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The association between frailty as assessed by the electronic frailty index and adverse postoperative outcomes

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Frailty is associated with adverse perioperative outcome.[1,2] ResearchOne (R1; a large primary care dataset), has been used to develop an electronic frailty index (eFI) based on the accumulation of clinical and functional deficits.[2] We report on the association between the eFI and mortality, length of survival (LoS) and increase in eFI over 12 months post-surgery (ΔeFI).

We studied a data extract from R1 containing codes for 860,649 operations performed between January 2011 and December 2016. Mortality (1, 3, 6 months), LoS, and 12-month increase in electronic frailty index (eFI) were the outcome measures. Age, gender, use of antihypertensive (AHM), eFI at surgery, count of both systolic (SBP) and diastolic (DBP) blood pressure (BP) 12 months prior to surgery, deprivation ranks, counts of GP visits (GPV) 12 months prior to surgery and latent variables for missing data were the assumed independent variables. We predicted outcomes using a general linear model with Elastic Net regularisation and iterative fitting along a regularisation path. Confidence intervals were derived via bootstrap sampling (n=100). Missing BP data were imputed based on population-level statistics, in 39.0% of cases.[3]

eFI at surgery was identified as being associated with change in eFI after surgery and survival (95% CI standardised β coefs (SβC) of 0.73-0.86 and 0.88-0.89 respectively). Other factors associated with survival and increased postoperative frailty included age, use of antihypertensive medications and sex.

The association between adverse postoperative outcome and eFI has not been demonstrated previously and suggests that the eFI warrants further investigation for preoperative risk assessment.

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