ECMO In Trauma
Matt Prekker MD, MPH
HCMC
April 22, 2016

OBJECTIVES

- Review experience with veno-venous (V-V) ECMO in critically-injured patients
- Understand the potential impact of specific injuries on decision-making around extracorporeal support
- Illustrate how regionalized trauma and ECMO systems overlap in the Upper Midwest

New Engl J Med 1972

“Trimodal” Distribution of Trauma Deaths

©AllinaHealthSystem
V-V ECMO For Trauma: Literature

<table>
<thead>
<tr>
<th>Author</th>
<th>Institution</th>
<th>N</th>
<th>Population</th>
<th>ECMO Duration</th>
<th>Hospital Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michaelis (1999)</td>
<td>U Michigan</td>
<td>30</td>
<td>80% blunt injury</td>
<td>10 days</td>
<td>54%</td>
</tr>
<tr>
<td>Cordell-Smith</td>
<td>Leicester, UK</td>
<td>28</td>
<td>86% MVC</td>
<td>6 days</td>
<td>71%</td>
</tr>
<tr>
<td>Bain (2012)</td>
<td>U.S. Military</td>
<td>5</td>
<td>3 GSW</td>
<td>8 days</td>
<td>100%</td>
</tr>
<tr>
<td>Reid (2013)</td>
<td>Regensburg, Germany</td>
<td>26</td>
<td>81% MVC</td>
<td>6 days</td>
<td>81%</td>
</tr>
<tr>
<td>Giraud (2014)</td>
<td>Wake Forest U</td>
<td>26</td>
<td>81% blunt injury</td>
<td>9 days</td>
<td>58%</td>
</tr>
</tbody>
</table>

V-V ECMO is a reasonable strategy for select patients with refractory respiratory failure following trauma, with similar outcomes to uninjured patients.

Deferred anticoagulation and interfacility transport are increasingly possible.

Trauma systems and ECMO centers may benefit from coordination at a state or regional level.

V-V ECMO For Trauma: Highlights

- Use of anticoagulation in pts at risk for hemorrhage
- Challenges to “standard” ARDS management
  - Prone position
  - Intra-abdominal pressure
  - Intracranial pressure
- Timing of definitive procedures/repairs
- Victims of trauma are generally young & healthy
- A multidisciplinary, coordinated approach across systems and specialties is required

SUMMARY

- V-V ECMO is a reasonable strategy for select patients with refractory respiratory failure following trauma, with similar outcomes to uninjured patients
- Deferred anticoagulation and interfacility transport are increasingly possible
- Trauma systems and ECMO centers may benefit from coordination at a state or regional level
REFERENCES


TO CONTACT ME

Matt Prekker MD, MPH
Pulmonary/Critical Care and Emergency Medicine
ECMO Medical Director
Hennepin County Medical Center
Matthew.Prekker@hcmed.org
Office: (612) 873-3196

V-V ECMO For Trauma: Literature

<table>
<thead>
<tr>
<th>Author Institution</th>
<th>N</th>
<th>Population</th>
<th>ECMO Duration</th>
<th>Hospital Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michaels (1999) U Michigan</td>
<td>30</td>
<td>80% blunt injury</td>
<td>10 days</td>
<td>54%</td>
</tr>
<tr>
<td>Cordell-Smith (2005) Leicester, England</td>
<td>28</td>
<td>86% MVC</td>
<td>6 days</td>
<td>71%</td>
</tr>
<tr>
<td>Bein (2012) U.S. Military</td>
<td>5</td>
<td>3 GSW</td>
<td>8 days</td>
<td>100%</td>
</tr>
<tr>
<td>Paid (2013) Regensburg, Germany</td>
<td>26</td>
<td>81% MVC</td>
<td>6 days</td>
<td>81%</td>
</tr>
<tr>
<td>Guirand (2014) Wake Forest U</td>
<td>26</td>
<td>81% blunt injury</td>
<td>9 days</td>
<td>58%</td>
</tr>
<tr>
<td>Guirand (2014) Wake Forest U</td>
<td>115</td>
<td>~80% blunt injury</td>
<td>6-10 days</td>
<td>54-100%</td>
</tr>
</tbody>
</table>