

Patients in States that Expanded Medicaid Are Less Likely to Have Tunneled Dialysis Catheters at the Time of First Arteriovenous Access Creation

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OBJECTIVES

- The Affordable Care Act (ACA) expanded Medicaid eligibility among non-elderly adults with incomes up to 138% of federal poverty level
- Several states have not implemented the measure
- Prior to Medicaid expansion, 1/5 of non-elderly adults diagnosed with end-stage renal disease (ESRD) were uninsured before qualifying for Medicare in the 4th month of dialysis
- Uninsured status associated with increased hemodialysis initiation using tunneled dialysis catheters (TDC), rather than arteriovenous (AV) access, potentially due to inadequate or delayed access to pre-dialysis care
- National Kidney Foundation recommends against TDC use due to higher risk of access-related infection and mortality and lower cost-effectiveness c/w AV access
- Among general population, Medicaid expansion associated with improved insurance coverage and health outcomes
- Among ESRD patients, Medicaid expansion associated with ↑ AV creation, but its association with a change in hemodialysis initiation with TDCs is unknown. Impact of expansion on survival, which could be influenced by changes in TDC use, also unclear
- Study Aim:** Among patients undergoing AV access creation, evaluate whether Medicaid expansion associated with
 - TDC use for hemodialysis initiation
 - Postoperative survival
 - Changes in payer mix

METHODS

Study Design:
Retrospective Cohort Study



Database:
 • Vascular Quality Initiative (VQI) 2011-2018
 • State-level AV access data from >100 academic/non-academic medical centers

State/Patient Selection:

- Adult, non-Medicare patients undergoing initial AV access creation
- As per VQI policy, included patients in states with ≥ 3 participating medical centers

METHODS: STATE/PATIENT SELECTION

8,462 non-Medicare patients undergoing initial AV access creation in 31 states



- Sample stratified based on whether patients underwent AV access creation in Medicaid expansion or non-Medicaid expansion states
 - Medicaid expansion states defined as those that expanded Medicaid eligibility from Jan 2014 to Feb 2015 (19 states)
 - Medicaid expansion did not occur before 2019 in 12 states

METHODS: CONCURRENT TDC USE

Outcomes:
 • Concurrent TDC use, postoperative mortality

Exposure:
 • Medicaid expansion vs. non-Medicaid expansion in the post-Medicaid expansion period from February 2015 to December 2018

Statistical Analysis:
 • Univariable and multivariable analysis

METHODS: PAYER MIX

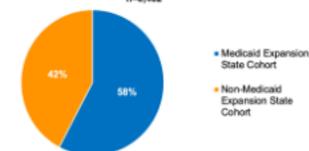
Outcomes:
 • Payer mix

Exposure:
 • Medicaid expansion

Statistical Analysis:
 • Difference-in-differences analysis

RESULTS

Proportion of Patients in Medicaid versus Non-Medicaid Expansion States (2015-2018)
 n=8,462



Demographics and Comorbidities by Medicaid Expansion Status

Characteristic	Overall N=8462	Medicaid Expansion N=4854	No Medicaid Expansion N=3608	P-value
Age, years (mean ± SD)	57.5 ± 14.4	59.5 ± 14.5	54.6 ± 13.8	<.001
Male gender	4,992 (59%)	2,928 (60%)	2,064 (57.7%)	.04
Non-white race	4,107 (48.5%)	2,147 (44%)	1,960 (54.8%)	<.001
Hispanic ethnicity	985 (11.6%)	633 (13%)	352 (9.8%)	<.001
Primary Insurer				<.001
Medicaid	2,008 (23.7%)	1,136 (23.3%)	872 (24.4%)	
Commercial	5,859 (69.2%)	3,620 (74.1%)	2,239 (62.6%)	
Military/Veteran Affairs	115 (1.4%)	52 (1.1%)	63 (1.8%)	
Non-US insurance	24 (0.3%)	9 (0.2%)	15 (0.4%)	
Self-Pay	456 (5.4%)	67 (1.4%)	389 (10.9%)	
Smoking History	4,135 (48.9%)	2,445 (50.1%)	1,690 (47.1%)	.01
Diabetes	5,146 (60.8%)	3,071 (62.9%)	2,075 (58%)	<.001
Coronary Artery Disease	1,554 (18.4%)	938 (19.2%)	616 (17.2%)	.02
Anemia	3,447 (40.7%)	2,052 (42%)	1,395 (39%)	<.001

Procedural Details by Medicaid Expansion Status

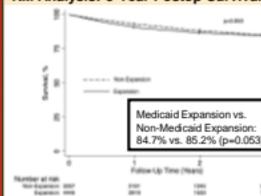
Operative Setting	Overall	Medicaid Expansion	No Medicaid Expansion	P-value
Office-based	25 (0.3%)	20 (0.4%)	5 (1%)	<.001
Ambulatory center	377 (4.5%)	354 (7.2%)	23 (0.6%)	
Hospital, outpatient	6,386 (75.5%)	3,435 (70.3%)	2,951 (82.5%)	
Hospital, inpatient	1,669 (19.7%)	1,070 (21.9%)	599 (16.7%)	
AV Access Type				<.001
Fistula	7,412 (87.6%)	4,206 (86.1%)	3,206 (89.6%)	
Graft	1,045 (12.3%)	674 (13.8%)	371 (10.4%)	
Concurrent Catheter	3,652 (43.2%)	1,943 (39.8%)	1,709 (47.8%)	<.001

Multivariable Analysis of Concurrent TDC Use

	OR	95% CI	P-value
Medicaid Expansion	.7	.63 - .78	<.001
Pre-admission Homelessness vs. Living at Home	3.33	1.45 - 7.66	.01
Pre-admission Living at Nursing Home vs. Home	1.68	1.22 - 2.3	.001
Non-white Race	1.32	1.19 - 1.46	<.001
Congestive Heart Failure	1.27	1.12 - 1.43	<.001
Hispanic Ethnicity	1.18	1.01 - 1.38	.04
Male Gender	1.15	1.03 - 1.27	.01
Age, year	.99	.98 - .99	<.001
Smoking History	.88	.79 - .98	.02
Hemoglobin < 10 g/dL	.88	.79 - .97	.01
Diabetes	.87	.78 - .97	.01
Obesity	.5	.45 - .56	<.001
Ambulatory with/without Assistance	.43	.34 - .56	<.001
Coronary Artery Disease	1.15	1 - 1.31	.05

RESULTS

KM Analysis: 3-Year Postop Survival



Multivariable Analysis 3-Year Postop Survival

	HR	95% CI	P-value
Medicaid Expansion	.85	.82 - 1.1	.001
Diabetes	1.48	1.34 - 1.72	<.001
CHF	1.42	1.22 - 1.66	<.001
Concurrent TDC Use	1.42	1.32 - 1.64	<.001
Pre-admission Living at Nursing Home	1.4	1.03 - 1.91	.03
PHD	1.4	1.12 - 1.75	.003
CABG/PCI	1.38	1.14 - 1.8	<.001
COPD	1.33	1.12 - 1.57	.001
Smoking History	1.21	1.05 - 1.41	.01
Anemia	1.21	1.05 - 1.4	.01
Age, year	1.02	1.02 - 1.03	<.001
AVF vs AVG Placement	.79	.68 - .95	.01
Obesity	.73	.62 - .85	<.001
Hispanic Ethnicity	.73	.63 - .84	.04
Non-white Race	.67	.57 - .78	<.001
Hypertension	.6	.48 - .75	<.001
Male Gender	1.13	.97 - 1.31	.11
Ambulatory with/without Assistance	.81	.63 - 1.05	.11
Pre-admission Homelessness	.5	.12 - 2.01	.33

Difference-in-Differences Analysis: Unadjusted Changes in Insurance Coverage Associated with Medicaid Expansion

Insurance Type	Medicaid Expansion States N=1795			Non-Medicaid Expansion States N=4589			Unadjusted Change Percentage Points (95% CI)	P-value
	Before Expansion, % N=4225	After Expansion, % N=8070	Difference, Percentage Points (95% CI)	Before Expansion, % N=493	After Expansion, % N=8016	Difference, Percentage Points (95% CI)		
Any Insurance	90.8	98.1	7.3 (8.1 - 13.8)	93.7	91.4	-2.4 (7.3 - 2.8)	9.8 (2.3 - 16.8)	.01
Medicaid	19.7	24.1	4.4 (2.1 - 10.8)	34.5	27.9	-7.1 (-25.6 - 11.5)	11.4 (4.9 - 27.8)	.16
Commercial	68.9	72.8	3.9 (1.9 - 9.8)	58.2	61.4	3.7 (1.7 - 24.4)	2.9 (17.8 - 18.2)	.87

Adjusted Changes in Insurance Coverage Associated with Medicaid Expansion

Insurance Type	Adjusted Change Percentage Points (95% CI)	P-value
Any Insurance	21.8 (4.9)	.07
Medicaid	9.2 (2.7 - 15.8)	.01
Commercial	4.8 (1.3 - 8.6)	.01
Stratified by Non-White Race		
Any Insurance	9.3 (-1.1)	.202
Medicaid	18.8 (7.7 - 30.4)	.001
Commercial	-7.1 (-17.2 - 3.0)	.154
Stratified by Hispanic Ethnicity		
Any Insurance	36.1 (3.9 - 69.8)	.001
Medicaid	118.9 (2.2 - 192)	.001
Commercial	16.9 (1.1 - 30.2)	.038

* Adjusted for state and month/year

CONCLUSIONS

- Patients undergoing initial AV access creation for hemodialysis in Medicaid expansion states were less likely to have tunneled catheters
- Treatment in Medicaid expansion states did not appear to confer a survival advantage in this surgical cohort over 3 years
- Medicaid expansion associated with a shift in VQI payer mix toward Medicaid
- Hispanic patients experienced gains in insurance coverage
- Medicaid expansion has potential for improving quality metrics among patients with ESRD