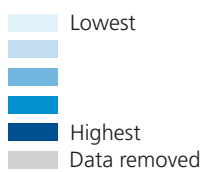


CRITICAL CARE

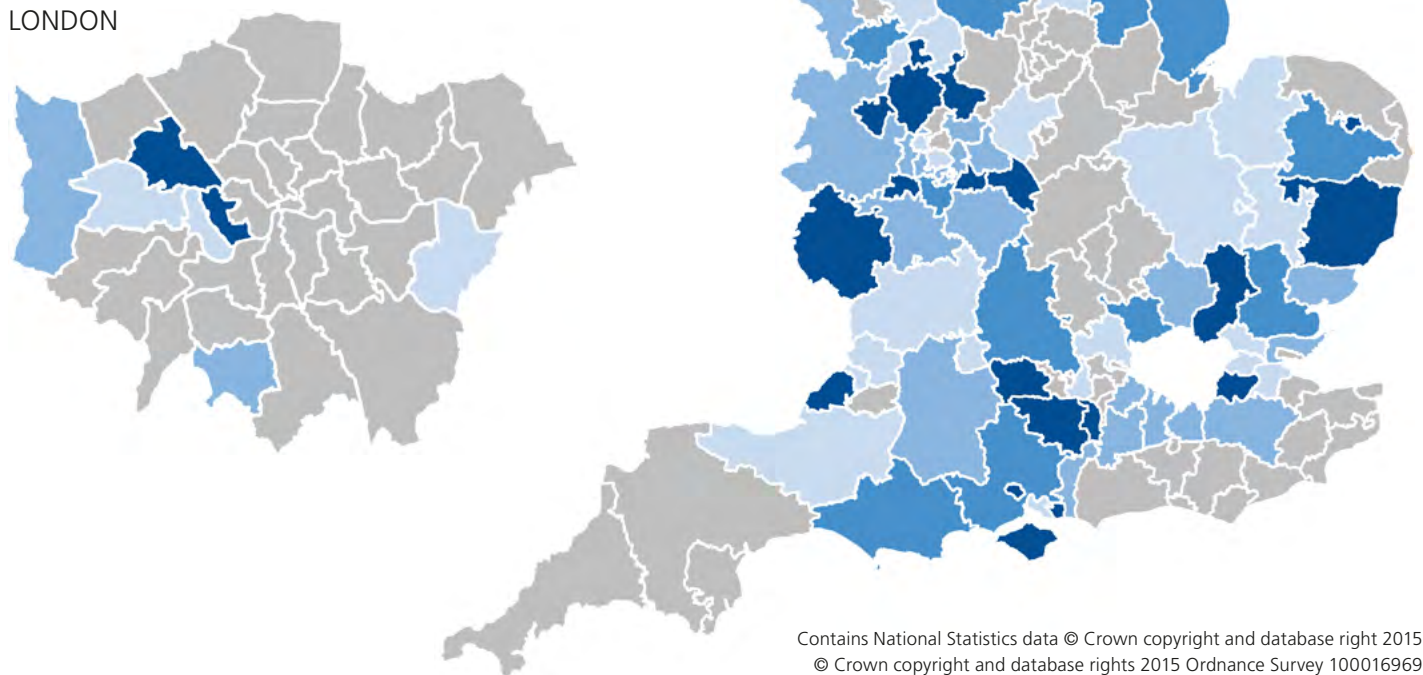
Map 97: Percentage of elective admissions for abdominal aortic aneurysm (AAA) or aorto-bifemoral bifurcation graft procedures that had planned access to adult critical care by CCG

2013/14

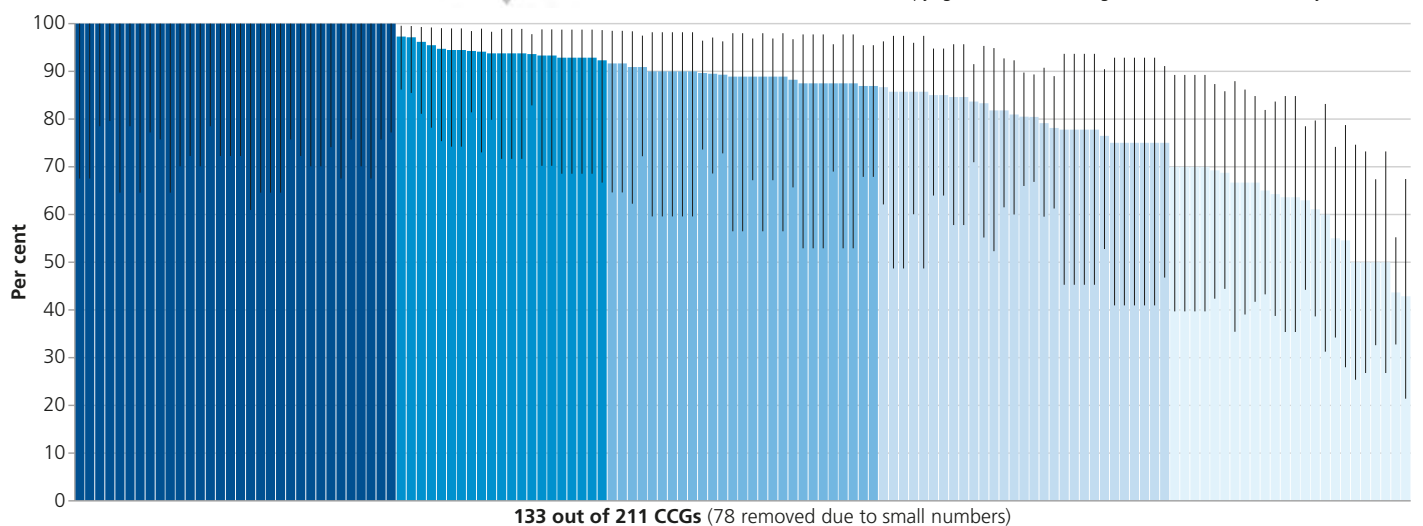
Domain 1: Preventing people from dying prematurely
 Domain 4: Helping people to recover from periods of ill health or injury



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Context

Outcomes after surgery have been improving over the last decade despite the context of an ageing population with increasing co-morbidities. In addition to standards of care during surgery, surgical outcomes depend on good-quality peri-operative care, including access to critical care support. Critical care (also known as intensive care) involves the treatment of patients who have, are at risk of or are recovering from potentially life-threatening failure of one or more body organ systems.¹

Much work has been done to improve cardiac surgery in specialist units, where the majority of procedures are elective and critical care support is routine, such as for valvular surgery. Major general surgery, which includes most major gastro-intestinal and vascular procedures, however, is undertaken in every acute hospital to treat a wide range of conditions, with only limited critical care support. A much higher proportion of non-cardiac surgical patients are treated as an emergency, and general surgical emergency admissions are the largest group of all surgical admissions in the UK, resulting in a high percentage of all surgical deaths.

Mortality after elective major gastro-intestinal or vascular surgery greatly exceeds that of cardiac surgery by 2–3-fold, and is much higher for non-cardiac surgical patients treated as an emergency: in the UK, 170,000 patients undergo higher risk non-cardiac surgery each year, 100,000 of whom will develop complications, resulting in 25,000 deaths. For these patients, emergency surgery and unscheduled management of complications is common.

High-risk patients comprise about 10% of the overall group of surgical inpatients, and have a hospital mortality rate of 10–15%. To reduce the risk of mortality and morbidity, and the degree of variation in surgical outcomes, requires:

- the rapid, reliable and accurate identification of patients who are at high risk of post-operative mortality and morbidity – risk factors include age and degree of organ dysfunction;
- the adoption of formal pathways for both elective and emergency surgery to address the clinical needs

of the patient, which will also aid the identification of high-risk patients;

- improved post-operative care through the use of critical care.

Critical care is an essential component of the clinical pathway for surgery. It offers patients improved survival and the lowest possible morbidity, and it is important to ensure that patients receive the level of post-operative care they require to achieve optimal outcomes. In many countries, patients undergoing major surgery routinely receive a higher level of post-operative care than patients in the UK. Indeed, some clinicians in the UK wait for organ failure to occur before they consider critical care, and The Royal College of Surgeons and Department of Health Working Group found that the peri-operative pathway of patients requiring emergency surgical management was “frequently disjointed, protracted and not always patient centred”.² Moreover, that outcomes varied substantially, and could be improved.²

Magnitude of variation

Map 97: AAA or aorto-bifemoral bifurcation grafts

For CCGs in England, the percentage of elective admissions for abdominal aortic aneurysm (AAA) or aorto-bifemoral bifurcation graft procedures that had planned access to adult critical care ranged from 42.9% to 100.0% (2.3-fold variation).³ When the four CCGs with the highest percentages and the four CCGs with the lowest percentages are excluded, the range is 50.0–100.0%, and the variation is 2-fold.

For this indicator, the confidence intervals are very wide (as displayed on the chart), and caution is needed when interpreting the data because the limits indicate that much of the variation within the indicator may not be statistically significant. Equally, as the number of events is relatively small for this indicator, it is subject to greater random variation. Consequently, the values for the range and fold difference are more likely to be exaggerated when compared with other indicators based on larger numbers of events.

1 The Royal College of Anaesthesia. Intensive Care Medicine. What is intensive care (critical care)? <http://www.rcoa.ac.uk/special-areas-of-training/intensive-care-medicine/>

2 The Royal College of Surgeons of England and Department of Health Working Group on Peri-operative Care of the Higher Risk General Surgical Patient. The Higher Risk General Surgical Patient. Towards Improved Care for a Forgotten Group. 2011. <https://www.rcseng.ac.uk/publications/docs/higher-risk-surgical-patient/>

3 Data from 78 CCGs have been removed due to small numbers.

Possible reasons for the degree of variation observed include differences in:

- the prevalence of disease in local populations;
- the volume of major and urgent surgery;
- patients' age and co-morbidities;
- existence and use of formal clinical pathways;
- clinical location for immediate post-operative care.

Map 98: Excision colorectal surgery

For CCGs in England, the percentage of emergency admissions for excision colorectal surgery that had planned access to adult critical care ranged from 0.0% to 96.6%.⁴ When the six CCGs with the highest percentages and the six CCGs with the lowest percentages are excluded, the range is 22.9–81.5%, and the variation is 3.6-fold.

Possible reasons for the degree of variation observed include differences in:

- the prevalence of disease, such as diverticulitis and ischaemic bowel disease (e.g. strangulated hernia and ischaemic colitis), in local populations;
- the volume of major and urgent surgery;
- patients' age and co-morbidities;
- lack of awareness of level of risk for non-cardiac general surgery patients;
- existence and use of formal clinical pathways;
- access to pre-operative assessment;
- timing of and access to diagnostic services;
- access to theatre;
- timing of surgery;
- timing of clinical decision about the need for critical care;
- seniority of clinician making the decision about the need for critical care;
- clinical location for immediate post-operative care.

Options for action

Commissioners need to specify that service providers:

- review the volume of surgery undertaken locally considered to be high risk, assess the critical care requirements for high-risk patients, and ensure provision of sufficient critical care beds to provide appropriate support during the post-operative period;

- undertake the pre-operative assessment in clinics of patients in high-risk groups undergoing elective surgery and institute targeted measures to improve their fitness for surgery;
- establish arrangements for more urgent surgical patients to be given pre-operative assessments;
- develop and promote the use of formal clinical pathways for elective and emergency abdominal surgery to address the needs of patients and prevent organ failure;
- use information from national audits, such as the National Emergency Laparotomy Audit (NELA; see "Resources") to improve patient care.

Service providers need to ensure that clinicians in secondary care:

- develop and improve their skills for estimating patients' levels of risk, using validated tools, such as POSSUM (Physiological and Operative Severity Score for the enUmeration for Mortality and Morbidity validated tool for abdominal surgery; see Smith and Tekkis under "Resources");
- apply the tool before and after the operation, such that a decision about the need for critical care support can be re-visited.

In addition, clinicians in primary care can increase their skills levels to support the identification of patients' fitness for elective surgery.

RESOURCES

- NICE. Acutely ill patients in hospital. Recognition of and response to acute illness of adults in hospital. NICE guidelines [CG50]. July 2007. <https://www.nice.org.uk/guidance/cg50>
- NHS England. Service Specification No. D16. NHS Standard Contract for Adult Critical Care. Schedule 2 – The Services – A. Service Specifications. 2014. https://www.engage-england.nhs.uk/consultation/specialised-services-policies/user_uploads/adlt-critical-care-serv-spec.pdf
- Smith JJ, Tekkis PP (2015) Risk Prediction in Surgery. <http://www.riskprediction.org.uk/background.php>
- Findlay GP, Goodwin APL, Protopapa K et al. Knowing the Risk. A review of the peri-operative care of surgical patients. A report by the National Confidential Enquiry into Patient Outcome and Death (2011). http://www.ncepod.org.uk/2011report2/downloads/POC_fullreport.pdf
- Critical Care Minimum Data Set Overview: http://www.datadictionary.nhs.uk/data_dictionary/messages/supporting_data_sets/data_sets/critical_care_minimum_data_set_fr.asp?shownav=1
- National Emergency Laparotomy Audit. <http://nela.org.uk/reports>

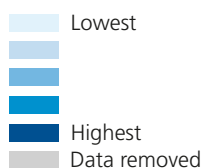
⁴ Data from 20 CCGs have been removed due to small numbers.

CRITICAL CARE

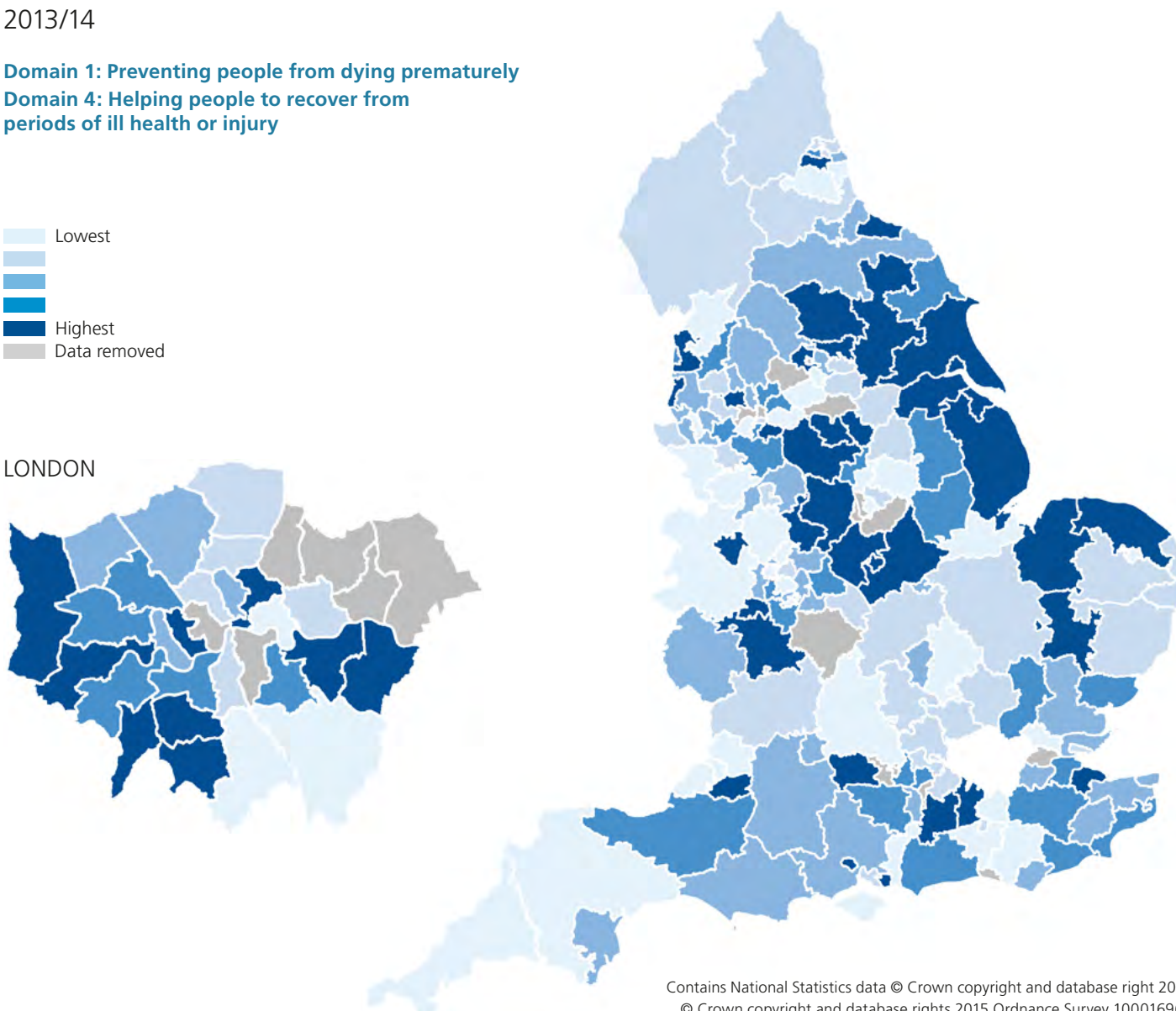
Map 98: Percentage of emergency admissions for excision colorectal surgery that had planned access to adult critical care by CCG

2013/14

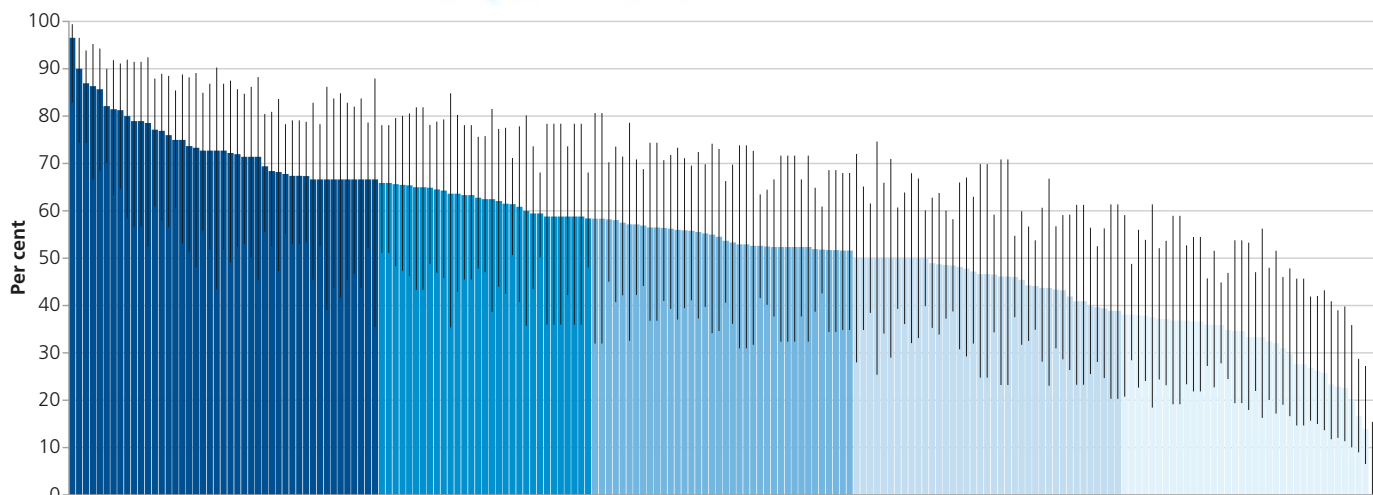
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191 out of 211 CCGs (20 removed due to small numbers)