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Results: Mean age was 58 years and the majority were male (78%), Non-Hispanic White (68%), with dilated cardiomyopathy (55%), long-term implant strategy (57%) and NYHA Class I-II (54%). Large (4-10 points) clinically important differences were detected in nearly all pairwise comparisons for all PROMIS measures (see Table for Fatigue results). MID's for four PROMIS measures were: Fatigue (3 to 5 points; see Table), Physical Function (2 to 3 points), Ability to Participate in Social Roles and Activities (3 points), and Satisfaction with Social Roles and Activities (3 to 5 points).

Conclusion: Patients with an LVAD, their caregivers and their clinicians should find it useful to be able to interpret the meaning of their PROMIS scores. MID's are especially useful for power calculations when designing new studies.

Estimates of Clinically Important and Minimally Important Differences for PROMIS Fatigue

Clinically Relevant Measure	n	Mean Fatigue Score ^a	Paired comparison	Mean difference ^b	p-value	Effect Size ^c
NYHA						
1	80	46.8	1-2	-3.4	0.019	0.36
			1-3	-6.9	<0.001	0.73
			1-4	-4.9	0.007	0.51
2	236	50.2	2-3	-3.4	0.001	0.36
			2-4	-1.4	0.659	0.01
3	161	53.7	3-4	2.0	0.435	0.21
4	67	51.7				
KCCQ-12 Fatigue						
Once per day or more (1)	129	57.9	1-2	5.3	<0.001	0.56
			1-3	10.7	<0.001	1.13
			1-4	14.8	<0.001	1.56
At least once per week (2)	146	52.6	2-3	5.4	<0.001	0.57
			2-4	9.6	<0.001	1.01
Less than once per week (3)	95	47.2	3-4	4.2	<0.001	0.44
Never (4)	110	43.1				
		^a Higher score = more fatigue		^b Bold denotes the MID		^c Mean difference/SD

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Measuring Quality of Life in Patients with Ventricular Assist Device - Psychometric Evaluation of the German Version of the Disease Specific QoLVAD-Questionnaire

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Purpose: Due to an increasing number of Ventricular assist device (VAD)-patients, patient-reported outcome measures assessing health-related quality of life (HRQoL) become important. No valid and reliable German instrument for VAD patients has been established.

Methods: In a nation-wide, multi-center, cross-sectional study, 393 participants completed the German translation of the Quality of Life with a Ventricular Assist Device (QoLVAD) questionnaire. The QoLVAD developed by Sandau et al. does assess five VAD specific QoL domains: physical, emotional, social, cognitive and spirituality. Psychometric evaluation was performed to test the applicability for clinical practice. Item and confirmatory factor analysis (CFA) were conducted. For convergent validity the Kansas City Cardiomyopathy Questionnaire (KCCQ) and the Patient Health Questionnaire-9 (PHQ-9) were used.

Results: Overall, 85.8 % of the sample was male; mean age 58.3 (range 18-85). The majority followed a bridge to transplant therapy (33.1 %) and were on VAD support for less than a year (38.9 %). The QoLVAD showed good item difficulty ($P_{total}=0.67$) and the majority of items had moderate to high discriminatory power ($r_{it}<0.3$). Most items demonstrated significant associations with total HRQoL and the five domains. Besides root

mean square error of approximation ($=0.07$), indices of model fit were moderate (comparative/Tucker-Lewis fit indices= $0.66/0.65$; standardized root mean square residual= 0.11). Seven items with low factor loadings (<0.30) were identified. Each QoLVAD domain demonstrated significant correlations with established measures supporting convergent validity (Table 1).

Conclusion: Findings indicate a promising standardized measure of QoL for patients on ongoing VAD support. Item reduction may increase model fit and psychometric quality of the instrument to improve its applicability in clinical practice.

Table 1: Summary scores and convergent validity of QoLVAD total score and domain scores

QoLVAD Domains	N	QoLVAD Score	Comparator Assessment	Correlation (r) between tests; p-value
Total	393	67.32 ± 14.71	KCCQ QoL	r = 0.70; p < 0.001
Physical	386	65.51 ± 13.72	KCCQ Physical Limitations	r = 0.63; p < 0.001
Emotional	388	65.50 ± 18.58	PHQ-9	r = -0.68; p < 0.001
Social	375	61.81 ± 18.70	KCCQ Social Limitations	r = 0.54; p < 0.001
Cognitive	379	78.67 ± 20.04	KCCQ Summary	r = 0.45; p < 0.001
Spirituality	289	63.97 ± 24.26	No comparator available	-

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Out of the Frying-Pan and into the Fire: Transplant Candidate Selection in Acute Lung Failure Due to SARS-CoV-2 Infection

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Purpose: The COVID-19 pandemic led to unprecedented rates of acute lung failure (ALF), and a rise in lung transplantation (LTx) referrals. Data on LTx in ALF is limited to LTx outcomes, and the unpredictable course of SARS-CoV-2 makes candidate selection challenging. This study summarizes our experiences, in both patients transplanted and those we declined.

Methods: LTx referrals for ALF due to SARS-CoV-2 between 01Apr20-01Oct21 were reviewed. Set parameters were collected prospectively. Acceptance criteria reflected previous guidance. Cases were discussed at our multi-disciplinary meeting and suitable candidates evaluated at source before transfer for consent and listing. Internal follow-up and external data from declined patients were retrospectively analysed, with survival to discharge and length of hospital stay as end-points.

Results: 45 patients were referred (78% male). Median age was 55.8 [IQR 47.6-59.8] years. 36 (80%) required both mechanical ventilation and vVECMO, of median duration 46 [31-82] and 34 [24-72] days respectively. Consolidation was the commonest CT finding (47%). Bacterial colonisation (23/45, 51%), coagulopathy (21/45, 47%) and hepatic dysfunction (11/45, 24%) were common. Twenty-two patients were conscious, of whom 21 were evaluated. Five patients died during evaluation, from either sepsis or bleeding. One failed evaluation, and one withdrew consent. Six patients improved, making urgent LTx unnecessary, with 5 attending our review clinic. Of the 8 patients successfully evaluated, one died unexpectedly awaiting transfer, one improved at listing and a further patient died of sepsis after listing. Three patients underwent LTx, all being discharged home at 3 months post-LTx.

Conclusion: LTx candidate selection in critically ill SARS-CoV2 patients is challenging. Late recovery, particularly in non-fibrotic ALF is not unusual. Decision-making needs to include “acceptable morbidity” as a prelude to delayed evaluation and perhaps listing. More data is needed about declined candidates, particularly unweanable sedated patients with single-organ failure. Even successful awake recipients may experience significant psychological injury, underlining previous arguments in sedated patients. Equity to all candidates needs consideration, given the extraordinary demands on organ availability and care resources.

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The Impact of Nutritional Status and Sarcopenia on the Outcomes of Lung Transplantation

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Purpose: Malnutrition and sarcopenia have been widely reported to negatively influence patients' outcomes in different clinical settings, but information is lacking about their impact on short and long-term outcomes after lung transplantation (LT). The aim of this study was to investigate which nutritional and sarcopenia indices independently predict prolonged postoperative invasive mechanical ventilation (IMV), intensive care unit (ICU) and hospital length of stay (LOS), re-intubation and rejection after LT.

Methods: Observational, retrospective study on patients undergoing LT in a single University Hospital was conducted between February 2016 and November 2020. Within 6 months before LT, the following data were collected: a) nutritional indices (Body Mass Index (BMI), serum albumin concentration, Prognostic Nutritional Index (PNI), Mini Nutritional Assessment Short-Form (MNA-SF)); b) sarcopenia indices (Creatinine Height Index (CHI), Skeletal Muscle Index (SMI) and densitometry of paravertebral muscles at chest CT-scan); c) postoperative clinical data related to the outcomes of interest. Univariable logistic regression models were used for binary outcomes and univariable gamma models for continuous outcomes.

Results: 108 of 114 patients were enrolled after excluding 6 patients for incomplete records. Seventy-two patients (67%) were male, median age was 52 [43-60] years. The main indications for BLT were interstitial (46%), septic (22%) and obstructive (19%) diseases. The IMV duration was non-linearly associated with pre-operative serum albumin (range 30-35 g/L: effect -1.67 [-2.45 - -0.89] hours, $p < 0.01$). The ICU LOS was non-linearly correlated to albumin (range 30-35 g/L: effect -0.84 [-1.23 - -0.45] days, $p < 0.01$) and PNI (range 25-40: effect -1.79 [-3.09 - -0.50] days, $p = 0.01$), but linearly associated to BMI (range 20.7-27.4 kg/m²: effect +0.34 [0.03 - 0.68] days, $p = 0.04$). No nutritional or muscle parameters predicted the need for re-intubation, the presence of rejection at 30 days and hospital LOS.

Conclusion: Pre-operative low serum albumin independently predicts prolonged IMV after LT, while pre-transplant low albumin, low PNI and high BMI values are associated with prolonged postoperative ICU LOS. Further studies are needed to identify the most appropriate nutritional and muscular assessment tools in BLT recipients.

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The Impact of Recipient Age on Outcomes of Simultaneous Heart-Lung Transplantation

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Purpose: The shortage of donor organs underscores the importance of identifying risk factors for adverse outcomes in multiorgan transplantation. Heart-lung transplantation (HLTx) is relatively uncommon, and there is a paucity of literature to suggest at what recipient age threshold mortality risk increases. This analysis aimed to identify a threshold of age that predicts adverse post-HLTx outcomes.

Methods: The United Network of Organ Sharing (UNOS) registry was used to identify adult combined HLTx from 2005-2021. The primary outcome was one-year mortality. Threshold regression analysis was used to identify the threshold at which age impacts one-year post-HLTx mortality. Patients were stratified according to the age threshold. Kaplan-Meier analysis was used to model survival, and multivariable Cox proportional hazards regression was used for risk-adjustment.

Results: 453 patients underwent HLTx in the study period. Threshold analysis identified that age >58 years impacted one-year mortality. Using this threshold, 47 (10.38%) patients were included in the older cohort, and 406 patients (89.62%) were included in the younger cohort. Older recipients were more likely to be male, have diabetes, and have higher lung allocation scores compared to younger recipients. On Kaplan Meier analysis, one-year survival was significantly lower in patients >58 years (64.7% vs 82.0%, $p = 0.007$). On multivariable analysis, the adjusted hazard for one-year mortality in recipients older than 58 years was 2.27 (95% CI [1.21-4.28], $p = 0.011$). Recipient creatinine, total bilirubin, temporary mechanical circulatory support, and non-ABO-identical matching were also independent predictors of one-year mortality. Patients >58 years more frequently required new onset dialysis after HLTx (19.2% vs 12.8%, $p = 0.031$) and had a higher incidence of postoperative stroke (13.0% vs 4.5%, $p = 0.040$).

Conclusion: The threshold of recipient age above which one-year mortality risk most increases in HLTx is 58 years. Although age >58 is a risk factor for one-year mortality with over 2-fold increased risk as compared to younger patients, the majority (65%) of older HLTx recipients do survive to 1-year. These data suggest that older age should be heavily considered in the patient selection process for HLTx but may not necessarily need to serve as an absolute contraindication, particularly in the absence of other risk factors.

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Liver-First Strategy for Combined Lung and Liver Transplantation: 15-Year Single-Center Experience

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Purpose: Combined lung and liver transplantation is an uncommon procedure and poses several management challenges. At our institution, since 2005, we have been performing liver transplantation before lung transplantation (liver first strategy), because this strategy might improve the liver coagulopathy thus reducing the risk of bleeding, and spare the successively transplanted lung allograft from the liver reperfusion fluid. Aim of this study was to present our 15-year experience with the liver first strategy for combined lung-liver transplantation.