# Language Accessibility of Liver Transplantation Center Websites

#### TO THE EDITOR:

Low health literacy is a contributor to health care disparities and can be an insurmountable barrier to accessing quality care. (1) End-stage liver disease is a complex and daunting diagnosis for patients to educate themselves about. In liver transplantation, a lack of easy-to-understand educational materials and low health literacy have been associated with lower rates of waitlisting. (2,3) Language accessibility is another key component of health literacy. Because more than 20% of the US population speaks a language other than English, the lack of language-accessible resources can create further barriers to care for many patients. (4)

Patients of all backgrounds frequently rely on the internet for accessing health information on a new diagnosis. (5) One potential measure of a transplant center's health equity efforts is the availability of

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non-English-language patient-facing resources, especially online resources. Providing language-accessible online information about the basics of liver transplantation and eligibility requirements is a fundamental practice for any transplant center committed to equitable stewardship of limited transplantation resources.

Within this context, we sought to assess the language accessibility of liver transplantation center Websites. We surveyed the patient-facing educational Websites of all 140 active, accredited US liver transplantation centers. We analyzed each Website to determine how many had information in a language other than English. We hypothesized that the majority of centers did not offer patient-facing materials specific to liver transplantation in a language other than English.

### Methods

Active, accredited US liver transplantation centers as of December 2020 were identified using the Organ Procurement and Transplantation Network Website. Exclusion criteria were active centers in Puerto Rico, as Spanish is the predominant governmental language. Demographic information for each state was obtained from publicly available US Census Bureau reports. (4) Data on 2020 transplant volume per center were obtained from the publicly available Scientific Registry of Transplant Recipients.

The patient-facing Website for each active liver transplantation center was located using the Google search engine. A comprehensive search of each center's Website was performed to identify any patient-facing, transplant-specific resources in a language other than English. This included navigation of the liver transplantation center's homepage, subpages, external links, and drop-down menus. Nondiscrimination notices and hospital interpreter information were excluded from this assessment. Resource type was categorized as integrated Website translation, individually translated resources, or separate Websites in another language.

Descriptive statistics were used to report the number and percentage of transplant centers that provided information in a language other than English. As transplant volume can vary center to center, which may affect the reach of alternative language resources, state-level and center-level transplant volumes from January 2020 through December 2020 were included in the analysis.

## Results

Websites were identified for all 140 active transplant centers included in the study, representing 38 states and the District of Columbia. A total of 23 states had no transplant centers that provided online materials in a second language. Resources in a language other than English were found in 24.3% (n = 34) of Websites, representing 41.0% (n = 16) of states. By center transplant volume, 31.1% of liver transplantation operations in the United States were performed at a center with online resources in a language other than English. Resource availability ranged from 3% to 100% per state (Fig. 1). California had the highest number of centers with resources in an alternative language at 58.3% (n = 7), followed by Texas at 42.9% (n = 6) and New York at 50% (n = 4; Supporting Table 1).

A total of 36 individual translated resources were identified across 34 Websites. Most centers had only 1 type of resource (94.1%; n = 32). The most common type of resource was individually translated materials at 50.0% (n = 18), followed by integrated translation at 44.4% (n = 16) and separate Websites at 5.6% (n = 2). Individually translated resources included pamphlets, single Web pages, health libraries, videos, and surveys. Some resources were translated in more than 1 language, with 108 different languages represented. Spanish was the most common language available at 100.0% (n = 36), followed by Arabic at 38.9% (n = 14) and Mandarin Chinese at 38.9% (n = 14). A total of 10 states had online patient materials in an alternative language that was not Spanish, with 108 different languages represented (Supporting Table 1).

### Discussion

Although more than 25 million people residing in the United States have low English-language proficiency, only 16 of 39 states with active liver transplantation centers had patient-facing online materials in alternative languages. (4) Approximately 70% of the liver

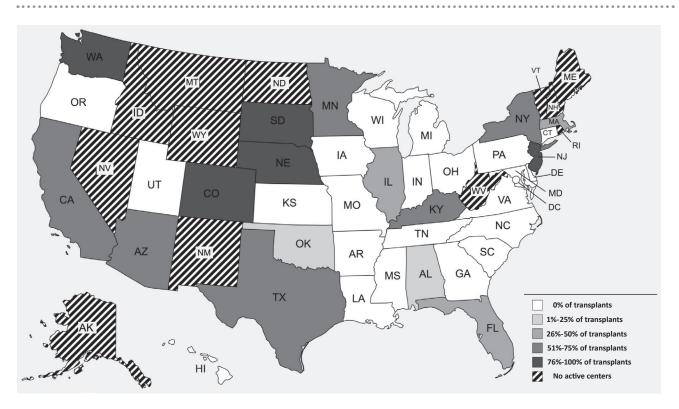


FIG. 1. Transplant volume per state served by a center that provided online resources in a language other than English.

transplantation operations in the United States were performed at a center without any alternative language online patient materials, and in the centers with language-accessible Websites, Spanish offerings are predominant.

In states with the highest reported populations with alternative language needs<sup>(4)</sup> (Texas, California), alternative language offerings are available at only 40% to 60% of centers. Current national offerings have a strong focus on Spanish, the second most commonly spoken language in the United States. However, 8.3% of the US population speaks a language other than Spanish or English at home. Because only 14 centers have resources in alternative languages other than Spanish, many patients with alternative language needs are underserved.<sup>(4)</sup>

The limitations of this study include reliance on the search engine algorithm to locate the official center Websites. Our analysis does not reflect any recent changes in the evaluated Websites. In addition, we were unable to assess in-person resources, such as brochures or multilingual staff (although these resources are likely only available to patients during evaluation). There are states without active transplant centers whose populations receive transplant care at centers out of state, thus our state-level and transplant center-level analyses are limited by this confounding factor. However, the lack of accessible resources is demonstrated nationwide, and patients who are residents in states without active centers have been included in the statewide analyses of the transplant center where they were served.

There is a great need for patient-facing materials for liver transplantation in languages other than English. Current liver transplantation center Websites' resources are not accessible to a large portion of patients with alternative language needs. Future work may include describing in-person offerings of transplant centers and surveying centers on their current engagement with non-English-speaking patients. Centralized translated

resources may be an achievable first step in improving access, and center-level accessibility for patients should be considered as a novel quality metric as it is integral to closing the equity gap in transplantation.

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#### REFERENCES

- De Oliveira GS, McCarthy RJ, Wolf MS, Holl J. The impact of health literacy in the care of surgical patients: a qualitative systematic review. BMC Surg 2015;15:86.
- Bittermann T, Dwinnells K, Chadha S, Wolf MS, Olthoff KM, Serper M. Low health literacy is associated with frailty and reduced likelihood of liver transplant listing: a prospective cohort study. Liver Transpl 2020;26:1409-1421.
- Bababekov YJ, Hung Y-C, Rickert CG, Njoku FC, Cao B, Adler JT, et al. Health literacy burden is associated with access to liver transplantation. Transplantation 2019;103:522-528.
- 4) US Census Bureau. Language spoken at home, limited English speaking households. https://data.census.gov/cedsci/all?q=Unite d%20States&tid=GOVSTIMESERIES.CG00ORG01. Published 2019. Accessed May 21, 2021.
- 5) Pew Research Center. The social life of health information. https://www.pewresearch.org/internet/2011/05/12/the-social-life-of-health-information-2011. Published 2011. Accessed May 21, 2021.