

Thoracic simulated allocation modeling of broader sharing

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Introduction

- A revision of current US heart allocation policy is in development.
- The OPTN/UNOS Thoracic Organ Transplantation Committee has proposed a 6-level urgency system, described elsewhere.
- In the current 3-level urgency system, status 1A, the most urgent group, receives the highest priority in allocation.
- The status 1A group includes a large number of candidates with disparate waitlist urgency as defined by waitlist mortality.
- Broader sharing is another tool to increase the pool of donor hearts available to the most urgent candidates.
- We investigated four broader sharing strategies and determined the impact of the modified allocation orderings on waitlist and posttransplant outcomes.

Methods

- SRTR standard analytic files and Thoracic Simulated Allocation Modeling (TSAM) software were used.

Methods (cont'd)

- Cohort included heart and heart-lung candidates and recipients, July 1, 2009, to June 30, 2011.
- TSAM simulates match runs using real candidates and donors.
- TSAM introduces variability by changing the order in which donors become available and the allocation rules that define offer order, and repeating each simulation 10 times.
- We applied current allocation rules, allocation under a 6-level urgency system, and the 6-level urgency rules plus 4 sets of broader sharing rules.
- Outcomes include transplant counts and rates, waitlist death counts and mortality rates, posttransplant death counts and mortality rates.

Results

- Overall, broader sharing resulted in slightly lower transplant rates than the current rules simulation, though some sharing rules overlapped ranges of current rules simulations (Fig. 1).
- Waitlist mortality rates declined with broader sharing; the more broadly organs were shared, the more waitlist mortality rates (Fig 1) and death counts (not shown) declined.

Results (cont'd)

- Posttransplant mortality rates and death counts were similar across simulations (data not shown).
- Among status 1 candidates, the most urgent group, transplant rates increased from 615 transplants per 100 patient-years on the waiting list to nearly 8000, a more than 10-fold increase (Fig 2).
- With sharing, transplant rates increased 10X among status 2 candidates (Fig 2).
- Waitlist mortality rates (Fig 2) in status 1 and 2 candidates were similar with sharing, but death counts declined (data not shown).
- The largest declines in waitlist mortality rates were among inactive candidates in broader sharing simulations (Fig 2).
- Decline in overall waitlist mortality with broader sharing was driven by decline in inactive candidates. In simulations, urgent candidates underwent transplant more quickly and ceased to be at risk for inactivation and subsequent death.
- Posttransplant death counts and mortality rates were similar across all simulations, overall (data not shown) and within each urgency status group (Fig 2).

Fig 1. Overall waitlist outcomes by simulation

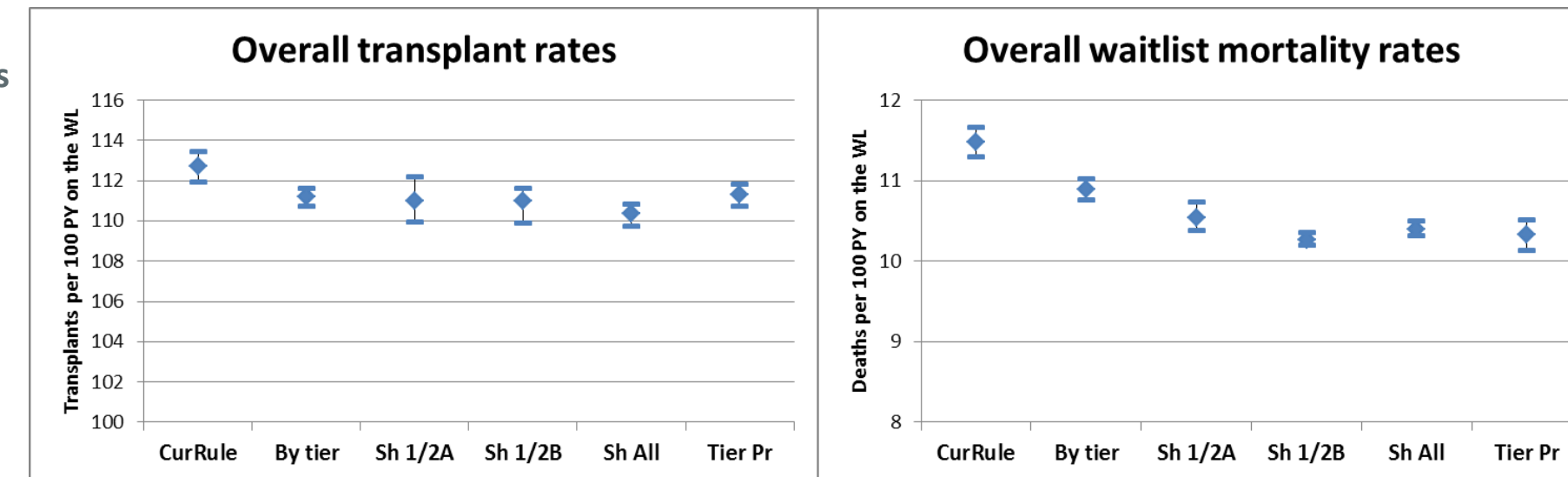
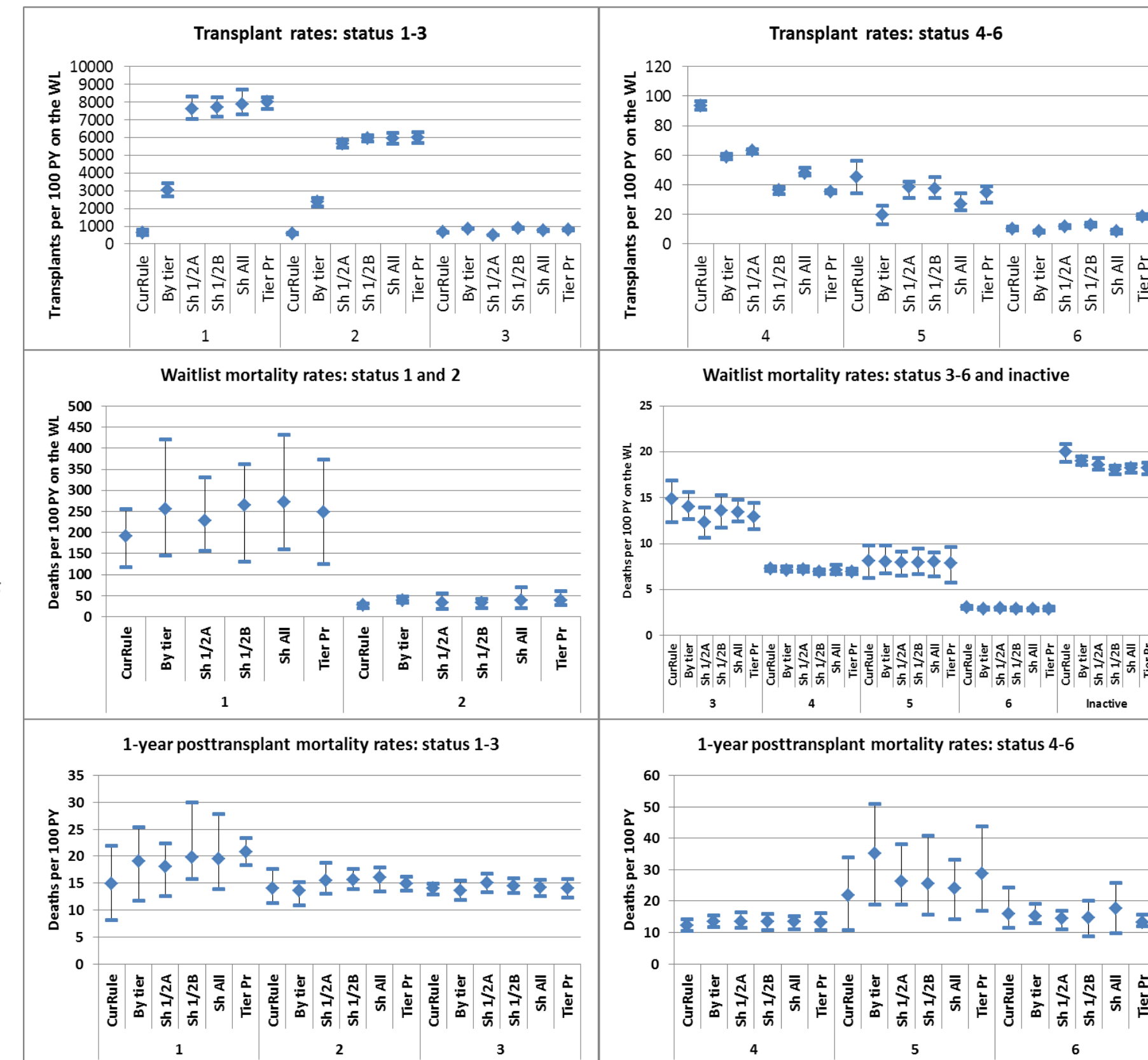


Fig 2. Waitlist and posttransplant outcomes by simulation and status



By tier simulates 6 urgency groups using current geography. Sh 1/2A prioritizes status 1 and 2 through zone B. Sh 1/2B is similar to Sh 1/2A, but shares status 3 more broadly. Sh All removes all local DSA priority. Tier PR shares sequentially.

Ask author for detailed sharing rules

Conclusions

- Compared with current rules, broader sharing showed substantially higher transplant rates in the most urgent candidates.
- Compared with the 6-category urgency classification without sharing, broader sharing showed substantially higher transplant rates in the most urgent candidates.
- Waitlist mortality rates declined with broader sharing.
- Posttransplant mortality rates remained similar to current rules.
- Broader sharing may increase access to transplant for the most urgent candidates without causing undue harm to other groups waiting for transplant.

Disclosures:
None of the authors have conflicts to disclose.