



# Effect of DSA-free heart allocation on children

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## Introduction

- On October 18, 2018, the heart allocation system changed to better risk-stratify adult candidates, providing those at higher risk for waitlist death improved access to transplant.
- New, now-current heart allocation rules continue to use donation service area (DSA) in prioritizing candidates.
- A project is underway to remove DSA from allocation rules for all organs.
- SRTR used thoracic simulated allocation model (TSAM) software to predict outcomes according to prior rules, now-current rules that use DSA, and newly proposed rules that replace DSA with circles of 500 or 250 nautical miles (NM) from the donor hospital.
- We summarized the impact of these four sets of allocation rules on children, by pediatric status.

## Methods

- This study uses SRTR data.
- The TSAM cohort included heart candidates, recipients, and donors, July 1, 2009-June 30, 2011.

## Methods (Cont’d)

- TSAM simulated match runs according to 1) policy in place prior to October 18, 2018, 2) now-current policy, and 3) two new versions of current policy that replace DSA with circles of radius 500NM and 250NM, respectively.
- Now-current heart allocation rules include collection of new data that provide more objective support for justification of status 1-4 that were not available to TSAM; some patients who met upgrade criteria in simulation might not meet those criteria in implemented policy.
- A brief description of the simulated allocation rules is given in Table 1.

## Results

- The TSAM cohort included 1363 candidates listed for heart transplant at age 0-17, 13.8% of all candidates.
- 860 (63.1%) pediatric candidates were listed as status 1A, 139 (10.2%) as status 1B, and 324 (23.8%) as status 2. Only 40 (2.9%) pediatric candidates were listed as inactive.

## Results (Cont’d)

- Overall transplant counts and rates among pediatric candidates were similar across the four simulations (Fig 1).
- Within status groups, transplant counts and rates were similar for prior, DSA-first, and 250NM simulations.
- The 500NM simulation resulted in higher transplant counts and rates for status 1A children, lower rates for status 2 children, and similar rates for status 1B children.
- Compared with current policy, the 500NM simulation resulted in 31 more status 1A transplants (674 vs. 643) and a 15% increase in transplant rate (603 vs. 524 transplants per 100 waitlist years)
- Among status 2 candidates, the 500NM simulated resulted in 13 fewer status 2 transplants and a 35% decrease in transplant rate (from 38 to 28 transplants per 100 waitlist years) compared with current policy.
- Waitlist death counts and rates were similar across all four simulations, overall and by status (Fig 2).
- Posttransplant survival was similar across simulations.

Table 1: Brief descriptions of allocation rules

| Name         | Description  |
|--------------|--|
| Prior        | Policy until October 18, 2018. DSA is first unit of allocation of adult donor organs to adults and children. Pediatric organs shared with pediatric candidates to 500NM. |
| DSA-first    | Current policy as of October 18, 2018. DSA is first unit of allocation, though pediatric status 1A candidates receive offers out to 500NM.                               |
| Circle 500NM | Replace DSA with 500NM as first unit of allocation. To maintain broader sharing, pediatric status 1A candidates receive offers out to 1000NM.                            |
| Circle 250NM | Replace DSA with 250NM as first unit of allocation. Pediatric status 1A candidates continue to receive offers out to 500NM.  |

## Conclusions

- Pediatric candidates are unlikely to be disadvantaged by new heart allocation rules or by DSA-free rules.
- Their placement in the allocation ordering gives them higher priority for donor organs than they received under prior rules.
- OPTN will continue to monitor waitlist and posttransplant outcomes as data become available.

Fig 1: Transplant rates by pediatric status and simulation

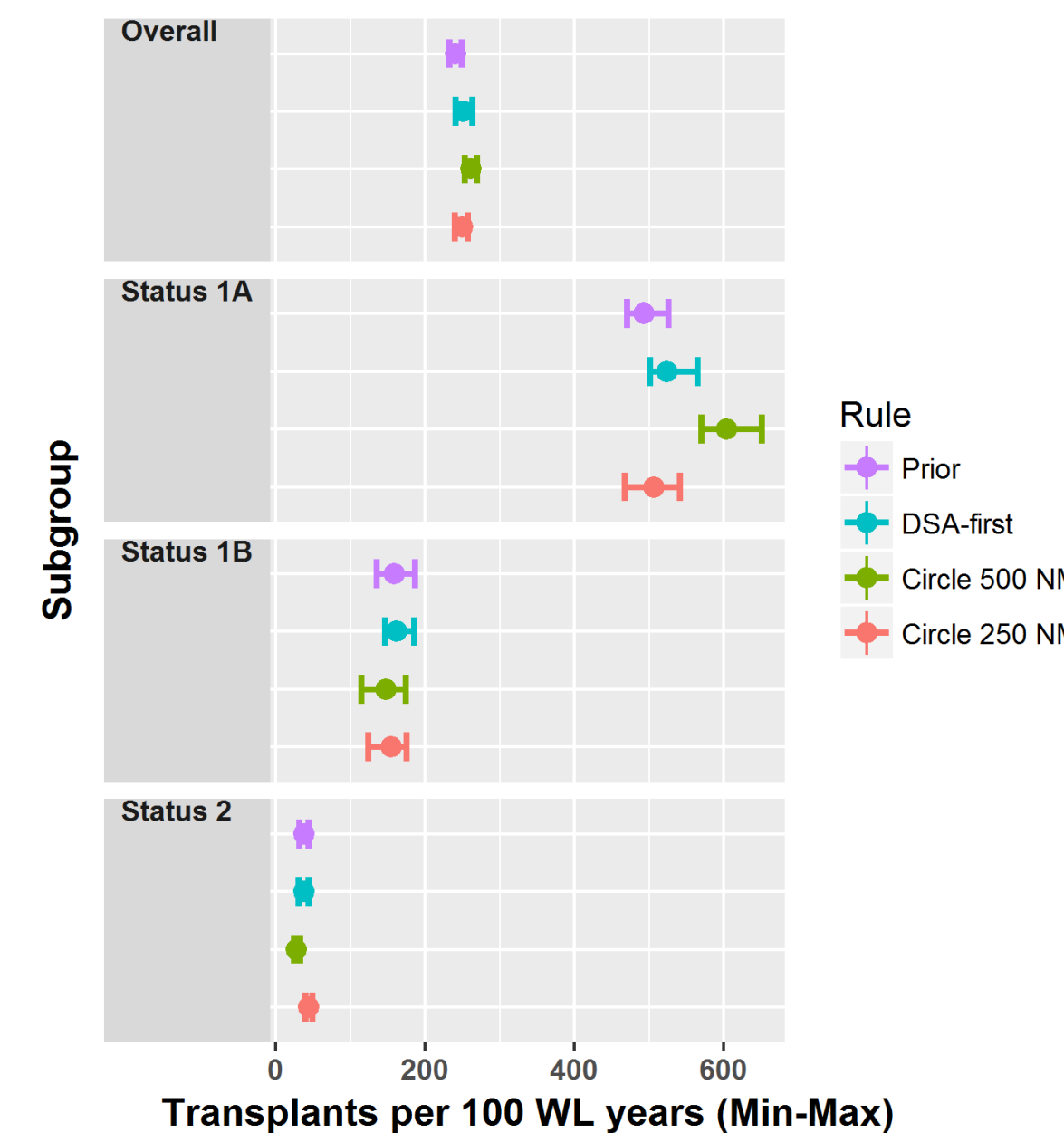


Fig 2: Waitlist mortality rates by pediatric status and simulation

