



Acceptable Peri-operative Risk of Mortality for Cardiac Transplantation: Physician and Patient Perspectives



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BACKGROUND

Heart transplantation has become a well-established therapy for patients with advanced heart failure. While risk of mortality is variable, patients with advanced heart failure have an estimated **one-year survival of only 50%**¹.

Survival with heart transplantation is 86% at one year, conferring as high as an average 36% increase in one-year survival².

Today, the decision as to who should receive a cardiac transplant solely rests with the cardiac transplantation team. Due to the scarcity of donor hearts, the cardiac transplantation team at the University of Toronto has adopted a threshold of **20% peri-operative mortality** above which cardiac transplantation is not offered.

Many patients are considered too high risk for cardiac transplant. These decisions, however, do not take into account what the patients themselves consider as acceptable risk.

The aim of this study was to evaluate the perspectives of three groups with respect to the acceptable peri-operative risk for cardiac transplantation: physicians, physicians responding as patients and patients with heart failure.

HYPOTHESIS

We hypothesized that the three groups (physicians, physicians responding as patients, and patients with heart failure) would accept different levels of peri-operative mortality that were **all higher** than our local 20% threshold.

METHODS

645 emails were distributed to physicians with cardiac transplant-related publications inviting them to access a survey link. One reminder email was sent with link access. Surveys were also distributed to patients with heart failure at a hospital-affiliated heart-function clinic.

Study participants were presented with a hypothetical patient with congenital heart disease and advanced heart failure being considered for cardiac transplantation. Data describing both organ scarcity and current one year survival post-cardiac transplant was provided in the stem.

Based on the scenario, participants were then asked at what level of **peri-operative mortality (0 - 100%)** they would no longer agree to proceed with cardiac transplantation.

Physicians were randomized (through Survey Monkey) to respond as the treating physician (*Survey A*) or as the hypothetical patient (*Survey B*). Patients were asked to respond as the hypothetical patient (*Survey C*).

A one-way ANOVA and T-Test was used to analyze for differences between 3 groups.

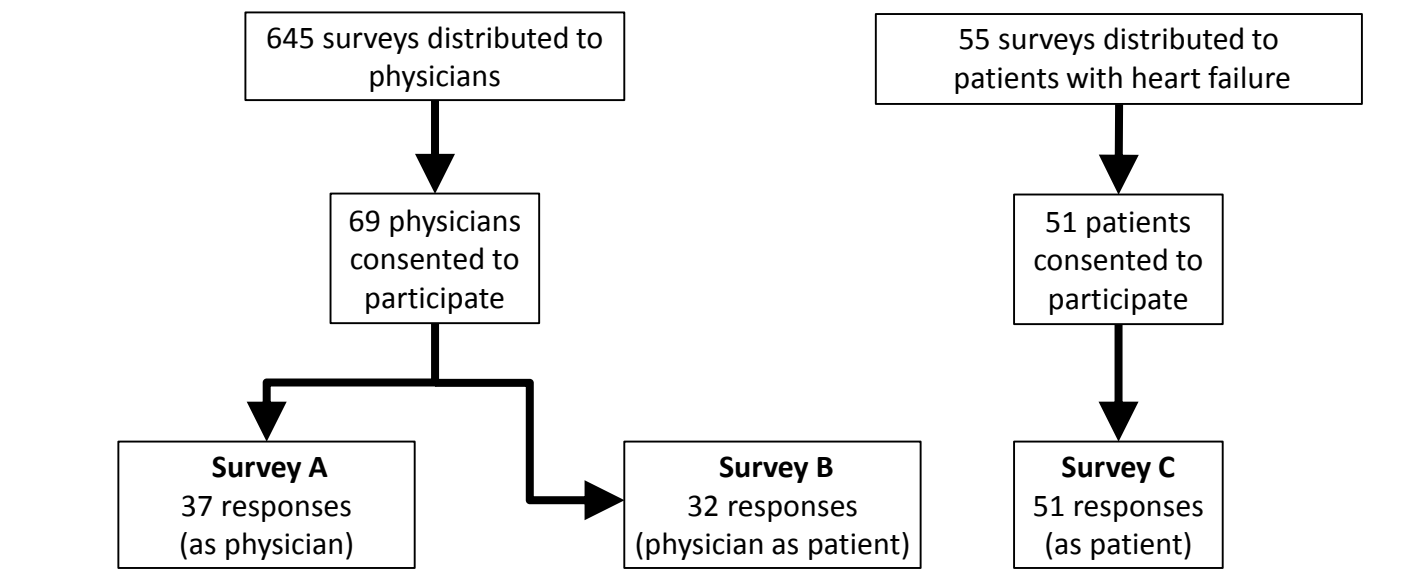


Figure 1: Survey distribution to physicians, physicians responding as patients, and patients with heart failure.

Survey B

Imagine you are 35 years old and were born with a significant heart defect. You have severe heart failure and despite institution of all known therapy (other than a heart transplant) you have **an 80% chance of dying in the next 12 months**.

You are able to walk around the house but cannot climb stairs and become very *short of breath* when you walk outside. You must walk slowly outside but cannot go further than your street corner without sitting down for ten minutes.

Cardiac transplantation is a critically scarce resource, with many patients dying each year while waiting for a heart. *Assuming you survive the heart transplant surgery*, you have a **95% chance of surviving 1 year** and **an 85% chance of surviving 5 years**.

The cardiovascular surgeon discusses with you the chances that you will die during or shortly after the operation. What chance of dying from the procedure **would you consider too high** to agree to proceed with a transplant? *Please fill in the blank with a number from 0-100.*

1. If the risk of dying were more than __%, I would NOT be willing to proceed with cardiac transplantation.

Figure 2: Example of Survey B for physicians responding as patients.

RESULTS

The response rate for physicians (Survey A, Survey B) was 11%, n=69. The response rate for patients with heart failure (Survey C) was 93%, n=51.

The mean acceptable risk of peri-operative mortality for cardiac transplantation in each group was: physicians **45% (95% CI 36.4 – 53.9)**; physicians responding as patients **50% (95% CI 41.3 – 58.6)**; and patients with heart failure **56% (95% CI 50.0 – 61.4)**.

Mean acceptable peri-operative morality for patients with heart failure was significantly higher than for treating physicians (p = 0.04). All three groups accepted a peri-operative risk of mortality that was significantly higher than our current threshold of 20% (p < 0.05).

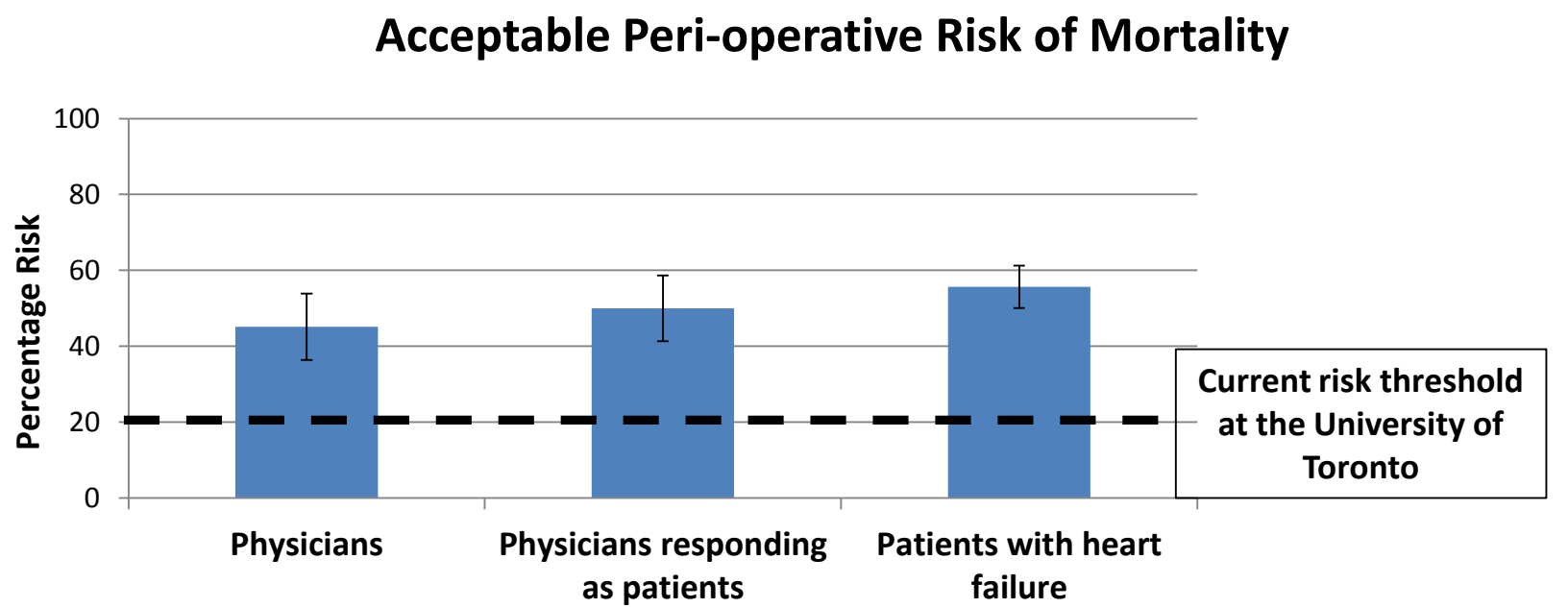


Figure 3: Comparison of acceptable peri-operative risk of mortality for cardiac transplantation for physicians, physicians responding as patients, and patients with heart failure compared to our institution’s existing peri-operative mortality threshold.

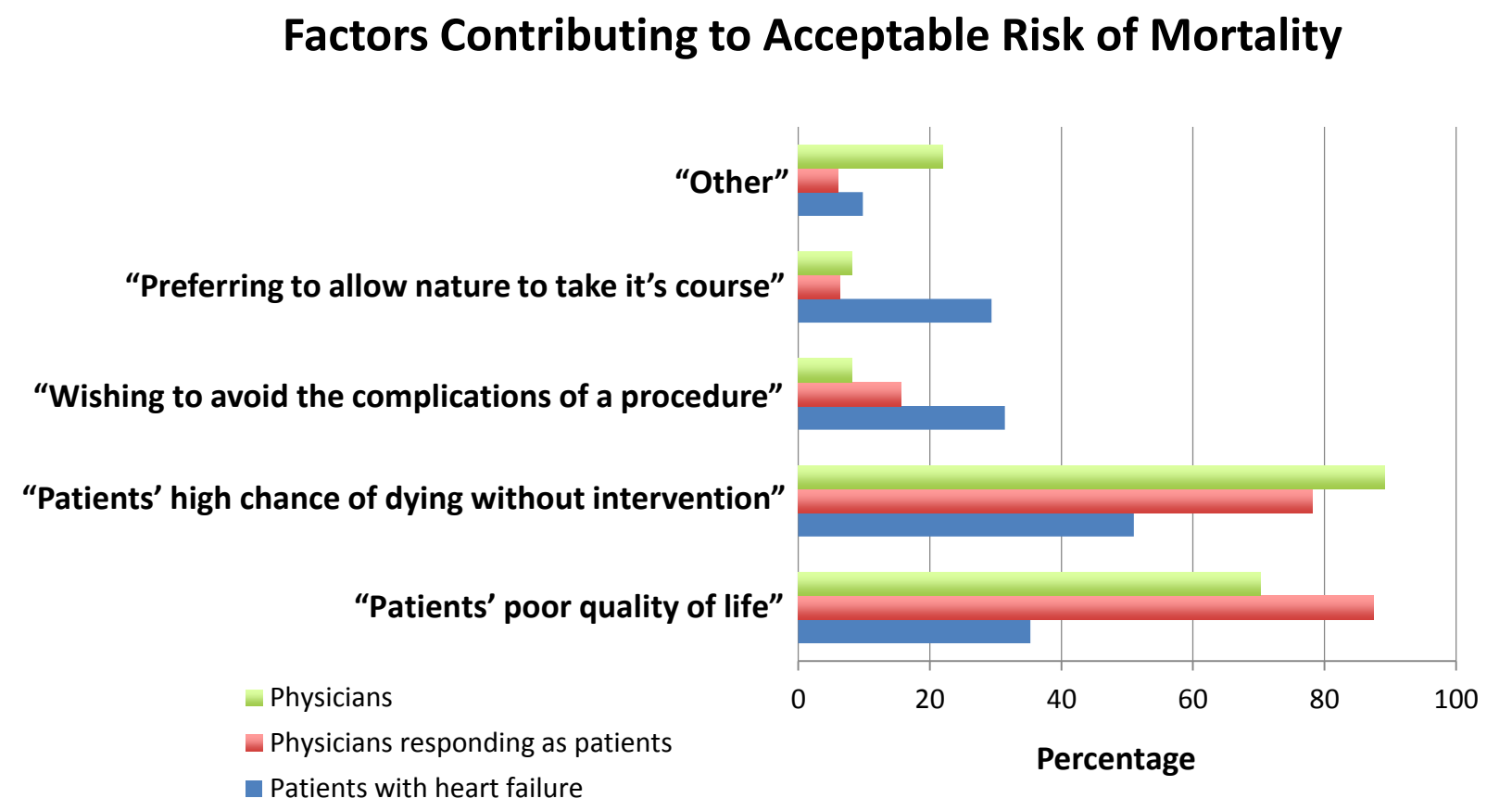


Figure 4: Comparison between physicians, physicians responding as patients, and patients with heart failure regarding factors that contributed to their acceptable risk of peri-operative mortality.

Respondent Demographic Information					
	Physicians (Survey A), n = 37		Physicians responding as patients (Survey B), n = 32		Patients with heart failure (Survey C), n = 51
Age (years)	25-34	10.8%	25-34	0%	25-34 3.9%
	35-44	37.8%	35-44	50.0%	35-44 5.9%
	45-54	18.9%	45-54	31.3%	45-54 21.6%
	55-64	29.7%	55-64	18.7%	55-64 17.6%
	65-74	2.7%	65-74	0%	65-74 31.4%
	75-84	0%	75-84	0%	75-84 11.8%
	85-94	0%	85-94	0%	85-94 7.8%
Gender	Male:	91.9%	Male:	84.4%	Male: 68.6%
Ethnicity	Caucasian:	54.1%	Caucasian:	68.8%	Caucasian: 79.2%
	Asian:	29.7%	Asian:	15.6%	Black: 16.7%
	Hispanic:	8.1%	Hispanic:	9.4%	Asian: 4.2%
	Other/Mixed:	2.7%	American Jewish:	3.1%	
Are you a religious person?	Yes:	51.4%	Yes:	25.0%	Yes: 54.9%
Prior surgery requiring general anaesthesia?	Yes:	59.5%	Yes:	62.5%	Yes: 82.4%
Years in Practice?	0-5	10.8%	0-5	6.3%	
	6-10	18.9%	6-10	28.1%	
	11-15	21.6%	11-15	25%	
	16-20	16.2%	16-20	12.5%	
	21-25	2.7%	21-25	21.9%	
	26-30	16.2%	26-30	0%	
	31-35	10.8%	31-35	3.1%	
	36-40	2.7%	36-40	3.1%	
Are you a physician or surgeon?	Physician:	73.0%	Physician:	75.0%	
	Surgeon:	24.3%	Surgeon:	21.9%	

Table 1: Demographic information of Survey A, Survey B and Survey C respondents.

CONCLUSIONS

As stewards of this absolute scarce societal resource, it is critical that we understand acceptable peri-operative risk of cardiac transplant from the perspective of all stakeholders. This preliminary data suggests that even those who are very informed may accept a peri-operative risk much higher than 20%. Actual patients tended to place a lower importance on their poor quality of life when determining what they consider acceptable peri-operative risk of mortality for cardiac transplant.

Fair and transparent distribution of this critically scarce resource ought to require consensus on acceptable peri-operative risk. Future work should explore other perspectives; this may result in more ethically sound decisions in high-risk cases.

DISCLOSURES

We do not discuss the off label use and/or investigational use of any drugs or devices. The following relevant financial relationships exist related to this poster presentation:
Dr. Savtchenko: No relationships to disclose
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REFERENCES

- Levy WC, Mozaffarian D, Linker DT, Sutradhar SC, Anker SD, Cropp AB, et al. The Seattle HF Model: prediction of survival in HF. Circulation. 2006;113(11):1424-33.
- Stehlik J, Lund LH, Edwards LB, Kucheryavaya AY, Benden C, Dipchand AI, Goldfarb S, et al. The Registry of the International Society for Heart and Lung Transplantation: Thirty-second Official Adult Heart Transplantation Report - 2015; Focus Theme: Early Graft Failure – 2015. Journal of Heart and Lung Transplantation. 2015;34(10):1244-1254.

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