

REVIEW

Living liver donor safety: Preoperative aspects of living liver donation—*Guidelines from the ILTS–iLDT consensus conference*

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Abstract

Living donor liver transplantation (LDLT) is an established therapy with curative intent for pediatric and adult patients with acute liver failure and end-stage liver disease. Donor safety remains paramount and commences during preoperative evaluation and assessment. Given the importance of the topic, the International Liver Transplantation Society and International Living Donor Liver Transplantation Group consensus conference on Living Liver Donor Safety was convened in March 2025 (Toronto, Canada). Recommendations were based on the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) system for assessment of recommendations, and the Danish model of consensus was

Abbreviations: 2D-SWE, 2d shear wave elastography; anti-HBc, hepatitis B core-Ab; APTT, activated partial thromboplastin time; BMI, body mass index; CT, computed tomography; FLR, future liver remnant; G6PD, glucose-6-phosphate dehydrogenase; GLP-1, glucagon-like peptide-1; GRADE, Grading of Recommendations, Assessment, Development, and Evaluation; GRBWR, graft-to-recipient body weight ratio; HbA1c, hemoglobin A1c; HBsAg, hepatitis B surface antigen; HBV DNA PCR, hepatitis B virus deoxyribonucleic acid polymerase chain reaction; HCV, hepatitis C virus; HIV, human immunodeficiency virus; iLDLT Group, International Living Donor Liver Transplantation Group; ILTS, International Liver Transplantation Society; INR, international normalized ratio; LDLT, living donor liver transplantation; LLD, living liver donor; LT, liver transplantation; MASH, metabolic dysfunction–associated steatohepatitis; MASLD, metabolic dysfunction–associated steatotic liver disease; MRE, magnetic resonance elastography; MRI, magnetic resonance imaging; MRI-PDFF, magnetic resonance imaging proton density fat fraction; PT, prothrombin time; RLV/TLV, remnant liver volume to total liver volume; RNA PCR, ribonucleic acid polymerase chain reaction; TSH, thyroid-stimulating hormone; VCTE, vibration-controlled transient elastography; VTE, venous thromboembolism; WG, working group.

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followed. This report presents 28 recommendations from the working group focused on addressing clinically relevant questions related to the preoperative aspects of living donor safety including assessment of donor acceptability (age, body mass index and hepatic steatosis; medical conditions and contraindications), medical and surgical workup (liver function and procoagulant workup; anatomical considerations and safe remnant), and psychosocial evaluation (timing and team; underlying conditions; non-directed, paired, and anonymous directed donors; urgent living donor workups for acute liver failure).

Keywords: consensus, donor safety, living donor liver transplantation, living liver donor, preoperative

INTRODUCTION

Living donor liver transplantation (LDLT) is a curative therapy for patients with liver disease and has excellent outcomes and survival benefits.^[1–4] With the persistent shortage of deceased donor organs available for transplant, LDLT remains a critical pathway for providing access to transplantation worldwide. Available data on living donor safety continues to be limited and granular, with marked heterogeneity across available reports.^[5] Furthermore, in the largest observational cohort study utilizing standardized data entry through the International LDLT Registry, global variation in LDLT practices was found to impact both donor and recipient short-term outcomes.^[6]

Given the limitations in the available data and notable variability in practice patterns, the International Liver Transplantation Society (ILTS) and International Living Donor Liver Transplantation (iLDLT) Group consensus conference on Living Liver Donor Safety was convened in March 2025 (Toronto, Canada). The following recommendations derived through consensus pertain to the careful preoperative evaluation of the potential donor for safety, including medical, surgical, and psychosocial considerations.

METHODS

Scientific committee and preparation

A total of 93 experts in the field of LDLT from 16 countries were allocated into 4 working groups (WGs), ensuring equity of region (Asia, Europe, and Americas), specialty (anesthesia, hepatology, surgery, radiology, psychiatry, medical ethics, nursing, and patient partner) and the 2 participating societies (ILTS and iLDLT group) representation. Of these working group members, 44 (47%) were from North America, 36 (39%)

from Asia, and 13 (14%) from Europe. With regard to specialty, 60 (65%) were surgeons, 16 (17%) were hepatologists, 9 (10%) were anesthesiologists, 2 (2%) were researchers, 2 (2%) were psychiatrists, and there was one patient partner, nurse, radiologist, and medical ethicist. An independent panel of 11 senior-most experts in the field (from the clinical, ethical disciplines, researchers, allied health, as well as patient partners) was formed to act as a jury (a pre-requisite of the Danish model of consensus) and provide a review of the recommendations drafted by the WGs. Of these jury members, 7 (64%) were from North America, 2 (18%) from Asia, and 2 (18%) from Europe. Regarding specialty, 5 (46%) were surgeons, 3 (27%) were hepatologists, and there was a one-patient partner, a nurse, and a researcher.

The key topics and questions related to preoperative, intraoperative, and postoperative (early and late) considerations relating to the safety of the living liver donor were formulated by the conference (Nazia Selzner, Kim Olthoff, Julie Heimbach, and Mohamed Rela) and scientific committee chairs (Prashant Bhan-gui, Ashwin Rammohan, and Blayne Amir Sayed). These were dealt with in greater detail by the WGs, which in turn were divided into subgroups to address focused questions on the broad topics.

Pertinent literature addressing the topic was screened in a non-systematic manner, and after review, was included for consideration based on the topics allotted to each of the WGs. Articles included those ideally published within the last 10 years, or earlier, when they were the only evidence pertinent to answer the question posed or were considered seminal articles on the topic. Through a series of 18 online meetings, the recommendations were drafted. Each panel screened and included records relevant to their question, with further studies identified after cross-referencing. Recommendations were categorized according to the Grading of Recommendations,

Assessment, Development and Evaluation (GRADE) system. A modified GRADE system was followed to account for the deficiencies in objective evidence available on certain topics (Table 1). Accordingly, the quality of evidence was based on the effect sizes of reported results and potential limitations (risk of bias, imprecision, indirectness, inconsistency, and publication bias) and rated from very low to high, and the strength of the recommendation was rated as strong or weak.

A draft of the recommendations encompassing the key studies answering focused questions was presented by the WGs to the conference and scientific chairs to minimize redundancies and inconsistencies and to allow for standardization of nomenclature. These recommendations were then presented to the independent jury for clarification and modifications, and further voted on by attendees on the day of the Consensus Conference.

Consensus process

The consensus conference was held on March 14, 2025, in Toronto, Canada, and was attended by over 180 international delegates. Each of the WGs gave structured presentations of the evidence and graded recommendations for their specific questions, followed by discussion and voting by the audience and the jury. Each recommendation was anonymously voted on by the audience, allowing “yes,” “no,” and “abstain” as possible answers. A response of > 80% for “yes” was recorded as consensus for the recommendations. Less than that, the recommendation was further discussed, reworded if necessary, and then voted upon again, until there was a > 80% “yes” vote obtained. If not achieved, it was further discussed if there was a need for selected recommendations to be downgraded or upgraded (from strong to weak and vice versa), removed, or the matter discussed in the manuscript text.

This working group (WG 1) addressed 3 main key questions with 9 subcategories (Supplemental Table S1, <http://links.lww.com/LVT/B70>), leading to 28 recommendations outlined in the sections below.

RECOMMENDATIONS

Q1: Who is an acceptable living liver donor (LLD) who can donate safely?

Theoretically, the ideal LLD is one with minimum perioperative risk and maximum probability of excellent health and quality of life after donation. In addition, the ideal LLD offers an optimal graft to the recipient. As expertise has progressively developed and the number of waitlisted patients for liver transplantation (LT) grows

TABLE 1 Modified GRADE System for categorizing recommendations

Grade of recommendation	I		IIa		IIb		III Recommendation not to do
	Strong recommendation to do	Benefits > > > risks and burdens	Moderate recommendation to do	Benefits > > risks and burdens	Weak recommendation to do	Benefits > = risks and burdens	
Conclusions of evidence							
A: High level of evidence Consistent evidence from well-performed and high-quality studies or systematic reviews (low risk of bias, direct, consistent, precise)		Strong recommendation based on a high level of evidence		Moderate recommendation based on a high level of evidence		Weak recommendation based on a high level of evidence	Recommendation based on a high level of evidence
B: Moderate/low level of evidence Evidence from studies or systematic reviews with few important limitations		Strong recommendation based on moderate/low level of evidence		Moderate recommendation based on moderate/low level of evidence		Weak recommendation based on moderate/low level of evidence	Recommendation based on moderate/low level of evidence
C: Very low level of evidence Evidence from studies with serious flaws. Only expert opinion or standards of care		Strong recommendation based on expert opinion		Moderate recommendation based on a very low level of evidence Diverging expert opinions		Weak recommendation based on a very low level of evidence Diverging expert opinion	Recommendation based on a very low level of evidence Expert opinion

TABLE 2 Review of literature on age and living liver donor safety

Author, year	Study type	Number of patients	Outcome/conclusions relevant to the question
Kuramitsu et al., 2007 ^[9]	Single-center, retrospective, comparative study	411 < 60 y 23 ≥ 60 y Max age: 66 y	Right-lobe-living donation is safe in donors older than 60 y old.
Dayangac et al., 2011 ^[10]	Single-center, retrospective, comparative study	122 < 50 y 28 ≥ 50 y Max age: 54 y	Right hepatectomy, including the middle hepatic vein and/or hepatectomy causing remnant liver volume <35% should be avoided in donors ≥ 50 y.
Suh et al., 2015 ^[11]	Single-center, retrospective, comparative study	46 > 50 y 840 < 50 y	The proportion of donors >50 increased significantly over time. The rate of major complications in older donors (age >50 y) was not significantly different from that in younger donors.
Goldaracena et al., 2016 ^[12]	Single-center, retrospective, comparative study	378 < 50 y 91 > 50 y	Upper age limit is 60 y.
Kadohisa et al., 2021 ^[13]	Single-center, retrospective, comparative study	20–29 y, n = 109 30–39 y, n = 157 40–49 y, n = 87 50–59 y, n = 81 ≥ 60 y, n = 36	Age range ≥ 18 and <70 y. The right liver was procured only from donors < 65 y and if the age was ≥ 65 y, the left liver or the left lateral section was procured.

globally, the adoption of LDLT has continued to increase, and the acceptance criteria for being a suitable donor and recipient have broadened. In turn, defining the ideal donor has become increasingly contextual, balancing traditional thresholds with pragmatic flexibility while ensuring informed consent, which is a mandatory requirement. As with any clinical evaluation, a thorough medical, surgical, medication, allergy, family, and psychosocial history is imperative to assess the overall safety and acceptability of an LLD.^[7] Assessment of the donor should ideally be done by a team that is independent of the transplant recipient team, so as to avoid any bias in decision-making regarding donor acceptance. Living liver evaluation teams must ensure that donation is being performed freely, willingly, with an understanding of the risks involved, and without the expectation of a prior agreement between the potential donor and recipient for some form of compensation, monetary or otherwise. The following considerations and recommendations pertain to acceptable LLD characteristics in the context of ensuring donor safety.^[8]

Age

Donor age is an important consideration in risk-stratifying LLD (Table 2). The consensus recommendation of an upper limit of 60 years reflects a transplant center's acceptance and available evidence that older donor age is associated with increased morbidity, susceptibility to liver fibrosis, and slower hepatic regeneration.^[9,12,14,15] Evidence is emerging about

accepting LLDs that are 60–69 years of age, particularly for left lobe donation, if the future liver remnant (FLR) is optimal with no or minimal steatosis, and the LLD does not have significant comorbidities.^[13,16] In potential donors greater than 60 years of age, frailty testing may also be considered.^[16] Conversely, the lower age limit should be guided by jurisdictional definitions of legal consent, as there are some countries, such as Canada and South Korea, that allow donation from individuals aged 16 or older. However, independent ethical and psychosocial scrutiny is necessary to ensure cognitive maturity, voluntariness, and capacity for informed decision-making and understanding of long-term psychosocial implications.^[17]

Recommendation: The lower age limit for living liver donation should adhere to the local regulations regarding the age of consent. The upper age limit for living donation should ensure both donor safety and the quality of the liver graft. We recommend 60 years as the upper age limit for living liver donation, which could vary based on donor graft type, quality, and future liver remnant.

Level of evidence: Moderate.

Grade of recommendation: Strong.

Body mass index and hepatic steatosis

The increasing prevalence of obesity and metabolic dysfunction–associated steatotic liver disease (MASLD) as well as metabolic dysfunction–associated steatohepatitis (MASH) has potential to influence the living liver donor candidate pool (Table 3).^[31] Obesity, defined as a body mass index (BMI) >30 kg/m² (or

25 kg/m² in Asian populations) is prevalent in 51% of MASLD patients and 82% of MASH patients.^[31] While BMI and its associated cardiometabolic risk factors are associated with higher hepatic fat content, using BMI as the sole criterion to exclude a living donor is discouraged. While a normal BMI between 18.5 and 25 kg/m² is ideal, a multimodal evaluation of hepatic fat content and cardiometabolic health is recommended to ensure donor safety.

From a living donor safety perspective, steatotic grafts exhibit impaired hepatocyte function and regeneration, hampered cellular metabolism, microcirculatory dysfunction, and an exaggerated proinflammatory cytokine response that worsens hepatocellular injury.^[32] The traditional terminology for assessing steatosis as either “macrovesicular steatosis” or “microvesicular steatosis” has been used in these guidelines, given that these terms have been predominantly utilized in studies defining thresholds for assessing living liver donor steatosis in the published literature and were overwhelmingly familiar to the participants. In this regard, reference to “macrovesicular steatosis” corresponds to either “large droplet fat” or “small droplet fat” in the more recent Banff guidelines.^[33] Presence of >30% macrovesicular steatosis has been shown to be associated with longer operative time, greater transfusion requirements, and increased risk of hepatic decompensation and death during non-living donor major hepatic resection.^[18] Furthermore, the presence of steatohepatitis (Mallory bodies, balloon degeneration, and fibrosis on biopsy) has been associated with major complications such as hepatic decompensation and death in the LLD after donation.^[21] The strain of right hepatic lobe resection may be intolerable in such patients. Bhangui et al. compared post-right-lobe donation outcomes in LLD with biopsy-proven macrovesicular steatosis (up to 20%) with those without macrovesicular steatosis. They showed similar postoperative biochemistries, length of hospital stays, and 30-day mortality rates between the 2 groups. They concluded that well-selected right-lobe grafts with up to 20% macrovesicular steatosis (without any evidence of steatohepatitis or inflammation) did not compromise graft function, and if adequate FLR in the donor was ensured, it was safe for the LLD.^[25]

Minimal hepatic macrovesicular steatosis, that is, <10% is generally deemed acceptable,^[34] and donors with steatosis between 10% and 30% may be considered for donation based on FLR and feasibility of graft steatosis optimization. Prospective donors with steatohepatitis or >30% macrovesicular steatosis should not proceed with living liver donation until improvement has been demonstrated radiologically and/or histologically after undergoing a structured optimization program. A recent study showed that a combination of diet and exercise-based interventions could yield significant improvement and resolution of

steatosis in up to 91.2% of potential LLD, with a reduction in steatosis by 21.2%.^[34] Pharmacotherapeutic agents, such as GLP-1 receptor agonists and their combinations, may also be used to facilitate weight loss and improve hepatic steatosis; however, evidence for their use in this population remains under investigation.^[35,36] These patients warrant continued risk stratification and follow-up post-donation at least as per the recommendation for the general population with MASLD.^[37]

Non-invasive elastography-based tests, for example, VCTE (vibration-controlled transient elastography), 2D-SWE (2d shear wave elastography), MRI-PDFF (magnetic resonance imaging proton density fat fraction), and MRE (magnetic resonance elastography), are being favored in lieu of liver biopsy for the evaluation of hepatic steatosis and fibrosis.^[38–40] Elastography-based tests are still not fully capable of identifying the presence of steatohepatitis. As a result, in situations where non-invasive modalities reveal ambiguous or discordant results, biopsy (either of the FLR alone or both lobes as indicated) for histological confirmation of steatosis and exclusion of steatohepatitis is critical. A strategy of repeating elastography-based testing and/or biopsy following achievement of weight loss goals in potential living liver donors with hepatic steatosis is encouraged.^[23]

Recommendations: While living liver donor BMI ≥ 18 and <25 kg/m² is acceptable, higher BMI should not be the sole criterion for declining prospective donors.

Level of evidence: Moderate.

Grade of recommendation: Strong.

While initial assessment for steatosis using available and preferred imaging modalities as per local protocols is reasonable, any suspicious findings or discordance should warrant liver biopsy and histological estimation of steatosis and presence of steatohepatitis.

Level of evidence: Moderate.

Grade of recommendation: Moderate.

Hepatic macrovesicular steatosis <10% is ideal for the living liver donation. We recommend that donors with macrovesicular steatosis between 10% and 30% be considered for donation based on the type of graft, future liver remnant, and feasibility of optimization of graft steatosis.

Level of evidence: Low.

Grade of recommendation: Strong.

Potential donors with hepatic steatosis >30% and/or steatohepatitis should not be considered for upfront living liver donation, as this can be associated with progressive hepatic dysfunction and fibrosis in the donor. A combination of diet and exercise can be beneficial to render them suitable for safe donation, which needs to be documented with repeat imaging and/or histology after the interventions.

Level of evidence: Low.

Grade of recommendation: Strong.

TABLE 3 Review of literature on BMI, hepatic steatosis, and living liver donor safety

Author, year	Study type	Number of patients	Outcome/conclusions relevant to the question
Behrns et al., 1998 ^[18]	Retrospective single-center comparative study	135 divided into 3 groups (no steatosis; < 30%; ≥ 30%) for major hepatic resection	Moderate-to-severe hepatic steatosis may be associated with increased perioperative morbidity and mortality, and preoperative identification of steatosis warrants caution prior to major resection.
Hwang et al., 2004 ^[19]	Observational (non-comparative study)	9 donors (low-calorie balanced diet, aerobic exercise, and total abstinence from alcohol)	Showed both the safety and the feasibility of the reduction in steatosis.
Nakamuta et al., 2005 ^[20]	Prospective study (comparative study)	11 prospective donors (diet, exercise, and drug therapy with bezafibrate)	Safe donation possible; one of the donors could not donate because of the inadequate GRWR—volumetry should be assessed after weight reduction.
Yamamoto et al., 2007 ^[21]	Retrospective, single-center	263 living donors 3 with MASH	One donor with MASH (30% steatosis, ballooning, and lobular inflammation) died. Donor safety is vital—to exclude the presence of MASH, a biopsy should be considered.
Oshita et al., 2012 ^[22]	Prospective study (comparative study)	N = 128 living liver donors, 87 non-diet-treated donors, 41 diet-treated donors with initial hepatic steatosis	Diet-treatment of living liver donors is feasible with regard to donor safety and recipient outcome when appropriately selected.
Choudhary et al., 2015 ^[23]	Prospective study (non-comparative study)	16 donors with aggressive lifestyle modification with diet and exercise	The second biopsy was done in all the donors except one and showed either reversal or improvement in steatosis. Uneventful recovery of donors.
Doyle et al., 2016 ^[24]	Retrospective, single-center	16 patients with hepatic steatosis (> 10%) treated with a very low-calorie diet, 53 non-diet-treated donors	Short course (at least 4 wk) of very-low-calorie diet is well tolerated and leads to rapid reduction in hepatic steatosis, with equivalent donor and recipient outcomes compared with non-diet-treated controls.
Bhangui et al., 2020 ^[25]	Retrospective single-center comparative study	623 right-lobe living donor transplants 10%–20% steatosis (n = 92) < 10% steatosis (n = 531)	Well-selected right-lobe grafts (with adequate FLR in the donor, GRWR in the recipient) with up to 20% macrovesicular steatosis do not compromise graft function and are safe for the donor.
Chung et al., 2020 ^[26]	Retrospective single-center comparative study	109 living donors total 7 donors with > 30% steatosis and BMI > 25 educated about voluntary weight reduction of 5% body weight	Less number of donors as compared with the control group; however, safe donation was feasible after voluntary weight reduction of 5% of body weight and maintenance for at least 8 wk.
Fujii et al., 2020 ^[27]	Retrospective single-center comparative study	30 donors total 8 donors with diet, exercise therapy, and essential phospholipid	All 8 donors in the interventional arm could donate safely.
Yoon et al., 2021 ^[28]	Retrospective single-center comparative study	51—moderate HS (30%–50%); 97—no-HS (after matching)	Donation is safe in strictly selected donors with moderate HS (30%–50%) with an acceptable biochemical profile and rate of liver regeneration. Major determinants are living donor age, remnant liver volume, and degree of HS.
Pamecha et al., 2022 ^[29]	Retrospective single-center comparative study	13 donors with lifestyle modifications—smoking cessation, diet, exercise	Safe donation is feasible after a reduction in steatosis; however, it is not always achievable in all donors.
Yoon et al., 2024 ^[30]	Retrospective single-center comparative study	N = 1040 total, 124 in the weight loss with diet and exercise matched to 124 in the control (non-steatosis group)	Improvement in steatosis with the intervention (diet and exercise) increases the donor pool safely.

Abbreviations: BMI, body mass index; GRWR, graft-to-recipient weight ratio; HS, hepatic steatosis; MASH, metabolic dysfunction–associated steatohepatitis.

TABLE 4 Review of medical considerations and contraindications pertaining to living liver donor safety

Author, year	Study type	Number of patients	Outcome/conclusions relevant to the question
Ridker et al., 1995 ^[41]	Genetic analysis of patients participating in the Physicians' Health Study	14,916	Factor V mutation is associated with increased VTE risk.
Yanaga et al., 1996 ^[42]	Single-center, retrospective	451	Prior cardiac disease increases the risk of cardiac complications, post-hepatectomy liver failure, bile leaks, and mortality.
Lee et al., 1999 ^[43]	Single-center, retrospective	4315	Diabetes is a significant risk factor for major cardiac complications in individuals undergoing major noncardiac surgery.
Malone et al., 2002 ^[44]	Database study (NSQIP) of a single center (Veterans Affairs hospital)	5031	Diabetes is associated with an increased risk of surgical site infections.
Lo et al., 2003 ^[45]	Single-center, retrospective	54 total donors, 29 antibody-positive hepatitis B core antigen (anti-HBc)	More deranged postoperative liver function tests in the core antibody group, but no difference in morbidity. Anti-HBc is not a contraindication for right-lobe liver donation.
Howell et al., 2004 ^[46]	Systematic review and meta-analysis	13,671 (meta-analysis)	Hypertension is associated with increased perioperative cardiovascular risk.
Coppens et al., 2006 ^[47]	Prospective observational study	464	No difference in risk of VTE in carriers of prothrombin 20210A mutation, not considering major surgery.
Turley et al., 2012 ^[48]	Database study (NSQIP)	5706	Major hepatic resection with extended hepatectomy is associated with increased risk of VTE, as well as male gender, long operative time, older age, and preoperative mechanical ventilation.
Venkatesan et al., 2017 ^[49]	Database study of the United Kingdom Clinical Practice Research Datalink	251,567	In the population, elevated diastolic, not systolic, blood pressure was associated with increased mortality.
Henderson et al., 2018 ^[50]	Single-center, retrospective	49 multi-organ sequential donations	Acceptable donor risk associated with sequential solid organ-liver donation.
Clark et al., 2018 ^[51]	Prospective cohort study	94 adults with the ZZ phenotype of alpha-1-antitrypsin disease	The ZZ phenotype is associated with a high prevalence of clinically significant fibrosis and abnormal liver enzymes.
Wong et al., 2019 ^[52]	Single-center, retrospective	964 liver transplants, 461 anti-HBc positive	De novo hepatitis B infection after liver transplantation was rare when using hepatitis B core-positive liver grafts with entecavir monotherapy prophylaxis; Hep B Core Ab status did not impact outcomes.
Fischer et al., 2020 ^[53]	Single-center, retrospective	417 patients undergoing major hepatectomy (59 with diabetes)	Diabetes increases morbidity but not increase in mortality.
Nair et al., 2020 ^[54]	Single-center, retrospective	5 patients with liver donation after kidney donation	Liver donation after kidney donation is safe and well-tolerated from a kidney function standpoint.
Schulze et al., 2022 ^[55]	Single-center, retrospective	20 donors with sickle cell trait	Consider sickle cell trait donors for living donor liver transplant in high-prevalence areas.
Jackson et al., 2023 ^[56]	Survey study	53 centers	Variation in practice patterns of the medical evaluation of living liver donors in the United States highlights the need to develop evidence-based guidelines for evaluation and risk assessment.
Reddy et al., 2024 ^[57]	Survey study	51 centers	VTE is uncommon after live donor hepatectomy, and there is significant variation across centers with regard to testing for prothrombotic conditions and use of perioperative prophylaxis.

TABLE 4. (continued)

Author, year	Study type	Number of patients	Outcome/conclusions relevant to the question
Lee et al., 2025 ^[58]	Single-center, retrospective	1421 living donor candidates	Incidence of protein C and protein S deficiency was 04% and 1.7%, respectively. None of the donors experienced thrombotic complications; 3 recipients had thrombotic complications not directly associated with donor thrombophilia.

Abbreviations: NSQIP, National Surgical Quality Improvement Program; VTE, venous thromboembolism.

Medical considerations and contraindications

The presence of significant cardiac comorbidities, for example, ischemic heart disease, arrhythmias, valvular heart disease, and pulmonary hypertension, increases the risk of perioperative cardiac complications and noncardiac complications, such as bile leak, liver failure, and death in patients undergoing major hepatic resection (Table 4). Thus, potential living liver donors with significant cardiac comorbidity should be excluded.

Recommendation: Potential live liver donors with significant cardiac comorbidities, including ischemic heart disease, arrhythmias, valvular heart disease, and pulmonary hypertension, are at very high risk for perioperative cardiovascular complications; hence, we recommend that they should not be considered for live liver donation.

Level of evidence: High.

Grade of recommendation: Strong.

In 2021, 529 million people were living with diabetes worldwide, representing 6.1% of the global population. By 2050, this number is projected to increase to 1.31 billion.^[59] While diabetes was previously deemed a contraindication to living liver donation, the increasing prevalence of diabetes has made the categorical exclusion of this sizable patient population practically difficult^[60] (Table 4). Specific to hepatic resections, a meta-analysis by Li et al.^[61] showed that diabetes is associated with increased risk of postoperative infections, complications, and liver failure. While reaffirming increased morbidity, recent evidence has shown that there is no increased risk of mortality in diabetic LLD.^[53] Carefully selected non-insulin-dependent diabetic LLD with well-controlled disease and no evidence of end-organ damage may be considered. Type 1 diabetes is an exclusion criterion for living liver donation.

Recommendation: Donor diabetes is a relative contraindication for live liver donation. Considering selected donors with well-controlled diabetes, without end-organ damage or other coexisting risk factors for donation, may be reasonable, after careful consideration of the future liver remnant and estimates of hepatic steatosis.

Level of evidence: Very low.

Grade of recommendation: Moderate.

Hypertension, though a recognized risk factor for perioperative cardiovascular risk, is not an absolute contraindication to LLD. This stance is consistent with practice patterns across LDLT programs (Table 4).^[56] Nevertheless, the presence of hypertension should prompt further cardiovascular risk stratification and evaluation for the presence of end-organ dysfunction, which may confer higher perioperative risk.

Recommendation: Uncontrolled hypertension (> 140/90 mm Hg) or hypertension associated with end-organ damage, for example, nephropathy, retinopathy, etc., is a contraindication for living liver donation. Carefully selected donors with well-controlled hypertension, a normal echocardiogram, without end-organ damage and other cardiometabolic risk factors, for example, obesity, diabetes, and dyslipidemia, may be considered.

Level of evidence: Very low.

Grade of recommendation: Strong.

Although recommendations for the assessment of risk for donor-transmitted malignancies in deceased donor liver transplantation (DDLTL) have been proposed,^[62] definitive guidelines to living donors with a history of, or concurrent malignancies, is still debatable.^[63] Experience from DDLTL should be extended to living donors. A careful multidisciplinary assessment of donors with a previous history of treated malignancy should be performed, and in addition to considering risk of transmission, factors such as primary site of prior malignancy, burden of disease, and risk of recurrence should be considered.

Recommendations: Active or incompletely treated malignancies are absolute contraindications for live liver donation.

Level of evidence: Very low.

Grade of recommendation: Moderate.

Donors with a previous history of treated malignancy may be carefully considered on a case-by-case basis after considering the primary site, burden of malignancy, and risk of recurrence.

Level of evidence: Very low.

Grade of recommendation: Strong.

A prior history of non-liver solid organ donation should not exclude a potential living liver donor (Table 4). The limited literature on living liver donation after prior organ donation is predominantly in left lobe or left lateral segment donors, with some groups advocating that this approach minimizes donor risk and is preferred when a graft-to-recipient weight ratio of >0.6 can be achieved.^[54] In a case series of 5 live liver donations after kidney donation, none of the LLD experienced acute or chronic kidney injury post-liver donation, suggesting safety.^[54] In another cohort study of multi-organ sequential donation (including kidney-then-liver and lung-then-liver donation), Henderson et al.^[50] demonstrated no intraoperative complications and only 2 (4%) liver-related complications. The median time interval between donations ranged between 3.7 and 4.5 years in these studies.^[50,54] While these studies highlight the safety of living liver donation after prior kidney or lung donation, careful selection may yield similar favorable outcomes in individuals who previously donated another solid organ, for example, the uterus or part of the pancreas. Center protocols regarding the interval between 2 solid organ donations vary; an interval of at least 1–2 years has generally been practiced.^[54,64]

Recommendation: Living liver donation after prior non-liver solid organ donation is not an absolute contraindication.

Level of evidence: Low.

Grade of recommendation: Moderate.

Bleeding is among the greatest risks to the LLD, particularly at a deeper plane of transection near the middle hepatic vein.^[65] In addition to technical strategies for controlling inflow and reducing this risk during the donor procedure, specific characteristics of the donor that may increase perioperative clotting should be considered. Indeed, the overall risk of venous thromboembolism (VTE) after hepatectomy is 2.9%.^[48] Donor thrombophilia, in fact, may increase perioperative risks for both donor and recipient, and its incidence should not be overlooked. In a recent series of 1421 living donors, the deficits of Protein C and Protein S were 0.4% and 1.6% respectively.^[58] Currently, there is no standardized protocol for coagulability testing across centers; however, for particular clinical situations, such as cases in which the donor is a first-degree relative of a recipient with Budd–Chiari syndrome or other procoagulant state, has prior miscarriages, or has a history of VTE, detailed testing of the donor is pertinent. Epidemiological considerations, as well as a personal and familial history of clotting or bleeding disorders, should be taken into account to identify which conditions should be tested during donor workup.

Recommendation: Genetic conditions such as bleeding and clotting disorders are contraindications to living liver donation.

Level of evidence: Low.

Grade of recommendation: Strong.

With the advent of direct-acting antiviral therapies, hepatitis C virus (HCV) Ab-positive donors are being more readily utilized, with excellent outcomes, in deceased donor liver transplantation.^[66] While recipients of HCV-positive organs from living donors can conceptually be cured, the risks of hepatectomy to the donor with HCV, particularly active HCV with positive ribonucleic acid (RNA) polymerase chain reaction (PCR), are not fully known. Specifically, there are legitimate concerns regarding the presence and degree of underlying inflammation and fibrosis and the chance for future development of hepatocellular cancer, although there is no strong data supporting this. Few published case reports suggest that HCV Ab-positive, RNA PCR negative may donate safely.^[67–70] Donation of a left lateral segment from a parent (HCV Ab-positive, RNA PCR negative) to a child in the setting of acute liver failure may be considered. Individuals with prior HCV infection (anti-HCV positive by HCV RNA negative) may be considered on a case-by-case basis after careful review of liver disease (inflammation and fibrosis).

Given the similar scarcity of donor safety data, as well as recipient outcomes data, live liver donation from hepatitis B surface antigen (HBsAg) positive LLD is also not recommended. Isolated hepatitis B core Ab (anti-HBc) positivity in the absence of HBsAg positivity, with anti-HBs antigen positivity, is present in 0.4%–1.7% of blood donors in low-prevalence areas and up to 10%–20% in endemic regions.^[71,72] Isolated anti-HBc can occur in 1 of 5 settings: (1) during the window period of an acute hepatitis B infection; (2) when anti-HBs antigen levels have fallen to undetectable levels years after recovery from acute hepatitis B; (3) when HBsAg titers fall below the threshold level of detection in chronic hepatitis B; (4) in the presence of HBsAg mutations leading to false-negative HBsAg results; and (5) false-positive anti-HBc. To delineate the risk of infection and associated underlying liver injury, further evaluation with hepatitis B (HBV) deoxyribonucleic acid (DNA) polymerase chain reaction (PCR), liver function tests, and elastography with or without liver biopsy should be considered. No significant differences in morbidity or mortality are seen in living liver donors with isolated anti-HBc, although worse derangement of liver function tests may be seen initially (Table 4).^[45]

Recommendations: We do not recommend considering donors with active HCV infection.

Level of evidence: Very low.

Grade of recommendation: Strong.

We do not recommend HBsAg-positive donors for living liver donation.

Level of evidence: Very low.

Grade of recommendation: Strong.

HBV-core Ab+ (and HBsAg-) potential living liver donors should undergo further testing to evaluate for chronic infection and underlying inflammation/fibrosis via HBV DNA, liver biochemistries, liver function tests, +/- elastography, and/or liver biopsy prior to donation.

Level of evidence: Moderate.

Grade of recommendation: Strong.

A thorough surgical, family, and allergy history is required as part of the LLD evaluation to assess for aspects that may increase donor risk. A family history of malignancy, premature coronary artery disease, liver disease, or genetic disorders should trigger appropriate testing and counseling of prospective live liver donors. In addition, a medication history should be taken to identify potentially hepatotoxic drugs and drugs with addictive potential. With respect to surgical history, a previous history of abdominal surgery should not preclude living liver donation. While concerns may arise with respect to scar tissue and associated surgical complexity, a prior report did not demonstrate any difference in operative time, blood loss, length of stay, or donor-related complications in patients with previous upper abdominal surgery versus those without.^[73]

Recommendation: Donor hepatectomy after prior intra-abdominal surgery is reasonable.

Level of evidence: Moderate.

Grade of recommendation: Moderate.

Question 2: What is the appropriate medical and surgical workup for donors?

Liver function and procoagulant workup

Initial laboratory screening of the potential living donor should include liver tests, standard biochemistry, basic coagulation tests such as prothrombin time/international normalized ratio (PT/INR) and activated partial thromboplastin time (APTT), hemoglobin A1c (HbA1c), thyroid-stimulating hormone (TSH), viral serology [hepatitis B, hepatitis C, and human immunodeficiency virus (HIV)].^[4,7,74–76] Center-specific evaluations for special infectious diseases based on epidemiology and history of travel should be considered; however, they are outside the scope of these consensus guidelines. ABO incompatibility should be discussed with the potential donor and the recipient in order to decide whether or not the donation process should be pursued. Additional screening for procoagulant status should be performed as needed, especially in family donors of recipients with procoagulant states and based on other center-specific protocols. Known risk factors include Protein C and S deficiencies, ATIII, Factor V, and von Willebrand Factor

deficiencies. Further testing for glucose-6-phosphate dehydrogenase (G6PD) and additional genetic screening (such as prothrombin mutation G20210A) may be indicated on a case-by-case basis. The significance of procoagulant status in the context of living liver donation regarding donor safety is yet to be defined. Collaboration with hematologists is encouraged to exclude a contraindication to donation.

Recommendation: We recommend ABO blood grouping, liver function tests, standard biochemistries, basic coagulation tests, HbA1c, TSH, HIV, and serologies for viral hepatitis for the initial donor screening.

Level of evidence: Low.

Grade of recommendation: Strong.

Anatomical considerations and safe remnant

Anatomical evaluation of a potential LLD requires careful analysis of the relevant radiological imaging, as part of the assessment of both safety and feasibility, to prevent post-hepatectomy liver failure, biliary injuries, and vascular complications (Table 5). Computed tomography (CT) and magnetic resonance imaging (MRI) are largely accepted as the modalities of choice for the vascular and biliary assessment, respectively.^[77,79] Volumes can be calculated with dedicated software from both the imaging sources, and segmentation techniques can be adopted to obtain 3D models to further improve preoperative planning; however, robust evidence on whether it improves outcomes remains limited. An FLR below 30% is considered a risk of postoperative major complications; therefore, it is discouraged.^[75,80] Similarly, the presence of anatomical variations that impact adequate blood supply to the FLR and venous outflow should be considered contraindications to donor acceptance. Anatomical variations of the biliary tree that increase the risk of future liver remnant drainage must also be closely assessed. Finally, while it has been suggested that the left liver may be considered the graft of choice in terms of donor safety [provided it satisfies the lower limit of a safe graft-to-recipient body weight ratio (GRBWR)], there remains a lack of consensus. A number of centers globally are continuing to perform the right donor hepatectomy in pursuit of balancing risk and benefit for both the donor and recipient.

Recommendations: Data from computed tomography (CT) scan and magnetic resonance imaging (MRI) should be combined for the final decision on donation suitability with respect to anatomy. Tools for 3-dimensional reconstruction may be helpful to enhance preoperative planning.

Level of evidence: Very low.

Grade of recommendation: Strong.

We recommend that the lower limit of the ratio of the remnant liver volume to total liver volume (RLV/TLV)

TABLE 5 Review of anatomical considerations and safe remnant pertaining to living liver donor safety

Author, year	Study type	Number of patients	Outcome/conclusions relevant to the question
Akamatsu and Kokudo, 2016 ^[75]	Single-center, retrospective study	462	For donor safety, the left liver is the first choice, provided that it satisfies the lower limit.
Hecht et al., 2019 ^[77]	Review	N/A	Biliary complications from unsuspected variant biliary anatomy occur in ~15%–30% of transplants, increasing risk to both donors and recipients.
Zuckerman et al., 2021 ^[78]	Single-center, retrospective study	604 living donors 28 FLR $\leq$ 30% matched 1:2	A calculated FLR between 28% and 30% is not a sole criterion for precluding living liver donation.
Borhani et al., 2021 ^[79]	Review	N/A	88% of centers use a combination of CT and MRI for the evaluation of liver donors. MRI is the mainstay modality for evaluation of the liver parenchyma, veins, and biliary tree.
Kim et al., 2023 ^[80]	Meta-analysis	1935	FLR > 30 is associated with reduced overall morbidity.
Raptis et al., 2024 ^[81]	Case-control study from a prospective registry	3448	Robotic approach for donor hepatectomy is associated with a lower incidence of overall morbidity.

Abbreviation: FLR, functional liver remnant.

should be 30% since RLV/TLV <30% is significantly associated with increased overall donor morbidity.

Level of evidence: Low.

Grade of recommendation: Strong.

Presence of vascular variants consistently limiting blood supply or outflow in the donor FLR are absolute contraindications for donor acceptance.

Level of evidence: Low.

Grade of recommendation: Strong.

Question 3: What is the appropriate psychosocial workup for donors?

Recommendations: Early psychosocial assessment is beneficial before subjecting individuals to a workup if they appear to have significant psychiatric, cognitive, or substance use disorders, which would preclude their acting as a donor.

Quality of evidence: Low.

Strength of recommendation: Strong.

Psychosocial professionals with experience in the assessment of LLD should be involved in the psychosocial workup. The discipline of the professional(s) within a given team may vary depending on local resources.

Quality of evidence: Low.

Strength of recommendation: Strong.

Timing and team

Timely psychosocial evaluation by professionals with experience in the assessment of LLD is critical for donor safety (Table 6). Early psychosocial assessment is beneficial in individuals who appear to have conditions that may preclude their acting as a donor, such as those with significant psychiatric, cognitive, or substance use disorders. Although the majority of centers routinely assess social support, motivation for donation, donor/recipient relationship, and history of substance abuse as part of the evaluation, the mental health workup is not standardized.^[7,87,91] LLD psychosocial evaluation tools have been developed to help with assessment and standardized communication of psychosocial risk to prospective donors,^[85,88] yet validated tools are rarely used, and this remains an area needing further investigation.^[91]

Underlying conditions

There is substantial variability in the acceptance patterns of donors with psychiatric risk factors and substance use history (Table 6).^[7,91] Voluntary, informed consent is a fundamental ethical and legal principle for capable adults undergoing elective procedures. Donors should be cognitively intact to provide informed consent and manage their postoperative state. Potential donors outside standard criteria [eg, donation in an emergency situation; donors in young adulthood (age $\leq$ 18); prior donors; donors with prior mental illness; donors with dependent or problematic substance use] should be assessed for realistic expectations about increased risks. Active, uncontrolled psychiatric ailments, as well as dependent or problematic active substance use, are contraindications to liver donation.

TABLE 6 Review of psychosocial workup for living liver donor safety

Author, year	Study type	Number of patients	Outcome/conclusions relevant to the question
Abdullah et al., 2007 ^[82]	Single-center analysis	327 potential living related donors and 136 potential recipients	6.8% of donor candidates are ineligible for donation due to psychosocial reasons.
Reichman et al., 2010 ^[83]	Interviews	29 potential anonymous liver donors assessed at UHN in Toronto. Of the 12 accepted, 4 were directed, and the remaining were non-directed	All accepted anonymous donors showed a significant history of altruistic activity, including acting as blood donors, bone marrow registrants, and volunteers at both a local and international level.
Marsh et al., 2014 ^[84]	Single-center prospective study	19 altruistic kidney donors and 20 controls	Functional imaging of the brain notes differences (amygdala volume and responsiveness) as to why some people may want to be altruistic donors.
Iacoviello et al., 2015 ^[85]	Literature review and assessment tool development	4 raters trained using live donor assessment tools, 99 psychosocial evaluations	The live donor assessment tool had good internal consistency, inter-rater reliability, and showed signs of validity.
Nishimura et al., 2016 ^[86]	Nationwide survey in Japan	Survey of 89 kidney and 30 liver transplant programs in Japan involved in living donor transplantation	83% of responding living donor liver programs in Japan include psychiatrists in standard post-donation follow-up.
Massey et al., 2018 ^[87]	Systematic review and assessment tool development	N/A	The EPAT tool attempts to standardize psychosocial screening with the aim of ensuring no psychosocial issues are overlooked.
Soin et al., 2019 ^[7]	Survey study of living donor liver transplant centers worldwide	24 centers with 19,009 living donor liver transplants	58% of centers accepted donors with a history of alcohol abuse. 0% accepted donors with active psychiatric illness. 50% accepted donors with psychiatric illness in remission.
Kook et al., 2019 ^[88]	Multicenter prospective study	4 centers with 386 living donor evaluations (both kidney and liver)	The living donor assessment tool had good reliability between raters and predicted the outcome of the psychosocial evaluation across centers.
Goldaracena et al., 2019 ^[89]	Interviews	50 anonymous live liver donors	Outcomes for anonymous donation are excellent with rigorous protocols.
Kasike et al., 2021 ^[90]	Registry analysis	398 consecutive living liver donor candidates from 6 US centers	The rate of decline for psychosocial reasons ranges from 0% to 30% across programs.
Zimbrea et al., 2024 ^[91]	Survey study of living donor liver transplant centers in the United States	33 centers	Psychosocial evaluation of donors is a multidisciplinary process. Mental health workup and follow-up are not standardized.

Abbreviations: EPAT, European Platform on Ethical, Legal, and Psychosocial Aspects of Organ Transplantation—ELPAT Living Organ Donor Psychosocial Assessment Tool; UHN, University Health Network.

Recommendations: We recommend that active, uncontrolled psychiatric ailments, which are associated with challenges in obtaining informed consent and/or could be worsened by a surgical donation or a poor outcome in either donor or recipient, should preclude live liver donation. Where possible, any such condition should be treated, consistent with ethical and legal norms, and followed by a stabilization period before further consideration is given to donation.

Quality of evidence: Low.

Strength of recommendation: Strong.

Donors should be cognitively intact enough to provide informed consent and be able to successfully manage the postoperative state.

Quality of evidence: Low.

Strength of recommendation: Strong.

We recommend that dependent or problematic active substance use be treated as a contraindication to living liver donation. If a potential donor has a known history of substance use disorder, there must be an assessment and a period of sustained abstinence before consideration of donation.

Quality of evidence: Low.
Strength of recommendation: Strong.

Non-directed, paired, and anonymous directed donors

Living liver donors should be assessed to ensure that their motivation for donation is altruistic (Table 6). Prior reports have noted that the majority of anonymous donors demonstrate a history of altruism.^[83,89] In the case of non-directed, paired, and anonymous donors, candidates should have realistic expectations about future meeting or relationships with their potential recipient, disruption of chains before completion (one paired exchange going through and the other stalled due to the donor or recipient not being medically fit), and the possibility that claims in social media and public appeals may be untrue.

Recommendations: We recommend that particular attention be paid to ensure that the motivation for donation is altruistic. The donor should have realistic expectations about any future meeting or relationship.

Quality of evidence: Moderate.
Strength of recommendation: Strong.

Donors involved in a paired exchange should understand the chain, including the possibility of disruption of the chain prior to completion.

Quality of evidence: Low.
Strength of recommendation: Strong.

Anonymous directed donors should have realistic expectations with regard to future relationships with the recipient and the accuracy of the statements made in public appeals.

Quality of evidence: Moderate.
Strength of recommendation: Strong.

Urgent living donor workups for acute liver failure

The use of urgent living liver donors is clinically recognized to bring additional psychosocial safety challenges, but there has been little systematic study in this area, with much of the research evidence focusing on recipient rather than donor outcomes.^[92–94] Ideally, candidates for urgent donation should have a psychosocial assessment and longitudinal follow-up. Particular attention needs to be paid to issues related to informed consent, ensuring that donation is voluntary (not unduly driven by emotions or coerced). The prospective donor should also be informed about the availability of a donor advocate in case he/she want to seek an independent opinion or clarification regarding the donation process.

FUTURE DIRECTIONS

There has been substantial progress in understanding the preoperative medical, surgical, and psychosocial evaluation of potential living liver donors in efforts to optimize donor safety. Despite this, however, the majority of available literature is limited to retrospective single-center or observational studies. The development and ongoing enrollment in large, well-designed registries such as the International LDLT Registry will allow for understanding variation in preoperative practice patterns and perhaps the development of predictive models for donor selection and recipient matching. The advent of emerging pharmacotherapeutics such as GLP-1 agonists, as well as developments in our understanding of hepatic steatosis and regeneration, affords opportunities for learning about the role of these medications in living donor candidates. In addition, regional and center-specific variability in donor assessment with regard to bleeding and prothrombotic risk are topics that require further investigation not only as they pertain to donor safety, but also associated recipient risk.

CONCLUSIONS

Careful donor selection after a detailed assessment is the first, and probably most important step, in ensuring a live living donor's safety. This report presents the recommendations regarding medical considerations, surgical assessment, and psychosocial workup of the LLD in the preoperative period. Multidisciplinary engagement is critical to ensure a detailed evaluation. Though worldwide practices or protocols may vary, certain essential elements need to be assessed before accepting a donor for live liver donation, and these have been detailed in this report.

AUTHOR CONTRIBUTIONS

All the authors participated in literature review, consensus conference discussion and voting, article writing and editing, and critical review. Madhukar S. Patel, Mohammad Qasim Khan, and Paolo Magistri were working group coordinators.

CONFLICTS OF INTEREST

François Durand consults for Sanofi. He advises Astellas. Anjana Pillai advises Boston Scientific, Genentech, AstraZeneca, Sirtex, and Fujifilm. Patrizia Burra advises GSK, Ipsen, Novo Nordisk, Chiesi, Kedrion, Biotest, and Sandoz. Norah Terrault received grants from GSK, Bluejay Therapeutics, Siemens Healthcare, Hoffman-La Roche, Gilead, Vir Biotechnology, Helio Health, Durect Corp, Eiger BioPharmaceuticals, and ImmunoCore. She has other interests in Clinical Care Options, Simply Speaking, and Elsevier. She is

employed by AASLD, Hepatitis B Foundation, and HBV Forum. Kim Olthoff advises OrganOx. The remaining authors have no conflicts to report.

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REFERENCES

- Hibi T, Wei Chieh AK, Chi-Yan Chan A, Bhangui P. Current status of liver transplantation in Asia. *Int J Surg*. 2020;82S:4–8.
- Olthoff KM, Smith AR, Abecassis M, Baker T, Emond JC, Berg CL, et al. Defining long-term outcomes with living donor liver transplantation in North America. *Ann Surg*. 2015;262:465–75; discussion 473–5.
- Wong TC, Fung JY, Pang HH, Leung CK, Li HF, Sin SL, et al. Analysis of survival benefits of living versus deceased donor liver transplant in high model for end-stage liver disease and hepatorenal syndrome. *Hepatology*. 2021;73:2441–54.
- Jackson WE, Malamon JS, Kaplan B, Saben JL, Schold JD, Pomposelli JJ, et al. Survival benefit of living-donor liver transplant. *JAMA Surg*. 2022;157:926–32.
- Xiao J, Zeng RW, Lim WH, Tan DJH, Yong JN, Fu CE, et al. The incidence of adverse outcome in donors after living donor liver transplantation: A meta-analysis of 60,829 donors. *Liver Transpl*. 2024;30:493–504.
- LDLTRegistry.org Collaborative. Global variation in living donor liver transplantation practices impacts donor and recipient short-term outcomes: Initial insights from the International LDLT Registry. *Am J Transplant*. 2025;25:1735–45.
- Soin AS, Chaudhary RJ, Pahari H, Pomfret EA. A worldwide survey of live liver donor selection policies at 24 centers with a combined experience of 19 009 adult living donor liver transplants. *Transplantation*. 2019;103:e39–47.
- Rudow DL, Swartz K, Phillips C, Hollenberger J, Smith T, Steel JL. The psychosocial and independent living donor advocate evaluation and post-surgery care of living donors. *J Clin Psychol Med Settings*. 2015;22:136–49.
- Kuramitsu K, Egawa H, Keeffe EB, Kasahara M, Ito T, Sakamoto S, et al. Impact of age older than 60 years in living donor liver transplantation. *Transplantation*. 2007;84:166–72.
- Dayagac M, Taner CB, Yaprak O, Demirbas T, Balci D, Duran C, et al. Utilization of elderly donors in living donor liver transplantation: When more is less? *Liver Transpl*. 2011;17:548–5.
- Suh KS, Suh SW, Lee JM, Choi Y, Yi NJ, Lee KW. Recent advancements in and views on the donor operation in living donor liver transplantation: A single-center study of 886 patients over 13 years. *Liver Transpl*. 2015;21:329–8.
- Goldaracena N, Sapisochin G, Spetzler V, Echeverri J, Kathis M, Catral MS, et al. Live donor liver transplantation with older (> / = 50 years) versus younger (< 50 years) donors: Does age matter? *Ann Surg*. 2016;263:979–85.
- Kadohisa M, Inomata Y, Uto K, Hayashida S, Ohya Y, Yamamoto H, et al. Impact of donor age on the outcome of living-donor liver transplantation: Special consideration to the feasibility of using elderly donors. *Transplantation*. 2021;105:328–7.
- Duclos J, Bhangui P, Salloum C, Andreani P, Saliba F, Ichai P, et al. Ad integrum functional and volumetric recovery in right lobe living donors: Is it really complete 1 year after donor hepatectomy? *Am J Transplant*. 2016;16:143–56.
- Durand F, Levitsky J, Cauchy F, Gilgenkrantz H, Soubrane O, Francoz C. Age and liver transplantation. *J Hepatol*. 2019;70:745–58.
- Izzy M, Brown RS, Eguchi S, Hwang S, Matamoros MA, Quintini C, et al. Optimizing pre-donation physiologic evaluation for enhanced recovery after living liver donation—Systematic review and multidisciplinary expert panel recommendations. *Clin Transplant*. 2022;36:e14680.
- Campbell M, Wright L, Greenberg RA, Grant D. How young is too young to be a living donor? *Am J Transplant*. 2013;13:1643–9.
- Behrns KE, Tsiotos GG, DeSouza NF, Krishna MK, Ludwig J, Nagorney DM. Hepatic steatosis as a potential risk factor for major hepatic resection. *J Gastrointest Surg*. 1998;2:292–8.
- Hwang S, Lee SG, Jang SJ, Cho SH, Kim KH, Ahn CS, et al. The effect of donor weight reduction on hepatic steatosis for living donor liver transplantation. *Liver Transpl*. 2004;10:721–5.
- Nakamuta M, Morizono S, Soejima Y, Yoshizumi T, Aishima S, Takasugi S, et al. Short-term intensive treatment for donors with hepatic steatosis in living-donor liver transplantation. *Transplantation*. 2005;80:608–12.
- Yamamoto K, Takada Y, Fujimoto Y, Haga H, Oike F, Kobayashi N, et al. Nonalcoholic steatohepatitis in donors for living donor liver transplantation. *Transplantation*. 2007;83:257–62.
- Oshita A, Tashiro H, Amano H, Kobayashi T, Onoe T, Ide K, et al. Safety and feasibility of diet-treated donors with steatotic livers at the initial consultation for living-donor liver transplantation. *Transplantation*. 2012;93:1024–30.
- Choudhary NS, Saraf N, Saigal S, Gautam D, Lipi L, Rastogi A, et al. Rapid reversal of liver steatosis with life style modification in highly motivated liver donors. *J Clin Exp Hepatol*. 2015;5:123–6.
- Doyle A, Adeyi O, Khalili K, Fischer S, Dib M, Goldaracena N, et al. Treatment with Optifast reduces hepatic steatosis and increases candidacy rates for living donor liver transplantation. *Liver Transpl*. 2016;22:1295–300.
- Bhangui P, Sah J, Choudhary N, Gautam D, Gupta V, Srinivasan T, et al. Safe use of right lobe live donor livers with up to 20% macrovesicular steatosis without compromising donor safety and recipient outcome. *Transplantation*. 2020;104:308–16.
- Chung JH, Ryu JH, Yang KH, Choi BH, Park Y, Lee TB, et al. Efficacy and safety of weight reduction of the donor in hepatic steatosis for living donor liver transplantation. *Ann Transplant*. 2020;25:e923211.
- Fujii Y, Kawamura N, Zaitu M, Watanabe M, Goto R, Kamiyama T, et al. Outcome of living-donor liver transplantation using grafts from donors treated for fatty liver. *Ann Transplant*. 2020;25:e920677.
- Yoon YI, Song GW, Lee SG, Park GC, Hwang S, Kim KH, et al. Safe use of right lobe living donor livers with moderate steatosis in adult-to-adult living donor liver transplantation: A retrospective study. *Transpl Int*. 2021;34:872–1.

29. Pamecha V, Patil NS, Parthasarathy K, Sinha PK, Mohapatra N, Rastogi A, et al. Expanding donor pool for live donor liver transplantation: Utilization of donors with non-alcoholic steatohepatitis after optimization. *Langenbecks Arch Surg.* 2022;407:1575–84.
30. Yoon YI, Lee SG, Hwang S, Kim KH, Ahn CS, Moon DB, et al. Safety of right liver donation after improving steatosis through weight loss in living donors: A retrospective study. *Hepatol Int.* 2024;18:1566–78.
31. Younossi ZM, Koenig AB, Abdelatif D, Fazel Y, Henry L, Wymer M. Global epidemiology of nonalcoholic fatty liver disease—Meta-analytic assessment of prevalence, incidence, and outcomes. *Hepatology.* 2016;64:73–84.
32. Atasever A, Yazici SE, Sahin T, Yuzer Y. Impact of preoperative treatment on donor hepatic steatosis in living donor liver transplantation. *Ann Transplant.* 2025;30:e947772.
33. Neil DAH, Minervini M, Smith ML, Hubscher SG, Brunt EM, Demetris AJ. Banff consensus recommendations for steatosis assessment in donor livers. *Hepatology.* 2022;75:1014–25.
34. Trakroo S, Bhardwaj N, Garg R, Modaresi Esfeh J. Weight loss interventions in living donor liver transplantation as a tool in expanding the donor pool: A systematic review and meta-analysis. *World J Gastroenterol.* 2021;27:3682–92.
35. Sanyal AJ, Newsome PN, Kliers I, Ostergaard LH, Long MT, Kjaer MS, et al. Phase 3 trial of semaglutide in metabolic dysfunction–associated steatohepatitis. *N Engl J Med.* 2025;392:2089–99.
36. Loomba R, Hartman ML, Lawitz EJ, Vuppalanchi R, Boursier J, Bugianesi E, et al. Tirzepatide for metabolic dysfunction–associated steatohepatitis with liver fibrosis. *N Engl J Med.* 2024;391:299–310.
37. Rinella ME, Neuschwander-Tetri BA, Siddiqui MS, Abdelmalek MF, Caldwell S, Barb D, et al. AASLD Practice Guidance on the clinical assessment and management of nonalcoholic fatty liver disease. *Hepatology.* 2023;77:1797–835.
38. European Association for the Study of the Liver. EASL Clinical Practice Guidelines on non-invasive tests for evaluation of liver disease severity and prognosis—2021 update. *J Hepatol.* 2021;75:659–89.
39. Kuchay MS, Choudhary NS, Sharma D, Krishan S, Mishra SK, Wasir JS, et al. Diagnostic accuracy and optimal cut-off of controlled attenuation parameter for the detection of hepatic steatosis in Indian population. *J Clin Exp Hepatol.* 2022;12:893–8.
40. Sterling RK, Duarte-Rojo A, Patel K, Asrani SK, Alsawas M, Dranoff JA, et al. AASLD Practice Guideline on imaging-based noninvasive liver disease assessment of hepatic fibrosis and steatosis. *Hepatology.* 2025;81:672–724.
41. Ridker PM, Hennekens CH, Lindpaintner K, Stampfer MJ, Eisenberg PR, Miletich JP. Mutation in the gene coding for coagulation factor V and the risk of myocardial infarction, stroke, and venous thrombosis in apparently healthy men. *N Engl J Med.* 1995;332:912–7.
42. Yanaga K, Takenaka K, Yamamoto K, Nishizaki T, Shirabe K, Shimada M, et al. Cardiac complications after hepatic resection. *Br J Surg.* 1996;83:1448–51.
43. Lee TH, Marcantonio ER, Mangione CM, Thomas EJ, Polanczyk CA, Cook EF, et al. Derivation and prospective validation of a simple index for prediction of cardiac risk of major noncardiac surgery. *Circulation.* 1999;100:1043–9.
44. Malone DL, Genuit T, Tracy JK, Gannon C, Napolitano LM. Surgical site infections: Reanalysis of risk factors. *J Surg Res.* 2002;103:89–95.
45. Lo CM, Fan ST, Liu CL, Yong BH, Wong Y, Ng IO, et al. Safety and outcome of hepatitis B core antibody-positive donors in right-lobe living donor liver transplantation. *Liver Transpl.* 2003;9:827–32.
46. Howell SJ, Sear JW, Foex P. Hypertension, hypertensive heart disease and perioperative cardiac risk. *Br J Anaesth.* 2004;92:570–83.
47. Coppens M, van de Poel MH, Bank I, Hamulyak K, van der Meer J, Veeger NJ, et al. A prospective cohort study on the absolute incidence of venous thromboembolism and arterial cardiovascular disease in asymptomatic carriers of the prothrombin 20210A mutation. *Blood.* 2006;108:2604–7.
48. Turley RS, Reddy SK, Shortell CK, Clary BM, Scarborough JE. Venous thromboembolism after hepatic resection: Analysis of 5,706 patients. *J Gastrointest Surg.* 2012;16:1705–4.
49. Venkatesan S, Myles PR, Manning HJ, Mozd AM, Andersson C, Jorgensen ME, et al. Cohort study of preoperative blood pressure and risk of 30-day mortality after elective non-cardiac surgery. *Br J Anaesth.* 2017;119:65–77.
50. Henderson ML, DiBrito SR, Thomas AG, Holscher CM, Shaffer AA, Bowring MG, et al. Landscape of Living Multiorgan Donation in the United States: A Registry-Based Cohort Study. *Transplantation.* 2018;102:1148–55.
51. Clark VC, Marek G, Liu C, Collinsworth A, Shuster J, Kurtz T, et al. Clinical and histologic features of adults with alpha-1 antitrypsin deficiency in a non-cirrhotic cohort. *J Hepatol.* 2018;69:1357–64.
52. Wong TC, Fung JY, Cui TY, Lam AH, Dai JW, Chan AC, et al. Liver transplantation using hepatitis B core positive grafts with antiviral monotherapy prophylaxis. *J Hepatol.* 2019;70:1114–22.
53. Fischer A, Fuchs J, Stravodimos C, Hinz U, Billeter A, Buchler MW, et al. Influence of diabetes on short-term outcome after major hepatectomy: An underestimated risk? *BMC Surg.* 2020;20:305.
54. Nair A, Modaresi Esfeh J, Kwon CHD, Aucejo F, Quintini C, Hashimoto K. Living liver donation in previous kidney donors: A single-center experience. *Am J Transplant.* 2020;20:1461–2.
55. Schulze M, Zidan A, Sturdevant M, Aljudaibi S, Shagrani M, Bzeizi K, et al. First experience in living liver donation from donors with sickle cell trait. *Transplant Direct.* 2022;8:e1332.
56. Jackson WE, Kaplan A, Saben JL, Kriss MS, Cisek J, Samstein B, et al. Practice patterns of the medical evaluation of living liver donors in the United States. *Liver Transpl.* 2023;29:164–71.
57. Reddy MS, Kasahara M, Ikegami T, Lee KW, iDLT Vanguard Multi-Center Study Project. An international survey of venous thromboembolic events and current practices of peri-operative VTE prophylaxis after living donor hepatectomy. *Clin Transplant.* 2024;38:e15209.
58. Lee S, Hong SK, Byun JM, Hong SY, Kim JY, Kim J, et al. Thrombophilia in liver donors: Prevalence of protein C or S deficiency in Korean candidates and decision considerations. *Clin Transplant.* 2025;39:e70265.
59. GBD 2021 Diabetes Collaborators. Global, regional, and national burden of diabetes from 1990 to 2021, with projections of prevalence to 2050: A systematic analysis for the Global Burden of Disease Study 2021. *Lancet.* 2023;402:203–34.
60. Rela M, Rammohan A. Patient and donor selection in living donor liver AQ9 transplantation. *Dig Med Res.* 2020;3:1–14.
61. Li Q, Wang Y, Ma T, Lv Y, Wu R. Clinical outcomes of patients with and without diabetes mellitus after hepatectomy: A systematic review and meta-analysis. *PLoS One.* 2017;12:e0171129.
62. Nalesnik MA, Woodle ES, Dimaio JM, Vasudev B, Teperman LW, Covington S, et al. Donor-transmitted malignancies in organ transplantation: Assessment of clinical risk. *Am J Transplant.* 2011;11:1140–7.
63. Dominguez-Gil B, Moench K, Watson C, Serrano MT, Hibi T, Asencio JM, et al. Prevention and management of donor-transmitted cancer after liver transplantation: Guidelines from the ILTS-SETH Consensus Conference. *Transplantation.* 2022;106:e12–29.

64. Jackson WE, Kriss MS, Burton JR, Jr, Nydam TL, Conzen KD, Pomposelli JJ, et al. Reply to "Living liver donation in previous kidney donors: A single-center experience". *Am J Transplant.* 2021;21:435–7.
65. Fan S-T, Lo C-M, Liu C-L, Yong B-H, Chan JK-F, Ng IO-L. Safety of donors in live donor liver transplantation using right lobe grafts. *Arch Surg.* 2000;135:336–40.
66. Cotter TG, Paul S, Sandikci B, Couri T, Bodzin AS, Little EC, et al. Increasing utilization and excellent initial outcomes following liver transplant of hepatitis C virus (HCV)-viremic donors into HCV-negative recipients: Outcomes following liver transplant of HCV-viremic donors. *Hepatology.* 2019;69:2381–95.
67. Di Sandro S, Catellani B, Guidetti C, Magistri P, Ballarin R, Pecchi A, et al. Successful living donor liver transplantation from an HIV and HCV positive donor: Report from the first case in the world. *AIDS.* 2023;37:1257–61.
68. Takeichi T, Asonuma K, Yamamoto H, Ohya Y, Okumura K, Lee KJ, et al. Liver transplant from an ABO-incompatible and hepatitis C antibody-positive but an HCV-RNA negative living donor in a familial amyloid polyneuropathy patient. *Exp Clin Transplant.* 2013;11:182–5.
69. Junger H, Knoppke B, Weigand K, Evert K, Brennfleck FW, Melter M, et al. Living donor liver transplantation from hepatitis C-infected donor to hepatitis C-infected recipient. *Hepatology.* 2020;72:1148–51.
70. Chen C, Ong K, Chen M, Tian Y, Sun D. Living donor liver transplant from a hepatitis C—Seropositive donor into a seronegative recipient: A case report. *Clin Case Rep Int.* 2022;6:1439.
71. Lok AS, Lai CL, Wu PC. Prevalence of isolated antibody to hepatitis B core antigen in an area endemic for hepatitis B virus infection: Implications in hepatitis B vaccination programs. *Hepatology.* 1988;8:766–70.
72. Wang C, Li X, Zhang C, Xiao L, Xian J. Prevalence and influential factors of isolated hepatitis B core antibody positivity in a Chinese adult population. *Sci Rep.* 2024;14:693.
73. Kasahara M, Egawa H, Takada Y, Yoshizawa A, Ogawa K, Sakamoto S, et al. Living donor liver transplantation from donor with previous upper abdominal surgery. *Transplantation.* 2005;80:286–7.
74. Puri P, Kumar A, Qaleem M. Donor evaluation protocol for live and deceased donors. *J Clin Exp Hepatol.* 2024;14:101217.
75. Akamatsu N, Kokudo N. Living liver donor selection and resection at the University of Tokyo Hospital. *Transplant Proc.* 2016;48:998–1002.
76. Nugroho A, Kim OK, Lee KW, Song S, Kim H, Hong SK, et al. Evaluation of donor workups and exclusions in a single-center experience of living donor liver transplantation. *Liver Transpl.* 2017;23:614–24.
77. Hecht EM, Wang ZJ, Kambadakone A, Griesemer AD, Fowler KJ, Heimbach JK, et al. Living donor liver transplantation: Preoperative planning and postoperative complications. *AJR Am J Roentgenol.* 2019;213:65–76.
78. Zuckerman J, Gorgen A, Acuna SA, Abreu P, Goldaracena N, Galvin Z, et al. Outcomes of highly selected live donors with a future liver remnant less than or equal to 30%: A matched cohort study. *Transplantation.* 2021;105:2397–403.
79. Borhani AA, Elsayes KM, Catania R, Kambadakone A, Furlan A, Kierans AS, et al. Imaging evaluation of living liver donor candidates: Techniques, protocols, and anatomy. *RadioGraphics.* 2021;41:1572–91.
80. Kim SH, Kim KH, Cho HD. Donor safety of remnant liver volumes of less than 30% in living donor liver transplantation: A systematic review and meta-analysis. *Clin Transplant.* 2023;37:e15080.
81. Raptis DA, Elsheikh Y, Alnema Y, Marquez KAH, Bzeizi K, Alghamdi S, et al. Robotic living donor hepatectomy is associated with superior outcomes for both the donor and the recipient compared with laparoscopic or open—A single-center prospective registry study of 3448 cases. *Am J Transplant.* 2024;24:2080–91.
82. Abdullah K, Abdeldayem H, Salama IA, Badah K, Al-Somali B, Abdulkareem A. Retrospective analysis of the causes of rejection of potential donors for living related liver transplantation. *Hepatol Int.* 2007;1:431–6.
83. Reichman TW, Fox A, Adcock L, Wright L, Abbey SE, Levy G, et al. Anonymous living liver donation: Donor profiles and outcomes. *Am J Transplant.* 2010;10:2099–104.
84. Marsh AA, Stoycos SA, Brethel-Haurwitz KM, Robinson P, VanMeter JW, Cardinale EM. Neural and cognitive characteristics of extraordinary altruists. *Proc Natl Acad Sci U S A.* 2014;111:15036–41.
85. Iacoviello BM, Shenoy A, Braoude J, Jennings T, Vaidya S, Brouwer J, et al. The live donor assessment tool: A psychosocial assessment tool for live organ donors. *Psychosomatics.* 2015;56:254–61.
86. Nishimura K, Kobayashi S, Tsutsui J, Kawasaki H, Katsuragawa S, Noma S, et al. Practices for supporting and confirming decision-making involved in kidney and liver donation by related living donors in Japan: A nationwide survey. *Am J Transplant.* 2016;16:860–8.
87. Massey EK, Timmerman L, Ismail SY, Duerinckx N, Lopes A, Maple H, et al. The ELPAT living organ donor Psychosocial Assessment Tool (EPAT): From 'what' to 'how' of psychosocial screening—A pilot study. *Transpl Int.* 2018;31:56–70.
88. Kook YWA, Shenoy A, Hunt J, Desrosiers F, Gordon-Elliott JS, Jowsey-Gregoire S, et al. Multicenter investigation of the reliability and validity of the live donor assessment tool as an enhancement to the psychosocial evaluation of living donors. *Am J Transplant.* 2019;19:1119–28.
89. Goldaracena N, Jung J, Aravinthan AD, Abbey SE, Krause S, Pritlove C, et al. Donor outcomes in anonymous live liver donation. *J Hepatol.* 2019;71:951–9.
90. Kasiske BL, Ahn YS, Conboy M, Dew MA, Folken C, Levan ML, et al. Outcomes of living liver donor candidate evaluations in the Living Donor Collective pilot registry. *Clin Transplant.* 2021;35:e14394.
91. Zimbrea PC, Rubman S, Andacoglu O, Bakhai D, Clifton E, Deng Y, et al. Psychosocial evaluation of living liver donors—State of current practices in the United States. *Liver Transpl.* 2024;30:505–18.
92. Goldaracena N, Spetzler VN, Marquez M, Selzner N, Cattral MS, Greig PD, et al. Live donor liver transplantation: A valid alternative for critically ill patients suffering from acute liver failure. *Am J Transplant.* 2015;15:1591–7.
93. Pamecha V, Vagadiya A, Sinha PK, Sandhyav R, Parthasarathy K, Sasurkar S, et al. Living donor liver transplantation for acute liver failure: Donor safety and recipient outcome. *Liver Transpl.* 2019;25:1408–21.
94. Yang GH, Yoon YI, Hwang S, Kim KH, Ahn CS, Moon DB, et al. Clinical significance and outcomes of adult living donor liver transplantation for acute liver failure: A retrospective cohort study based on 15-year single-center experience. *Ann Surg Treat Res.* 2024;107:167–77.

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