University of Kentucky Heart Transplant Program

25 Years
* Early 1980s
* 1985
  * Emery Wilson-Dean
  * Byron Young- Chair of Department Surgery
  * Ed Todd- Chief of Division- CT Surgeon
  * Frank Butler-Hospital CEO

* Kentucky Governor’s Race-Democratic primary
  * Wallace G. Wilkerson vs John Y. Brown Jr.
* Ed Todd resigns 1987

* Randolph W. Chitwood-Chief of the Division 1988
  * Mandate to start heart transplant program
  * Resigned and returned to East Carolina State after 10 months at UK. Heart transplant program on “hold”

* Robert K. Salley promoted to Division Chief
  * Richard Floyd, only other cardiac surgeon, resigns 1990
* In desperation UK reaches out to a former Trainee
* Michael Eldon Sekela hired as an adult cardiac surgeon, asks about heart transplant....
* Sekela begins 2/1/1991
* First heart transplant 3/28/1991
<table>
<thead>
<tr>
<th>*</th>
<th>Date</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chitwood</td>
<td>1988</td>
<td>N/A</td>
</tr>
<tr>
<td>Sekela</td>
<td>1991</td>
<td>85</td>
</tr>
<tr>
<td>Sanchez</td>
<td>1996</td>
<td>59</td>
</tr>
<tr>
<td>Mentzer</td>
<td>2000</td>
<td>55</td>
</tr>
<tr>
<td>Ramiah</td>
<td>2006</td>
<td>42</td>
</tr>
<tr>
<td>Hoopes</td>
<td>2012</td>
<td>41</td>
</tr>
<tr>
<td>Sekela</td>
<td>2015</td>
<td>77</td>
</tr>
<tr>
<td><strong>Total number hearts</strong></td>
<td><strong>359</strong></td>
<td></td>
</tr>
</tbody>
</table>
* Waid 1991
* Mills 1997
* Menon 1998
* Waid 2001
* Rajagopalan 2006

* 16 of the 25 years the medical director has been a Nephrologist
<table>
<thead>
<tr>
<th>Hospital</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>UKMC</td>
<td>43</td>
</tr>
<tr>
<td>Cleveland Clinic</td>
<td>47</td>
</tr>
<tr>
<td>Vanderbilt</td>
<td>53 (+12 peds)</td>
</tr>
<tr>
<td>Barnes-Jewish</td>
<td>29</td>
</tr>
<tr>
<td>St. Vincent</td>
<td>24</td>
</tr>
<tr>
<td>IU</td>
<td>23</td>
</tr>
<tr>
<td>Jewish</td>
<td>7</td>
</tr>
<tr>
<td>Kosair</td>
<td>5</td>
</tr>
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</table>
* UKMC Cardiac Transplant Program

* 15th busiest in the United States - 2015

* 130 programs are active

* UNOS DATA
Adult Heart Transplants

% of Patients Bridged with Mechanical Circulatory Support*
(Transplants: January 2000 - December 2013)

* LVAD, RVAD, TAH, ECMO
Adult Heart Transplants
Donor and Recipient Age
(Transplants: January 2009 - June 2014)
Adult Heart Transplants
Donor and Recipient Age
(Transplants: January 2009 - June 2014)
Diagnosis: Retransplant

Kaplan-Meier Survival by Era (Transplants: January 1982 - June 2013)

Median survival (years):

All pair-wise comparisons were significant at p < 0.05 except 2002-2008 vs. 2009-6/2013.

For some retransplants, a diagnosis other than retransplant was reported, so the total number of retransplants may be greater.
Cumulative Incidence of Leading Causes of Death (Transplants: January 1994 - June 2013)

- CAV
- Malignancy (non-Lymph/PTLD)
- Infection (non-CMV)
- Graft Failure
- Renal Failure
- Multiple Organ Failure
- Acute Rejection

*Adult Heart Transplants*
Adult Heart Transplants

Rehospitalization Post Transplant of Surviving Recipients

(Follow-ups: January 2004 - June 2014)

- Up to 1 Year (N=18,958)
- Between 2 and 3 Years (N=15,749)
- Between 4 and 5 Years (N=13,452)
Recent UKMC 1+3 VS USA
UKMC 1+3 Previous VS USA
UKMC Waiting List

![Chart showing new additions to waitlist, active on waitlist, total on waitlist, and total transplants for 2014, 2015, and 2016.]
Number transplanted with VAD vs no VAD

UKMC VAD vs no VAD
Transplant Length of Stay 13 days - Region 14 days and National 15 days

<table>
<thead>
<tr>
<th>Length of Stay</th>
<th>ICU LOS</th>
<th></th>
<th>TAP LOS</th>
<th></th>
<th>Hospital LOS</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
<td>Range</td>
<td>Mean</td>
<td>Median</td>
<td>Range</td>
</tr>
<tr>
<td>CY2014</td>
<td>5.4</td>
<td>6.0</td>
<td>2-9</td>
<td>10.0</td>
<td>11.0</td>
<td>7-80</td>
</tr>
<tr>
<td>CY2015</td>
<td>PENDING</td>
<td></td>
<td></td>
<td>14.0</td>
<td>13.0</td>
<td>6-161</td>
</tr>
<tr>
<td></td>
<td>26.3</td>
<td>21.0</td>
<td>9-934</td>
<td>33.9</td>
<td>20.5</td>
<td>0-222</td>
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</table>

UKMC LOS
**Readmit rate within 1yr post-transplant 25.6%**

**National average 50%**

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### Readmits within 3mo post TXP

<table>
<thead>
<tr>
<th></th>
<th>Readmitted</th>
<th># Days - TXP DC to 1st readmit</th>
<th>Total Readmits LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total #</td>
<td># Patients</td>
<td># TXP</td>
</tr>
<tr>
<td>CY2012</td>
<td>7</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>CY2013</td>
<td>4</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>CY2014</td>
<td>3</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>CY2015</td>
<td>8</td>
<td>7</td>
<td>43</td>
</tr>
</tbody>
</table>

### Readmits within 1yr post TXP

<table>
<thead>
<tr>
<th></th>
<th>Readmitted</th>
<th># Days - TXP DC to 1st readmit</th>
<th>Total Readmits LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total #</td>
<td># Patients</td>
<td># TXP</td>
</tr>
<tr>
<td>CY2012</td>
<td>9</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>CY2013</td>
<td>6</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>CY2014</td>
<td>4</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>CY2015</td>
<td>16</td>
<td>11</td>
<td>43</td>
</tr>
</tbody>
</table>
UKMC Number of Referrals for TX

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Referrals</th>
</tr>
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<tbody>
<tr>
<td>CY2009</td>
<td>67</td>
</tr>
<tr>
<td>CY2010</td>
<td>62</td>
</tr>
<tr>
<td>CY2011</td>
<td>76</td>
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<tr>
<td>CY2012</td>
<td>89</td>
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<tr>
<td>CY2013</td>
<td>107</td>
</tr>
<tr>
<td>CY2014</td>
<td>129</td>
</tr>
<tr>
<td>CY2015</td>
<td>128</td>
</tr>
<tr>
<td>CY2016</td>
<td>209</td>
</tr>
</tbody>
</table>
Number of inpatients awaiting heart transplantation

* Heart Transplants Performed 1/1/14-12/31/14: 14
* Recipient Hospitalized 53.8%/ Not hospitalized 46.2%

* Heart Transplants Performed 1/1/15-12/31/15: 43
* Hospitalized 37.2%/Not hospitalized 62.8%

*UKMC INPT vs OUTPT*
*Michael Sekela
*Connie Taylor

*UKMC Team Time Zero
Heart Transplant Surgeons
Michael Sekela, MD, Surgical Director, Heart Transplant Program
Alexis Shafii, MD
Paul Tessmann, MD
Ted Wright, MD

Cardiologists
Navin Rajagopalan, MD, Medical Director, Heart Transplant Program
Maya Guglin, MD
Paul Anaya, MD
David Booth, MD
Meena Bhalla, MD

Nurse Practitioners
Candice Falls, NP
Lauren Davis, NP

Heart Transplant Coordinators
Donna Dennis, BSN, RN, CCTC
Tanya Mooney, BSN, RN
Heather Ross, MSN, RN

Staff Support
Jennifer Whittaker

Financial Coordinator
Kim Million

Social Worker
Summer Davies, MSW

Pharmacists
Adam Sieg, PharmD
William Kuan, PharmD

Dietitian
Sarah Moore, RD

Physical Therapists
Kathryn Gaines, PT
Angela Henning, PT

Immuo-Molecular Pathology Lab
John May, Chief Medical Technologist

Palliative Care
Pep Peppiatt, MD

Mechanical Circulatory Support and Heart Transplant Manager
Julia Akhtarekhvari, BSN, RN, CCRN
* Autologous Stem Cells + Transmyocardial Laser
  * Primary Investigators
    * Michael E Sekela + Ahmed Abdel-Latif
* Ischemic cardiomyopathy
* Depressed LV function no revasc option
* Class 2-3+ CHF
* Harvest and Surgery same day....... 
* We have successfully performed procedure

*Phase 1 Clinical Trial*