



Το ελληνικό πρόγραμμα μεταμόσχευσης πνεύμονα

The hellenic program of lung transplantation

Ηρακλής Τσαγκάρης

Αναπληρωτής Καθηγητής ΕΚΠΑ

Εθνικός Οργανισμός Μεταμοσχεύσεων

Δήλωση συμφερόντων

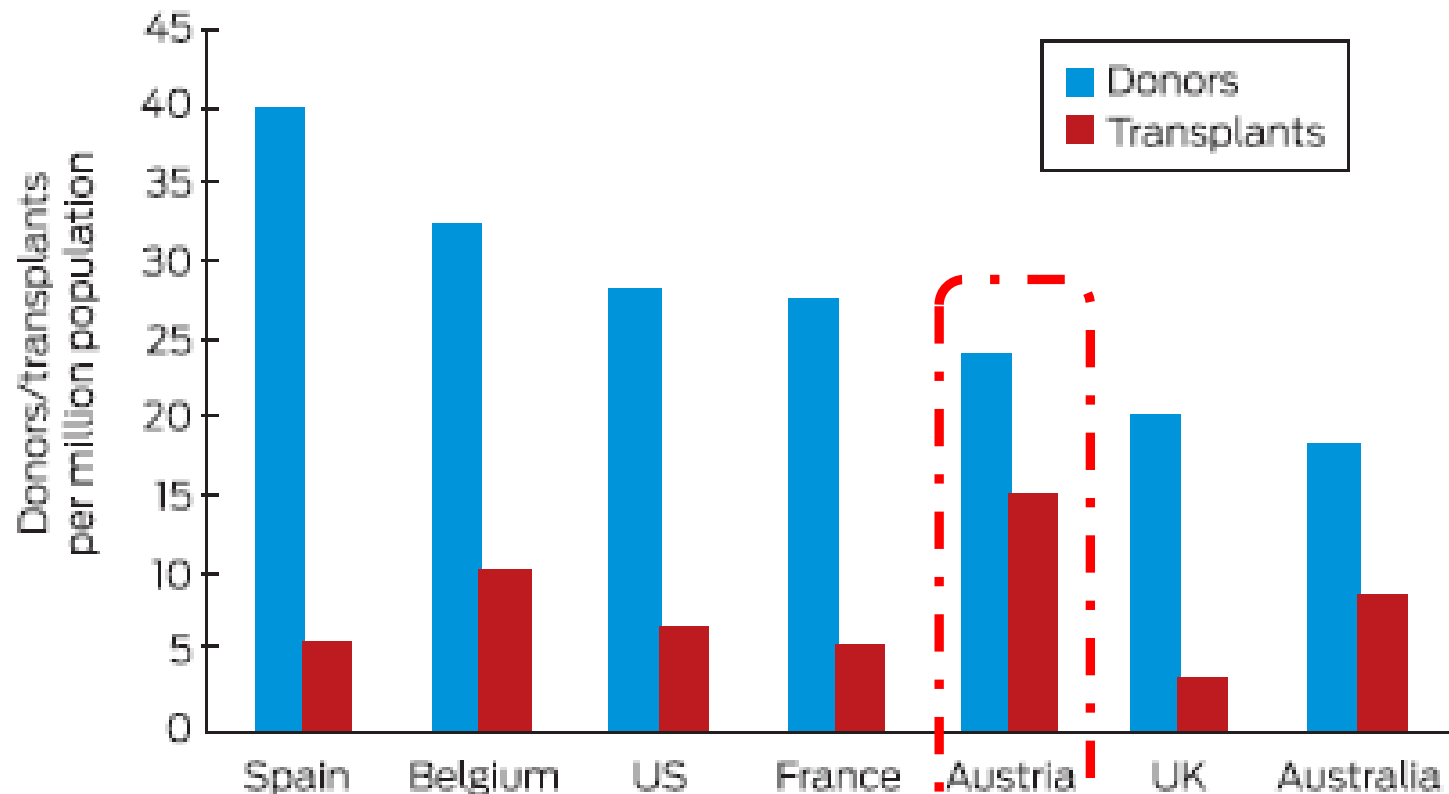
Υπότροφος Ιδρύματος Ωνάση

The goal



1 Australian lung transplant activity per million population in 2015: total donors compared with number of transplants, by selected countries*

Paraskeva, MJA 2018



World rank							
Donors per million population	1	3	6	7	10	14	18
Lung transplants per million population	11	2	6	12	1	20	3
Proportion utilised	14%	31%	22%	19%	62%	15%	44%

The past

- 1992-2001

‘Papanikolaou Hospital’ –Thessaloniki

11 LuTxS and 5 Heart-Lung TxS

- 2005-2010

‘Onassis Cardiac Center’

12 LuTxS/11pts

Lung TxS performed at Vienna: greek pts

- 2008: 3 LTxs
- 2009: 1 LTxs
- 2010: 5 LTxs
- 2011: 6 LTxs
- 2012: 2 LTxs
- 2013: 5 LTxs
- 2014: 5 LTxs
- 2015: 6 LTxs
- 2016: 7 LTxs
- 2017: 9 LTxs
- 2018: 3 LTxs



Launching the Hungarian Lung Transplantation Program

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ABSTRACT

The first successful lung transplantation was done in 1963 by James Hardy in the United States. The Vienna Lung Transplant program was launched in 1989 by Professor Walter Klepetko, and in 1996 lung transplantation became available in this center also for Hungarian patients. By 2013, conditions for full-scale Hungarian lung transplantation program were ripe. The Hungarian government invested 3 million Euros for infrastructural developments that made the operation and the perioperative care available. Besides funding, the professional training of medical personnel was also essential for this program to start. Hungarian specialists have had internship opportunities to study all aspects of lung transplantation at the Thoracic Surgery Department in Vienna. After successful preparations, the first lung transplantation in Hungary was performed on December 12, 2015.

1st step

- Education - Accreditation



Κωνστ. Ιερομόναχος Βασιλική Τσαγκάρη
Ιωάννης Νενεκίδης Ηρακλής Τσαγκάρης

2nd step

- Application to Hellenic Transplantation
Organisation and license for Lung Tx Program

3rd step

- National List
- Common Austrian-Hellenic list

(Currently 4 Greek pts in Vienna list
3 LuTxs performed during 2018)

Case Mix (last 5 years)

- 2018: CF 3
 - 2017: CF 9
 - 2016: CF 5, PAH 1, A₁-AT 1
 - 2015: CF 2, PAH 1, PF 3, ReTx 1
 - 2014 :CF4, ReTx 1
-
- CF 23pts - PF 4pts - ReTx 2pts - PAH 2pts - A₁AT 1pt
 - Last 15 pts: all CF

Adult Lung Transplants

Indications (Transplants: January 1995 – June 2016)

Diagnosis	SLT (N=18,207)	BLT (N=36,046)	TOTAL (N=54,253)
COPD	7,266 (39.9%)	9,539 (26.5%)	16,805 (31.0%)
IIP	6,449 (35.4%)	6,990 (19.4%)	13,439 (24.8%)
CF	218 (1.2%)	8,266 (22.9%)	8,484 (15.6%)
ILD-not IIP	1,078 (5.9%)	1,925 (5.3%)	3,003 (5.5%)
A1ATD	797 (4.4%)	1,912 (5.3%)	2,709 (5.0%)
Retransplant	922 (5.1%)	1,269 (3.5%)	2,191 (4.0%)
IPAH	88 (0.5%)	1,481 (4.1%)	1,569 (2.9%)
Non CF-bronchiectasis	67 (0.4%)	1,413 (3.9%)	1,480 (2.7%)
Sarcoidosis	312 (1.7%)	1,026 (2.8%)	1,338 (2.5%)
PH-not IPAH	135 (0.7%)	690 (1.9%)	825 (1.5%)
LAM/tuberous sclerosis	146 (0.8%)	381 (1.1%)	527 (1.0%)
OB	73 (0.4%)	395 (1.1%)	468 (0.9%)
CTD	140 (0.8%)	282 (0.8%)	422 (0.8%)
Cancer	7 (0.0%)	27 (0.1%)	34 (0.1%)
Other	509 (2.8%)	450 (1.2%)	959 (1.8%)

Indications for Lung Transplantation

- Chronic end stage lung disease
- Limited life expectancy
- Failed medical management
- Rapid progression of the disease

For most pts the 'ultimate' treatment

-Trading one medical challenge for another

-Do not expect normal life expectancy in most pts

LuTx: major indications

- Obstructive lung disease
- Restrictive lung disease
- Pulmonary vascular disease
- Cystic fibrosis

A usual Tuesday at Vienna at the pretransplantation clinic

- Rain and cold weather
- 4-5 preselected COPD pts will be evaluated at the clinic (30-40 of them will be transplanted annually)
- 1 preselected 'fibrosis' pt will be evaluated

Launching the Hungarian Lung Transplantation Program

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- After the successful preparations, the first available donor was finally chosen from a small town in Hungary on December 12, 2015. The donor was an A-positive 59-year old man. There were no major illnesses in his medical history.
- The recipient was a 54-year-old stage IV chronic obstructive pulmonary disease patient. After a gradual worsening of his overall status, he was placed on the waiting list on May 13, where he spent 213 days in total.

How have other 'students' started?

- Hungary (currently 20-30 LuTx annually)

First 8 pts were COPD patients

- Slovenia (we succeeded the Slovenian team at Vienna)

Successfully performed first 2 LuTx –both COPD

- Turkey 8-9 LuTx centers

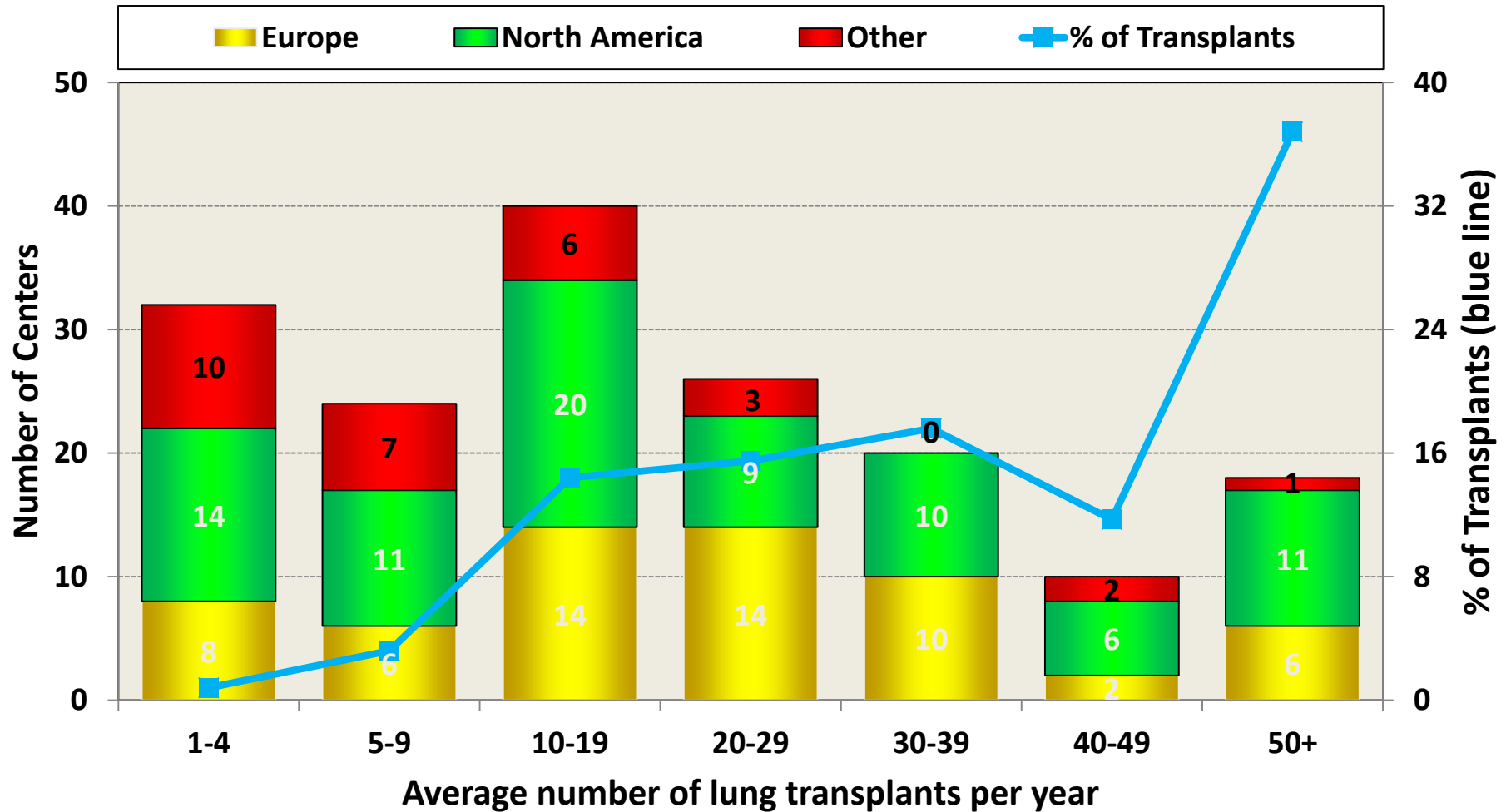
Viable?

- Size (number of LuTxs)
- Results (survival)

Adult Lung Transplants

Average Center Volume by Location

(Transplants: January 2009 – June 2016)



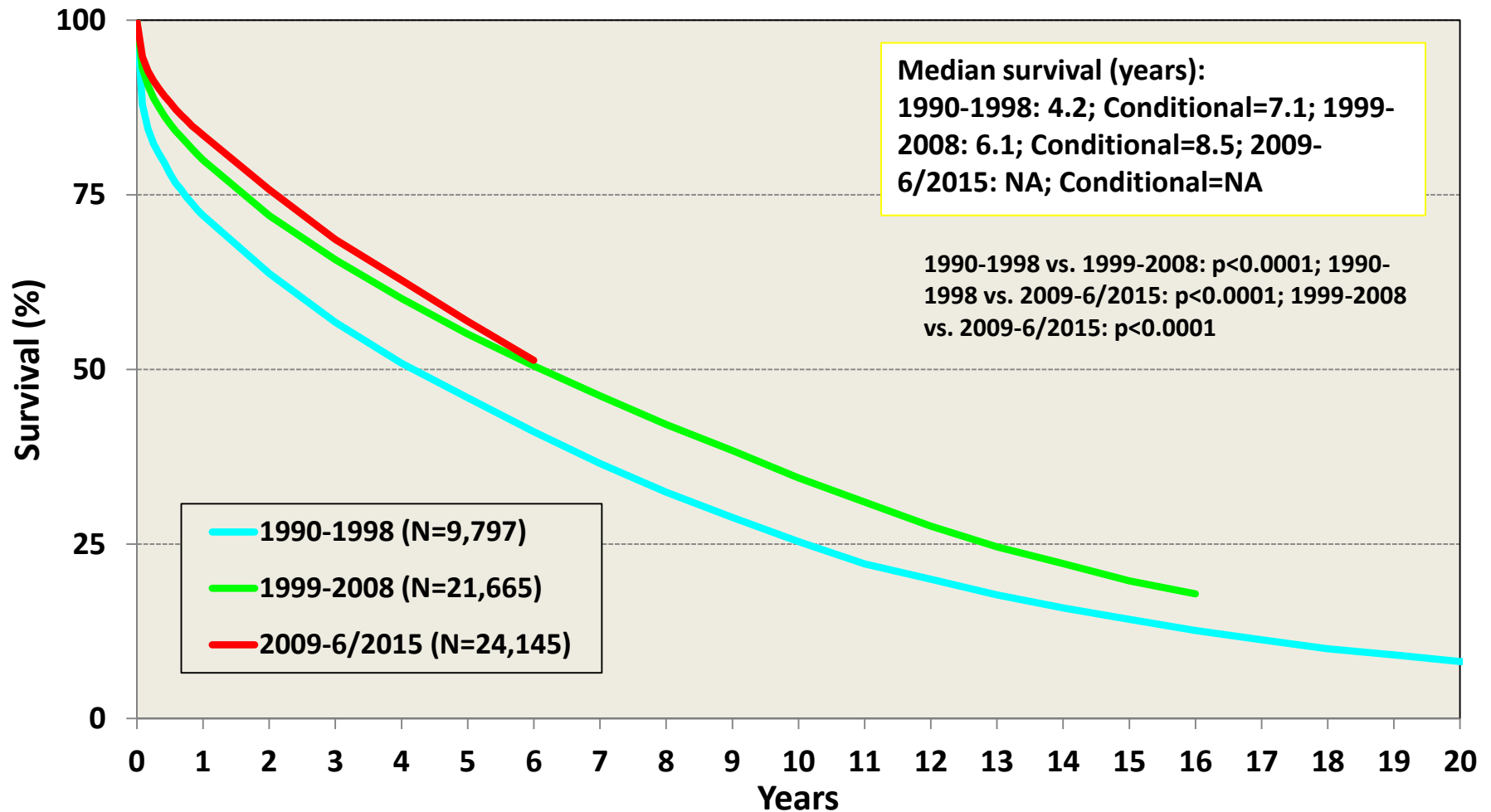
The European Reality

- 1-9 LTxs/year: 14 centers
- 10-19 LTxs/year: 14 centers
- 20-29 LTxs/year: 14 centers
- 30-49 LTxs/year: 12 centers
- 50-99 LTxs/year: 4 centers
- >100 LTxs/year: Vienna and Hannover

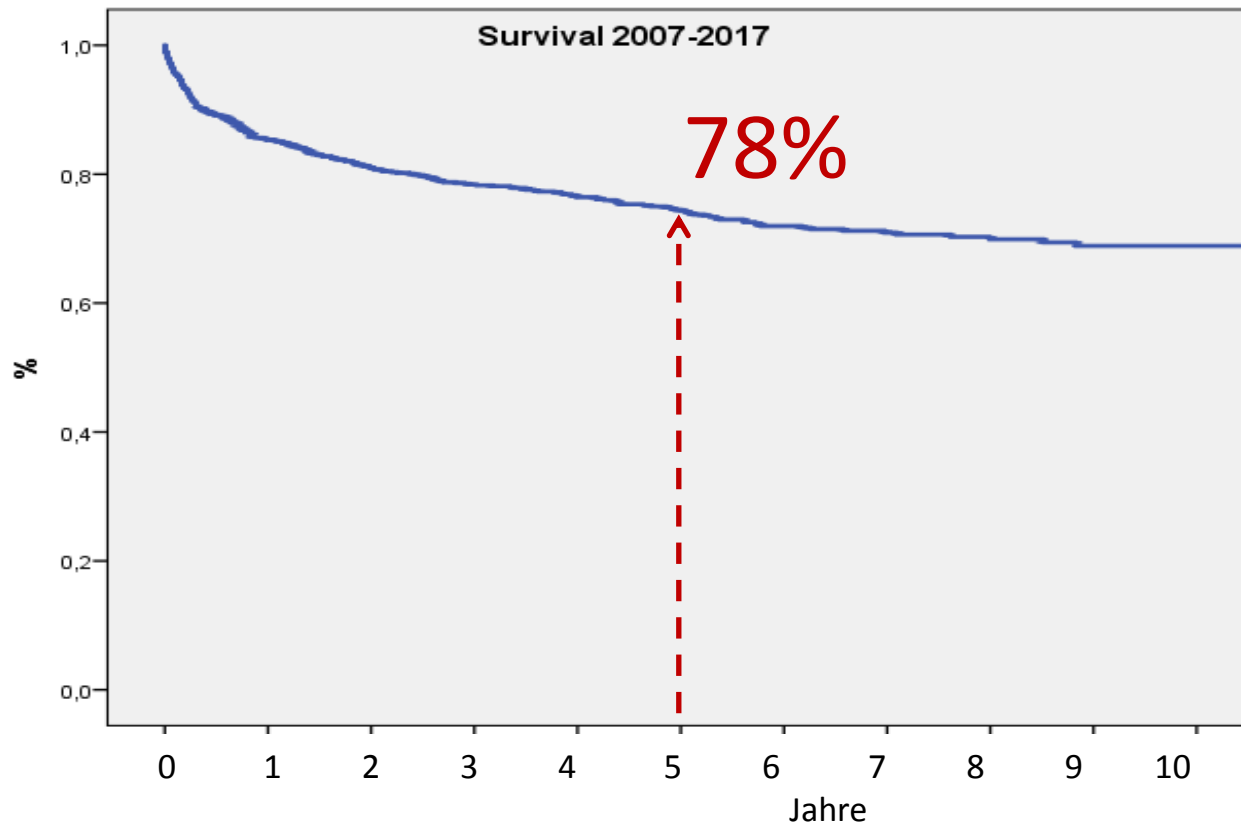
Adult Lung Transplants

Kaplan-Meier Survival by Era

(Transplants: January 1990 – June 2015)

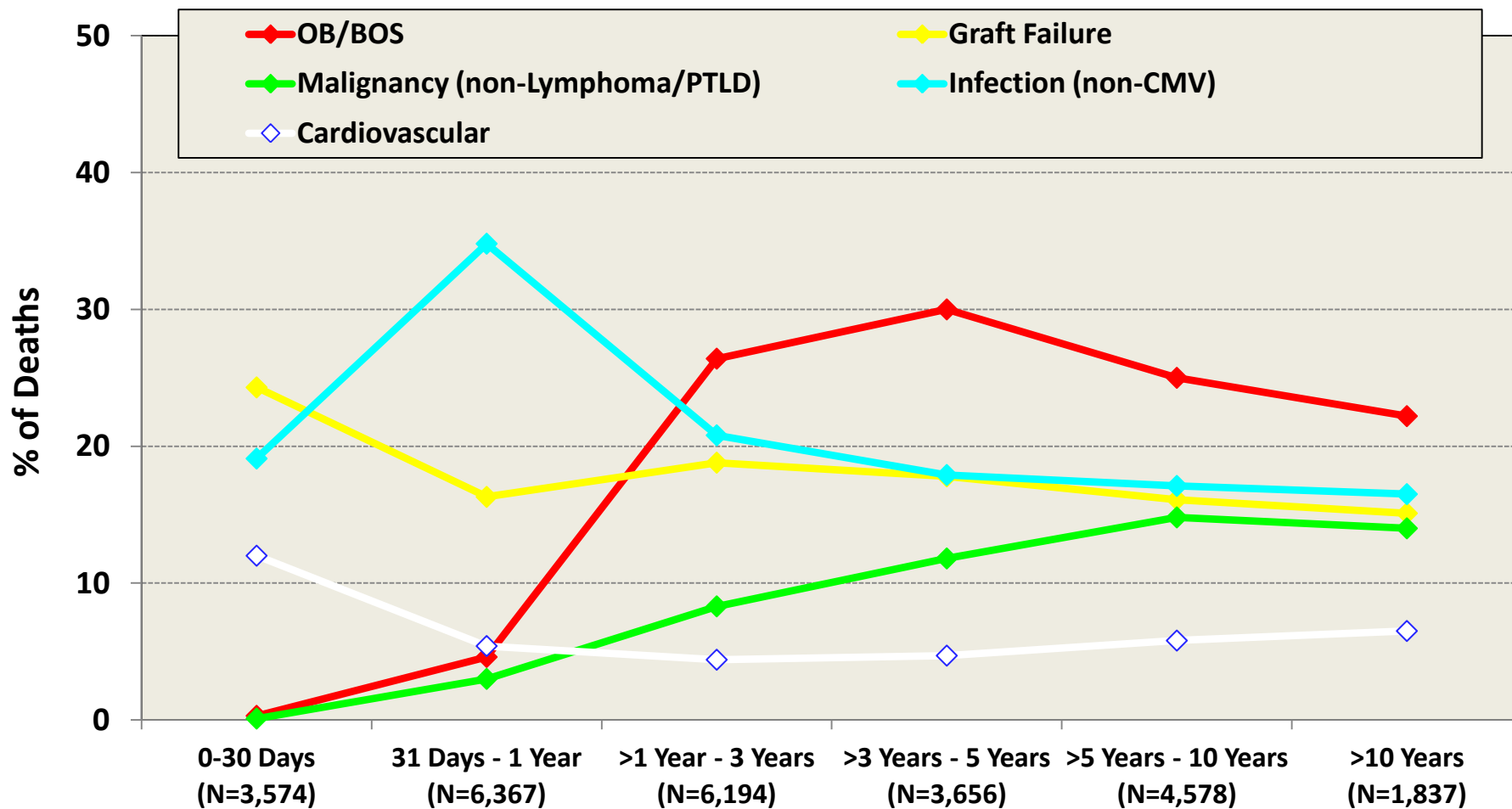


Vienna survival 2007-2017 , n=1070



Adult Lung Transplants

Relative Incidence of Leading Causes of Death (Deaths: January 1990 – June 2016)



ISHLT CONSENSUS

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



David Weill, MD (Committee Chairs),^a Christian Benden, MD (Committee Members),^c Paul A. Corris, MD (Committee Members),^d John H. Dark, FRCS (Committee Members),^d R. Duane Davis, MD (Committee Members),^e Shaf Keshavjee, MD (Committee Members),^f David J. Lederer, MD (Committee Members),^g Michael J. Mulligan, MD (Committee Members),^h G. Alexander Patterson, MD (Committee Members),ⁱ Lianne G. Singer, MD (Committee Members),^j Greg I. Snell, MD (Committee Members),^k Geert M. Verleden, MD, PhD (Committee Members),^l Martin R. Zamora, MD (Committee Members),^m and Allan R. Glanville, MBBS, MD (Committee Chairs)^b

Basic principles

- The decision to place a patient on the waiting list for a lung transplant is complex, reflecting consideration not only of clinical and psychosocial characteristics of the individual patient but also program-specific factors and regional considerations (e.g., the influence of a lung allocation system).

Rationale

- The referral of a patient to a transplant center should not be interpreted by the patient, referring physician, or the program as an automatic endorsement of listing that individual, either at the time of referral or at some point in the future.

Absolute contraindications

- Untreatable significant dysfunction of another major organ system (e.g., heart, liver, kidney, or brain) unless combined organ transplantation can be performed.
- Uncorrected atherosclerotic disease with suspected or confirmed end-organ ischemia or dysfunction and/or coronary artery disease not amenable to revascularization.
- Acute medical instability, including, but not limited to, acute sepsis, myocardial infarction, and liver failure. Uncorrectable bleeding diathesis. Chronic infection with highly virulent and/or resistant microbes that are poorly controlled pre-transplant

Absolute contraindications

- Chronic infection with highly virulent and/or resistant microbes that are poorly controlled pre-transplant.
- Evidence of active *Mycobacterium tuberculosis* infection.
- Significant chest wall or spinal deformity expected to cause severe restriction after transplantation. Class II or III obesity (BMI >35.0 kg/m²).
- Current non-adherence to medical therapy or a history of repeated or prolonged episodes of non-adherence to medical therapy that are perceived to increase the risk of non-adherence after transplantation.

Absolute contraindications

- Psychiatric or psychologic conditions associated with the inability to cooperate with the medical/allied health care team and/or adhere with complex medical therapy.
- Absence of an adequate or reliable social support system.
- Severely limited functional status with poor rehabilitation potential.

Donor/Recipient matching

- ABO blood group compatibility (identity preferred)
- Size matching (D/R TLC)
- Urgency status
- Elevated Panel Reactive Antibodies PRA (>30%)
- Age

LAS calculation

- Diagnosis
- Age
- Height, Weight
- Diabetes
- Oxygen requirement
- 6MWT
- Functional Status
- PA systolic pressure
- PA mean pressure
- PAOP
- Cr
- FVC
- Arterial CO₂

LAS Calculator

Date of birth	<input type="text"/>	dd-mm-yyyy
Height	<input type="text"/>	cm
Weight	<input type="text"/>	kg
Lung Diagnosis Code	<input type="text"/>	▼
Assistance level	<input type="text"/>	▼
Diabetes	<input type="text"/>	▼
Assisted Ventilation	<input type="text"/>	▼
Supplemental Oxygen	<input type="text"/>	▼
Amount of oxygen	<input type="text"/>	<input type="text"/> ▼
FVC predicted	<input type="text"/>	%
Pulmonary Artery Systolic Pressure	<input type="text"/>	mmHg
Mean Pulmonary Artery Pressure	<input type="text"/>	mmHg
Pulmonary Capillary Wedge Mean	<input type="text"/>	mmHg
Current PCO ₂	<input type="text"/>	<input type="text"/> ▼
Highest PCO ₂	<input type="text"/>	<input type="text"/> ▼
Lowest PCO ₂	<input type="text"/>	<input type="text"/> ▼
→ Change in PCO ₂	(no value)	%
Six minute walk distance	<input type="text"/>	m
Serum Creatinine	<input type="text"/>	<input type="text"/> ▼

Calculate





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COPD

Timing of listing (presence of one criterion is sufficient):

- BODE index ≥ 7 .
- $FEV_1 < 15\%$ to 20% predicted.
- Three or more severe exacerbations during the preceding year.
- One severe exacerbation with acute hypercapnic respiratory failure.
- Moderate to severe pulmonary hypertension.

Onassis Transplantation Center



In conclusion

The 4 pillars of the program should be

- (1) prudent patient selection,
- (2) efficient organ procurement,
- (3) successful operation and perioperative care, and
- (4) high quality, continuous follow-up care.

Thank you all for your attention and most of all
Vienna's team for their hospitality and continuing support



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