Donor Utilization: Making Use of a Precious Resource in Cardiac Transplant

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Hospital discharges for heart failure by sex (United States: 1980–2010).

# Heart Failure Statistics

**US Population** [1]  
301,000,000

**Target Population – 35-74 Age Cohort** [3]  
139,100,000

**Diagnosed CHF Population** [2]  
- All ages: 5,520,000  
- 35 to 74 years: 3,744,000  
- NYHA Class IIIB and IV [3] in 35 – 74 Age Cohort: 374,400 (75%)

**Co-morbidities estimated in this Cohort**  
(280,800)

**Potential Patients – 35 to 74 years**  
93,600

**Simple Math: Patients per 100,000 Population**  
30

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Jeevanandan V, Oral Presentation, Society of Thoracic Surgeons, 2011
Our Population

Washington state: \(6,724,540\)

\(= 2017\) pts
Orthotopic Heart Transplant
Two Decades of Stability

J Heart Lung Transplant, vol 33, 2014
Total heart transplants
Increasing MCS use
LVAD Survival

Continuous Flow LVAD/BiVAD Implants: 2008 – 2013, n = 9372

<table>
<thead>
<tr>
<th>Months</th>
<th>% Survival</th>
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<tbody>
<tr>
<td>1</td>
<td>95%</td>
</tr>
<tr>
<td>12</td>
<td>80%</td>
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<tr>
<td>24</td>
<td>69%</td>
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<tr>
<td>36</td>
<td>59%</td>
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<td>48</td>
<td>47%</td>
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n = 9372, Deaths = 2272

n at risk: 9372 6203 4027 2739 1821 1194 711 408 174
HEART TRANSPLANTS
Kaplan-Meier Survival
(Transplants: January 1982 - June 2010)

Half-life = 10 years
Conditional half-life = 13 years

N = 96,273
N at risk at 25 years = 112

Survival is based on adult and pediatric transplant recipients

Patient survival among adult heart transplant recipients, 2005–2007
UWMC Transplant Survival 1985-2012 (n=576)

- 30 day: 93.0±1.1%
- 1 year: 90.2±1.2%
- 5 years: 81.9±1.7%
- 10 years: 68.2±2.2%
- 15 years: 53.6±2.7%
- 20 years: 40.1±3.3%
- 25 years: 31.1±4.7%
Suicide Rate in the US by Year

CDC. Web-based Injury Statistics Query and Reporting System (WISQARS). Atlanta, GA. 2013

* Rates for All Ages are age-adjusted to the standard 2000 population; rates for the 10-24 yrs age group is age-specific.
Share of Motorcycle Deaths By Age, 1975 to 2011

Source: NHTSA
But, It’s more complicated

Khush et al, 2015
Figure 3: Percentage of donor hearts accepted for transplantation, by UNOS region. (A) United States map showing geographic location of 11 UNOS regions, (B) 1995–1999, (C) 2000–2005, (D) 2006–2010. (note B–D: Alaska and Hawaii are not shown, but belong to region 6).
So Why is That Happening?

• Decline in heart utilization from 44% to 29%
• Increasing age of the donor population
• Fear of “high risk” hearts
• Avoidance of LVH
• Fear of longer ischemic times
• Avoidance of gender and size mismatching
Deceased donor heart transplant rates per 100 patient years on the waiting list
Deceased donor heart donation rates (per 1,000 deaths), by state: 2009-2011
UW Donor Stats

- 2012
  - 325 Donor offers
  - 78 Transplanted hearts
  - 20 Transplanted at the UW

- 2012
  - 6% overall utilization
  - 26% adjusted utilization
The Plan

• Review every donor offer
• Identify missed opportunities
• Establish a Donor Review Conference
• Consensus for donor assessment
• Review our outcomes
Review every offer

- Careful review of each donor offer
- Highlight hearts transplanted by other centers
- Identify reasons for refusal
Missed Opportunities

- Initial Low EF that improves
- CPR positive donors with normal EF
- Obese donors with normal Echo and Angio
- Mild LVH in local donors
- Local older donors
- Young donors turned down for CDC high risk status
Donor Conference

- Non-threatening, collaborative
- De-identified
- Thorough review of selected cases
- Discussion
- Literature review plan
Heart transplantation outcomes from cardiac arrest–resuscitated donors

Mohammed A. Quader, MD, Luke G. Wolfe, MS, and Vigneshwar Kasirajan, MD

From the Division of Cardiothoracic Surgery, Virginia Commonwealth University, Richmond, Virginia.

Figure 1  Recipient survival.

Figure 2  Graft survival by CPR duration.
Consensus

• Discussion leads to consensus
• Voting
• Summarize
• “newsletter”
Review Outcomes

- 2012
  - 325 Donor offers
  - 78 Transplanted hearts
  - 20 Transplanted at the UW

- 2013
  - 292 Donor offers
  - 66 Transplanted hearts
  - 31 Transplanted at the UW

- 2012
  - 6% overall utilization
  - 26% adjusted utilization

- 2013
  - 11% overall utilization
  - 47% adjusted utilization
UW Transplant Volumes

One year Survival increased from 80% to 94% over the same period
Conclusions

- A small conservative program can significantly change volumes
- Can do this safely
- This is a project about stewardship
- But...........
• Increase organ donation rates
• Expand DCD
• Legislate Cortical Brain death definition