Vascular Surgical Care Of Patients With Housing Insecurity: Demographics And Disparities

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Introduction

- Housing insecurity is rising in the United States
- Unhoused patients have limited access to preventive care and higher exposure to acute and chronic diseases.
- They have more emergent procedures, longer hospital stays, and higher readmission rates.
- Housing insecurity confers reduced access to follow-up and wound care, increasing complication risks.

Objective

- Compare demographics, operative management, and outcomes of unhoused vs. housed patients undergoing vascular surgical procedures in a large national database

Methods

- Data: Vascular Quality Initiative (2003–2024): EVAR, TEVAR, OAR, CEA, CAS, PVI, LEB, SIB, and amputation databases
- Patient Cohort: 1,037,094 total, compared by housed or unhoused status at time of admission
- Outcomes: Perioperative mortality, complications, reintervention, extended length of stay (>75th percentile), and 5-year mortality.
- Outcomes analyzed for all procedures in aggregate and each individually
- Multivariable logistic regression models adjusted for known risk factors (age, gender, race, BMI, procedure urgency, CKD, CHF, etc.).
- Cox proportional hazard model for 5-year mortality

Results

Table I. Postoperative outcomes for housed compared to unhoused patients

	Univariate			Multivariable		
	Housed (N,%)	Housing Insecure (N,%)		Housed (reference) vs Housing Insecure		
	N=1034734 (99.8%)	N=2360 (0.2%)	P-value	OR	95% CI	P-value
Perioperative Death						
All Procedures	22973 (2%)	69 (3%)	**0.03**	0.98	0.75, 1.25	0.90
LE Bypass	1897 (2%)	3 (1%)	0.18	0.61	0.15, 1.60	0.40
PVI	8331 (2%)	19 (2%)	0.61	0.81	0.50, 1.25	0.40
Amputation	2265 (7%)	11 (4%)	**0.03**	0.67	0.32, 1.24	0.20
SIB	1124 (4%)	2 (2%)	0.22	1.63	0.21, 12.7	0.60
TEVAR	2157 (7%)	12 (10%)	0.18	1.71	0.87, 3.06	0.09
EVAR	2235 (3%)	7 (6%)	**0.02**	1.57	0.58, 3.60	0.30
OAR	1838 (10%)	5 (14%)	0.38	0.96	0.21, 3.06	>0.9
CAS	2238 (2%)	9 (7%)	**<0.001**	2.13	0.97, 4.14	0.04
CEA	1736 (1%)	2 (1%)	1.00	0.95	0.16, 3.00	>0.9
Any Complication						
All Procedures	61444 (6%)	281 (12%)	**<0.001**	1.42	1.23, 1.64	**<0.001**
LE Bypass	15277 (17%)	92 (29%)	**<0.001**	1.79	1.39, 2.28	**<0.001**
PVI	13458 (3%)	58 (5%)	**0.001**	1.49	1.06, 2.09	**0.02**
Amputation	5113 (16%)	40 (14%)	0.41	0.86	0.59, 1.23	0.40
SIB	4213 (15%)	24 (19%)	0.35	0.69	0.16, 2.01	0.50
TEVAR	4844 (15%)	36 (31%)	**<0.001**	1.76	1.15, 2.66	**0.008**
EVAR	4798 (5%)	14 (13%)	**0.003**	1.52	0.76, 2.83	0.20
OAR	4347 (23%)	14 (40%)	**0.02**	1.84	0.80, 4.06	0.14
CAS	5518 (4%)	13 (10%)	**0.01**	1.51	0.79, 2.64	0.20
CEA	6896 (3%)	11 (5%)	0.18	1.17	0.58, 2.10	0.60
Reintervention						
All Procedures	33845 (3%)	194 (8%)	**<0.001**	1.60	1.36, 1.86	**<0.001**
LE Bypass	11049 (13%)	76 (24%)	**<0.001**	1.78	1.36, 2.30	**<0.001**
PVI	4116 (1%)	33 (3%)	**<0.001**	2.15	1.49, 3.01	**<0.001**
Amputation	2504 (8%)	27 (9%)	0.31	0.99	0.63, 1.50	>0.9
SIB	2881 (10%)	20 (16%)	0.08	0.54	0.09, 1.84	0.40
TEVAR	3179 (10%)	29 (25%)	**<0.001**	1.85	1.17, 2.86	**0.006**
EVAR	2513 (3%)	6 (5%)	0.14	1.14	0.43, 2.48	0.80
OAR	2342 (12%)	9 (26%)	**0.02**	2.17	0.91, 4.78	0.07
CAS	2910 (2%)	4 (3%)	0.77	1.11	0.34, 2.64	0.80
CEA	4346 (2%)	8 (4%)	0.09	1.62	0.73, 3.07	0.20
Length of Stay (days) (Mean, SD)				**Extended LOS (N,%)**		
All Procedures	3.74 (16.8)	11.0 (19.4)	**<0.001**	3.5	3.20, 3.83	**<0.001**

IQR: Interquartile range; EVAR: endovascular aortic repair; TEVAR: thoracic endovascular aortic repair; OAR: open aortic repair; CEA: carotid endarterectomy; CAS: carotid artery stenting; PVI: peripheral vascular intervention; AAA: Abdominal Aortic Aneurysm; MI: Myocardial infarction; CABG: Coronary artery bypass graft; COPD: Chronic obstructive pulmonary disease; CHF: Congestive heart failure; CKD: Chronic kidney disease; GFR: Glomerular filtration rate; ACE: Angiotensin converting enzyme inhibitor; ARB: Angiotensin II receptor blocker; ADI: Area Deprivation Index, divided by quintiles.

Results

Table II. Baseline characteristics

	Housed N=1034734 (99.8%)	Housing Insecure N=2360 (0.2%)	P-value
Procedure			
Supra-inguinal Bypass	7949 (0.8%)	30 (1.3%)	**0.01**
Lowe Extremity Bypass	88008 (8.5%)	323 (13.7%)	**<0.001**
PVI	415905 (40.2%)	1094 (46.4%)	**<0.001**
TEVAR	32291 (3.1%)	118 (5.0%)	**<0.001**
EVAR	89332 (8.6%)	111 (4.7%)	**<0.001**
Carotid Endarterectomy	216259 (20.9%)	222 (9.4%)	**<0.001**
Carotid Artery Stent	133268 (12.9%)	137 (5.8%)	**<0.001**
TFCAS	56576 (42.5%)	81 (59.1%)	**<0.001**
TCAR	72117 (54.1%)	50 (36.5%)	**<0.001**
Open AAA Repair	19092 (1.8%)	35 (1.5%)	0.22
LEA	32630 (3.2%)	290 (12.3%)	**<0.001**

- Unhoused patients are younger, more often male, and non-white, undergoing more urgent and emergent procedures.
- 23% of unhoused discharged to housing insecurity.
- Perioperative and 5-year mortality did not differ between groups.
- Housing insecurity associated with higher odds of extended length of stay, reintervention, and complications.

Conclusions

- Unhoused patients undergo more emergent procedures, higher reintervention rates, and experience more complications than housed patients.
- Results suggest earlier screening for vascular disease in the unhoused population.
- Emphasize equitable discharge practices to ensure continuity of care and prevent readmissions.

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