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Variation and predictors of emergency surgery in emergency hospital admissions from the Emergency Surgery Or Not (ESORT) study

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Aims: To assess variation in use of emergency surgery (ES) for emergency hospital admissions with acute appendicitis, cholelithiasis, diverticular disease, abdominal wall hernia or intestinal obstruction.
Methods: Cohorts were extracted from Hospital Episode Statistics for 136 acute NHS trusts in England. Clinical panel consensus defined ES for emergency admissions between 1/4/2010 and 31/12/2019. The association of socio-demographic characteristics with ES use was estimated by multivariable logistic regression, with adjustment for comorbidity, frailty, diagnosis and trust.
Results: The cohort sizes ranged from 49,385 (hernia) to 184,777 (appendicitis) patients. ES was less likely for: patients aged over 80, with odds ratios (ORs) across conditions from 0.15 to 0.84 versus those aged under 40; the most deprived, ORs 0.83 to 0.92, versus least deprived; and Asian patients, ORs 0.72 to 0.88, versus White patients. Black patients were less likely to have emergency surgery for appendicitis (OR 0.78) and cholelithiasis (OR 0.78). Females were less likely to have ES for appendicitis (OR 0.94 versus males), but more likely to have surgery for intestinal obstruction (OR 1.29), hernia (OR 1.13) and cholelithiasis (OR 1.22). Unexplained variation in ES across trusts, remained after case-mix adjustment, and was greatest for cholelithiasis (median of 16%, 10 to 90 centile 5%-34%), and hernia (61%, 52%-71%), followed by intestinal obstruction (29%, 24%-36%). appendicitis (93%, 89%-95%), and diverticular disease (15%, 11%-20%).
Conclusions: The socio-demographic characteristics of emergency admissions are associated with the likelihood of receiving ES. Variation in ES use between NHS trusts remained after adjustment for demographic and clinical characteristics.