

Team uncovers social, economic factors influencing acute liver failure in children, and ways to overcome them

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Imagine your healthy child gets sick—so sick that you take them to the emergency department. You are shocked to find out that their liver is

failing, and they will need a transplant to survive. Studies show that their chances of survival are higher the faster they can get to a hospital that performs liver transplants. But what factors affect how quickly that happens?

Pediatric [acute liver failure](#), also called PALF, is a life-threatening condition that emerges with very little warning in previously healthy [children](#). It is rare, affecting about 5,000 children in the United States a year, and can result from viral hepatitis or drug-induced liver injury (such as a child accidentally swallowing too much Tylenol)—or appear with no apparent cause at all. Many children recover with supportive care or medications, but for some, an emergency liver transplant is the only way to save their lives.

A Children's Hospital Los Angeles research team has found that for these children, the likelihood of receiving a liver transplant and the prospects of recovery can depend upon factors outside their overall health. The research is [published](#) in the journal *Pediatric Transplantation*.

"Studies have shown that prompt referral to a liver transplant center reduces the chances of death," says Johanna Ascher Bartlett, MD, Transplant Hepatology fellow at CHLA and corresponding author on the paper. "But is everybody who needs a transplant referred to a transplant center in time? Outside of the clinical factors we are monitoring, we wanted to understand if there were any overlooked disparities that we could address to improve our patients' ability to receive transplants and care."

The researchers wanted to know if patient race, ethnicity and social determinants of health—the [environmental factors](#) like neighborhood, social support systems, [economic stability](#) and more that can affect a person's health in unexpected ways—could impact the outcomes of children with acute liver failure. The researchers examined the [medical](#)

[records](#) of 145 children admitted to CHLA with acute liver failure over the past two decades. The team then validated the CHLA results with data from 156 patients who were part of the larger National Institutes of Health Pediatric Acute Liver Failure Study Group, which included patients from 12 different centers.

The analysis showed that factors like [family support](#), employment (parent or caretaker), patient age, race and language spoken can affect clinical outcomes.

"Families with more financial and interpersonal support tend to experience better outcomes—spontaneous recovery or liver transplant rather than death—while patients from [lower-income families](#) have worse outcomes, regardless of insurance status," says Dr. Ascher Bartlett. "Overall, our data indicate that the children who died more often had limited social support systems and parents who were the primary caregiver but who worked full-time."

Uncovering hidden influences

In the Children's Hospital Los Angeles group:

- 55% of CHLA liver transplant patients reported having "extensive" community and family/friend support
- 40% of families of patients who died reported having extensive support
- 11% of primary caregivers were unemployed in the group of transplant patients with worse outcomes
- 7% of transplant patients who died had primary caregivers who were unemployed
- 5% of patients in the spontaneous recovery group had primary caregivers who were unemployed

"These data show that barriers still exist for children with acute liver failure who are admitted to pediatric transplant centers," says Juliet Emamaullee, MD, Ph.D., FRCSC, FACS, transplant surgeon at CHLA and senior author on the paper. "There may be [unconscious biases](#) held by medical teams in evaluating children with acute liver failure. Our data serves as a reminder that we need to maintain a patient-centered approach when evaluating patients, especially for families that may struggle to navigate the complexities of the health care system."

Overcoming disparities

However, when the researchers examined CHLA acute liver failure patients for disparities using the social deprivation index—a standard statistical tool measuring income, [poverty rate](#) and education according to zip code—they found that socio-economic disparities existed, but did not necessarily interfere with these children's chances of getting a transplant or their health outcomes.

"While similar studies on a larger scale and in different urban settings are needed to truly determine the relationships between social determinants of health and access to prompt care at a transplant center, our data suggests that current referral patterns to CHLA—the only freestanding pediatric hospital in the U.S. that serves under-resourced communities—may be effective in overcoming these potential barriers," says Dr. Emamaullee, Research Director, Division of Abdominal Organ Transplantation.

"From our experience, screening for inequities can equip clinicians with the tools needed to identify unmet health-related social and economic needs of patients, and collaborating with community health organizations could allow providers to refer patients with socioeconomic insecurities so they can be more quickly routed to transplant centers."

More information: Johanna Ascher Bartlett et al, Finance, race, ethnicity, and spoken language impact clinical outcomes for children with acute liver failure, *Pediatric Transplantation* (2024). [DOI: 10.1111/petr.14686](https://doi.org/10.1111/petr.14686)

Provided by Children's Hospital Los Angeles

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