SRC – AMS Meeting Minutes

Analytical Methods Subcommittee Teleconference

January 23, 2025; 1:00 PM – 2:30 PM CST

Voting Members:
William Parker, MD, MSCP, PhD (co-chair) ('26)
Joel Adler, MD, MPH ('26)
Syed Ali Husain, MD, MPH, MA, FASN ('26)
Erika Helgeson, PhD ('25)
Yong-Fang Kuo, PhD ('27)

Not in attendance:
Jonathan (JD) Daw, PhD ('27)
William (Bill) Irish, PhD ('25)
Megan Neely, PhD ('25)

Ex-Officio:
Grace Lyden, PhD (SRTR staff co-chair)
Rebecca Goff, PhD (UNOS-OPTN)
Jesse Schold, PhD (OPTN-DAC)

Not in attendance:
Adriana Alverez, MS (HRSA)
Brianna Doby, MPH (HRSA)
Shannon Dunne, JD (HRSA)
Sarah Laskey, PhD (HRSA)

SRTR Staff:
Avery Cook, MPH, MSW
Tonya Eberhard
Larry Hunsicker, MD, PhD
Amy Ketterer
Sydney Kletter
Maria Masotti, PhD
Jon Miller, PhD
Jon Snyder, PhD, MS
Nicholas Wood, PhD
David Zaun, MS

Not in attendance:
Allyson Hart, MD, MS
Ryutaro Hirose, MD
Roslyn Mannon, MD, FASN
Mona Shater, MA

Welcome and introductions

Dr. Grace Lyden called the Analytical Methods Subcommittee (AMS) meeting to order. Dr. Lyden introduced herself as the co-chair of the AMS, taking over from Dr. Jon Snyder. Dr. William Parker also introduced himself as a new co-chair of the AMS. Dr. Yong-Fang Kuo introduced herself as the only present new member, and she recapped her experience in health research as a biostatistician. Dr. Lyden reviewed the agenda, reviewed the conflict of interest management guidelines, and proceeded with the first item.

Survival after waitlist removal without transplant

Dr. Maria Masotti initiated the discussion by emphasizing the importance of understanding the survival rates of individuals removed from transplant waiting lists without receiving a transplant, known as delisting. Delisting can occur for reasons such as improvement in condition, deterioration of condition, or other factors like being medically unsuitable. Accurately estimating survival after delisting is crucial for evaluating waitlist mortality, designing medical urgency scores, and making informed decisions regarding transplant allocation. Recent modeling suggests that individuals delisted for deteriorating condition may show improved survival post-delisting, which prompted further investigation into possible causes.

Dr. Masotti explained that the modeling used data from the most recent Scientific Registry of Transplant Recipients (SRTR) database, focusing on adults removed from the transplant waiting lists for heart, kidney, liver, and lung transplants between January 1, 2003, and December 31, 2022. The candidates were categorized into three groups based on the reason for removal: deteriorated condition, improved condition, or other (including those who refused the transplant or could not be contacted). Candidates without an observed death date were assumed to still be alive. The survival probabilities were calculated using Kaplan-Meier methods, with survival estimates stratified by organ type and reason for removal.

The data revealed interesting trends, such as an increase in 1-year survival rates for delisted liver, heart, and lung candidates, particularly after 2015. Dr. Jesse Schold pointed out discrepancies in SRTR data, particularly when patients were removed from single-organ transplant lists but later received multiorgan transplants. Dr. Masotti cross-referenced the data and confirmed that the trends observed were not due to multiorgan transplant occurrences. Further analysis also revealed that death data quality has been impacted since 2011, when access to the full Death Master File (DMF) was restricted.

The discussion shifted to potential causes of the observed survival trends. Dr. Masotti suggested that the number of delistings due to deteriorating condition might not have increased, but rather, the trend in survival improvement could be linked to changes in how deaths were reported. Analyses adjusting for patient characteristics showed a significant decrease in the rate of death since 2010, especially for heart, liver, and lung candidates, but not for kidney candidates. These findings suggested that the survival trends were not entirely explained by changes in patient characteristics.

A major topic of conversation was the incomplete death data, particularly after 2011 when the DMF became restricted. This limitation resulted in the use of less reliable sources, such as obituaries and center-reported deaths, possibly leading to higher survival estimates. Dr. Lyden explained that the Social Security DMF relied on individuals having a Social Security number, limiting its comprehensiveness. Dr. Joel Adler noted that gaps in SRTR's death reporting might be contributing to the observed survival trends.

The group discussed the potential of using additional data sources, such as the National Death Index (NDI), to improve the completeness and accuracy of death reporting. The NDI was noted for its completeness and could be used to audit the current death reporting system. Dr. Masotti proposed conducting an audit to identify NDI deaths for individuals delisted for deteriorated condition who had no recorded death date in SRTR's database. The cost for auditing a sample of around 4,000 individuals was discussed, at less than $4,000. Discussion continued about expanding the audit to include all delisted candidates, including those with death dates in SRTR's database.

Dr. Rebecca Goff, a United Network for Organ Sharing (UNOS) representative, was brought into the discussion when Dr. Lyden asked the committee about requesting that UNOS replicate the findings using OPTN internal data, which would include unverified deaths. Dr. Goff suggested that if this were the determination of the subcommittee, it would be better to take this request to the Data Advisory Committee (DAC) for their evaluation, and the DAC would then approach UNOS.

A vote was held to determine whether to proceed with purchasing and using the NDI death data. The motion overwhelmingly passed, with a friendly amendment by Dr. Parker to include all delisted candidates. Several options were proposed for increasing the scope of the audit and sampling different subsections, such as using each state's health department death data to gather the same data without the 1-year lag that the NDI has. The committee emphasized the importance of improving the robustness of the death data to ensure more accurate waitlist mortality evaluations in the future.

Impact of CMS ESRD data access on kidney graft survival estimates

Dr. Jon Miller addressed the impact of restricted access to the Centers for Medicare & Medicaid Services (CMS) End-Stage Renal Disease (ESRD) data on kidney graft survival estimates. Prior to September 2020, SRTR could use CMS ESRD datasets to validate and augment kidney graft failure data, but this access has since been limited. This change could potentially affect long-term survival estimates for kidney transplants, especially in the development of a new patient-facing, long-term outcome calculator for kidney graft survival, which was slated for release this year. The tool relies on accurate survival estimates, and the loss of CMS ESRD data complicates the process.

Dr. Miller detailed the sources currently used by SRTR for kidney graft failure data, including Organ Procurement and Transplantation Network (OPTN) transplant recipient forms, death data from the Limited Access DMF (LADMF), and an SRTR-internal restricted death master file, and previously CMS CrownWeb data through September 2020. He presented a cohort of kidney transplants from April 2, 2009, to September 30, 2020, and highlighted the impact of missing CMS ESRD data. Out of 215,116 kidney transplants, 49,041 graft failures were identified, with 8.6% of graft failure dates changing when CMS ESRD data were included. The median difference in graft failure dates was 109 days, and without the ESRD medical evidence, 1,043 graft failures were missed, though some of these were captured by other data sources after the censoring date of September 30, 2020.

A Kaplan-Meier comparison was conducted to evaluate how survival rates differed with and without CMS ESRD data. The analysis showed minimal differences in short-term outcomes, with 1-year survival rates being the same (93.7%) whether CMS ESRD data were included or not. However, at the 7-year mark, survival without CMS ESRD data was slightly higher (70.4%) compared to survival with CMS ESRD data (69.6%). These results suggest that while the restricted access to CMS ESRD data does impact long-term outcomes, the effect is small.

The conclusion drawn from the analysis was that the restricted access to CMS ESRD data could lead to slight overestimates of long-term kidney graft survival, particularly for dialysis-free graft survival. Dr. Miller recommended that SRTR re-establish access to CMS ESRD data to prevent misclassification of graft survival and failure and to improve the accuracy of long-term outcome estimates. The committee acknowledged the need to be transparent in the long-term outcome application about the limitations in the data and to ensure the public-facing information is clear regarding potential overestimations.

The group then moved to a vote on including a note in the long-term outcome application, indicating that dialysis-free graft survival might be slightly overestimated due to the restricted access to CMS

ESRD data. The motion was approved by Drs. Adler, Husain, Helgeson, and Kuo, with a friendly amendment proposed by Dr. Parker to also analyze different subgroups to determine if the difference in survival rates was larger in particular patient groups.

Historical priors for Bayesian program evaluations

Dr. Lyden presented an overview of SRTR's program metrics, which are published twice a year and compare observed outcomes to expected outcomes based on patient and donor characteristics. The metrics are tiered on the SRTR website, and the statistical approach uses a Bayesian framework with a gamma (2,2) prior to calculate the observed-to-expected ratio. The posterior distribution is then used to determine the program's rate ratio. This method is effective for larger programs, but smaller programs, such as pediatric ones or those that have fewer events (for example, graft failures), may struggle to obtain top-tier rankings due to wider posterior distributions and fewer data.

The current method of assigning program tiers is influenced by the gamma (2,2) prior, which pulls programs toward a mean of 1, indicating expected performance. However, Dr. Lyden pointed out that smaller programs with fewer events face difficulty achieving top-tier rankings, as the prior is more influential for them. She proposed changing the prior to a historical approach, where past observed and expected events (from non-overlapping cycles) would be factored into the calculations. This would create a posterior distribution based on both current and past data.

The proposed historical prior would help programs that have consistently performed well over time, potentially allowing smaller programs that have "proven" themselves to be ranked higher. This change would move smaller programs out of the middle tier and into outer tiers based on their historical performance, although medium and large programs could also shift tiers. However, Dr. Lyden also noted that this could limit programs based on past performance.

The committee discussed the implications of this proposed change. Dr. Larry Hunsicker suggested that the subcommittee should not decide whether the new method should be implemented, but rather, determine if the approach is correct and should be presented to the full SRTR Review Committee (SRC) for approval. Dr. Kuo supported the idea of using historical data but raised concerns about defining the expected timeframe for events. Dr. Parker proposed making the historical data prior "flatter" to strike a balance between pulling small programs toward expected (current method) and pulling them toward their past performance (historical prior). Dr. Adler expressed support for the idea and emphasized the importance of finding a middle ground. Dr. Lyden added that this proposal is being submitted as an abstract to the World Transplant Congress (WTC).

Closing business

Dr. Lyden thanked members for the robust discussion. With no other business being heard, the meeting concluded. The next AMS meeting is scheduled for April 23, 2025, at 10:00 AM CST.