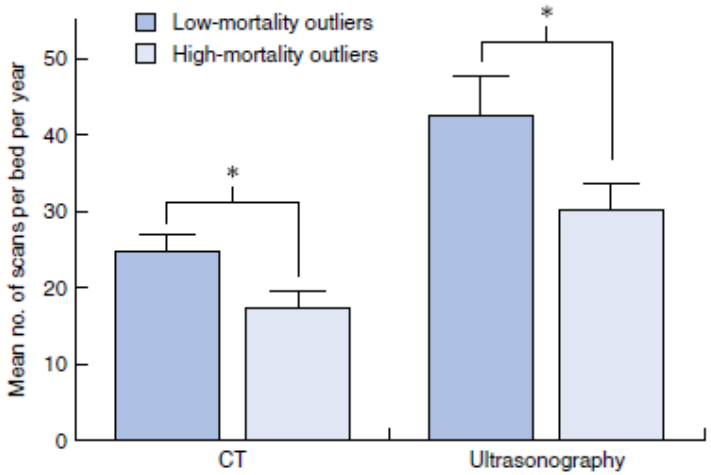

Fig. 3 Use of imaging in high- and low-mortality outlying National Health Service hospital Trusts. Values are mean with 95 per cent confidence intervals. CT, computed tomography. *$P < 0{\cdot}001$ (independent-samples t test)

Outcomes following emergency surgery

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

- 1853 pts, 35 hospitals
- Unadjusted 30 day mortality 14.9% (3.6 to 41.7%)
- 24.4% mortality in >80 yrs
- Goal directed fluid therapy 0-63%
- 0-68.9% returned to ward post surgery (level I)

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Table 2 Time of day, seniority of medical staff, and 30 day mortality. *Time of anaesthetic induction

Time of day*	*n*	Consultant anaesthetist present (%)	Consultant surgeon present (%)	30 day mortality (%)
08:00–17:59	1044	75.2	80.8	14.2
18:00–23:59	442	54.8	67.7	17.8
00:00–07:59	152	40.8	61.8	20.3

Hotel NHS and the acute abdomen – admit 1st then investigate

- 122 pts admitted with “acute abdomen” over one month
- “Necessary” n=56, median LOS 8.5 days
  - Surgery (n=36)
  - Death (n=3)
  - Severe illness (n=17)
- “Unnecessary” n=66, median LOS 5 days
- Total costs £330,468

£125,000 for unnecessary admissions (92% hotel costs)

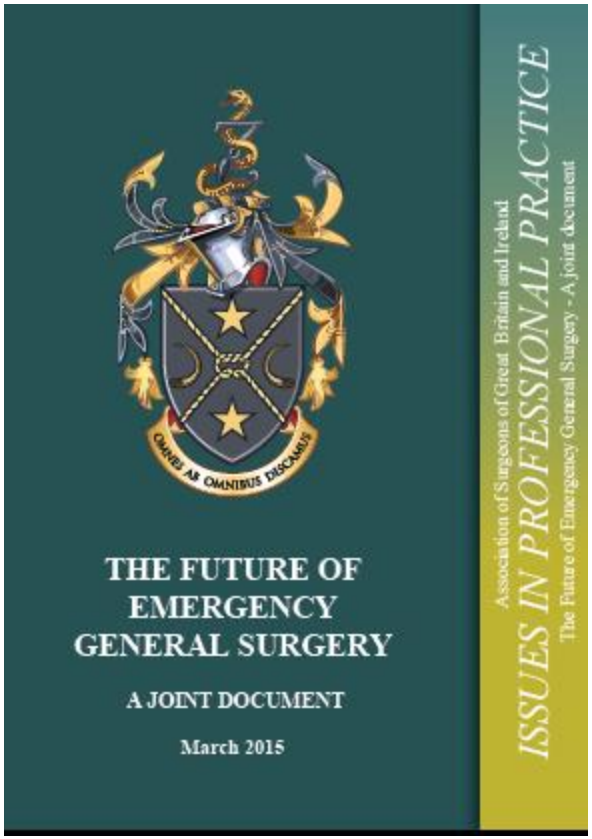
Aryal K, Bhowmick A, Beveridge A, Scott NA

Int J Clin Pract 2009;63:1805-7

Future provision of emergency general surgery

Current issues 2015

- Variable (poor) outcomes
- Under-resourced service
- Reduced experience of junior staff
- Loss of team structure
- Unwillingness to engage in service improvement
- Lack of leadership



Future provision of emergency general surgery

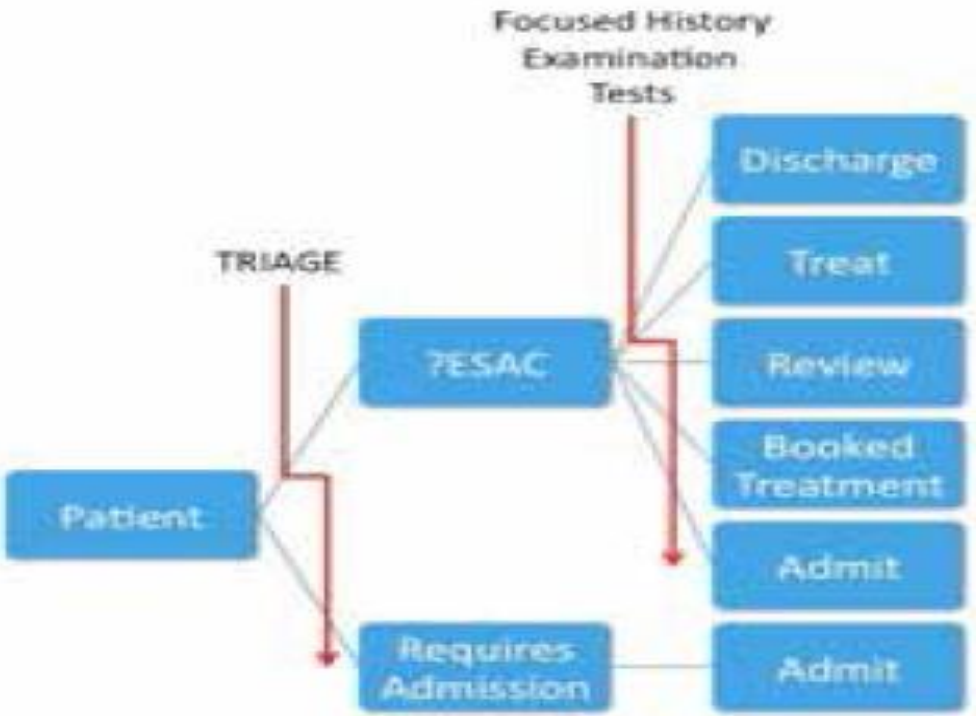
Control the front door

- Number of admissions increasing
- Many unnecessary
- Juniors, locums etc
- **SENIOR ASSESSMENT BEFORE ADMISSION**

Ambulatory care - the Derby model

FIGURE 1

EMERGENCY SURGERY AMBULATORY CARE (ESAC) PATHWAY



PILOT STUDY OF A NEW PARADIGM IN THE MANAGEMENT OF SURGICAL EMERGENCIES USING EMERGENCY SURGERY AMBULATORY CARE

GM Tierney Consultant Colorectal Surgeon
S Tou Consultant Colorectal Surgeon
J Hender General Manager
JN Lund Associate Professor in Surgery
Derby Hospitals NHS Foundation Trust

TABLE I

CONDITIONS BY LIKELY TRIAGE OUTCOME

Conditions requiring admission	Conditions suitable for ESAC
Peritonitis	Non-specific abdominal pain
Intestinal obstruction	Biliary colic
Appendicitis	Mild cholecystitis
Pancreatitis	Some abscesses
Intestinal ischaemia	Stable rectal bleeding
Severe cholecystitis	Chronic conditions without acute exacerbation
Trauma	

ESAC = emergency surgery ambulatory care

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Methods

- An ESAC team was formed with an experienced consultant surgeon and an assistant practitioner (for phlebotomy, cannulation, electrocardiogram).
- The consultant took referrals and triaged patients. Those not requiring hospital treatment were directed to the appropriate team, those requiring emergency admission went straight to the surgical assessment unit and those suitable were seen and assessed on the ESAC pathway.

Results

- In four months, 377 patients were seen by the ESAC team (out of a total of 1,028 referrals).
- Of these, 260 avoided admission
  - 31 per cent were discharged without needing follow-up
  - there were only six readmissions within 30 days of discharge.
- Satisfaction surveys from patients and GPs were very positive – with all 60 patients surveyed rating the consultation as good or excellent.

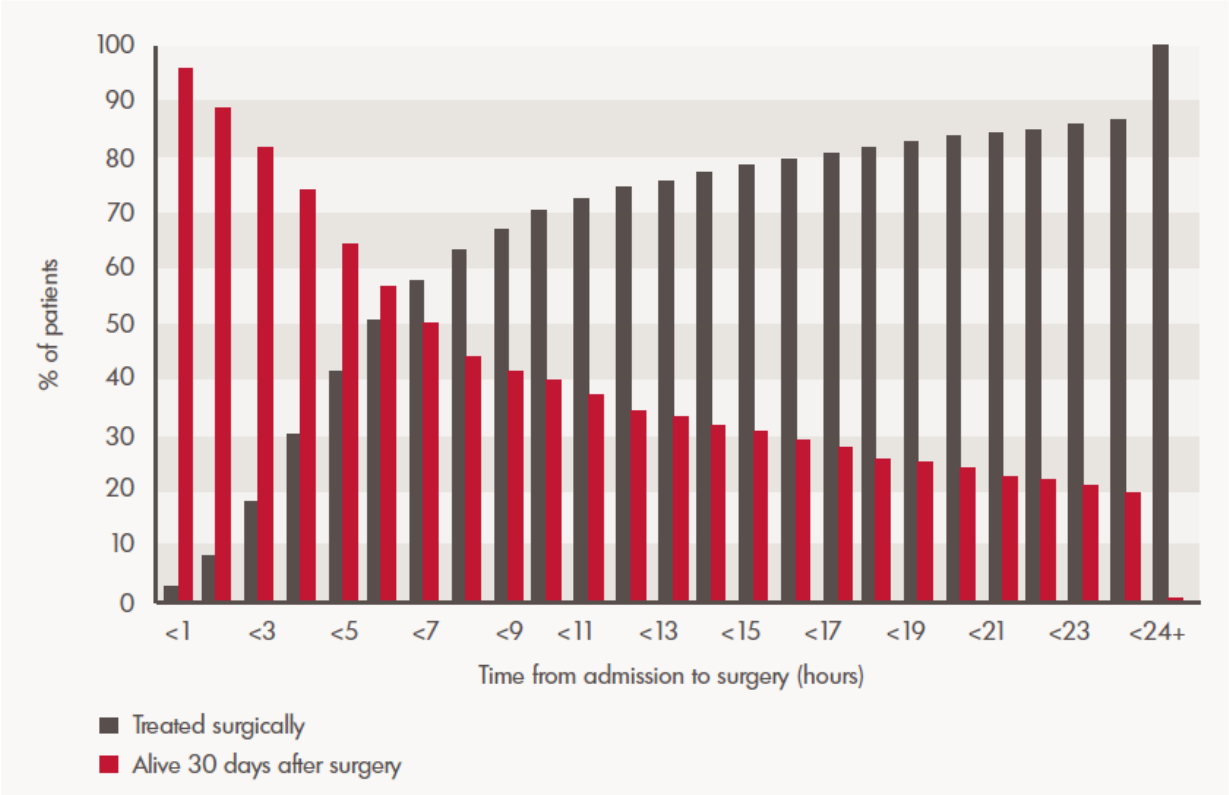
Future provision of emergency general surgery

Acute biliary disease

- Typical lengths of stay 5-7 days for acute cholecystectomy
- Unacceptable
  - Clinically
  - Financially
- Defined pathways required
  - Leadership
  - Imaging
  - Senior input
  - Access to planned non-elective theatre slots

Influence of time to surgery on outcome

Figure 3.1: Cumulative percentage of patients treated surgically for perforated peptic ulcer and percentage alive 30 days after surgery in relation to time after hospital admission, February 2003 to August 2009



Emergency Laparotomy Pathway Quality Improvement Care (ELPQuiC) Bundle

- Early assessment with mortality prediction and escalation where appropriate
- Broad spectrum antibiotics if perforation/sepsis suspected
- Once decision for surgery then next on list or within 6 hrs
- Early/ongoing goal directed fluid resuscitation
- All patients to ICU after emergency laparotomy

Use of a pathway quality improvement care bundle to reduce mortality after emergency laparotomy

S. Huddart[1], C. J. Peden[2], M. Swart[3], B. McCormick[4], M. Dickinson[1], M. A. Mohammed[5] and N. Quiney[1] on behalf of the ELPQuiC Collaborator Group

Table 2 Lives saved (before 30 days) per 100 patients before and after introduction of the emergency laparotomy pathway quality improvement care bundle

	Lives saved per 100 patients			
Site	Before ELPQuiC	After ELPQuiC	Difference	*P**
1	6·48 (4·64, 8·32)	11·96 (11·37, 12·55)	5·48 (3·55, 7·42)	< 0·001
2	6·76 (6·37, 7·14)	15·68 (15·29, 16·06)	8·92 (8·37, 9·47)	< 0·001
3	7·95 (5·66, 10·25)	9·96 (9·26, 10·67)	2·01 (−0·40, 4·42)	0·101
4	4·34 (2·90, 5·78)	8·77 (7·78, 9·76)	4·43 (2·68, 6·19)	< 0·001
All	6·47 (5·79, 7·15)	12·44 (12·14, 12·75)	5·97 (5·23, 6·72)	< 0·001

Values in parentheses are 95 per cent c.i. ELPQuiC, emergency laparotomy pathway quality improvement care. *Linear regression model.

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The Royal College of Anaesthetists | NIAA HSRC Health Services Research Centre | RCS Advancing Surgical Standards | HQIP Healthcare Quality Improvement Partnership

NELA National Emergency Laparotomy Audit

- Before surgery
  - Senior input
  - Timely diagnostics
  - Risk assessment
  - Antibiotics
  - Prompt access to theatre
- During surgery
  - Involvement consultant anaesthetist and surgeon
- After surgery
  - Critical care use
  - Medical elderly review

Emergency general surgery 2016

Opportunities to address the challenges

There are four important opportunities to address the above challenges:

- the systematic use of protocols and pathways
- the increased use of more network-based approaches
- the development of new non-medical roles
- new training models.

Argument to centralise emergency services

- the shift from generalist to more specialist practice in surgery
- providing access to consultant-delivered care 24/7
- reductions in the number of doctors in training
- providing EGS services with the necessary diagnostic and other support services
- ensuring high-quality training
- the increasing constraints on NHS finances.

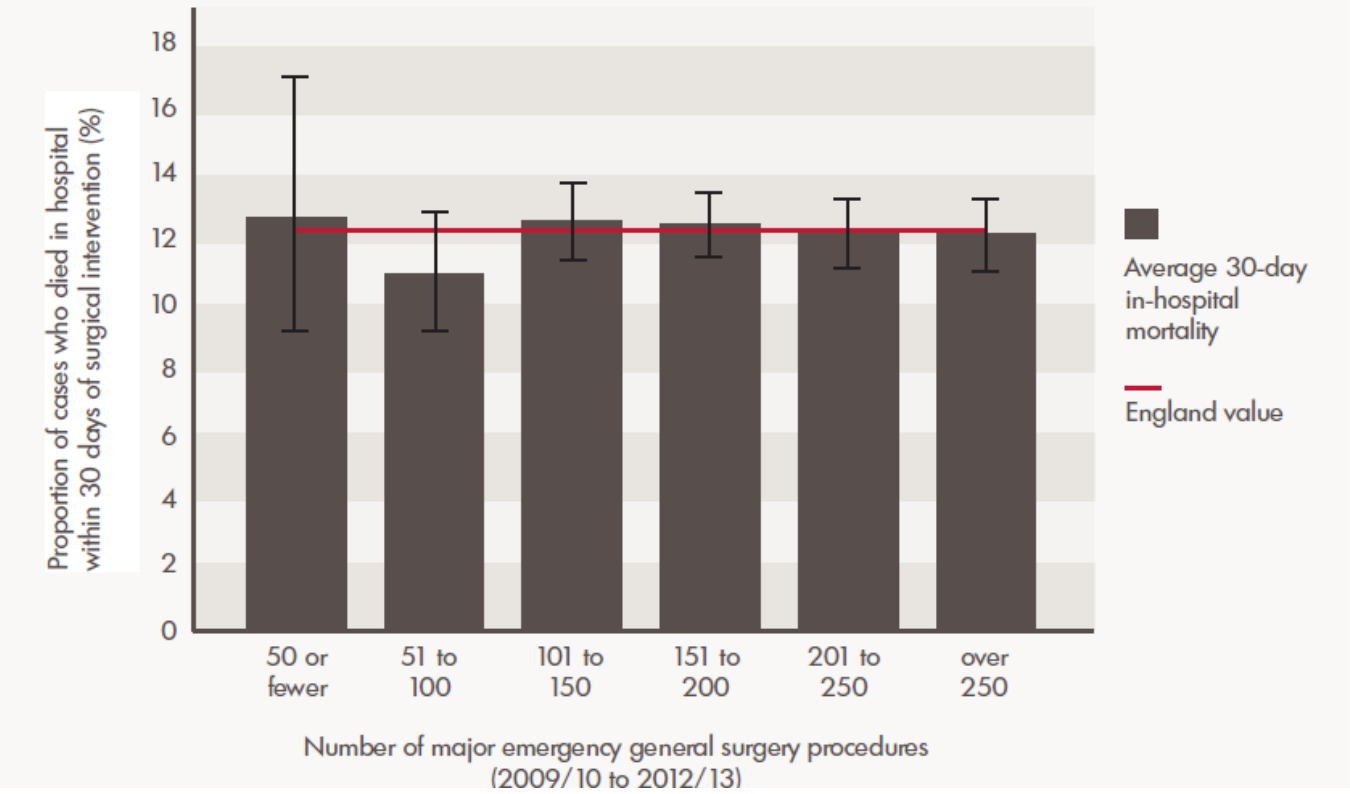
The argument for centralisation

Table 2.1: Distribution of caseload for major emergency general surgery procedures among cases with high-risk diagnoses,* pooled data 2009/10 to 2012/13

Number of major procedures	Number of hospital sites	Proportion of total sites included
50 or fewer	10	6.5%
51 to 100	19	12.3%
101 to 150	37	24.0%
151 to 200	43	27.9%
201 to 250	29	18.8%
Over 250	16	10.4%

The argument for centralisation

Figure 2.1: 30-day in-hospital mortality rate grouped by number of major emergency general surgery procedures among cases with high-risk diagnoses, pooled data 2009/10 to 2012/13



Future provision of emergency general surgery

<u>Where will care be provided?</u>

- <10% of admissions require emergency laparotomy
- Assessment should be close to home
- Neighbouring hospitals need to collaborate eg PCI for MI, acute stroke etc

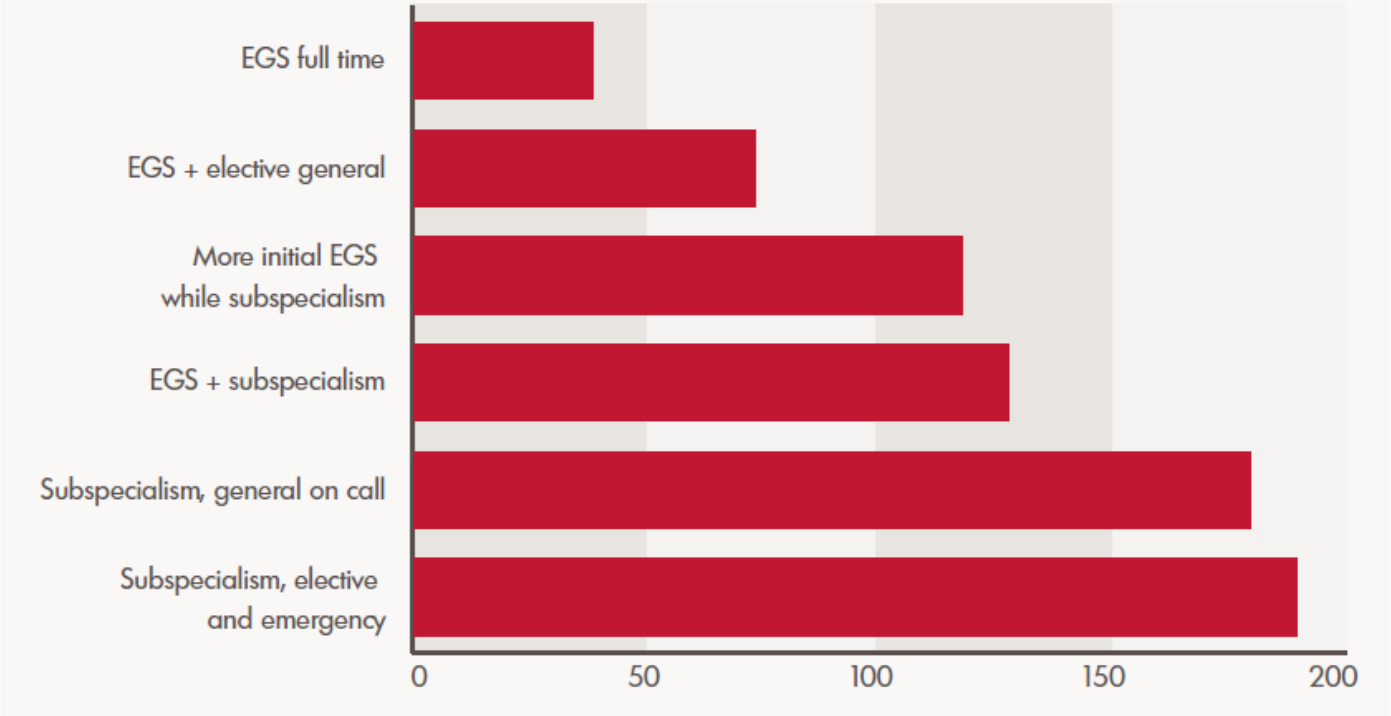
The future workforce for emergency surgery

Issues

- Non-medical roles
- Emergency vs elective practice
- The role of the specialist in emergency care
- The dedicated emergency surgeon

Career choices – current trainees

Figure 3.3: Which job would trainees go for? Results of a survey of 276 trainees (specialist training 3–8)



Source: 2014 ASGBI survey of surgeons in training (unpublished).

The future workforce in emergency general surgery

Table 2.3: Percentage of trainees reaching the number of procedures recommended by the Joint Committee on Surgical Training (JCST) prior to obtaining a Certificate of Completion of Training

	% trainees reaching JCST guideline by special interest						
Procedure (JCST guideline)	Breast	Vascular	UGI/ HPB**	Colorectal	Transplant	General	Total (%)
Emergency laparotomy* (100)	34	30	62	73	20	100	55*
Hartmann's procedure (5)	74	78	86	93	100	100	85
Appendicectomy (80)	82	63	90	93	60	100	84
Cholecystectomy (50)	65	59	100	89	80	100	81
Inguinal hernia repair (60)	66	70	93	93	60	100	83
Segmental colectomy (20)	82	74	86	100	60	100	86

* 75% met the modified indicative number of 75 emergency laparotomies.
** Upper gastrointestinal / hepato-pancreato-biliary.

Best practice 2016

- ELPQuiC bundle
- Pathway for the management of acute gallstone disease
- Pathway for surgical ambulatory care
- Direct telephone access to a senior decision-maker for GPs and paramedics
- Closer integration with medical teams
- Improved access to theatres (including optimising use with mathematical modelling).

"We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard, because that goal will serve to organize and measure the best of our energies and skills"

JFK 1962