

Medicaid Policy and Liver Transplant for Alcohol-Associated Liver Disease

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SUPPLEMENTARY RESULTS

Proportion of Payment by Medicaid for LT in ALD including Patients with Hepatocellular Carcinoma

In an analysis adjusting for individual-level characteristics affecting likelihood of LT, region wait-time, differences by era in unrestricted states, and differences between restricted and unrestricted states in 2002-11, a restricted policy was associated with lower odds of LT paid by Medicaid for ALD in 2012-17 (aOR 0.76, 95% CI 0.57-0.96, $p=0.04$). Between 2002-11, the adjusted proportion of LT paid by Medicaid was 18.0% (95% CI 15.8-20.2%) vs. 19.7% (95% CI, 16.6-22.9%) among restricted vs. unrestricted states. Between 2012-17, the adjusted proportion of LT paid by Medicaid was 17.1% (95% CI, 14.7-19.6%) vs. 23.0% (95% CI, 19.5-26.6%) among restricted vs. unrestricted states. In difference-of-difference analysis, restricted (vs. unrestricted) policies were associated with an absolute decrease of 4.1% (95% CI, 0.2-8.1%, $p=0.04$) in adjusted proportion of LT paid by Medicaid after 2011.

In adjusted analysis to ensure our findings were not due to different prevalence of ALD among total LT recipients, we confirmed that a restricted policy was not associated with an increase in the odds of ALD among total LT recipients between 2012-17 (aOR 1.09, 95% CI 0.94-1.27, $p=0.26$).

Proportion of Payment by Private Insurance for LT in ALD including Patients with Hepatocellular Carcinoma

To assess proportion of private insurance payment among LT for ALD recipients, in an analysis adjusting for individual-level characteristics affecting likelihood of LT, region wait-time, differences by era in unrestricted states, and differences between restricted

and unrestricted states in 2002-11, restricted policy was associated with similar odds of LT for ALD paid by private insurance in 2012-17 (aOR 1.18, 95% CI 0.96-1.45, p=0.12). Between 2002-11, the adjusted proportion of LT paid by private insurance was 62.0% (95% CI 59.7-64.4%) vs. 57.5% (95% CI, 54.6-60.5%) among restricted vs. unrestricted states. Between 2012-17, the adjusted proportion of LT paid by private insurance was 59.9% (95% CI, 56.9-62.8%) vs. 51.4% (95% CI, 47.9-55.0%) among restricted vs. unrestricted states. In difference-of-difference analysis, restricted (vs. unrestricted) policies were associated with an absolute increase of 3.9% (95% CI, -0.9 to +8.7%, p=0.11) in adjusted proportion of LT paid by private insurance after 2011.

Supplemental Table 1. Classification of State Policies, Proportion of Liver Transplants for Alcohol-Associated Liver Disease Paid by Medicaid vs. Non-Medicaid Between 2002-2017

Restrictive States				Unrestrictive States			
State	Non-Medicaid N (%)	Medicaid N (%)	Total	State	Non-Medicaid N (%)	Medicaid N (%)	Total
Arizona	175 (80.3)	43 (19.7)	218 (100)	Alabama	152 (93.8)	10 (6.2)	162 (100)
Arkansas	39 (72.2)	15 (27.8)	54 (100)	Connecticut	50 (66.7)	25 (33.3)	75 (100)
California	790 (70.7)	327 (29.3)	1,117 (100)	Florida	812 (83.4)	161 (16.5)	973 (100)
Colorado	87 (73.1)	32 (26.9)	119 (100)	Kansas	101 (82.1)	22 (17.9)	123 (100)
District of Columbia	103 (83.1)	21 (16.9)	124 (100)	Kentucky	143 (74.1)	50 (25.9)	193 (100)
Georgia	318 (87.1)	47 (12.9)	365 (100)	Maryland	276 (76.7)	84 (23.3)	360 (100)
Hawaii	8 (80.0)	2 (20.0)	10 (100)	Minnesota	248 (89.5)	29 (10.5)	277 (100)
Illinois	420 (77.1)	125 (22.9)	545 (100)	Missouri	168 (80.4)	41 (19.6)	209 (100)
Indiana	205 (82.3)	44 (17.7)	249 (100)	New York	421 (77.7)	121 (22.3)	542 (100)
Iowa	41 (71.9)	16 (28.1)	57 (100)	Oregon	52 (85.2)	9 (14.8)	61 (100)
Louisiana	316 (90)	35 (10.0)	351 (100)	Puerto Rico	18 (78.3)	5 (21.7)	23 (100)
Massachusetts	302 (76.8)	91 (23.2)	393 (100)	South Carolina	73 (79.4)	19 (20.6)	92 (100)
Michigan	279 (86.1)	45 (13.9)	324 (100)	Virginia	131 (84.5)	24 (15.5)	155 (100)
Nebraska	100 (80.6)	24 (19.4)	124 (100)	Wisconsin	382 (76.4)	118 (23.6)	500 (100)
New Jersey	12 (38.7)	19 (61.3)	31 (100)				
North Carolina	184 (93.9)	12 (6.1)	196 (100)				
Ohio	307 (78.1)	86 (21.9)	393 (100)				
Oklahoma	45 (86.5)	7 (13.5)	52 (100)				
Pennsylvania	767 (85.8)	127 (14.2)	894 (100)				
South Dakota	3 (50.0)	3 (50.0)	6 (100)				
Tennessee	216 (86.4)	34 (13.6)	250 (100)				

Texas	889 (91.0)	88 (9.0)	977 (100)				
Utah	65 (76.5)	20 (23.5)	85 (100)				
Washington	125 (79.6)	32 (20.4)	157 (100)				

States not included in this study due to no LTs performed in 2017: Alaska, Idaho, Maine, Mississippi, Montana, Nevada, New Hampshire, New Mexico, North Dakota, Rhode Island, Vermont, West Virginia, Wyoming

Supplemental Table 2. Recipient Characteristics at Time of Liver Transplant between 2002-2011 vs. 2012-2017

Recipient Characteristic	2002-2011 (N=5,421)	2012-2017 (N=5,415)	P
Age – yr – median (IQR)	54 (48-60)	53 (46-59)	<0.001
Male, n (%)	4,222 (78)	4,028 (74)	<0.001
Medicaid Insurance, n (%)	977 (18)	1,036 (19)	0.14
Private Insurance, n (%)	3,270 (60)	3,119 (58)	0.004
Race / Ethnicity, n (%)			0.002
Caucasian	4,357 (80)	4,264 (79)	
African American	212 (4)	222 (4)	
Hispanic	743 (14)	756 (14)	
Asian	51 (1)	93 (2)	
Other	58 (1)	80 (2)	
Highest Education Level, n (%)			<0.001
High School or Below	2,336 (43)	2,255 (42)	
College or Above	2,045 (38)	2,815 (52)	
Unknown	1,040 (19)	345 (6)	
Body Mass Index, median (IQR)	27.6 (24.3-31.6)	28.2 (24.7-32.3)	<0.001
Diabetes*, n (%)	1,033 (19)	938 (17)	<0.001
Renal Replacement Therapy, n (%)	882 (16)	1,449 (27)	<0.001
Portal Vein Thrombosis at LT** n (%)	343 (6)	528 (10)	<0.001
MELD Score at LT, median (IQR)	24 (18-31)	30 (23-37)	<0.001
SLK Recipient, n (%)	489 (9)	690 (13)	<0.001
Region Wait Time, n (%)			0.66
Low	1,994 (37)	2,014 (37)	
Medium	2,223 (41)	2,175 (40)	
High	1,204 (22)	1,226 (23)	
Days on Waitlist, median (IQR)	37 (10-141)	22 (7-93)	<0.001

*For diabetes status, 110 (2.0%) missing values in 2002-2011 group, 18 (0.3%) missing values in 2012-2017 group

**For portal vein thrombosis at LT, 136 (2.5%) missing values in 2002-2011 group, 38 (0.7%) missing values in 2012-2017 group