

take on the risk of urgently listed patients should not conclude that outcomes are, in fact, equivalent to the common electively listed patient.

Still, Tang and colleagues⁷ provide granular characteristics on those patients who not only underwent transplantation but also were listed, which offers those in similar centers an opportunity to reevaluate and potentially improve recipient selection in this high-risk patient population.

References

1. Kotloff RM, Thabut G. Lung transplantation. *Am J Respir Crit Care Med*. 2011; 184:159-71.
2. Yusen RD, Edwards LB, Dipchand AI, Goldfarb SB, Kucheryavaya AY, Levvy BJ, et al. The registry of the International Society for Heart and Lung Transplantation: thirty-third adult lung and heart-lung transplant report-2016;

focus theme: primary diagnostic indications for transplant. *J Heart Lung Transplant*. 2016;35:1170-84.

3. Valapour M, Lehr CJ, Skeans MA, Smith JM, Uccellini K, Lehman R, et al. OPTN/SRTR 2018 annual data report: lung. *Am J Transplant*. 2020;20(Suppl s1): 427-508.
4. George TJ, Beatty CA, Kilic A, Shah PD, Merlo CA, Shah AS. Outcomes and temporal trends among high-risk patients after lung transplantation in the United States. *J Heart Lung Transplant*. 2012;31:1182-91.
5. Russo MJ, Davies RR, Hong KN, Iribarne A, Kawut S, Bacchetta M, et al. Who is the high-risk recipient? Predicting mortality after lung transplantation using pretransplant risk factors. *J Thorac Cardiovasc Surg*. 2009;138: 1234-8.
6. De Oliveira NC, Julliard W, Osaki S, Maloney JD, Cornwell RD, Sonetti DA, et al. Lung transplantation for high-risk patients with idiopathic pulmonary fibrosis. *Sarcoidosis Vasc Diffuse Lung Dis*. 2016;33:235-41.
7. Tang A, Thuita L, Siddiqui HU, Rappaport J, Blackstone EH, McCurry KR, et al. Urgently listed lung transplant patients have outcomes similar to those of electively listed patients. *J Thorac Cardiovasc Surg*. 2021;161:306-17.e8.

See Article page 306.



Commentary: Donor lungs allocated to critically ill patients listed urgently: No longer a waste of precious organs?

Dirk Van Raemdonck, MD, PhD,^a
 Laurens J. Ceulemans, MD, PhD,^a
 Arne Neyrinck, MD, PhD,^b
 Robin Vos, MD, PhD,^c and
 Geert M. Verleden, MD, PhD^c

In their white paper on “Ethical Principles in the Allocation of Human Organs,” reviewed and updated in 2015, the Ethics Committee of the Organ Procurement and Transplantation Network identified 3 principles of primary importance in the equitable allocation of scarce human organs for transplantation: (1) utility; (2) justice; and (3) respect for persons (including respect for autonomy).¹ Strong factors that affect access to transplant waiting list,

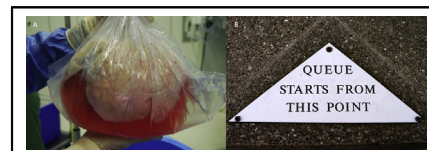
From the Departments of ^aThoracic Surgery, ^bAnesthesiology, and ^cPneumology, University Hospitals Leuven, Leuven, Belgium.

Disclosures: Authors have nothing to disclose with regard to commercial support. Received for publication March 4, 2020; accepted for publication March 4, 2020; available ahead of print March 19, 2020.

Address for reprints: Dirk Van Raemdonck, MD, PhD, Department of Thoracic Surgery, University Hospital Gasthuisberg, Herestraat 49, B-3000 Leuven, Belgium (E-mail: dirk.vanraemdonck@uzleuven.be).

J Thorac Cardiovasc Surg 2021;161:319-20
 0022-5223/\$36.00

Copyright © 2020 by The American Association for Thoracic Surgery
<https://doi.org/10.1016/j.jtcvs.2020.03.012>



A, Set of donor lungs bagged for transport. B, Who do we now call in for the transplant?

CENTRAL MESSAGE

Well-selected patients urgently listed for LTx because of acute respiratory failure have similar outcomes as those of electively listed patients with comparable disease severity and urgency.

such as patient and graft survival, quality of life, availability of alternative treatments, and age should also be considered within the context and balance of these 3 ethical principles, in particular utility.

Lung transplantation (LTx) programs across the world are regularly consulted for patients admitted elsewhere developing de novo acute respiratory deterioration with no further treatment options beside urgent and unplanned LTx. Mechanical ventilation or extracorporeal life support is often deployed to bridge such patients to LTx. This

situation is still considered a relative contraindication in the 2014 updated International Society for Heart and Lung Transplantation consensus document for the selection of LTx candidates.² Overall, these patients are known to have worse perioperative outcome and inferior long-term survival.³ Therefore, the LTx community in general has been reluctant to accept such patients on their waiting list because of the increased risk to waste good organs and the competition with stable and electively listed patients with a better chance for good post-transplant outcome.

Tang and co-workers,⁴ in this issue of the *Journal*, reviewed their experience with 201 urgently listed patients receiving transplants between 2006 and 2017 at the Cleveland Clinic. Recipient outcome was compared with 1423 electively listed transplant recipients. Not surprisingly, death at any time after listing, including post-transplant death, was higher among urgently listed patients. These patients were younger (53 ± 13 vs 55 ± 12 years), had more ventilator and extracorporeal support (25% vs 2%), had more restrictive lung disease (73% vs 51%), and had a higher Lung Allocation Score (82 ± 13 vs 47 ± 17). Of note, at 1 month after listing, mortality was 26% in urgently listed patients and 58% received transplants versus only 2.1% and 20%, respectively, in the electively listed patients. However, in-hospital morbidity and mortality, survival up to 7 years, and allograft function were similar in a matched comparison of both groups with 76 patients each using weighted balancing–score methodology.⁴

This report is one of the largest single-center studies focusing on outcome in urgently listed LTx candidates. How to understand that outcome was similar in both matched groups? We believe this was related to the definition of *urgently listed*, determined as *previously not evaluated as an outpatient before listing*, whereas the electively listed patients were identified in this study by *the date of listing preceding the date of hospital admission for transplantation*. After all, both groups consisted of “urgent” patients with comparable disease severity in terms of age, diagnosis, Lung Allocation Score, and life support, but their date of listing differed.

Nevertheless, this retrospective study by the Cleveland group on a large patient cohort is interesting as their findings shed new light on the ongoing discussion whether patients with acute respiratory failure and urgent referral for rescue transplantation should be listed at all. A limitation of the study acknowledged by the authors is the unknown proportion of patients who were not referred or were not listed for LTx at all. Therefore, the results presented in this paper represent only a portion of

well-selected patients believed to be still able to undergo transplantation with a reasonable outcome. Series on successful LTx in patients with acute respiratory distress syndrome, for example, after a serious viral infection, are rarely reported.^{5,6}

In our LTx program at the University Hospitals Leuven, Belgium, we have been reluctant to list patients with acute pulmonary deterioration who were previously not seen in the clinic or not screened for transplantation. Nevertheless, such patients are always discussed and evaluated by a multidisciplinary team on an ad hoc and case-by-case basis. Young patients who survive the critical period in the intensive care unit and who can be rehabilitated may still be considered for elective transplantation in case their pulmonary function and exercise capacity remain limited without any other medical or surgical options for further improvement. As discussed in the International Society of Heart and Lung Transplantation consensus document,² these patients will need careful reevaluation to determine candidacy for LTx taking into account not only physiologic findings but also psychosocial factors, family support, and fully informed patient consent that cannot always be obtained upon referral when critically ill.

Hopefully one day, with unlimited donor supply, health-care resources, and personnel, the sole ethical principle in organ allocation remaining valid is the patient’s autonomy. However, that day, transplant physicians will no longer be triggered by a scarcity of transplantable organs to continue the inspiring ethics debate on a fair lung allocation policy.

References

1. The Ethical Principles in the Allocation of Human Organs; . Available at: <https://optn.transplant.hrsa.gov/resources/ethics/ethical-principles-in-the-allocation-of-human-organs/>. Accessed March 4, 2020.
2. Weill D, Benden C, Corris PA, Dark JH, Davis RD, Keshavjee S, et al. A consensus document for the selection of lung transplant candidates: 2014—an update from the pulmonary transplantation council of the International Society for Heart and Lung Transplantation. *J Heart Lung Transplant*. 2015;34:1-15.
3. Yusen RD, Edwards LB, Dipchand AI, Goldfarb SB, Kucheryavaya AY, Levvey BJ, et al. The registry of the International Society for Heart and Lung Transplantation: thirty-third adult lung and heart-lung transplant report-2016; focus theme: primary diagnostic indications for transplant. *J Heart Lung Transplant*. 2016;35:1170-84.
4. Tang A, Thuita L, Siddiqui HU, Rappaport J, Blackstone EH, McCurry KR, et al. Urgently listed lung transplant patients have outcomes similar to those of electively listed patients. *J Thorac Cardiovasc Surg*. 2021;161:306-17.e8.
5. The world’s first lung transplantation in a 59-year old patient with acute lung injury following a respiratory infection with COVID-19 virus performed on Saturday, February 29, 2020 by Dr Chen Jingyu from Wuxi People’s Hospital in China; . Available at: <https://www.youtube.com/watch?v=NFdtzvzeOGQ>. Accessed March 4, 2020.
6. Chang Y, Lee SO, Shim TS, Choi SH, Kim HR, Kim YH, et al. Lung transplantation as a therapeutic option in acute respiratory distress syndrome. *Transplantation*. 2018;102:829-37.