

Broader Geographic Sharing of Pediatric Lung Donors Improves Allocation Efficiency

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Disclosures

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I have no financial relationships to disclose within the past 12 months relevant to my presentation. My presentation does not include discussion of off-label or investigational use products. I do not intend to reference unlabeled/unapproved uses of drugs or products in my presentation.

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Background

- US organ allocation system is focused on early transplant for pediatric candidates (age <18 years) to minimize the impact of end stage organ disease on lifespan and quality of life.
- In pediatric lung transplantation, allocation of donor lungs is limited by small number of donors within current geographic boundaries.

Background: Current Allocation Boundaries



Hypothesis

- Broader geographic sharing of pediatric donor lungs will increase pediatric candidate access to transplant.

Methods

- Study cohort: US lung and heart-lung transplant candidates from July 1, 2009 to June 30, 2011
- Child <12 years, adolescent 12-17 years, adult ≥ 18 years
- Thoracic Simulation Allocation Model (TSAM) developed by the Scientific Registry for Transplant Research (SRTR) was used to model impact of broader geographic sharing of adolescent and child donors.

Methods: Algorithm for Broader Sharing of Adolescent Donors

Current Allocation		Broader Geographic Sharing	
Geographic zone	Candidate	Geographic zone	Candidate
Local Donation Service Area (DSA)	1. Adolescent	Local DSA + 1,000 miles	1. Adolescent
	2. Child		2. Child
	3. Adult	Local DSA	3. Adult

Child: <12 years

Adolescent: 12-17 years

Adult: ≥18 years

Methods: Algorithm for Broader Sharing of Child Donors

Current Allocation		Broader Geographic Sharing	
Geographic zone	Candidate	Geographic zone	Candidate
Local DSA + 1,000 miles	1. Child	Local DSA + 1,000 miles	1. Child
Local DSA + 500 miles	2. Adolescent	Local DSA + 1,000 miles	2. Adolescent
Local DSA	3. Adult	Local DSA	3. Adult

Child: <12 years

Adolescent: 12-17 years

Adult: ≥18 years

Methods: Algorithm for Prioritizing Children for Adolescent Donors

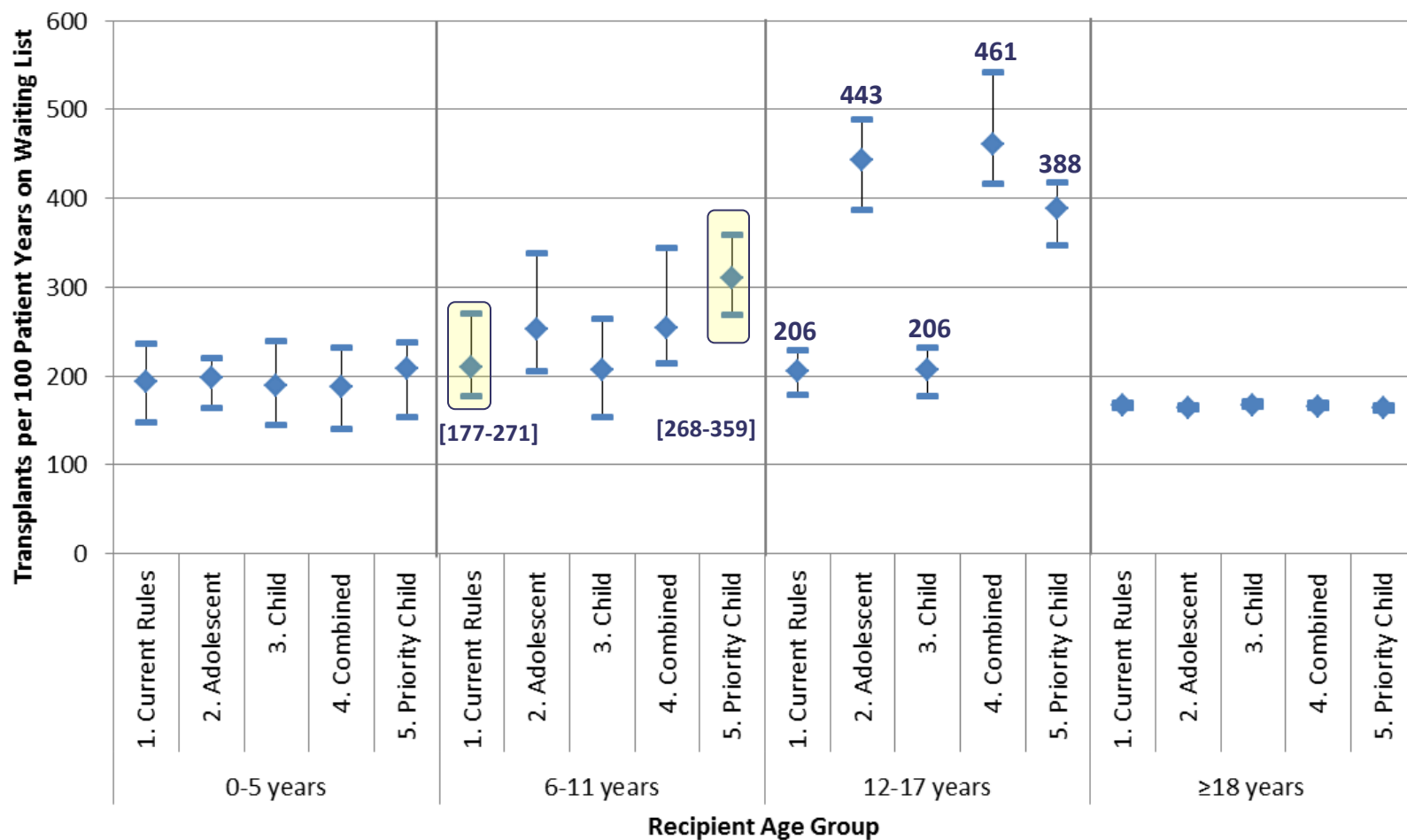
Current Allocation		Broader Geographic Sharing	
Geographic zone	Candidate	Geographic zone	Candidate
Local Donation Service Area (DSA)	1. Adolescent	Local DSA + 1,000 miles	1. Child
	2. Child		2. Adolescent
	3. Adult	Local DSA	3. Adult

Child: <12 years

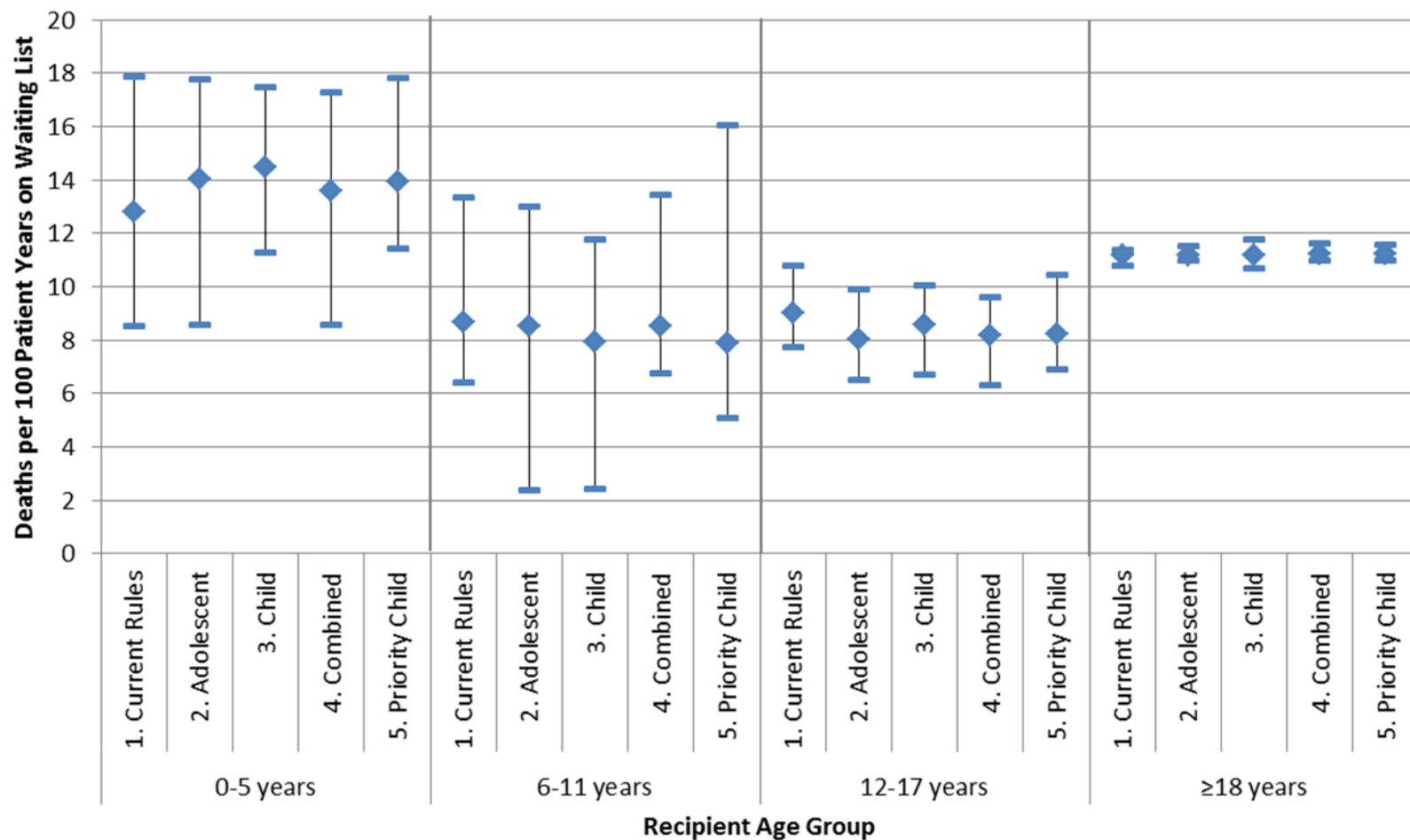
Adolescent: 12-17 years

Adult: ≥18 years

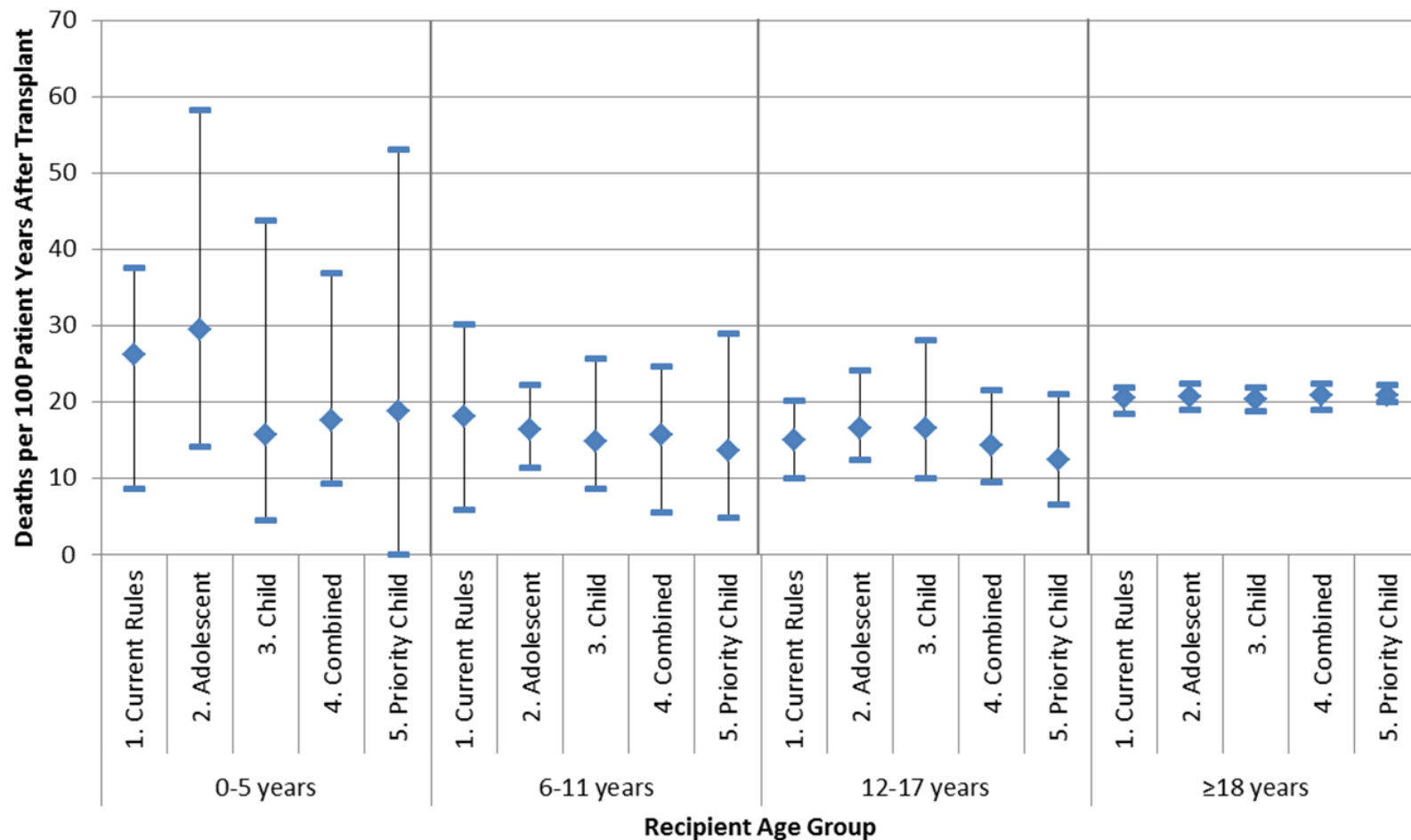
Results: Transplant Rate by Age Group



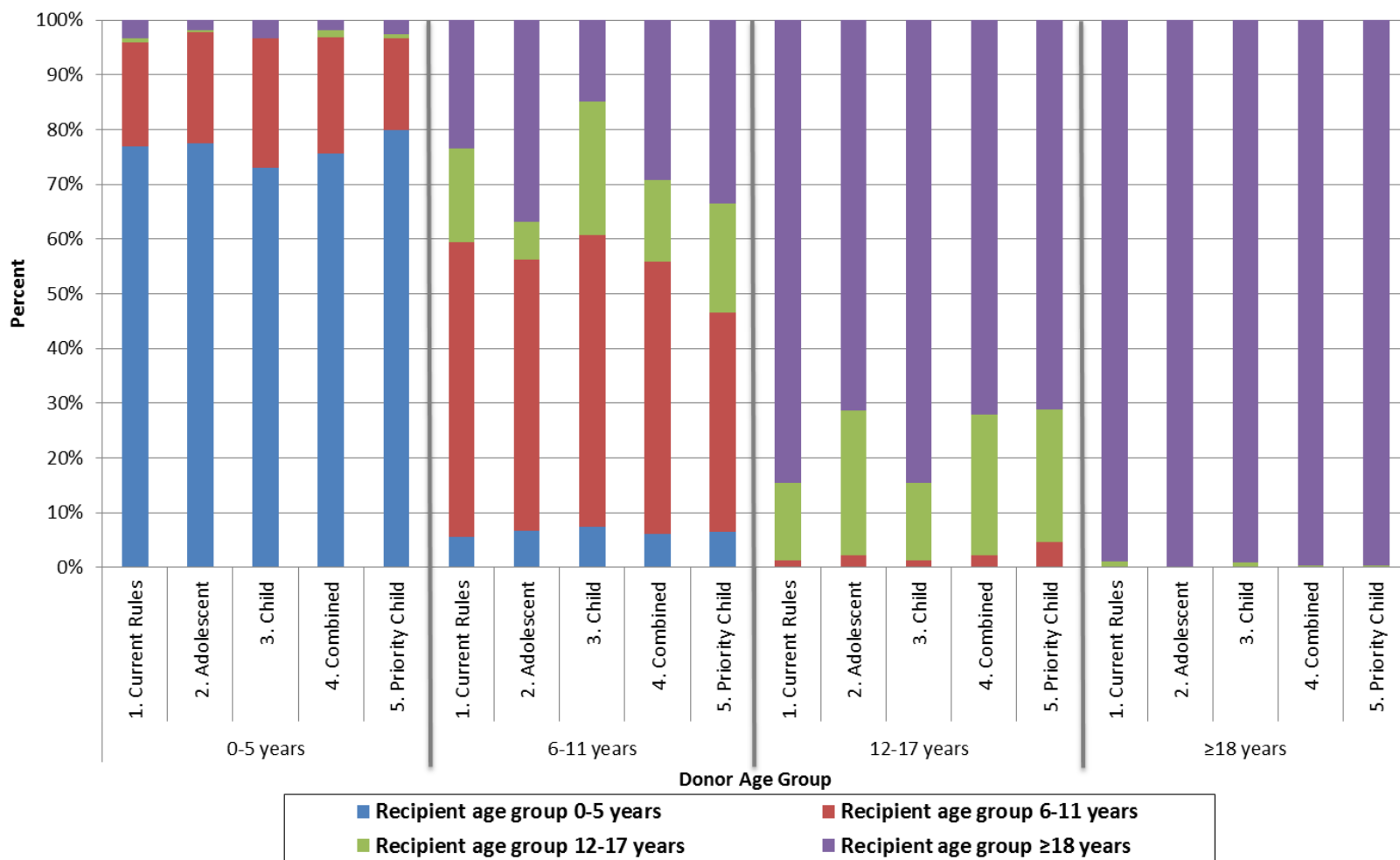
Results: Wait-list Mortality by Age Group



Results: 1-year Posttransplant Mortality by Age Group



Results: Age Distribution of Donors and Recipients



Conclusions

- Broader geographic sharing of pediatric donor lungs may increase pediatric access to transplant.
- Adult transplant rate, wait-list mortality, and 1-year posttransplant mortality were not adversely affected.
- Some of our findings may be explained by the small number of pediatric candidates as compared to adults; the need for donor and candidate thoracic size matching; and LAS prioritization of donor lungs to the sickest candidates.

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