Supplementary

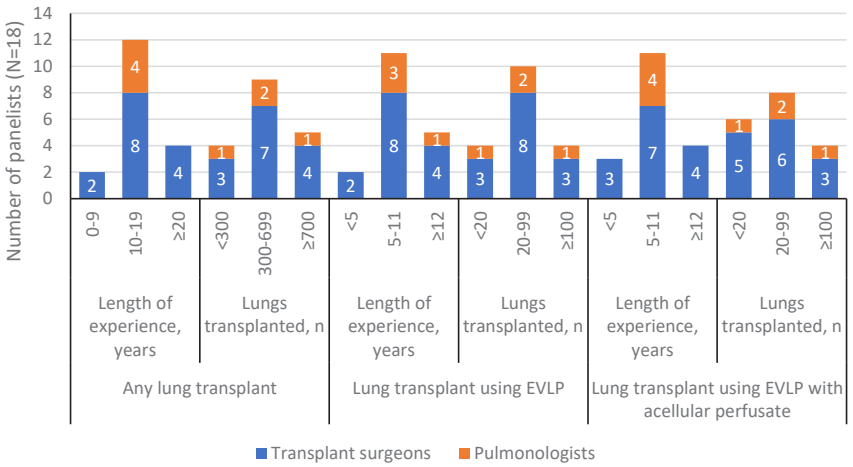

Figure S1 Panelists' self-reported experience with lung transplantation and EVLP. EVLP, ex vivo lung perfusion

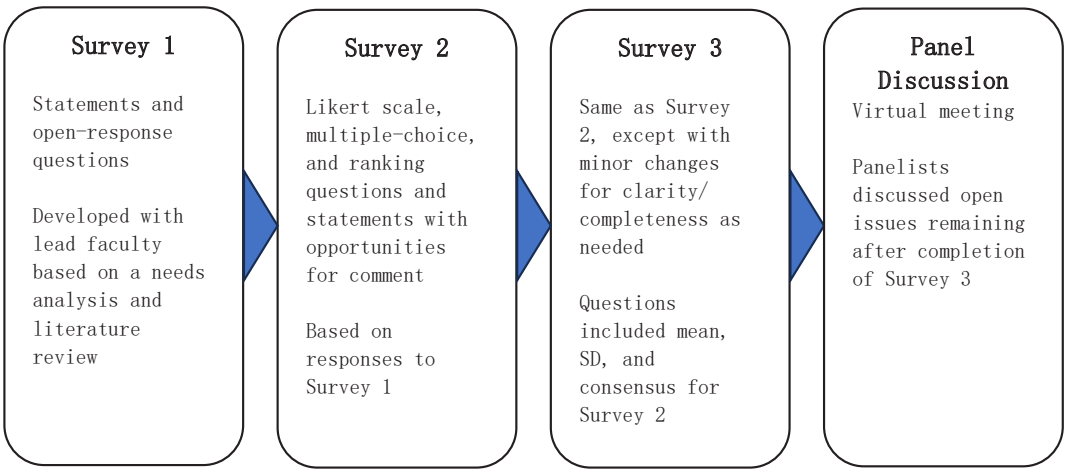

Figure S2 Overview of the modified Delphi process.

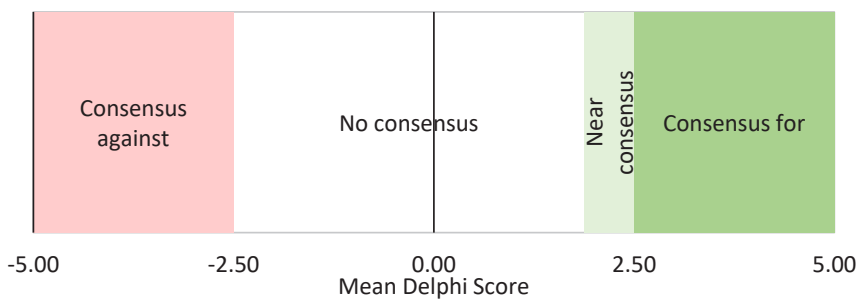

Figure S3 Prospective definition of consensus. Near consensus was defined post-hoc.

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Table S1 EVLP and lungs with pulmonary embolism or infarction

I place lungs on EVLP if there are blood clots in the pre-EVLP retrograde at procurement or if the other signs of pulmonary embolism are present (10 responses)

- Yes: 5
- Sometimes: 1
- No: 4

I use EVLP to clear emboli (e.g., with thrombolytics or vascular angioextraction) (10 responses)

- Yes: 3
- Sometimes: 2
- No: 5

I reject lungs with large pulmonary infarction (9 responses)

- Yes: 8
- No: 1

Do you have a threshold for pulmonary infarction where you would reject lungs without putting them on EVLP (8 responses)

- Yes: 5
- No: 3

Results of a poll administered during the virtual panel meeting conducted after Survey 3. EVLP, ex vivo lung perfusion.

Table S2 EVLP and lungs procured using NRP

If NRP DCD lungs appear to meet standard criteria, I will consider taking them straight to transplant (10 responses)

- Yes: 4
- No: 3
- N/A or no experience: 3

I put all NRP DCD lungs on EVLP for assessment unless they are clearly unusable (7 responses)

- Yes: 4
- No: 2
- N/A or no experience: 1

Results of a poll administered during the virtual panel meeting conducted after Survey 3. DCD, donation after cardiocirculatory death; EVLP, ex vivo lung perfusion; N/A, not applicable; NRP, normothermic regional perfusion.

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Table S3 CIT in decisions about EVLP *vs.* straight to transplant

For lungs that you consider to be good quality and to have been procured well (e.g., by your procurement team or a team you have confidence in):

What is the maximum acceptable CIT using standard storage techniques?

- ≤7 hours: 1
- 8–9 hours: 8
- 10–11 hours: 4
- ≥12 hours: 4

What is the maximum acceptable CIT using 10 ℃ storage?

- ≤7 hours: 0
- 8–9 hours: 1
- 10–11 hours: 2
- ≥12 hours: 12
- N/A, I'm not familiar with 10 ℃ storage: 2

What are the key factors that influence the maximum acceptable CIT? (please provide your response in a few sentences)

- Age of donor, evidence of aspiration, signs of infiltrate
- Temperature of transport/storage, use of EVLP, recipient risk factors for PGD, initial lung donor quality
- Recipient urgency, other donor factors (mechanism of death, radiographic appearance, other concerns)
- First, confidence in the quality of the donor lung, so key would be donor age and preprocurement performance. A young lung with no red flags (clear cxr, clear branch, low airway pressure, great gas exchange) I would have no concerns of 12 h or less. Now I believe in still trying to keep that number low, so second would be reasonable logistics factors—time of day, staff available, concomitant cases, difficulty of explant, etc.
- Better preservation of lung viability at 10 ℃, reliable safe lung function, absence of PGD
- Age of donor, over all quality of lungs, DCD *vs.* DBD and recipient characteristics (i.e., severe PH)
- Quality of procurement, storage temperature and technique [standard (ice), control temp cooler (Lung Guard), 10 degrees storage], quality of the graft at the time of recovery (localized injury to a lobe *vs.* injuries involving more than one lobe)
- Quality of the organ determines the maximal acceptable CIT as does the recipient risk. The better the donor organ quality, the longer an acceptable CIT. Higher recipient risk raises concern about longer CIT unless the organs are of high quality
  - 1. Quality of donor procurement team. This is critical, especially to ensure adequate inflation
  - 2. Quality of donor lung
  - 3. Risk level of recipient
  - 4. Careful avoidance/mitigation of reperfusion injury, with ECMO and other strategies
- Keeping the lungs inflated—atelectasis is worst thing possible
- If lungs are perfect quality, I will be more lenient with my CIT allowance, whether on ice or 10 degrees. If using 10 degrees, I am not concerned about CIT up to ~20 h

Results of a poll administered by email after the virtual panel meeting conducted after Survey 3. 17/18 panelists responded to the poll. CIT, cold ischemia time; cxr, chest X-ray; DBD, donation after brain death, DCD, donation after cardiocirculatory death, ECMO, extracorporeal membrane oxygenation; EVLP, ex vivo lung perfusion; h, hours; N/A, not applicable; PGD, primary graft dysfunction.

https://dx.doi.org/10.21037/jtd-2024-2069

Table S4 CIT2 in evaluation of suitability for transplant

How do you usually define CIT2?

- Removal from EVLP to reperfusion of the first lung: 5
- Removal from EVLP to first stitch of the anastomosis: 2
- Removal from EVLP to placement of the deflated lung in the recipient's chest cavity: 10
- Other (please describe): 0

Please add any comments (please provide your response in a few sentences)

- The answer above reflects the long-standing standard of our transplant center
- CIT2 definition is variable and would be good to settle on common definition
- A trial of remote EVLP at a centralized facility defined CIT2 as the time from end of EVLP to the time the lung was removed from ice [Mallea JM, Hartwig MG, Keller CA, et al. Remote ex vivo lung perfusion at a centralized evaluation facility. J Heart Lung Transplant 2022;41:1700-11). In my opinion this is a more accurate measure of CIT2. In some cases (lobar transplant, trimming of the graft, porcine bronchus) a significant amount of time could be spent on the back table preparing the lung

For the following questions, please define CIT2 as the time from removal from EVLP to placement of the deflated lung in the recipient's chest cavity

For lungs that you consider to be good quality and to have been procured well (e.g., by your procurement team or a team you have confidence in) but doesn't have a recipient yet:

What is the maximum acceptable CIT2 using standard storage techniques?

- ≤7 hours: 4
- 8–9 hours: 9
- 10–11 hours: 2
- ≥12 hours: 2

What is the maximum acceptable CIT2 using 10 ℃ storage?

- ≤7 hours: 2
- 8–9 hours: 0
- 10–11 hours: 3
- ≥12 hours: 10
- N/A, I'm not familiar with 10 ℃ storage: 2

What are the key factors that influence the maximum acceptable CIT2? (please provide your response in a few sentences)

- Quality/performance of lungs at the end of EVLP (P/F, compliance, STEEN loss, bronchoscopy, cxr), age of donor, signs of infiltrate
- Temperature of transport/storage after use of EVLP, recipient risk factors for PGD, lung donor quality at completion of EVLP
- Again, recipient urgency, other donor factors (mechanism of death, radiographic appearance, other concerns) but now also how strongly confident the quality during EVLP (excellent *vs.* marginal in regard to compliance, PO2, deflation)
- Quality of donor lung prior to harvest and compliance/PO2 at conclusion of EVLP
- I would try to keep ischemic time in CIT1 if possible and keep CIT2 low just given the degree of confidence I would have in the organ (put the risk on the EVLP run and not the patient). So, we are really talking about lungs that I'm offered from an EVLP run. In that case at present, I would probably try to keep it less than 12 h—I have no great data, but we are now talking about a much longer total ischemic time with CIT1 and the EVLP run (probably another 10 h at an absolute minimum), so I would be more nervous really extending this longer
- Proven safety and efficacy of 10 ℃ storage
- Age of donor, overall quality of lungs, DCD *vs.* DBD and recipient characteristics (i.e., severe PH)
- Storage mode, info on quality of lungs, appropriately inflated
- Quality of procurement, storage temperature and technique [standard (ice), control temp cooler (Lung Guard), 10 degrees storage], quality of the graft at the time of recovery (localized injury to a lobe *vs.* injuries involving more than one lobe)
- Quality of the organ determines the maximal acceptable CIT as does the recipient risk. The better the donor organ quality, the longer an acceptable CIT. Higher recipient risk raises concern about longer CIT unless the organs are of high quality
- Donor age (younger donor can tolerate longer ischemic time); smoking status; recipient conditions: longer CIT2 for low-risk recipients (young, ambulatory outpatient, not in ICU)
  - 1. Quality of donor procurement team. This is critical, especially to ensure adequate inflation
  - 2. Quality of donor lung
  - 3. Risk level of recipient
  - 4. Careful avoidance/mitigation of reperfusion injury, with ECMO and other strategies
- The total CIT (CIT1 + CIT2) + EVLP time all <12 h
- Lung quality at the end of EVLP

Results of a poll administered by email after the virtual panel meeting conducted after Survey 3. 17/18 panelists responded to the poll. CIT, cold ischemia time; cxr, chest X-ray; EVLP, ex vivo lung perfusion; h, hours; ICU, intensive care unit; N/A, not applicable; P/F, ratio of PaO2 to fraction of inspired oxygen; PGD, primary graft dysfunction.

https://dx.doi.org/10.21037/jtd-2024-2069