Clinical trial suggests paradigm shift for lung transplantation

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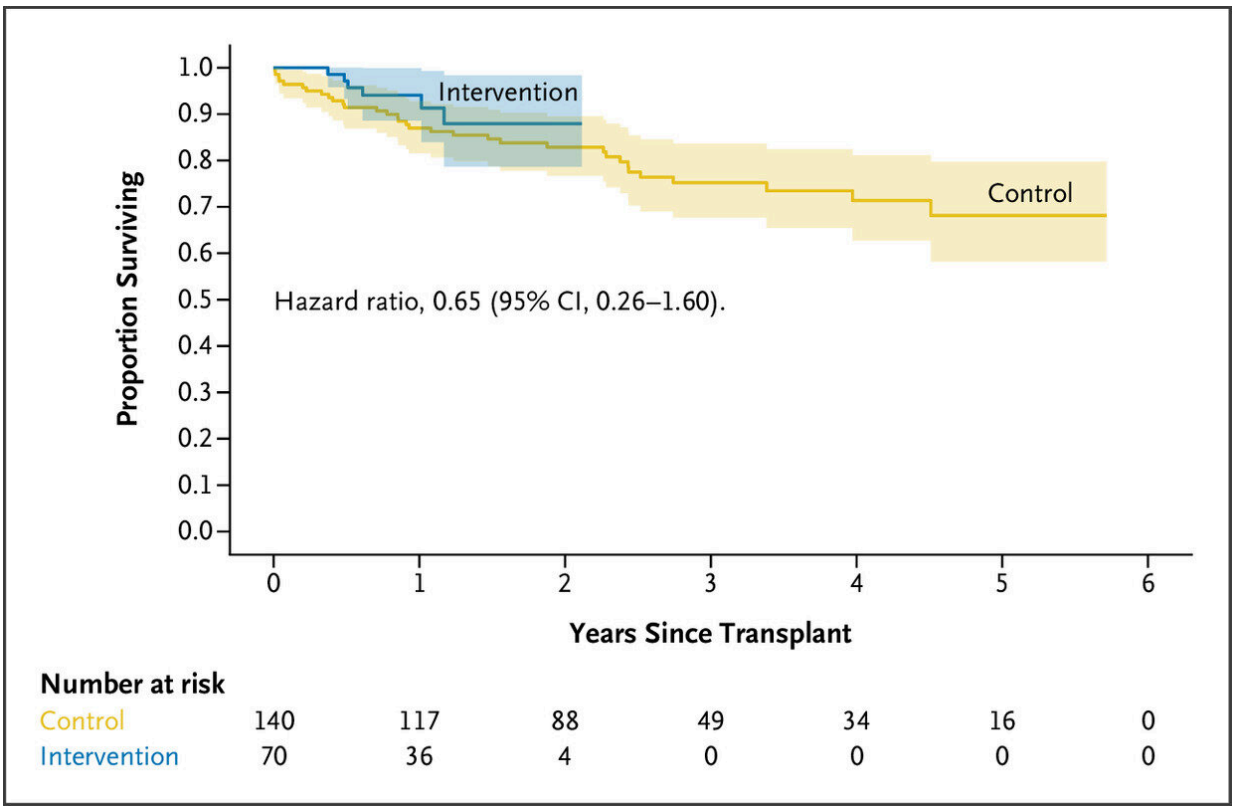

Kaplan–Meier 1-Year Recipient Survival Curve. CI denotes confidence interval. Credit: *NEJM Evidence* (2023). DOI: 10.1056/EVIDoa2300008

Storing donor lungs for transplant at 10 degrees Celsius markedly increases the length of time the organ can live outside the body according to research led by a team of scientists at the Toronto Lung

Transplant Program in the Ajmera Transplant Centre at the University Health Network (UHN).

The prospective multicenter, nonrandomized clinical trial study of 70 patients demonstrated that donor lungs remained healthy and viable for transplant up to four times longer compared to storage at the current standard of ice cooler preservation of around 4 degrees Celsius.

"The clinical impact of this study is huge. It's a paradigm shift for the practice of lung transplant," says lead author Dr. Marcelo Cypel, Surgical Director of the Ajmera Transplant Centre and a surgeon within the Sprott Department of Surgery at UHN.

"I have no doubt that this will become the gold standard practice of lung preservation for the foreseeable future."

Lungs available for transplant are currently limited by the length of time a donor organ can be kept viable. Increasing storage time allows for viable donor lungs to come from greater distances, increasing the potential for greater numbers of lungs becoming available for transplant and overcoming many of the hurdles around transplant logistics.

"In transplant, we still see a critical shortage of organs and people dying on the waitlist because there are not enough lungs to be transplanted," says Dr. Cypel, who is also a Professor in the Division of Thoracic Surgery, Department of Surgery at U of T.

"It's a great accomplishment to see that our research is now having an impact, and that we can actually have more cases done at our center, with continued outstanding clinical results. Better organ preservation also means better outcomes for patients."

Results of the trial were published today in the *NEJM Evidence*.

The trial took place over 18 months at UHN's Toronto General Hospital, the Medical University of Vienna, and Hospital Universitario Puerta de Hierro-Majadahonda in Madrid.

"The ability to extend the lifespan of the donor organ poses several advantages. Ultimately, these advantages will allow for more lungs to be utilized across farther geographies and the ability to improve recipient outcomes by converting lung transplantation into a planned rather than urgent procedure," says study first author Dr. Aadil Ali, Adjunct Scientist at the Toronto General Hospital Research Institute.

Some advantages of this new 10 degrees Celsius standard for lung storage include the potential to reduce or eliminate the 24/7 schedule and urgency of lung transplant procedures. By increasing the length of time donor lungs are viable, transplant surgeries could become planned procedures, which avoids bumping scheduled surgeries and overnight transplantation. This advancement on practice comes at a critical time when hospital resources are stretched and there are increased surgical backlogs due to the pandemic.

The study also suggests the new preservation temperature will allow more time to optimize immunologic matching between donor and recipients, and the possibility of performing lung transplantation in a semi-elective rather than urgent fashion.

More information: Aadil Ali et al, Extension of Cold Static Donor Lung Preservation at 10°C, *NEJM Evidence* (2023). DOI: 10.1056/EVIDoa2300008

Provided by University Health Network