Organ Transplant Decision Aid (#8001)

An interactive decision support tool that estimates survival probability for potential organ transplant recipients

Georgia Tech inventors have developed an interactive tool that provides the estimated probability of a potential transplant recipient surviving certain time periods based on their transplant options. Survival probabilities are determined for three cases: receiving an IRD organ immediately, receiving a non-IRD organ immediately, or waiting and receiving a non-IRD organ sometime in the future. Hence, the tool can be used to help a patient decide whether to accept an immediate organ offer or wait for another organ in the future. The tool can be used both when the immediate organ offer is IRD or non-IRD. This tool uses machine learning survival probability models to create a custom report based on the characteristics of the potential recipient and donor. Unlike previous technologies, this tool has the ability to calculate survival probabilities for kidney, liver, heart, and lung transplants.

Benefits/Advantages

- **Simple** – easy-to-use interface for entering patient and donor characteristics
- **Flexible** – separate survival models use different variables which enhance the performance of each model
- **Multifaceted** – calculates survival probabilities for multiple organs where current technologies only determine survival probability for kidneys

Potential Commercial Applications

- Hospitals
- Research labs
- Organ transplant operations

Background/Context for This Invention

Every year, thousands of patients die on the organ transplant waiting list. Yet, many organs are discarded and are never used for transplant; in 2009 19.2% of viable donor kidneys intended for transplant were discarded. The discard rates are even higher for infectious risk donor (IRD) organs, that is, potential donor organs that are at an increased risk for specific infections. Recent studies have shown that the risk of IRD organs is often substantially overestimated and that many of these organs can provide lifesaving transplants. A 2009 study showed that kidneys with the CDC's IRD label were one-third less likely to be used for transplantation than if they did not have the label. Further, a 2017 study showed that the IRD label results in non-utilization of hundreds of organs per year.

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More Information

Publications

Using machine learning and an ensemble of methods to predict kidney transplant survival, Plos One, Jan. 9-2019

For more information about this technology, please visit:
https://licensing.research.gatech.edu/technology/organ-transplant-decision-aid

Images: