SRTR 101

Jon J. Snyder, PhD
Director of Transplant Epidemiology
Chronic Disease Research Group
Hennepin Healthcare Research Institute
Minneapolis, MN
Disclosures

I have no financial relationships to disclose within the past 12 months relevant to my presentation. The ACCME defines ‘relevant’ financial relationships as financial relationships in any amount occurring within the past 12 months that create a conflict of interest.

My presentation does/does not include discussion of off-label or investigational use, and I do/do not intend to reference unlabeled/unapproved uses of drugs or products in my presentation.
Disclosures – SRTR

The views expressed do not necessarily reflect the official policies of the U.S. Department of Health and Human Services nor does mention of trade names, commercial practices, or organizations imply endorsement by the U.S. Government.
SRTR’s Place Within the Nation’s Transplant System
SRTR’s Major Deliverables

Public Reporting
- Website
- PSRs
- OSRs
- ADR

Analytic Support
- HRSA
- OPTN

Quality Tools
- Secure Site
- CUSUMs
- Workbooks
- Decision Aids

Research Support
- Data Access
- Data Queries
Over 26,000 transplants have been performed so far this year.

Upcoming PSR/OSR Changes and Model Previews

Read the announcement:
Over 26,000 transplants have been performed so far this year.

Upcoming PSR/OSR Changes and Model Previews

Read the announcement:
For heart transplant candidates, this measure has the largest impact on survival after listing among these three measures. 1 year heart survival includes only candidates who received a transplant.

---

**Temple University Hospital**

Philadelphia, PA  
N/A 17 ADULTS

- View Summary Data
- View Complete Report (PDF)

---

**St Luke's Hospital of Kansas City**

Kansas City, MO  
N/A 39 ADULTS

- View Summary Data
- View Complete Report (PDF)
The SRTR website allows users to search for transplant programs through the search functionality found at the top of all website pages. This guide provides a brief explanation of the information presented in searches for transplant programs.
PSR Reporting Schedule

January Release
- October: Data Review
- December: Report Preview

July Release
- April: Data Review
- June: Report Preview
SRTR contractual reporting obligations:

- Waitlist activity
- Waitlist outcomes
- Posttransplant outcomes
- Acceptance and utilization of organs
- Cost and resource utilization by transplant programs
- Living donor outcomes
Waitlist

AS OF JANUARY 2018

41
PEOPLE
WERE ON THE WAITLIST

+ JOINED THE LIST

91
PEOPLE

- WERE REMOVED

101
PEOPLE

<table>
<thead>
<tr>
<th>87 received transplants</th>
<th>5 deteriorated</th>
<th>0 transferred to another center</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 recovered</td>
<td>2 died</td>
<td>2 other</td>
</tr>
</tbody>
</table>

AT THE END OF DECEMBER 2018

31
PEOPLE
WERE ON THE WAITLIST
Transplant Rate

How quickly do patients move from the waitlist to transplant?
Webinars
Continuing Education & Beyond

September 12, 2019

Waitlist Metrics: Understanding Transplant Rate, Mortality Rate and the New Waitlist Survival Worksheet

Jon Snyder, PhD
Director of Transplant Epidemiology
Scientific Registry of Transplant Recipients
Minneapolis Medical Research Foundation

September 12, 2019
Transplant Rate: Evaluation Period

2-Year Evaluation Window

1/1/2017 1/1/2018 12/31/2018
Transplant Rate: Evaluation Period

2-Year Evaluation Window

Person-days Waiting: 730 and 0 Transplants

1/1/2017  1/1/2018  12/31/2018
Transplant Rate: Evaluation Period

2-Year Evaluation Window

Person-days Waiting: **643** and **0** Transplants
Removed: 10/5/2018

Person-days Waiting: **730** and **0** Transplants

A
B

1/1/2017 1/1/2018 12/31/2018
Transplant Rate: Evaluation Period

2-Year Evaluation Window

Person-days Waiting: 396 and 0 Transplants

1/1/2017  1/1/2018  12/31/2018
Transplant Rate: Evaluation Period

2-Year Evaluation Window

Person-days Waiting: 625 and 1 Transplant
Listed on 3/1/2017 Transplanted: 11/15/2018

Person-days Waiting: 396 and 0 Transplants
Listed on 12/1/2017

C
D
# Transplant Rate: Calculation

<table>
<thead>
<tr>
<th>Patient</th>
<th>Person-Days Waiting</th>
<th>Transplants</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>730</td>
<td>0</td>
</tr>
<tr>
<td>B</td>
<td>643</td>
<td>0</td>
</tr>
<tr>
<td>C</td>
<td>396</td>
<td>0</td>
</tr>
<tr>
<td>D</td>
<td>625</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,394</strong></td>
<td><strong>1</strong></td>
</tr>
</tbody>
</table>

\[
\frac{1 \text{ Transplant}}{2394 \text{ Person-Days}} = 0.000418
\]
Transplant Rate: Calculation

<table>
<thead>
<tr>
<th>Patient</th>
<th>Person-Days Waiting</th>
<th>Transplants</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>730</td>
<td>0</td>
</tr>
<tr>
<td>B</td>
<td>643</td>
<td>0</td>
</tr>
<tr>
<td>C</td>
<td>396</td>
<td>0</td>
</tr>
<tr>
<td>D</td>
<td>625</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>2,394</td>
<td>1</td>
</tr>
</tbody>
</table>

\[
\frac{1 \text{ Transplant}}{2394 \text{ Person-Days}} = 0.000418
\]

0.000418 Transplants Per Person-Day of Waiting
## Transplant Rate: Calculation

<table>
<thead>
<tr>
<th>Patient</th>
<th>Person-Days Waiting</th>
<th>Transplants</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>730</td>
<td>0</td>
</tr>
<tr>
<td>B</td>
<td>643</td>
<td>0</td>
</tr>
<tr>
<td>C</td>
<td>396</td>
<td>0</td>
</tr>
<tr>
<td>D</td>
<td>625</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,394</strong></td>
<td><strong>1</strong></td>
</tr>
</tbody>
</table>

\[
\frac{1 \text{ Transplant}}{2394 \text{ Person-Days}} = 0.000418
\]

Convert to a rate per 100 Person-Years by Multiplying by 365.25*100

\[
0.000418 \times 365.25 \times 100 = 15.3
\]
Transplant Rate: Calculation

<table>
<thead>
<tr>
<th>Patient</th>
<th>Person-Days Waiting</th>
<th>Transplants</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>730</td>
<td>0</td>
</tr>
<tr>
<td>B</td>
<td>643</td>
<td>0</td>
</tr>
<tr>
<td>C</td>
<td>396</td>
<td>0</td>
</tr>
<tr>
<td>D</td>
<td>625</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>2,394</td>
<td>1</td>
</tr>
</tbody>
</table>

\[
\frac{1 \text{ Transplant}}{2394 \text{ Person-Days}} = 0.000418
\]

Convert to a rate per 100 Person-Years by Multiplying by 365.25*100

\[
0.000418 \times 365.25 \times 100 = 15.3
\]

15.3 Transplants Per 100 person-years of waiting
Transplant Rate: FAQs

Inactive Time:
- Active/Inactive time are both considered in the denominator.

Discrepancy Between Transplant/Death and Waitlist Removal:
- If a patient is determined to have been transplanted or died prior to removal from the waitlist, the waitlist time is truncated to the transplant/death date.

Multiple Listings:
- If a patient is listed at multiple programs, only the transplanting program is credited with the transplant and the patient's follow-up time is censored at the other program(s) on the date of transplant.

Multi-organ Listings:
- If a candidate is simultaneously listed for more than 1 organ, the candidate is included in the transplant rate calculation for each of the organs.
Table B4. Transplant rates: 01/01/2017 - 12/31/2018

<table>
<thead>
<tr>
<th>Waiting List Registrations</th>
<th>This Center</th>
<th>OPO/DSA</th>
<th>Region</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All Candidates</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count on waiting list at start*</td>
<td>126</td>
<td>243</td>
<td>3,158</td>
<td>14,684</td>
</tr>
<tr>
<td>Person Years**</td>
<td>222.5</td>
<td></td>
<td></td>
<td>6.6</td>
</tr>
<tr>
<td>Removals for Transplant</td>
<td>248</td>
<td></td>
<td></td>
<td>32</td>
</tr>
<tr>
<td><strong>Adult (18+) Candidates</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count on waiting list at start*</td>
<td>125</td>
<td>238</td>
<td>3,044</td>
<td>14,113</td>
</tr>
<tr>
<td>Person Years**</td>
<td>220.5</td>
<td></td>
<td></td>
<td>5,642.7</td>
</tr>
<tr>
<td>Removals for transplant</td>
<td>248</td>
<td></td>
<td></td>
<td>2,304</td>
</tr>
<tr>
<td><strong>Pediatric (&lt;18) Candidates</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count on waiting list at start*</td>
<td>1</td>
<td>5</td>
<td>114</td>
<td>571</td>
</tr>
<tr>
<td>Person Years**</td>
<td>2.0</td>
<td>11.8</td>
<td>242.8</td>
<td>1,090.1</td>
</tr>
<tr>
<td>Removals for transplant</td>
<td>0</td>
<td>15</td>
<td>224</td>
<td>1,187</td>
</tr>
</tbody>
</table>

* Counts in this table may be lower than similar counts in other waiting list tables, such as Table B1. A small percentage (~1%) of patients are found to have died or been transplanted before being removed from the waiting list, so these patients are excluded if the event occurs prior to the start of the study period. Inactive time on the waiting list is included in the calculations for this table.

** Person years are calculated as days (converted to fractional years). The number of days from January 1 or from the date of first wait listing until death, transplant, removal from the waiting list or December 31.
248 * 100 / 222.5 = 111.5
Figure B1. Observed and expected transplant rates: 01/01/2017 - 12/31/2018

Rate per 100 Person Years

- All: 111.5 (Observed), 39.6 (Expected)
- Adult: 112.5 (Observed), 39.9 (Expected)
- Pediatric: 0.0 (Observed), 6.2 (Expected)

Figure B2. Transplant rate ratio estimate

Estimated Transplant Rate Ratio

3.13
2.44
2.77

Figure B3. Observed adult (18+) and pediatric (<18) transplant rates: 01/01/2017 - 12/31/2018

Rate per 100 Person Years

- Adult (18+): 112.5 (This Center), 131.4 (OPO/DSA), 40.8 (Region), 55.3 (U.S.)
- Pediatric (<18): 0.0 (This Center), 127.6 (OPO/DSA), 92.3 (Region), 108.9 (U.S.)

Transplant Rate Ratio (akin to O/E, or observed-to-expected ratio)
Two Variations of Transplant Rates Are Presented

<table>
<thead>
<tr>
<th>[All-Donor] Transplant Rate:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Considers both a living donor transplant and a deceased donor transplant as a success.</td>
<td></td>
</tr>
<tr>
<td>• Pro: Reflects the experience of all patients at the program whether they have a living donor available or not.</td>
<td></td>
</tr>
<tr>
<td>• Con: Differences in timing of listing candidates with a known living donor can lead to higher or lower rates.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Deceased-Donor Transplant Rate:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Stops a candidate's follow-up at the time of a living donor transplant and does not count the living donor transplant as a success.</td>
<td></td>
</tr>
<tr>
<td>• Pro: Truer to a candidate's experience if they do not have a living donor available.</td>
<td></td>
</tr>
<tr>
<td>• Con: May not reflect the total experience of patients at the program since living donor transplants are not counted as a success.</td>
<td></td>
</tr>
</tbody>
</table>
For liver transplant candidates, this measure has the **largest impact on survival after listing** among these three measures. 1 year liver survival includes only candidates who received a transplant.

<table>
<thead>
<tr>
<th>Distance</th>
<th>Deceased Donor Transplants in a Year</th>
<th>Living Donor Transplants in a Year</th>
<th>Survival on the Waitlist</th>
<th>1-Year Liver Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mayo Clinic Hospital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phoenix, AZ</td>
<td>N/A</td>
<td>128</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>View Summary Data</td>
<td>View Complete Report (PDF)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northwestern Memorial Hospital</td>
<td>N/A</td>
<td>98</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Chicago, IL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>View Summary Data</td>
<td>View Complete Report (PDF)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tulane Medical Center</td>
<td>N/A</td>
<td>22</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>New Orleans, LA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>View Summary Data</td>
<td>View Complete Report (PDF)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The adult or pediatric deceased donor transplant rate serves as the basis for this evaluation on the SRTR Search Results Page.
Waitlist Mortality

Question of interest

• At what rate do waitlist candidates die following listing and prior to transplant?
Waitlist Mortality: Evaluation Period

Patients are followed from the date of listing or start of the evaluation window, whichever is later, until:

• Transplant
• Death
• Transfer to another program
• 60 days past removal for recovery (transplant is no longer needed)
• End of the evaluation window

Patients are followed beyond removal for being too sick to transplant with death ascertainment supplemented by additional searches by OPTN, NTIS, and CMS.
Waitlist Mortality Rate: Evaluation Period

2-Year Evaluation Window

Person-days Waiting: 409 and 0 Deaths
Removed for recovery: 12/15/2017, followed 60 more days
Died: 9/25/2018

Person-days Waiting: 564 and 1 Death
Listed on 5/1/2017
Removed too sick: 10/1/2018
Died: 11/15/2018

D

C

1/1/2017  1/1/2018  12/31/2018
B. Waiting List Information

Figure B7. Offer acceptance: Overall

Figure B8. Offer acceptance:
PHS increased infectious risk
Table C6D. Adult (18+) 1-year survival with a functioning deceased donor graft
Single organ transplants performed between 01/01/2016 and 06/30/2018
Deaths and retransplants are considered graft failures

<table>
<thead>
<tr>
<th></th>
<th>WAUW</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of transplants evaluated</td>
<td>153</td>
<td>6,481</td>
</tr>
<tr>
<td>Estimated probability of surviving with a functioning graft at 1 year (unadjusted for patient and donor characteristics)</td>
<td>90.85%</td>
<td>91.17%</td>
</tr>
<tr>
<td>Expected probability of surviving with a functioning graft at 1 year (adjusted for patient and donor characteristics)</td>
<td>90.11%</td>
<td>--</td>
</tr>
<tr>
<td>Number of observed graft failures (including deaths) during the first year after transplant</td>
<td>14</td>
<td>548</td>
</tr>
<tr>
<td>Number of expected graft failures (including deaths) during the first year after transplant</td>
<td>13.78</td>
<td>--</td>
</tr>
<tr>
<td>Estimated hazard ratio*</td>
<td>1.01</td>
<td>--</td>
</tr>
<tr>
<td>95% credible interval for the hazard ratio**</td>
<td>[0.58, 1.57]</td>
<td>--</td>
</tr>
</tbody>
</table>
Figure C3D. Adult (18+) 1-year deceased donor graft failure HR estimate

Figure C4D. Adult (18+) 1-year deceased donor graft failure HR program comparison

Worse

Better

Program Volume
Transplants Performed 01/01/2016 - 06/30/2018

WAUW

Other Programs
Choose the Transplant Rate, Deceased-Donor Only Transplant Rate, or Waitlist Mortality Rate.

### Model Elements Table

This table lists the elements included in the risk adjustment model and each element’s data source. For additional information on the data sources, click the Additional Info tab.

#### Show 25 entries

<table>
<thead>
<tr>
<th>Element</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candidate age at listing</td>
<td>TCR</td>
</tr>
<tr>
<td>Candidate blood type</td>
<td>TCR</td>
</tr>
<tr>
<td>Candidate has spontaneous bacterial peritonitis</td>
<td>TCR</td>
</tr>
<tr>
<td>Candidate BMI</td>
<td>Calculated</td>
</tr>
<tr>
<td>Candidate diabetes status/type at onset</td>
<td>TCR</td>
</tr>
<tr>
<td>Candidate education</td>
<td>TCR</td>
</tr>
<tr>
<td>Candidate ethnicity</td>
<td>TCR</td>
</tr>
<tr>
<td>Candidate race</td>
<td>TCR</td>
</tr>
</tbody>
</table>
Model Elements: Which items are accounted for in the risk adjustment?

Model Elements Table

This table lists the elements included in the risk adjustment model and each element’s data source. For additional information on the data sources, click the Additional Info tab.

<table>
<thead>
<tr>
<th>Element</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candidate age at listing</td>
<td>TCR</td>
</tr>
<tr>
<td>Candidate blood type</td>
<td>TCR</td>
</tr>
<tr>
<td>Candidate has spontaneous bacterial peritonitis</td>
<td>TCR</td>
</tr>
<tr>
<td>Candidate BMI</td>
<td>Calculated</td>
</tr>
<tr>
<td>Candidate diabetes status/type at onset</td>
<td>TCR</td>
</tr>
<tr>
<td>Candidate education</td>
<td>TCR</td>
</tr>
<tr>
<td>Candidate ethnicity</td>
<td>TCR</td>
</tr>
<tr>
<td>Candidate race</td>
<td>TCR</td>
</tr>
</tbody>
</table>
# Model Coefficients

Model Coefficients: Provides the actual statistical model used and the ability to download the file.

## Model Coefficients Table

This table shows the coefficients, from a Poisson survival model, for each level of the risk adjusters included in the model. To better understand the relationship between each element and modeled risk, click on the Model Element Plots tab. Additionally, the estimated effects are accessible by clicking on Download .CSV File.

### Download .CSV File

**Show 25 of entries**

<table>
<thead>
<tr>
<th>Element</th>
<th>Level</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candidate age at listing</td>
<td>Apply to &gt; 45 (Right LS)</td>
<td>0.004130</td>
</tr>
<tr>
<td>Candidate age at listing</td>
<td>Apply to &gt; 60 (Right LS)</td>
<td>0.000000</td>
</tr>
<tr>
<td>Candidate age at listing</td>
<td>Apply to &lt; 30 (Left LS)</td>
<td>0.000000</td>
</tr>
<tr>
<td>Candidate age at listing</td>
<td>Apply to &lt; 60 (Left LS)</td>
<td>-0.007345</td>
</tr>
<tr>
<td>Candidate blood type</td>
<td>A</td>
<td>0.010567</td>
</tr>
</tbody>
</table>
SRTR Waiting List Risk Adjustment Models

Choose a PSR Release Date:

July 2019

Model Element Plots: Shows a graphical representation of how the risk adjustment works.

Model Element Plots

Select a covariate from the model to see the relationship between the covariate and the deceased donor transplant rate.

Select a Covariate to Plot

Candidate blood type

Model Elements  Model Coefficients  Model Element Plots  Baseline Hazard  Additional Info

Organ
- Kidney
- Liver
- Heart
- Lung
- Pancreas
- Intestine
- Simultaneous Heart-Lung

Outcome
- Transplant Rate
- Deceased Donor Transplant Rate
- Waitlist Mortality

Choose an age group:
- Pediatric (<18)
- Adult (18+)

Scientific Registry of Transplant Recipients
For candidate blood type, we see the model expects the transplant rate to be 2.15x higher for AB candidates compared to A or O candidates.
Baseline Hazard: Needed if a statistician would like to use the model.

The waiting list models use a constant baseline hazard.

Model Baseline Hazard = 0.002260
SRTR Waiting List Risk Adjustment Models

Choose a PSR Release Date:
- July 2019

---

Organ
- Kidney
- Liver
- Heart
- Lung
- Pancreas
- Intestine
- Simultaneous Heart-Lung

Outcome
- Transplant Rate
- Deceased Donor Transplant Rate
- Waitlist Mortality

Choose an age group:
- Pediatric (<18)
- Adult (18+)

---

Additional Info: Additional notes about the model.

Additional Model Information

Multi-organ Candidates

The status of waiting for a non-liver transplant is determined by being listed on a non-liver waiting list within 30 days of listing on the liver waiting list. Similarly, the status of having undergone non-liver transplant is determined up to 30 days after placement on the liver waiting list.

Waiting for a heart includes heart and heart-lung listings. Waiting for a kidney-pancreas includes kidney-pancreas and pancreas listings.

The variable for having undergone heart transplant includes heart and heart-lung transplants. The variable for having undergone kidney-pancreas transplant includes kidney-pancreas and pancreas transplants.

MELD (Model for end-stage liver disease)

For candidates listed before implementation of MELD (February 27, 2002), the earliest non-missing MELD value is used. For candidates listed after implementation of MELD, MELD at listing is used.

Data Sources

The Source column in the Model Elements table identifies, if it exists, the location of the variable in the OPTN database. "TCR" corresponds to the Transplant Candidate Registration form. "Status History" variables are typically used in allocation and values may change over time. These are selected in a process similar to the selection of MELD scores, as described above. "Calculated" variables are derived from variables in the TCR or Status History.

Natural-Log Scale
Tools for Programs

Nicholas Salkowski, PhD
Welcome to the new SRTR Secure Website launched on February 20, 2019. If this is your first time logging in to the new site, and you had an active account on the old site, you MUST reactivate your account.

Log In

Enter your email address and password to continue. To keep SRTR secure, passwords expire after 60 days of inactivity.

EMAIL ADDRESS

Password

Forgot your password?

LOG IN

Government Regulations

You are accessing a U.S. Government information system, which includes (1) this computer, (2) this computer network, (3) all computers connected to this network, and (4) all devices and storage media attached to this network or to a computer on this network. This information system is provided for U.S. Government-authorized use only.

Unauthorized or improper use of this system may result in disciplinary action, as well as civil and criminal penalties.

By using this information system, you understand and consent to the following:

- You have no reasonable expectation of privacy regarding any communications or data transiting or stored on this information system. At any time, and for any reason, the National Institutes of Health (NIH) may monitor, intercept, copy, use, disclose, or distribute communications or data transiting or stored on this information system.

SecureSRTR.transplant.hrsa.gov
CUSUMs (cumulative sum) are currently provided for the following metrics:

Posttransplant Graft/Patient Survival  Offer Acceptance
Y-Axis:
Observed – Expected (O-E)

-1 = 1 fewer failure than expected
1 = 1 more graft failure than expected
Trending down: Better than expected rates of failure
Trending up: Worse than expected rates of failure
Accompanying One-Sided CUSUM

Attempts to discern whether the observed trends are “statistically significant” or perhaps just random noise.
Accompanying One-Sided CUSUM

One-Sided CUSUM: All Donor Adult One-Year Graft Failure

Has a red “5% Threshold line at the top of the chart. If the line hits the threshold, we conclude there is sufficient evidence of a real trend.
Accompanying One-Sided CUSUM

It is called the “5% threshold” because there is about a 5% chance of a false positive if the chart hits this line.
Accompanying One-Sided CUSUM

Y-axis is more difficult to interpret (i.e., don’t worry about the value). It is the value of the CUSUM test statistic. Importantly, it is not O-E.
The liver program experienced almost 7 more failures than expected over the three-year period. Is this trend statistically significant?
This chart signaled on 11/4/2016. This is when the chart had accumulated enough evidence that the observed trend was more than statistical noise (with a 5% chance this is a false positive).
Expected Survival Worksheets
### Adult Graft Survival

<table>
<thead>
<tr>
<th>Number of Transplants</th>
<th>454</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed (O)</td>
<td>47</td>
</tr>
<tr>
<td>Expected (E)</td>
<td>40.06</td>
</tr>
</tbody>
</table>

#### Current MPSC Flag Criteria
- Mean Hazard Ratio (HR): 1.17
- Probability HR > 1.20: 39.9%
- Probability HR > 2.50: 0.0%

- Flagged by Standard Criteria: FALSE
- Small Volume Flag: FALSE
- Flagged By Current Criteria: FALSE

#### CMS Criteria
- O - E: 6.94
- O / E: 1.17
- One-Sided P Value: 0.154
- Large Volume Flag: FALSE

### Adult Patient Survival

<table>
<thead>
<tr>
<th>Number of Transplants</th>
<th>439</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed (O)</td>
<td>37</td>
</tr>
<tr>
<td>Expected (E)</td>
<td>29.37</td>
</tr>
</tbody>
</table>

#### Current MPSC Flag Criteria
- Mean Hazard Ratio (HR): 1.24
- Probability HR > 1.20: 56.6%
- Probability HR > 2.50: 0.0%

- Flagged by Standard Criteria: FALSE
- Small Volume Flag: FALSE
- Flagged By Current Criteria: FALSE

#### CMS Criteria
- O - E: 7.63
- O / E: 1.26
- One-Sided P Value: 0.097
<table>
<thead>
<tr>
<th>Include This Patient?</th>
<th>Patient ID</th>
<th>Transplant Date</th>
<th>Graft Failure?</th>
<th>Graft Failure Date</th>
<th>End Follow Up</th>
<th>Follow Up Days</th>
<th>Expected</th>
<th>Observed &amp; Included</th>
<th>Expected &amp; Included</th>
<th>Candidate Candidate Candidate Candidate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-02</td>
<td>0</td>
<td></td>
<td>2016-01-02</td>
<td>365</td>
<td>0.071305</td>
<td>0</td>
<td>0.071305009</td>
<td>0 0 0 0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-01-03</td>
<td>0</td>
<td></td>
<td>2016-01-03</td>
<td>365</td>
<td>0.110962</td>
<td>0</td>
<td>0.110962273</td>
<td>0 0 1</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-01-03</td>
<td>0</td>
<td></td>
<td>2016-01-03</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
<td>0.135009634</td>
<td>0 0 0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-01-08</td>
<td>0</td>
<td></td>
<td>2016-01-08</td>
<td>365</td>
<td>0.09341</td>
<td>0</td>
<td>0.093409637</td>
<td>1 0 0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-01-09</td>
<td>0</td>
<td></td>
<td>2016-01-09</td>
<td>365</td>
<td>0.074871</td>
<td>0</td>
<td>0.07487065</td>
<td>0 0 0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-01-10</td>
<td>0</td>
<td></td>
<td>2016-01-10</td>
<td>365</td>
<td>0.164489</td>
<td>0</td>
<td>0.164489411</td>
<td>0 0 0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-01-10</td>
<td>0</td>
<td></td>
<td>2016-01-10</td>
<td>365</td>
<td>0.101648</td>
<td>0</td>
<td>0.101648251</td>
<td>1 0 0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-01-11</td>
<td>0</td>
<td></td>
<td>2016-01-11</td>
<td>365</td>
<td>0.079115</td>
<td>0</td>
<td>0.079114739</td>
<td>1 0 0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-01-12</td>
<td>0</td>
<td></td>
<td>2016-01-12</td>
<td>365</td>
<td>0.084535</td>
<td>0</td>
<td>0.084534566</td>
<td>0 0 1</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-01-17</td>
<td>0</td>
<td></td>
<td>2016-01-17</td>
<td>365</td>
<td>0.059417</td>
<td>0</td>
<td>0.059416746</td>
<td>0 0 1</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-01-19</td>
<td>0</td>
<td></td>
<td>2016-01-19</td>
<td>365</td>
<td>0.087197</td>
<td>0</td>
<td>0.087197434</td>
<td>0 0 1</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-01-21</td>
<td>1 2018-01-15</td>
<td></td>
<td>2016-01-21</td>
<td>359</td>
<td>0.073983</td>
<td>1</td>
<td>0.07398253</td>
<td>1 0 0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-01-21</td>
<td>0</td>
<td></td>
<td>2016-01-21</td>
<td>365</td>
<td>0.111053</td>
<td>0</td>
<td>0.11105283</td>
<td>1 0 0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-01-23</td>
<td>0</td>
<td></td>
<td>2016-01-23</td>
<td>365</td>
<td>0.107148</td>
<td>0</td>
<td>0.107147508</td>
<td>0 0 0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-01-24</td>
<td>0</td>
<td></td>
<td>2016-01-24</td>
<td>365</td>
<td>0.132924</td>
<td>0</td>
<td>0.13292389</td>
<td>0 0 0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-01-26</td>
<td>0</td>
<td></td>
<td>2016-01-26</td>
<td>365</td>
<td>0.104203</td>
<td>0</td>
<td>0.104202904</td>
<td>1 0 0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-01-30</td>
<td>0</td>
<td></td>
<td>2016-01-30</td>
<td>365</td>
<td>0.092388</td>
<td>0</td>
<td>0.092387834</td>
<td>1 0 0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-02-02</td>
<td>0</td>
<td></td>
<td>2016-02-02</td>
<td>365</td>
<td>0.086283</td>
<td>0</td>
<td>0.086282679</td>
<td>1 0 0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-02-04</td>
<td>0</td>
<td></td>
<td>2016-02-04</td>
<td>365</td>
<td>0.071031</td>
<td>0</td>
<td>0.07103001</td>
<td>1 0 0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-02-05</td>
<td>0</td>
<td></td>
<td>2016-02-05</td>
<td>365</td>
<td>0.069641</td>
<td>0</td>
<td>0.069640959</td>
<td>1 0 0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-02-06</td>
<td>0</td>
<td></td>
<td>2016-02-06</td>
<td>365</td>
<td>0.115234</td>
<td>0</td>
<td>0.115234192</td>
<td>0 0 0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-02-08</td>
<td>0</td>
<td></td>
<td>2016-02-08</td>
<td>365</td>
<td>0.114907</td>
<td>0</td>
<td>0.114907057</td>
<td>1 0 0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-02-08</td>
<td>0</td>
<td></td>
<td>2016-02-08</td>
<td>365</td>
<td>0.058356</td>
<td>0</td>
<td>0.058356495</td>
<td>0 0 0</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2015-02-15</td>
<td>0</td>
<td></td>
<td>2016-02-15</td>
<td>365</td>
<td>0.068472</td>
<td>0</td>
<td>0.068471905</td>
<td>1 0 0</td>
</tr>
</tbody>
</table>
### Subgroup Analyses

Set these to: 0, blank, or FALSE to exclude the patient from the analysis.

<table>
<thead>
<tr>
<th>Patient ID</th>
<th>Transplant Date</th>
<th>Graft Failure?</th>
<th>Graft Failure Date</th>
<th>End Follow Up</th>
<th>Follow Up Days</th>
<th>Expected</th>
<th>Observed &amp; Included</th>
<th>Expected &amp; Included</th>
<th>Candidate</th>
<th>Candidate</th>
<th>Candidate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2015-01-02</td>
<td>0</td>
<td>2016-01-02</td>
<td>365</td>
<td>0.071305</td>
<td>0</td>
<td>0.071305</td>
<td>0.071305</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>2015-01-03</td>
<td>0</td>
<td>2016-01-03</td>
<td>365</td>
<td>0.110962</td>
<td>0</td>
<td>0.110962</td>
<td>0.110962</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>2015-01-03</td>
<td>0</td>
<td>2016-01-03</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
<td>0.13505</td>
<td>0.13505</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>2015-01-08</td>
<td>0</td>
<td>2016-01-08</td>
<td>365</td>
<td>0.093411</td>
<td>0</td>
<td>0.093409</td>
<td>0.093409</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>2015-01-09</td>
<td>0</td>
<td>2016-01-09</td>
<td>365</td>
<td>0.074971</td>
<td>0</td>
<td>0.074970</td>
<td>0.074970</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>2015-01-10</td>
<td>0</td>
<td>2016-01-10</td>
<td>365</td>
<td>0.164489</td>
<td>0</td>
<td>0.164483</td>
<td>0.164483</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>2015-01-10</td>
<td>0</td>
<td>2016-01-10</td>
<td>365</td>
<td>0.101648</td>
<td>0</td>
<td>0.101648</td>
<td>0.101648</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>2015-01-11</td>
<td>0</td>
<td>2016-01-11</td>
<td>365</td>
<td>0.079115</td>
<td>0</td>
<td>0.079114</td>
<td>0.079114</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>2015-01-12</td>
<td>0</td>
<td>2016-01-12</td>
<td>365</td>
<td>0.084535</td>
<td>0</td>
<td>0.084534</td>
<td>0.084534</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>2016-01-17</td>
<td>0</td>
<td>2016-01-17</td>
<td>365</td>
<td>0.059417</td>
<td>0</td>
<td>0.059417</td>
<td>0.059417</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2016-01-19</td>
<td>0</td>
<td>2016-01-19</td>
<td>365</td>
<td>0.087197</td>
<td>0</td>
<td>0.087197</td>
<td>0.087197</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2016-01-21</td>
<td>0</td>
<td>2016-01-21</td>
<td>365</td>
<td>0.073963</td>
<td>1</td>
<td>0.073983</td>
<td>0.073983</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>2016-01-21</td>
<td>0</td>
<td>2016-01-21</td>
<td>365</td>
<td>0.111083</td>
<td>0</td>
<td>0.111083</td>
<td>0.111083</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>2016-01-23</td>
<td>0</td>
<td>2016-01-23</td>
<td>365</td>
<td>0.107148</td>
<td>0</td>
<td>0.107147</td>
<td>0.107147</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>2016-01-24</td>
<td>0</td>
<td>2016-01-24</td>
<td>365</td>
<td>0.132924</td>
<td>0</td>
<td>0.132924</td>
<td>0.132924</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>2016-01-26</td>
<td>0</td>
<td>2016-01-26</td>
<td>365</td>
<td>0.104203</td>
<td>0</td>
<td>0.104202</td>
<td>0.104202</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>2016-01-30</td>
<td>0</td>
<td>2016-01-30</td>
<td>365</td>
<td>0.092388</td>
<td>0</td>
<td>0.092387</td>
<td>0.092387</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>2016-02-02</td>
<td>0</td>
<td>2016-02-02</td>
<td>365</td>
<td>0.086283</td>
<td>0</td>
<td>0.086282</td>
<td>0.086282</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
### Subgroup Analyses

Turn graft failures on/off or edit the dates here.

<table>
<thead>
<tr>
<th>Include This Patient?</th>
<th>Patient ID</th>
<th>Transplant Date</th>
<th>Graft Failure?</th>
<th>Graft Failure Date</th>
<th>End Follow Up</th>
<th>Follow Up Days</th>
<th>Expected &amp; Included</th>
<th>Expected &amp; Included</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-02</td>
<td>0</td>
<td></td>
<td>2016-01-02</td>
<td>365</td>
<td>0.071305</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-03</td>
<td>0</td>
<td></td>
<td>2016-01-03</td>
<td>365</td>
<td>0.110962</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-04</td>
<td>0</td>
<td></td>
<td>2016-01-04</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-05</td>
<td>0</td>
<td></td>
<td>2016-01-05</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-06</td>
<td>0</td>
<td></td>
<td>2016-01-06</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-07</td>
<td>0</td>
<td></td>
<td>2016-01-07</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-08</td>
<td>0</td>
<td></td>
<td>2016-01-08</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-09</td>
<td>0</td>
<td></td>
<td>2016-01-09</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-10</td>
<td>0</td>
<td></td>
<td>2016-01-10</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-11</td>
<td>0</td>
<td></td>
<td>2016-01-11</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-12</td>
<td>0</td>
<td></td>
<td>2016-01-12</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-13</td>
<td>0</td>
<td></td>
<td>2016-01-13</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-14</td>
<td>0</td>
<td></td>
<td>2016-01-14</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-15</td>
<td>0</td>
<td></td>
<td>2016-01-15</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-16</td>
<td>0</td>
<td></td>
<td>2016-01-16</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-17</td>
<td>0</td>
<td></td>
<td>2016-01-17</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-18</td>
<td>0</td>
<td></td>
<td>2016-01-18</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-19</td>
<td>0</td>
<td></td>
<td>2016-01-19</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-20</td>
<td>0</td>
<td></td>
<td>2016-01-20</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-21</td>
<td>0</td>
<td></td>
<td>2016-01-21</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-22</td>
<td>0</td>
<td></td>
<td>2016-01-22</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-23</td>
<td>0</td>
<td></td>
<td>2016-01-23</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-24</td>
<td>0</td>
<td></td>
<td>2016-01-24</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-25</td>
<td>0</td>
<td></td>
<td>2016-01-25</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-26</td>
<td>0</td>
<td></td>
<td>2016-01-26</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-27</td>
<td>0</td>
<td></td>
<td>2016-01-27</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-28</td>
<td>0</td>
<td></td>
<td>2016-01-28</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-29</td>
<td>0</td>
<td></td>
<td>2016-01-29</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-30</td>
<td>0</td>
<td></td>
<td>2016-01-30</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-01-31</td>
<td>0</td>
<td></td>
<td>2016-01-31</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-02-01</td>
<td>0</td>
<td></td>
<td>2016-02-01</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-02-02</td>
<td>0</td>
<td></td>
<td>2016-02-02</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-02-03</td>
<td>0</td>
<td></td>
<td>2016-02-03</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-02-04</td>
<td>0</td>
<td></td>
<td>2016-02-04</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-02-05</td>
<td>0</td>
<td></td>
<td>2016-02-05</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-02-06</td>
<td>0</td>
<td></td>
<td>2016-02-06</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-02-07</td>
<td>0</td>
<td></td>
<td>2016-02-07</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-02-08</td>
<td>0</td>
<td></td>
<td>2016-02-08</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-02-09</td>
<td>0</td>
<td></td>
<td>2016-02-09</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-02-10</td>
<td>0</td>
<td></td>
<td>2016-02-10</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-02-11</td>
<td>0</td>
<td></td>
<td>2016-02-11</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-02-12</td>
<td>0</td>
<td></td>
<td>2016-02-12</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-02-13</td>
<td>0</td>
<td></td>
<td>2016-02-13</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-02-14</td>
<td>0</td>
<td></td>
<td>2016-02-14</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2015-02-15</td>
<td>0</td>
<td></td>
<td>2016-02-15</td>
<td>365</td>
<td>0.13501</td>
<td>0</td>
</tr>
</tbody>
</table>

---

**Scientific Registry of Transplant Recipients (SRTR)**
### Subgroup Analyses

You can add columns to help with subgroup analyses here. Do not add columns in the middle of the data array to the right of this column.
Data tables available monthly with the CUSUM charts!

<table>
<thead>
<tr>
<th>Cohort Age</th>
<th>Type</th>
<th>Interactive CUSUM Charts (Google Vis)</th>
<th>Printable Static CUSUM Charts (PNG)</th>
<th>Data Tables (HTML)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adult</strong></td>
<td>Graft Survival</td>
<td>Go</td>
<td>Go</td>
<td>Go</td>
</tr>
<tr>
<td></td>
<td>Patient Survival</td>
<td>Go</td>
<td>Go</td>
<td>Go</td>
</tr>
<tr>
<td><strong>Pediatric</strong></td>
<td>Graft Survival</td>
<td>Go</td>
<td>Go</td>
<td>Go</td>
</tr>
<tr>
<td></td>
<td>Patient Survival</td>
<td>Go</td>
<td>No Report</td>
<td>No Report</td>
</tr>
<tr>
<td><strong>Adult and Pediatric</strong></td>
<td>Offer Acceptance</td>
<td>Go</td>
<td>No Report</td>
<td>No Report</td>
</tr>
</tbody>
</table>
How to use pretransplant expected workbooks?

Will be covered in detail on Friday by Andrew Wey.
Transplant Epidemiology

Director
Jon Snyder, PhD, MS

Investigators
Allyson Hart, MD, MS
Bertram Kasiske, MD FACP
Ajay Israni, MD MS

Program Manager
Caitlyn Nystedt, MPH PMP

Administrative Assistant
Pamela Giles

Medical Editor
Nan Booth, MSW, MPH, ELS

Biostatisticians
David Zaun, MS
Sally Gustafson, MS
Nicholas Salkowski, PhD
David Schladt, MS
Melissa Skeans, MS
Yoon Son Ahn, MS
Andrew Wey, PhD
Tim Weaver, MS

Marketing & Comm.
Mona Shater, MA
Amy Ketterer

Data Visualization
Matthew Tabaka

Project Managers
Katherine Audette, MS
Michael Conboy, MA
Bryn Thompson, MPH

IT Director
Ryan Follmer

SQL Database Administration
Mark Fredrickson
Patrick Johnson

Software Development & Simulations
Joshua Pyke, PhD
Greta Knefelkamp
Eugene Shteyn, MS

Web Administration
Carl Fils-Aime

Network & Hardware Administration
C. Daniel Sheets
Hilford Ponnie