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The Need for Liver Transplants Is Skyrocketing Among Older Americans

ALEXANDRIA, Va. – A new study has found that the proportion of older Americans who need a liver transplant (LT) has sharply increased in recent years, often due to the rising number of cases of nonalcoholic steatohepatitis (NASH). As the U.S. population ages, researchers estimate that more patients aged 65 or older will need an LT than ever before.

Researchers with Inova Health System in Falls Church, Virginia, conducted the study and will present their findings this week at [The Liver Meeting Digital Experience™](#) held by the [American Association for the Study of Liver Diseases](#). The researchers assessed recent trends among older Americans who require an LT, examined the medical indications for a transplant, as well as how these patients fare while waiting for a new liver and after LT surgery.

The study found that the percentage of LT candidates aged 65 or older was 9 percent from 2002 through 2005 and rose to 23 percent from 2018 to 2020. Many of these candidates also had NASH: Of the LT candidates from 2002 to 2005, 13 percent had NASH, and that percentage rose to 39 percent from 2018 through 2020. The percentage of patients with hepatitis C virus (HCV) dropped from 27 percent to 18 percent between the two study periods.

“In the past, older patients were routinely denied listing for liver transplantation because doctors believed they were less likely to survive the surgery and post-transplant management,” said Maria Stepanova, PhD, senior biostatistician at Inova Health System and the study’s co-author. “From the late 1960s through the 1980s, a recipient’s age could not exceed 45 to 50 years. That age limit gradually increased, but the application of arbitrary age cutoffs for transplant listing remained.”

Following transplant, however, older patients are now faring better than ever before. Recent data from pilot studies has revealed more about the feasibility of performing LTs in older patients.

“Age limits are largely being abandoned as exclusion criteria, but the mid- and long-term outcomes of elderly transplant candidates and recipients are still not well understood,” Stepanova said.

Researchers analyzed data on 31,209 LT candidates from 2002 to 2020 using the U.S. Scientific Registry of Transplant Recipients. All candidates were age 65 or older; 61 percent were male, 73 percent were white and 66 percent were on Medicare. Researchers found that 33 percent of the LT candidates had type 2 diabetes, and their mean body mass index was 25±5 kg/m². On a scale of 0–100, the candidates’ mean functional liver status was 65±22, below the

80-100 score that is associated with normal or good status. Candidates' Model for End-Stage Liver Disease (MELD) score, which estimates a patient's chances of surviving over the next three months, was 19 ± 10 . A MELD score ranges from six to 40, with higher numbers meaning an increased likelihood to receive a liver transplant. Of those studied, 3 percent were candidates for liver retransplant.

Medical conditions that indicated LT in older candidates varied:

- 31 percent had NASH.
- 23 percent had hepatitis C virus.
- 18 percent had alcoholic liver disease.
- 5 percent had primary biliary cholangitis.
- 3 percent had hepatitis B virus.
- 3 percent had autoimmune hepatitis.
- 3 percent had primary sclerosing cholangitis.

In addition to their primary liver disease, 30 percent of these older candidates also had hepatocellular carcinoma.

Among older LT candidates:

- 54 percent had a transplant.
- 12 percent died while waiting for an organ.
- 14 percent were removed from the waitlist due to deterioration.
- 2 percent refused LT.
- 4 percent improved and did not need LT.
- 7 percent were removed from the list for other reasons.
- 8 percent remained waitlisted.

Compared with younger candidates, older patients had a lower rate of LT and a higher rate of removal from the list due to their condition deteriorating, but their mortality rates while waitlisted were similar to those of younger candidates. Factors that predicted a higher chance of LT in older candidates included more recent waitlisting, being male and having a college degree, a higher MELD score or hepatocellular carcinoma diagnosis. Conversely, factors like being Hispanic, being on Medicaid or having pre-transplant Type 2 diabetes were associated with a lower chance of LT in older candidates. Rates of post-LT mortality were higher in older patients than in younger patients.

"As the U.S. population ages, this data is particularly relevant," said Zobair Younossi, MD, president of Inova Health System and the study's senior investigator.

"Similarly, patients with chronic liver diseases, especially NASH, are also getting older. By studying the outcomes of liver transplantation in the elderly, we can provide evidence to support the expansion the transplant candidate pool," Younossi said. "In fact, we believe it is more about the physiologic age of the patient than their chronologic age."

Dr. Stepanova's poster entitled "Non-Alcoholic Steatohepatitis (NASH) Is the Most Common Indication for Liver Transplantation (LT) Among the Elderly: Data from the United States Scientific Registry of Transplant Recipients (SRTR)" (1447) can be viewed at The Liver Meeting Digital Experience™, Nov. 12–15, 2021, and the corresponding abstract can be found in the journal [HEPATOLOGY](#).

About AASLD

AASLD is the leading organization of clinicians and researchers committed to preventing and curing liver disease. The work of our members has laid the foundation for the development of drugs used to treat patients with viral hepatitis. Access to care and support of liver disease research are at the center of AASLD's advocacy efforts.

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Abstract 1447: NON-ALCOHOLIC STEATOHEPATITIS (NASH) IS THE MOST COMMON INDICATION FOR LIVER TRANSPLANTATION (LT) AMONG THE ELDERLY: DATA FROM THE UNITED STATES SCIENTIFIC REGISTRY OF TRANSPLANT RECIPIENTS (SRTR)

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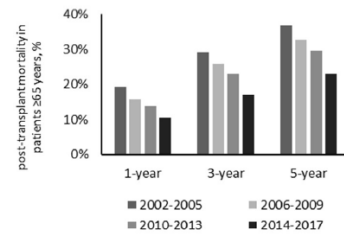
Abstract Text

Background: As the U.S. population ages, more elderly patients may need LT. Our aim was to assess recent trends among elderly Americans requiring LT.

Methods: SRTR data (2002 to 2020) was used to select elderly (≥ 65) LT candidates and assess on-list and post-LT outcomes. Predictors of post-LT mortality were assessed in a Cox proportional hazard model.

Results: During the study period, 31,209 LT candidates ≥ 65 were waitlisted: age 68 ± 3 years, 61% male, 73% white, 66% Medicare, 33% with type 2 diabetes (T2DM), BMI 29 ± 5 kg/m², functional status (0-100) 65 ± 22 , MELD score 19 ± 10 , 3% LT retransplants. Etiologies included NASH (31%), hepatitis C (HCV) (23%), alcoholic liver disease (18%), primary biliary cholangitis (5%), hepatitis B (3%), autoimmune hepatitis (3%), and primary sclerosing cholangitis (3%); 30% also had hepatocellular carcinoma (HCC). Over time, the proportion of patients ≥ 65 among all adult LT candidates increased from 9% (2002-2005) to 23% (2018-2020) (trend $p < 0.0001$). During this period, proportion of NASH among these candidates increased from 13% (2002-2005) to 39% (2018-2020) while the proportion of HCV decreased from 27% to 18%, respectively ($p < 0.0001$). Of these candidates, 54% were eventually transplanted, 12% died while waiting, 14% were removed due to deterioration, 2% refused LT, 4% improved, 7% were removed for other reasons, and 8% remained listed. In comparison to younger LT candidates, elderly candidates had lower crude transplant rate (54% vs. 59%, $p < 0.0001$), higher rate of removal due to deterioration (14% vs. 9%, $p < 0.0001$) but similar on-list mortality ($p > 0.05$). In multivariate analysis, independent predictors of a higher chance of receiving LT were more recent years of listing, male sex, college degree, higher MELD score, and HCC (all $p < 0.01$). In contrast, being Hispanic, covered by Medicaid, and having pre-transplant T2DM were associated with a lower chance of receiving LT among elderly (all $p < 0.01$). Post-LT mortality was higher than in younger recipients (all $p > 0.0001$). Despite this, mortality continued to decrease in this group (Figure). In multivariate analysis, independent predictors of higher post-LT mortality were earlier year of LT, older age, male sex, higher MELD score, history of T2DM, retransplantation, HCC (at baseline and in follow-up) (all $p < 0.01$).

Conclusion: The proportion of elderly patients in need of LT in the U.S. is sharply increasing. The outcomes of these patients have been improving in the past decades.



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