Intensivist-led Donor Care in the Intensive Care Unit

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Disclosure

Co-investigator: Monitoring Organ Donor to Improve Transplantation Results (MOnIToR)
- US Dept. of Health Resources Services and Administration (HRSA) grant

Consultant: Center for Organ Recovery and Education (CORE, Pa)

Principal Investigator: Cooling to Optimize Organ Life (COOL Donor Study)
- UPMC Competitive Medical Research Fund
- University of Pittsburgh - CCM Innovation Grant Fund
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Organ Transplantation in the U.S.

- **Candidates on transplant waiting list**
  - All candidates: 116,034
  - All organs: 126,181

- **Organ donors in 2011**
  - All organ donors: 14,146
    - deceased donors: 8,126
    - living donors: 6,020

- **Organs transplanted**
  - All donor organs: 28,537
    - deceased donor organs: 22,518 (3.51 organs/donor)
    - living donor organs: 6,019

- **Waiting list candidate mortality**
  - 6,715 died in 2011 (~ 6%)
Preload responsiveness and inflammation

Organ transplantation by donor resuscitation

P = 0.034

Preload unresponsive
Preload responsive

% of organs transplanted

Heart | Lung | Kidney | Pancreas | Liver

Organ Donor Support Team

- Implementation date: July 2008
  - A group of 7 dedicated intensive care consultants including a medical director
  - Provide 24/7 coverage for organ donation
  - On-site evaluation and management within 60 minutes of consultation along with coordinators

- Objective
  - Increase organ recovery per donor
Intensivists responsibilities

- Review medical records
- Evaluate for organ donation
- Perform brain-death examination in consented donors
- Discuss with family and provide emotional support
- Critical care of organ donor
  - procedures
  - management
- Supervise DCD procedure
- Medical consultation for remote location outside UPMC
- Participate in research
Organs recovered per donor at UPMC before and after ODST (2008)
Organs recovered per donor in UPMC (2009)

- Benchmark 3.75
- CORE DSA
- UPMC Presby
Standard Criteria Donors (2008)

- Standard criteria
- Brain dead donor < 50 years of age
Brain-dead donors age ≥60 years

Or

Brain dead donors aged 50 - 59 years with

- Hypertension
- Cerebrovascular accident
- Creatinine > 1.5 mgs/dl
Donation after cardiac death (2008)
12 months before and after ODST

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Without Intensivist</th>
<th>With Intensivist</th>
<th>% of Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of donors</td>
<td>46</td>
<td>57</td>
<td>23.9%</td>
</tr>
<tr>
<td>No. of organs Transplanted</td>
<td>84</td>
<td>138</td>
<td>64.3%</td>
</tr>
<tr>
<td>Organs recovered per donor</td>
<td>1.83</td>
<td>2.42</td>
<td>↑ 32.2%</td>
</tr>
<tr>
<td>Standard criteria</td>
<td>2.67</td>
<td>3.55</td>
<td>↑ 33%</td>
</tr>
<tr>
<td>Extended criteria</td>
<td>1.18</td>
<td>1.76</td>
<td>↑ 49.1%</td>
</tr>
<tr>
<td>Donation after cardiac death</td>
<td>1.45</td>
<td>1.64</td>
<td>↑ 13.1%</td>
</tr>
<tr>
<td>Heart transplantation</td>
<td>7</td>
<td>11</td>
<td>↑ 57.1%</td>
</tr>
<tr>
<td>Lung transplantation</td>
<td>8</td>
<td>21</td>
<td>↑ 162.5%</td>
</tr>
<tr>
<td>Liver transplantation</td>
<td>24</td>
<td>32</td>
<td>↑ 33.3%</td>
</tr>
<tr>
<td>Kidney transplantation</td>
<td>44</td>
<td>72</td>
<td>↑ 63.6%</td>
</tr>
<tr>
<td>Pancreas transplantation</td>
<td>1</td>
<td>1</td>
<td>0%</td>
</tr>
</tbody>
</table>
## Donor characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Without intensivist (n=35)</th>
<th>With intensivist (n=43)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean, yrs</td>
<td>51</td>
<td>52</td>
<td>0.8</td>
</tr>
<tr>
<td>Male donor</td>
<td>22 (63)</td>
<td>27 (63)</td>
<td>0.99</td>
</tr>
<tr>
<td>Standard criteria</td>
<td>18 (51)</td>
<td>22 (51)</td>
<td>0.99</td>
</tr>
<tr>
<td>Extended criteria</td>
<td>17 (49)</td>
<td>21 (49)</td>
<td></td>
</tr>
<tr>
<td>Lung disease</td>
<td>6 (17)</td>
<td>11 (26)</td>
<td>0.53</td>
</tr>
<tr>
<td>Kidney disease</td>
<td>2 (6)</td>
<td>5 (12)</td>
<td>0.61</td>
</tr>
<tr>
<td>Hypertension</td>
<td>19 (54)</td>
<td>20 (47)</td>
<td>0.64</td>
</tr>
<tr>
<td>Coronary artery disease</td>
<td>8 (23)</td>
<td>7 (16)</td>
<td>0.65</td>
</tr>
<tr>
<td>Tobacco use</td>
<td>11 (32)</td>
<td>23 (54)</td>
<td>0.08</td>
</tr>
</tbody>
</table>
Intensivists-led donor care is associated with an increase in organ transplantation from brain dead donors.

Singbartl et al., Am J Transplantation 2011
Reasons for increase in organ transplantation

- Better resuscitation of organ donors and hemodynamic management
  - Better implementation of bundled donor management protocols

- Conversion of potential DCD donors to brain dead donors
  - Increased organ recovery per donor

- Aggressive donor management

- Therapeutic and diagnostic bronchoscopy
  - Lung recruitment

- Discussion of organ function with the transplant surgeons
Organ Procurement Organization

- **Work as a multidisciplinary team**
- **Co-ordinators discuss care with**
  - intensivist
  - bedside nurse
  - transplant surgeons
  - OPO administrator
- **Organize logistics for organ procurement**
- **Participate in research**
  - consent for research
  - execute intervention
  - collect blood samples and data
Donation after Cardiac Death (DCD)

- UPMC has an explicit policy for DCD
- End of life care should precede and be independent from organ donation
- Mandatory ethics consult prior to all DCD procedures
- ODST intensivist begins withdrawal of life support in the ICU or in OR
  - Successful DCD
- Organs not procured after 1 hour following termination of life support
Quality Improvement

- Detailed questionnaire completed by the ODST intensivist as well as the coordinator
  - Time of consultation, evaluation, discussion with family
  - Problems in management (e.g., donor cardiac arrest)
  - Procedures performed
  - Subjective evaluation of intensivist activities by the OPO coordinator
  - Evaluation of logistics

- Monthly meeting with
  - medical director, intensivists, transplant surgeons, OPO administrators
Ethics

- End of life care vs organ donation

- Managing conflict of interest
  - Care of patients awaiting transplantation vs care of organ donors
  - Brain death pronouncement
  - Donation after cardiac determination of death