History of Lung Transplantation: A uniquely Canadian Success Story

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Toronto Lung Transplant Program
Toronto General Hospital
University Health Network
University of Toronto
First Human Lung Transplant

James Hardy MD
1963 Jackson, Mississippi

First Human Heart-Lung Transplant

Bruce Reitz MD
Stanford 1981
NUMBER OF LUNG TRANSPLANTS REPORTED BY YEAR AND PROCEDURE TYPE

NOTE: This figure includes only the lung transplants that are reported to the ISHLT Transplant Registry. As such, this should not be construed as representing changes in the number of lung transplants performed worldwide.

ISHLT

2010

J Heart Lung Transplant. 2010 Oct; 29 (10): 1083-1141
The story of human lung transplant BEFORE, BEFORE time......
Joel Cooper MD
University of Toronto
1982
APPLICATION FOR RESEARCH ETHICS REVIEW
TORONTO GENERAL HOSPITAL

* (To be submitted with a protocol describing the research)

PROJECT TITLE: EXPERIMENTAL HUMAN LUNG TRANSPLANTATION

NAME OF PRINCIPAL INVESTIGATOR: JOEL D. COOPER, M.D.

DEPARTMENT: SURGERY
ROOM NO: 10-226 EN EXT: 3679

SOURCE OF FUNDING (If Any) NONE

ANTICIPATED DURATION OF RESEARCH: EIGHTEEN MONTHS

DATE 4- Aug - 82

SIGNATURE OF APPLICANT

The research described in the appended protocol has been reviewed and assessed as scientifically valid.

DATE AUGUST 10, 1982

SIGNATURE OF HOSPITAL DEPARTMENT CHIEF
III Selection Criteria

Potential candidates will include patients, preferably under 50 years of age, with end-stage, disabling primary pulmonary pathology. This will include patients with end-stage interstitial lung disease and patients with end-stage primary pulmonary hypertension, who have already experienced at least one syncopal episode. Patients with pulmonary failure due to systemic sclerosis will be considered if there is no evidence for circulating immune complexes. Patients with cystic fibrosis will not be considered.

Potential candidates should be individuals who are totally disabled, unable to perform any tasks and with limited ability to ambulate. Patients requiring home oxygen because of respiratory symptoms will be included. Patients with chronic infection, previous myocardial infarction, or other major organ failure (other than cor pulmonale) will be excluded.

Patients should be judged to have less than six months to live. All
Tom was an incredibly brave guy.....I told him what the odds were. 43 human lung transplants had been done to date. No one survived longer than 6 month and in fact, most never left hospital. I remember like it was yesterday. He told me, “It would be a privilege to be patient 44.”

8 May 2011 – Ron Grossman
The candidates had to be otherwise perfect but they were incredibly sick and had to be willing to take the risks...I travelled all over the place – Kansas, Texas,...to assess them.

There were no housestaff. At the beginning, it was just a couple of us, Cooper, the other thoracic surgeons me, Wilf (de Majo). We just took shifts sleeping in the ICU with the patients.

There was no money for this. We weren’t paid. Neither was the hospital.

8 May 2011 – Ron Grossman
Unilateral Lung Transplantation for Pulmonary Fibrosis

Toronto Lung Transplant Group*  

Abstract
Improvements in immunosuppression and surgical techniques have made unilateral lung transplantation feasible in selected patients with end-stage Interstitial lung disease. We report two cases of successful unilateral lung transplantation for end-stage respiratory failure due to pulmonary fibrosis. The patients, both oxygen-dependent, had progressive disease refractory to all treatment, with an anticipated life expectancy of less than one year on the basis of the rate of progression of the disease. Both patients were discharged six weeks after transplantation and returned to normal life. They are alive and well at 26 months and 14 months after the procedure. Pulmonary-function studies have shown substantial improvement in their lung volumes and diffusing capacities. For both patients, arterial oxygen tension is now normal and there is no arterial oxygen desaturation with exercise.

Note added in proof: We have now performed five lung transplantations for pulmonary fibrosis, with four long-term survivors, all of whom have returned to a normal life style.
SOURCE INFORMATION

From the University of Toronto. Address reprint requests to Dr. Cooper at 10–226 Eaton Bldg., Toronto General Hospital, 200 Elizabeth St., Toronto, ON M5G 1L7, Canada.

*The members of the Toronto Lung Transplant Group are as follows: Joel D. Cooper, M.D., Robert J. Ginsberg, M.D., Melvyn Goldberg, M.D., G. Alexander Patterson, M.D., F. Griffith Pearson, M.D., and Thomas R.J. Todd, M.D. (surgery); Ronald Grossman, M.D., and Janet Maurer, M.D. (respirology); Phillip Halloran, M.D. (immunology); Wilfred DeMajo, M.D. (anesthesia); Michael F.X. Glynn, M.D. (hematology); Hiller Vellend, M.D. (infectious disease); James Duffin, Ph.D. (biomedical engineering); and Roger Goldstein, M.D., and Monica Contreras, M.D. (respiratory rehabilitation). The members of the writing committee were J.D. Cooper, M.D., R.F. Grossman, M.D., P. Halloran, M.D., G.A. Patterson, M.D., and T.R.J. Todd, M.D.
1986 – First Bilateral Lung Transplant
Toronto: Alex Patterson

15 yrs later
1988 Toronto
First Bilateral Lung Transplant for Cystic Fibrosis
Late 1980’s to early 1990’s
Rae Days and other fiscal restraints....

Revolving Door of Health Ministers
Ruth Grier (February 3, 1993 — June 26, 1995)
Frances Lankin (April 22, 1991 — February 3, 1993)
Evelyn Gigantes (October 1, 1990 — April 18, 1991)
Elinor Caplan (September 29, 1987 — October 1, 1990)
Toronto General Hospital

THE Toronto Hospital

University Health Network
Division of Thoracic Surgery
Toronto General Hospital, 1987

Griff Pearson MD, Tom Todd MD, Joel Cooper MD, Alec Patterson MD

University of Toronto
Transplant Respirologists

Janet Maurer MD

MIA

Steven Kesten MD
In the pipelines

Shaf Keshavjee MD

Lianne Singer MD
Good leadership..

..and a love story.

Michael Hutcheon MD

Charlie Chan MD

Cecilia Chaparro MD
The Toronto Lung Transplant Program
Number of Transplants Per Year
1983-SEP2008 (YTD)
AVERAGE CENTER VOLUME
Lung Transplants: January 1, 2000 - June 30, 2009

Average number of lung transplants per year

- 1-4: 49
- 5-9: 26
- 10-19: 32
- 20-29: 25
- 30-39: 14
- 40-49: 5
- 50+: 7

Number of centers

Percentage of transplants

ISHLT

J Heart Lung Transplant. 2010 Oct; 29 (10): 1083-1141
Expansion of Programme

Pre-Tx coordinators

Post-Tx coordinators

Physiotherapists

Nutritionist

Psychiatrist

Social Worker
Breathtaking device saves woman’s life

With her lungs shutting down and heart about to fail, a Toronto patient becomes the first in North America to use an artificial lung to survive until her transplant.
Telehealth in Lung Transplantation
Toronto Lung Transplant Programme
2010
Alex Pangman...jazz singer..

...lung transplant recipient.