Physician Density, Social Vulnerability and Access to Allogeneic Hematopoietic Cell Transplant in Texas

Poster #CT-362

Samantha Watters, MPH[1,2]; Jaime M. Preussler, MS[1]; Christa Meyer, MS[1]; Mary Senneka, MBA[1]

1. NMDP/CIBMTR; 2. University of Maryland School of Public Health

CIBMTR (Center for International Blood and Marrow Transplant Research) is a research collaboration between the Medical College of Wisconsin and NMDP.

CIBMTR® A RESEARCH COLLABORATION BETWEEN THE MEDICAL COLLEGE OF WISCONSIN AND NMDP

SCHOOL OF PUBLIC HEALTH — DEPARTMENT OF BEHAVIORAL AND COMMUNITY HEALTH

PRESENTER

Samantha Watters, MPH
swatters@nmdp.org
CIBMTR.org

CONTACT ME

BACKGROUND

- Access to allogeneic hematopoietic cell transplantation (alloHCT) is limited by many factors, with only 1 in 3 patients who may need a transplant receiving one
- Physician density of hematology/oncology and HCT physicians is largely unstudied
- Texas was previously identified as having a high risk of alloHCT access challenges due to high social vulnerability index (SVI) and alloHCT unmet need

STUDY AIM

- To examine associations between state-level SVI, physician density, estimated percent alloHCT unmet need and actual alloHCT utilization in Texas

METHODS

- Retrospective analysis, N=254 Texas counties
- **Data sources**: SVI (Centers for Disease Control and Prevention); Doctors and Clinicians national downloaded file (Center for Medicare and Medicaid Services) for all hematology-oncology and HCT physicians with Medicare enrollment; 2018-2022 estimated alloHCT unmet need and actual utilization (NMDP/CIBMTR)
- **Variables**: Physician density calculated as providers per 10,000 population; alloHCT utilization per 100,000 county population; estimated percent unmet need per 100,000 county population calculated with Surveillance, Epidemiology, and End Results (SEER) and Census data; all variables collapsed into binary categories (low, high) based on percentiles for interpretability (**Table 1**)
- Logistic regression analysis compared results
- Total SVI and individual SVI subthemes (socioeconomic status, household characteristics, race/ethnicity, and housing/transportation) were tested in separate models

Data suggest that physician density and SVI themes may be critical for alloHCT access and utilization.

Household vulnerability is associated with lower odds of living in an area with high physician density. Physician density is associated with higher odds of living in an area with high alloHCT utilization and reduced unmet need (**Table 2**).

Table 2: Multivariable logistic regression models assessing relationships between social vulnerability and physician density, alloHCT utilization, and unmet need

Variable	Odds Ratio (95% Confidence Interval)		
	Physician Density	alloHCT Utilization	% Unmet Need
Socioeconomic Status	0.717 (0.364, 1.413)	0.631 (0.347, 1.146)	1.494 (0.819, 2.724)
Household Characteristics	**0.455**** (0.234, 0.883)	0.783 (0.440, 1.394)	1.163 (0.651, 2.077)
Race/Ethnicity	0.853 (0.452, 1.610)	**2.063**** (1.163, 3.659)	**0.449**** (0.253, 0.798)
Housing/ Transportation	**4.601**** (2.336, 9.063)	0.954 (0.526, 1.729)	1.029 (0.566, 1.868)
Physician Density	----------	**1.649*** (0.920, 2.954)	**0.512**** (0.284, 0.922)

Note: *Significant at p<0.1. **Significant at p<0.05. Socioeconomic status=below 150% poverty, unemployed, housing cost burden, no high school diploma, no health insurance. Household characteristics=aged 65 or older, aged 17 or younger, civilian with a disability, single-parent households, English language proficiency. Race/ethnicity=race/ethnicity other than white, non-Hispanic. Housing/transportation=multi-unit structures, mobile homes, crowding, no vehicle, group quarters.

DESCRIPTIVE RESULTS

Table 1: Defining thresholds for binary categories used in logistic regression analyses

Variable	Range	Mean ± SD	High
SVI themes	0-1	0.50 ± 0.29	>0.50
Physician Density	0-1.75	0.14 ± 0.29	>0
AlloHCT Utilization	0-743.68	10.89 ± 46.74	>7.48
% Unmet Need	0-100	68.26 ± 27.79	>69.42

Note: Due to the large number of counties without any physicians, PD was split into "no physicians" for low (N=178, 70.1%) and "any physicians" for high (N=76, 29.9%). All other variables were split into low and high based on the 50th percentile (N=127, 50% in both categories).

FINDINGS

- Positive associations between race/ethnicity and areas of higher alloHCT utilization and lower unmet need, as well as associations between housing/transportation vulnerabilities and high physician density, may be skewed by diverse metropolitan areas (**Table 2**).

CONCLUSIONS AND FUTURE DIRECTIONS

- Results support a need for targeted initiatives and resources for counties with low physician density and high SVI.
- Relationships between variables should be further examined to better understand the results, particularly how race/ethnicity relates to alloHCT utilization and unmet need.
- While these data cannot establish causal relationships at the population level, data can be further examined in other at-risk states to inform initiatives, funding, and policy to improve access.

DISCLOSURE

- There are no relevant conflicts of interest to disclose.