Optimal eGFR Cutoffs for risk of Death or Dialysis after Open and Endovascular Abdominal Aortic Aneurysm Repair

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Introduction

- Chronic kidney disease (CKD) is known to increase morbidity and mortality for both open and endovascular repair of AAA.
- Most risk prediction models use a binary classification of estimated glomerular filtration rate (eGFR) < 60ml/min/1.73m2

Objectives

- Determine the optimal eGFR cutoff for risk stratification and modeling

Methods

- Vascular Quality Initiative databases for Open and Endovascular aneurysm repair from 2013-2023
- Patients with intact, first-time repair were included
- 56462 EVAR patients and 8070 OAR
- Divided into cohorts based on eGFR (≥60, 45-59, 30-44, <30, and preop dialysis)
- Linear regression analysis were used to compare perioperative mortality and permanent dialysis
- A Linear Regression model with a restricted cubic spline configuration was used to demonstrate the continuous relationship between eGFR and predicted perioperative mortality

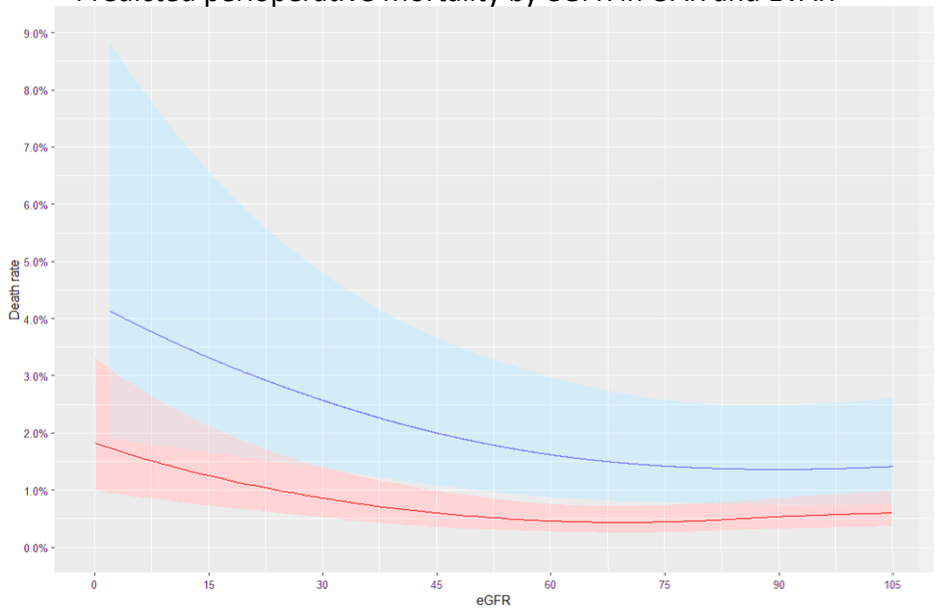
Tables & Figures

Perioperative Death and permanent HD requirements following EVAR and OAR

Perioperative mortality	EVAR				OAR			
eGFR	Rate	aOR[1]	95% CI[1]	p-value	Rate	aOR[1]	95% CI[1]	p-value
≥60	0.8%	ref	ref	ref	3.1%	ref	ref	ref
45-59	1.0%	1.01	0.79, 1.28	>0.9	4.9%	1.1	0.81, 1.49	0.5
30-44	**1.7%**	**1.35**	**1.05, 1.72**	**0.015**	6.6%	1.3	0.92, 1.81	0.12
<30	**3.4%**	**2.3**	**1.78, 2.97**	**<0.001**	**11.5%**	**2.26**	**1.54, 3.25**	**<0.001**
HD	**4.5%**	**3.29**	**2.05, 5.07**	**<0.001**	**11.1%**	**3.67**	**1.03, 10.2**	**0.023**
Permanent HD								
≥60	0.1%	ref	ref	ref	0.8%	ref	ref	ref
45-59	**0.1%**	**1.09**	**0.39, 2.58**	**0.9**	1.3%	1.49	0.82, 2.61	0.2
30-44	**0.3%**	**3.59**	**1.73, 7.24**	**<0.001**	1.1%	1.18	0.53, 2.39	0.7
<30	**1.5%**	**18.1**	**10.1, 33.1**	**<0.001**	4.2%	4.14	2.15, 7.62	<0.001

*Adjusted for age, sex, hypertension, diabetes, COPD, CHF, Anemia, smoking, and medication use: ASA, statin, Beta blocker, and ACE/ARB

Predicted perioperative Mortality by eGFR in OAR and EVAR



Results

- Compared to patients with eGFR ≥60, patients with eGRF 45-59 had similar adjusted odds of mortality for both OAR and EVAR
- In both EVAR and OAR 30-35% increase in the odds of mortality for those with eGFR 30-44
- Similar trend for permanent HD requirement

Conclusions

- Rather than a binary eGFR cutoff of <60 to stratify patient risk after AAA repair, a better understanding of perioperative risk may be achieved by stratifying into 5 groups (≥60m, 45-59, 30-44, and <30, and preop dialysis)

Acknowledgements

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Funding from the Harvard-Longwood Research Training in Vascular Surgery NIH T32 Grant 5T32HL007734-30