OPTN Organ Procurement & Transplantation Network

Crosswalk of Covariates used for the Post-Transplant Survival Calculation in Lung Allocation

Establish Continuous Distribution of Lungs, effective March 9, 2023,[1] replaces the Lung Allocation Score (LAS) with a lung Composite Allocation Score (CAS). The LAS included a measure of post-transplant outcomes that accounted for the expected number of days a candidate would live during one-year post-transplant. The lung CAS includes a change to that measure to reflect the expected number of days a candidate will live during the first five years post-transplant. The crosswalk below is intended to assist transplant hospitals in comparing the covariates for the one-year post-transplant calculation used in the LAS prior to March 9, 2023, with the covariates for the five-year post-transplant calculation effective March 9, 2023. More information on this calculation can be found in *A Guide to Calculating the Lung Composite Allocation Score (Lung CAS).*[2]

Lung Allocation Score (1-year survival)		Lung Composite Allocation Score (5-year survival)		
For this variable:	**The following is used in the LAS post-transplant calculation:**	**For this covariate**	**When**	**The following coefficient us used in the lung post-transplant outcomes score calculation**
	0.0208895939056676 * (age–45) if candidate is greater than 45 years old 0 if candidate is 45 years old or younger	Age at the time of the match run (fractional calendar year)	Age is less than 20	0.0676308559079852 x (20 - age) + 0.78241832
			Age is at least 20 and less than 30	-0.0782418319259552 x (age - 20) + 0.78241832
			Age is at least 30 and less than 40	0
			Age is at least 40 and less than 50	0.0025908121347866 x (age - 40)
			Age is at least 50 and less than 60	0.0167463361760962 x (age - 50) + 0.02590812
			Age is at least 60 and less than 70	0.0227144625797883 x (age - 60) + 0.19337148
			Age is at least 70	0.0612288624399672 x (age - 70) + 0.42051611

[1] "Establish Continuous Distribution of Lungs," OPTN, Policy Notice, accessed December 23, 2022, https://optn.transplant.hrsa.gov/media/eyvd01ia/policy-notice_lung-cd-update_lung.pdf.
[2] "A guide to calculating the Lung Composite Allocation Score (Lung CAS)," OPTN, accessed December 23, 2022, https://optn.transplant.hrsa.gov/media/jhcppfnd/guide_to_calculating_lung_composite_allocation_score.pdf.

Creatinine (serum) at transplant (mg/dL) with the most recent date and time	0.25451764981323* creatinine if candidate is at least 18 years old 0 if candidate is less than 18 years old	Creatinine (serum) (mg/dL) with the most recent test date and time	Creatinine is less than 0.4 and candidate is at least 18 years old	-7.4016726145812200 x (0.4 - creatinine) + 0.41872820
			Creatinine is at least 0.4 and less than 0.6 and candidate is at least 18 years old	-1.2584103289549000 x (creatinine - 0.4) + 0.41872820
			Creatinine is at least 0.6 and less than 0.8 and candidate is at least 18 years old	0.3712348866558860 x (creatinine - 0.6) + 0.16704614
			Creatinine is at least 0.8 and less than 1.4 and candidate is at least 18 years old	0.6844301806854400 x (creatinine - 0.8) + 0.24129311
			Creatinine is at least 1.4 and candidate is at least 18 years old	0.6881894154264970 x (creatinine - 1.4) + 0.65195122
			Candidate is less than 18 years old	0
Cardiac index (L/min/m^2) at rest, prior to any exercise	0.1448727551614 if less than 2 L/min/m^2 0 if at least 2 L/min/m^2	Cardiac index (L/min/m^2) at rest, prior to any exercise	Less than 2 L/min/m^2	-0.4837491139906200 x (2 – cardiac index) + 0.04030226
			At least 2 and less than 2.5 L/min/m^2	-0.0806045255202868 x (cardiac index - 2) + 0.04030226
			At least 2.5 and less than 3.5 L/min/m^2	0.0136169358319050 x (cardiac index - 2.5)
			At least 3.5 and less than 4.5 L/min/m^2	0.0808432592591954 x (cardiac index - 3.5) + 0.01361694
			At least 4.5 and less than 5 L/min/m^2	0.0696938839239190 x (cardiac index - 4.5) + 0.09446020
			At least 5 L/min/m^2	-0.0023264599609358 x (cardiac index - 5) + 0.12930714

Ventilation status if candidate is hospitalized	0.33161555489537 if continuous mechanical ventilation needed 0 if no continuous mechanical ventilation needed	Assisted ventilation	ECMO or continuous mechanical-hospitalized	0.267537018672253
			not ECMO or continuous mechanical-hospitalized	0
Diagnosis Group A	0	Diagnosis Group	A	-0.098901796
Diagnosis Group B	0.51341349576197		B	0
Diagnosis Group C	0.23187885123342		C	-0.167126401
Diagnosis Group D	0.12527366545917		D	0
Detailed diagnosis: Bronchiectasis (Diagnosis Group A only)	0.12048575705296	Detailed diagnosis within Group A	Bronchiectasis	-0.026706663
Detailed diagnosis: Obliterative bronchiolitis (non-retransplant, Diagnosis Group D only)	-0.33402539276216	Detailed diagnosis within Group D	Obliterative bronchiolitis (non-retransplant)	-0.132634978
Detailed diagnosis: Constrictive bronchiolitis (Diagnosis Group D only)	-0.33402539276216	Detailed diagnosis within Group D	Constrictive bronchiolitis	-0.132634978
Detailed diagnosis: Sarcoidosis with PA mean pressure greater than 30 mm Hg (Diagnosis Group D only)	0.43537371336129	Detailed diagnosis within Group D	Sarcoidosis with PA mean pressure greater than 30 mm Hg	0.0561853179859775

Detailed diagnosis: Sarcoidosis with PA mean pressure of 30 mm Hg or less (Diagnosis Group A only)	0.98051166673574	Detailed diagnosis within Group A	Sarcoidosis with PA mean pressure of 30 mm Hg or less	0.501743373724746
Detailed diagnosis: Sarcoidosis with PA mean pressure missing (Diagnosis Group A only)	0.98051166673574	Detailed diagnosis within Group A	Sarcoidosis with PA mean pressure missing	0.501743373724746
--	--	Detailed diagnosis within Group A	Lymphangioleiomyomatosis	-0.271420386
--	--	Detailed diagnosis within Group D	COVID-19: pulmonary fibrosis	0.046504644
--	--	Detailed diagnosis within Group D	Pulmonary fibrosis, other	0.046504644
Oxygen needed to maintain adequate oxygen saturation (88% or greater) at rest (L/min)	0.0100383613234584 *O_2 for Diagnosis Group A 0.0093694370076423 *O_2 for Diagnosis Groups B, C, and D	--	--	--
--	--	Functional Status	No assistance needed with activities of daily living	-0.005304128
			Some assistance needed with activities of daily living	0
			Total assistance needed with activities of daily living	0.074378407
Six-minute-walk-distance (feet) obtained while	0.0001943695814883 * (1200-Six-minute-walk distance)	Six-minute-walk distance (feet) obtained while	Less than 20 0 feet	-0.0002535116049789 x (200 - Six-minute-walk distance) + 0.11168755

candidate is receiving supplemental oxygen required to maintain an oxygen saturation of 88% or greater at rest. Increase in supplemental oxygen during this test is at the discretion of the center performing the test.	0 if six-minute-distance-walked is at least 1,200 feet	candidate is receiving supplemental oxygen required to maintain an oxygen saturation of 88% or greater at rest. Increase in supplemental oxygen during this test is at the discretion of the center performing the test.	At least 200 feet and less than 600 feet	-0.0002841805913329 x (Six-minute-walk distance - 200) + 0.11168755
			At least 600 feet and less than 800 feet	-0.0000049617083362 x (Six-minute-walk distance - 600) - 0.00198468
			At least 800 feet and less than 1,200 feet	-0.0001950464256370 x (Six-minute-walk distance - 800) - 0.00297703
			At least 1,200 feet and less than 1,600 feet	-0.0007428583659073 x (Six-minute-walk distance - 1200) - 0.08099560
			At least 1,600 feet	0.0035374143842919 x (Six-minute-walk distance - 1600) - 0.37813894

Missing or expired values for post-transplant survival calculation

If this covariate's value:	Is (for LAS):	Then the LAS post-transplant score uses this substituted value:	Is (for lung CAS):	Then the CAS post-transplant score uses this substituted value:
Cardiac index	Missing	3.0 L/min/m^2	Missing, or greater than 5	5.0 L/min/m^2
Continuous mechanical ventilation (LAS) **Assisted ventilation (CAS)**	Missing or expired	Continuous mechanical ventilation while hospitalized in the post-transplant survival measure	Missing or expired	Continuous mechanical ventilation while hospitalized
Creatinine: serum	Missing or expired	40 mg/dL in the post-transplant survival measure for candidates at least 18 years old	Missing, expired or greater than 1.6	1.6 mg/dL

		0 mg/dL in the post-transplant survival measure for candidates less than 18 years old		
Functional status	--	--	Missing or expired	Total assistance needed
Oxygen needed at rest	Missing or expired	26.33 L/min in the post-transplant survival measure	--	--
Six-minute-walk distance	Missing or expired	0 feet in the post-transplant survival measure	Missing or expired	200 feet
			Greater than 1,600	1,600 feet