Previous models have performed poorly to predict post-surgical patients with high readmission rate, which is vital to appropriate set-up of health services. The aim of the study was to identify trends in the long-term readmission rate and common distinct sequences of causes of readmissions among the high-impact users, those with high readmission rate, following an elective abdominal aortic aneurysm (AAA) repair.

The patient cohort (2006-2009) was identified through national administrative data from all NHS English hospitals. Trajectory and sequence analysis was performed on the administrative data. Both elective EVAR (endovascular repair) (n=6172) and open repair (n=10,801) were shown to have 5 subgroups with similar trends in readmission rate: chronic high-impact, short-term high-impact, impending high-impact, intermediate-impact and low-impact. Chronic high-impact users were associated with highest number of readmissions for vascular and other elective procedures (p < 0.001).

Determinant of chronic high-impact users was socio-economic deprivation in EVAR (OR 1.28 [1.16-1.42], p 0.013) and open repair (OR 1.32 [1.22-1.43], p <0.001). Impending high-impact users, with annual rise in readmission rate, were associated with non-Caucasian ethnicity in EVAR (OR 1.57 [1.30-1.90], p 0.019) and open repair (OR 1.42, [1.21-1.67], p 0.028). Common causes of non-elective readmissions in high-impact users with multiple readmissions were cardio-pulmonary conditions.

The predictors, trends and sequence of causes of readmission rate were different in high-impact users compared to other groups. The long-term trends of readmission rate among various subgroups of patients were similar in EVAR and open repair patients despite obvious differences in treatment pathways. Common distinct sequences of readmission among high-impact users mainly consisted of cardio-pulmonary causes suggesting possible beneficial use of cardiac rehabilitation after aneurysm repair in this group.
Premorbid function, comorbidity, and frailty predict outcomes after elective abdominal aortic aneurysm repair
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Early outcomes following elective abdominal aortic aneurysm (AAA) have significantly improved. The aging population, however, continues to make the decision to intervene often difficult, especially given that traditional risk models do not reflect issues of aging and frailty. This study aimed to integrate measures of function alongside comorbidity- and frailty-specific factors to determine outcome.

Consecutive patients over the age of 65 years undergoing elective AAA repair were assessed (time period 27/10/14 - 31/07/16). Demographics, mode of surgery and a variety of measures of function (physical, social, and psychological) and comorbidity were recorded. The primary outcome was mortality with secondary outcomes of prolonged LOS (defined as >/= 7 days) and unplanned readmission. Statistical analysis was performed using multivariate logistic regression.

We analysed 198 patients (169 men, median age 77 years, mean AAA diameter 6cm). The median follow up period was 15 (9.8-21) months and median LOS 2 days. The overall mortality rate was 3.5%. Thirty patients had a prolonged LOS and 32 patients an unplanned readmission.

Independent predictors of mortality was the Katz score (p=0.006). Independent predictors of a prolonged LOS was open repair (as opposed to EVAR - p=0.047).

Independent predictors of unplanned readmission were gender (p=0.033), anaemia (Hb < 11 - p=0.002) and a previous history of falls (p=0.014).

A number of frailty related factors predict poorer patient specific outcomes following elective AAA repair. These may highlight appropriate patients who would benefit from targeted comprehensive assessment and frailty specific interventions.
A questionnaire based survey to ascertain UK clinicians' preferences for the management of a complex abdominal aortic aneurysm

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Our objective was to quantify potential variability across the UK in the management of a complex abdominal aortic aneurysm (AAA).

An online survey was emailed to all members of the Vascular Society for Great Britain and Ireland. The survey presented a complex AAA vignette of a 63-year-old woman with significant respiratory co-morbidity whose computed tomographic (CT) angiogram demonstrated a 54 mm AAA with a short (7 mm) proximal neck but no other adverse morphological features for a standard or complex endovascular aneurysm repair (EVAR). The survey included images and questions related to AAA management as well as surgeon location, experience, and access to operating facilities. 111 valid responses were received, 91% from consultants.

47% of participants indicated a first line preference for continuing surveillance, 29% for fenestrated EVAR and 7% each for no operative intervention and open surgical repair. The remainder indicated various preferences including standard EVAR (3%), standard EVAR with endoanchors (3%), chimney EVAR (2%), EVAS (endovascular aneurysm sealing) (1%) and chimney EVAS (1%). Of the 47% who wanted to continue surveillance, once their threshold was reached, 73% would manage with a fenestrated EVAR, 17% with open repair and the remainder with EVAS (2%), chimney EVAS (2%) or standard EVAR with endoanchors (2%). 49% of participants carried out endovascular procedures in hybrid theatres, 36% in radiology angiosuites and 15% in standard operating theatres.

The study results support anecdotal variation in practice among vascular specialists. This variation reflects the lack of solid evidence on the optimal management of complex AAA.
Post-implantation syndrome following endovascular aneurysm sealing for abdominal aortic aneurysm
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Post-implantation syndrome (PIS) is a common complication following endovascular aneurysm repair (EVAR). It is defined according to the criteria for systemic inflammatory response syndrome. This study aims to assess the incidence of PIS following EVAR and endovascular aneurysm sealing (EVAS).

A retrospective analysis of 229 patients who underwent endovascular treatment for intact, infrarenal abdominal aortic aneurysm. 123 patients underwent EVAS and 109 underwent EVAR. Pre-, intra- and postprocedural data were collected.

The 229 patients had a mean age of 75.3 years and 89.1% were male. There were no significant differences in age or gender between the EVAR and EVAS groups. The patients in the EVAS group had a greater comorbid burden, however the only significant difference was a greater number of patients with coronary artery disease in the EVAS group. PIS was observed in 10 patients following EVAR and in 2 patients following EVAS (P=0.014). PIS was also significantly more common in male patients (P=0.03). No significant differences were seen in the incidence of PIS in terms of age, aneurysm diameter, procedure time or comorbidity. Hospital and intensive therapy unit (ITU) stays were longer in patients who developed PIS (P<0.0001).

This study shows that PIS is significantly less common after EVAS than after EVAR. The diagnosis of PIS was also associated with significantly longer ITU and hospital stays.
Little is known about the risk factors for high-impact use of health service and causes of emergency readmissions amongst high-impact users after ruptured abdominal aortic repair (rAAA). The aim of the study was to subdivide patient groups, examine trends in number and causes of emergency readmissions following rAAA and to assess their chronological order to identify strategies to reduce long-term readmission rate.

The patient cohort (2006-2009) was identified through national administrative data from all NHS English hospitals and followed up for 5 years.

Open repair (n=3877) were shown to have 5 subgroups: low-impact (71.7%), intermediate-impact (13.9%), short-term high-impact (8.9%), impending high-impact (4.2%) and chronic high-impact (1.3%). Determinant of chronic high-impact users was heart failure (OR 3.74 [2.12-6.62], p 0.023) and the commonest sequences of readmissions were: chest infection-COPD (n=9 [18.3%]), COPD-chest infection-COPD (n=4 [8.1%]), COPD-chest infection-chest infection-COPD (n=4 [8.1%]) and chest infection-COPD-COPD-chest infection (n=4 [8.1%]).

Two subgroups, low- (78.1%) and high-impact (21.9%), were derived from best fit model for EVAR (endovascular repair) (n=267). Determinants of chronic high-impact users were diabetes (OR 19.11 [5.87-62.18], p=0.012) and prolonged length of stay (OR 2.44 [1.82-3.25], p=0.002) and common sequences of readmissions were: COPD-chest infection (n=3 [5.8%], rAAA-iatrogenic injury (n=3 [5.8%]), chest pain-iatrogenic injury (n=2 [3.9%]), COPD-COPD-chest infection (n=2 [3.9%]) and COPD-constipation (n=2 [3.9%]).

Predictors of high-impact users were identified to help clinicians to stratify long-term management needs. A focus on prevention of iatrogenic injuries and reduction of recurrent admissions for cardiopulmonary conditions is required to prevent patients becoming high-impact.
Abdominal Aortic Artery Calcification (AAAC) scores are associated with poor overall and cardiovascular outcomes in patients with Abdominal Aortic Aneurysms (AAA)

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Focus is increasingly moving towards prediction of longer term cardiovascular related outcomes in patients with aneurysmal disease. Arterial calcification is a recognised predictor of poor cardiovascular (CV) outcome yet limited aneurysm-specific data is available. Assessment of the predictive role of calcification in abdominal aortic aneurysm (AAA) patients is therefore clinically relevant, specifically with regard to CV outcome.

AAAC scores from the CT scans of a consecutive series of AAA patients were calculated using a modified Agatston score (Jan 2011 - Dec 2012). The primary outcome was all-cause mortality. Secondary outcomes were cardiovascular mortality and morbidity.

196 patients (median age 78 [72-84], 160 [81.6%] male) were analysed with a median follow up of 22 (3-48) months. The primary outcome was reached in 38 (19.4%) patients. AAAC score was associated with all-cause mortality (OR 1.023; 95% CI 1.002-2.120; p=0.038) and with cardiac mortality (OR 2.121; 95% CI 1.675-2.879; p=0.003) and morbidity (OR 1.897; 95% CI 1.023-2.342; p=0.042). The area under the curve of the receiver operator curve for the AAAC score was 0.815 (95% CI [0.755-0.875]; p<0.001) for the primary outcome. An AAC score of > 21000 had the best diagnostic accuracy to determine the outcome measure, with sensitivity and specificity of 84% and 74.6%, respectively.

Higher AAAC scores are associated with poor overall and cardiovascular specific outcomes. AAAC may aid in identifying high-risk patients who would benefit from intensive treatment aimed at reducing CV risk.