2020 TMF Abstracts

Category 2- QAPI & Safety

ABSTRACT C2-A

LIVING DONOR ENHANCED RECOVERY AFTER SURGERY (ERAS) PATHWAY

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Purpose: Standardized approach focusing on ensuring adequate hydration and proper pain management leads to better patient outcomes. Prior to implementing a standardized perioperative care approach, patient length of stay and outcomes were variable with increased length of stays directly related to increased episodes of constipation post-operatively. In January of 2019, we developed a standard pathway for living donor kidney transplant patients.

Method: A standard protocol was developed and approved by the transplant protocol committee. This interdisciplinary committee consists of transplant nurses, social work, pharmacy, nutrition, transplant surgeons and transplant nephrologists. Once approved, the protocol was implemented. Data monitoring would focus on length of stay (LOS). A shorter length of stay can be associated with decreased number of post-operative complications, while a longer LOS can be associated with increased number of post-operative complications. LOS data was collected quarterly prior to, during and after protocol implementation.

Results: The protocol was implemented in January 2019. The two main goals of protocol implementation were: 1. Ensure adequate hydration pre-operatively, intra-operatively and post-operatively. Adequate levels of hydration prevent common post-operative complications such as constipation, hypotension and decreased urine output; 2. Ensure adequate pain control with limited use of narcotics. Limited narcotic use will help to prevent post-operative constipation and over sedation. Adequate pain control also allows patients to ambulate earlier, cough and deep breathe more effectively preventing the many complications of immobility post-operatively. Prior to implementation the average length of stay was 2.75 days (FY18 data). Q1 of FY 19 LOS was 3 days. Immediately following implementation (Feb 2019 – Oct 2019) the average LOS was decreased to 2.125 days.

Conclusion: Implementation of the standard pathway has led to a decrease length of stay in the living donor population. Data is being collected to determine whether specific complications have also decreased. The standard pathway and associated interventions are addressed for completion during daily multidisciplinary rounds that occur on the inpatient unit.

Implications/Relevance: Implementation of this standard of care aligned and directly met our QAPI living donor program goal. Implementation ensures that patients are receiving standard based care that allows for quality outcomes as evidence by a decrease in the length of stay.

Justine Gliesman, RN, MSN, CMSRN; Joyce Fiorentino BSN, CCTC, CNN; Donna Feinstein RN, BSN, MM

ABSTRACT C2-B

STANDARDIZED SEROLOGY SURVEILLANCE FOR RECIPIENTS OF INCREASED RISK DONOR ORGANS

Theresa Garcia, MSN, Cleveland Clinic Transplant Center, Cleveland, Ohio

Purpose/ Problem:

Use of increased risk donor organ (IRDO) is an accepted practice in the transplant field and expands the donor pool. The Public health and Safety Guidelines (PHS) recommends specific serology surveillance for these recipients who receive this type of organs. OPTN has included reporting of serology surveillance results in the Transplant follow-up form up to 1 year post transplant follow-up of recipients with an IRDO. While each of our transplant program (heart, lung, liver, kidney, pancreas and intestine) has a protocol on serology surveillance for recipients of IRDO, we noted a wide variability in practice and compliance. Variations were evident when completing the 6 month and 1 year OPTN Transplant Recipient Follow-up forms of these transplant recipients.

Under the guidance of our Transplant Infectious Disease Physician a Care Pathway for Increased Risk Donor transplantation, serology surveillance monitoring was developed. The care pathway was intended to standardize surveillance across all transplant programs.

Methods: With the approval of Program Directors from each of the Transplant programs the care pathway was implemented. It called for surveillance just prior to (24 hours) transplant to establish baseline, at 1 month (up to 3) and 12 (+/- 2) months post- transplant.
To evaluate each program's compliance with the care path, patient cohort was defined (all patients for each program who is receiving or received an increased risk donor organ). Compliance was tracked by reviewing lab results fed into the transplant database or direct review of the patient's EMR. Compliance was measured for each time points (prior to transplantation, at 1-3 months and between 10-14 months post transplantation). We used scorecards to report and analyze the trend of each program's compliance.

Pre- transplant serology surveillance was audited immediately after transplantation. Data coordinators are provided with an automated patient list report of those due for compliance audit for each month (sample report available). To assist the programs in identifying patients due for the 1 and 12 months serology surveillance, an automated patient list report was provided every 2 weeks (sample report available) in advanced of the maximum due date. EMR order set was created to ensure that all recommended lab tests are drawn.
Understanding that this is a safety concern we aimed for 100% compliance. A baseline compliance measurement was done 3 months post-care pathway implementation. Baseline results are below:
Quarter 4 2017

Program	At Transplant	1-3 Months Post	10-14 months Post
Heart	0%	100%	0%
Lung	25%	45%	66%
Liver	100%	75%	75%
Kidney	0%	0%	40%
Pancreas	NA	100%	NA
Intestine	NA	NA	NA

Results: The care pathway was implemented quarter 4 of 2017. Month after month improvement with each transplant program was noted. Serology surveillance just prior to transplant has markedly improved. Data submitted on serology results for the 6 months and 1 year TIEDI TRF have become more consistent and standardized. "Not Done" response has become very few and far in between.

2019 (through November) compliance with Serology Care Pathway results

Program	At Transplant % (N)	1-3 Months Post % (N)	10-14 months Post % (N)
Heart	95% (20)	95% (19)	95% (20)
Lung	92% (40)	92% (37)	95% (22)
Liver	85% (46)	90% (42)	85% (41)
Kidney	83% (55)	89% (63)	83% (39)
Pancreas	NA	NA	NA
Intestine	NA	NA	100% (1)

2018 results also available

Conclusion:
Use of a care pathway across the transplant center has standardized serology surveillance screening for all of our transplant programs. A well- defined and standardized surveillance pathway is conducive not only for the expected benefit of early detection of sero-conversion and timely intervention but also for standardized data reporting. Our surveillance yielded 1 early catch, treatment and resolution for the patient. Serology results availability for TIEDI TRF submission now standardized and markedly improved. It allowed for a systematic and standardized compliance monitoring and sharing of best practices form improvement among the programs.

Theresa Garcia, MSN, Tiffany Buda MSN, Renee Bennett MSN

ABSTRACT C2-C

POST TRANSPLANT HYPERGLYCEMIA: A ROOT CAUSE ANALYSIS

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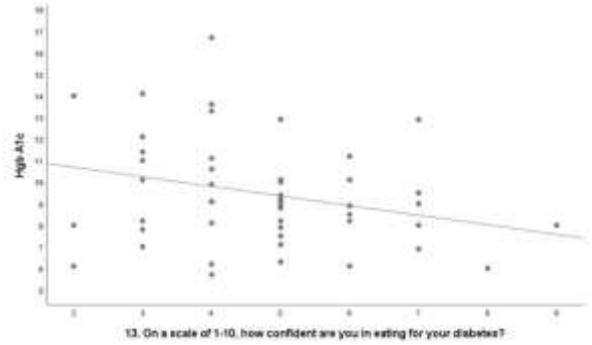
Problem: As a leading cause of delayed graft function and cardiovascular disease, chronic hyperglycemia is a growing problem in the post-transplant clinical course. Whether related to uncontrolled diabetes prior to transplant or new-onset glycemic dysfunction after transplant, it is prudent to assess root causes and develop standards of care to reduce associated risks. Renal patients are at especially high risk for development of post-transplant glycemic dysfunction with up to 74% of recipients developing this complication. Low health literacy also contributes to poorer long term outcomes in chronic disease. Identifying and addressing patient-reported deficits in understanding regarding glycemic control in renal disease will contribute to waitlist readiness and improved post-transplant outcomes.

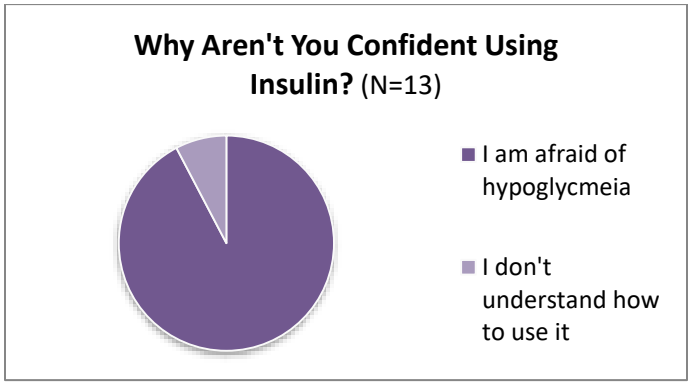
Methods: Renal patients with diabetes receiving care in a metropolitan safety net hospital were provided a 20-question survey. Patients were in varying phases of renal disease; from CKD 3 (GFR 30-59 mL/min^3) related to IgA nephropathy, hypertension (HTN) or diabetes (DM), to pre-transplant end-stage renal disease (ESRD) patients receiving renal replacement therapy (RRT), and post-transplant patients with established immunosuppression regimens. Survey questions were aimed at determining patient understanding of and compliance with their current diabetes treatment regimen. Surveys were administered to the patient during the office visit. Registered Dietitian collected the pre-questionnaire responses and later the post response after discharge from the visit. All data was collected anonymously and entered into a excel data sheet for analysis. The zip code, HgbA1c, insulin type and months since last A1c result was collected by the Registered Dietitian for each patient during the visit. Average A1c was compared with years since DM diagnosis. In addition, understanding of basic lifestyle changes such as timing and compilation of meals was assessed. Patient confidence in their knowledge regarding eating for diabetes and renal disease was also assessed before and after a clinic visit with a Registered Dietitian (RD) specializing in renal nutrition. Questionnaire was summarized with counts and percent following skip patterns identified. The patient confidence scale was compared before and after clinic visit with a paired T-test. The comparisons between years since DM diagnosis used a Chi-square test for categorical variables and a T-test for continuous variables. All statistical tests used a statistical significance level less than 0.05. SPSS was used to perform the statistical analysis.

Findings: Participants had a mean A1c of 9.5% (6.1-16.7). Of the 50 participants, 8 (16%) had an A1c in recommended ranges, or <7.0%, while 18 participants (36%) had an A1c >10%. In general, patients with lower self-reported pre-visit confidence in eating for glycemic control had a higher A1c (Pearson correlation -0.29; p=0.045). Of the 45 participants using insulin, 19 (42%) reported skipping insulin, with a majority (92%) reporting fear of hypoglycemia as the reason (p<0.01). Inconsistent food intake was also common, with 72% of patients reporting skipping meals (p=0.02). A majority (72%) of the patients using 70/30 reported not eating 3 meals daily (p=0.54). Most of these participants (75%) stated they did not know 3 meals are recommended when using 70/30. When asked what diet changes to make for glycemic control, only 17% of respondents knew to limit carbohydrate and eat consistently. Other reported strategies included eating less fat, drinking Gatorade and using honey in place of sugar. After a visit with a Registered Dietitian, participants reported increased confidence in eating for diabetes (p<0.01). Interestingly, although 78% of the participants lived in zip codes with greatest socioeconomic disparities (5), just 3 (6%) reported not having adequate resources to eat well for their conditions.

Conclusion: Findings emphasize patient understanding as a strong predictor of outcomes regarding glycemic control. A patient-centered, multidisciplinary approach is needed when targeting glycemic control in transplant patients with renal disease and diabetes. Patients with low health literacy receiving care in large health systems may have difficulty navigating the system and reaching out for help. Clear communication and congruent messaging from all providers will reduce risk for confusion. Despite prescription of effective treatment regimens, poor understanding of said regimen negates opportunity for improvement. This becomes even more imperative in the transplant population, where inherent risk for glycemic dysfunction exists and directly impacts transplant outcomes. Additionally, helping patients establish effective habits prior to transplant will not only contribute to waitlist readiness, but also reduce risk for complications after transplant. Findings confirm this is especially true with messaging regarding eating for multiple chronic diseases. A Registered Dietitian should provide education to patients and providers to increase patient confidence and promote congruence in message. Teach back is a vital strategy to ensure the intended message is received and understood. Further research is needed, particularly in metropolitan safety net hospitals, in impact of messaging and patient attitudes on glycemic control trends in renal transplant patients, especially in relation to food intake. This information will be vital to inform processes and protocols, in the hopes of improving waitlist readiness and post-transplant outcomes.

Rachel Trammell, MS, RD, CSR, LD and L. Steven Brown, MS, CPH





ABSTRACT C2-D

MULTIDISCIPLINARY RESPONSE TO DONOR ABO DISCREPANCY-RELATED ADVERSE EVENT

Victoria Hunter, BSN, RN-C, CCTC, Nebraska Medicine, Omaha, Nebraska

Problem: Potential organ donors are screened for hemodilution using Food and Drug Administration-approved algorithms to recognize potential false-negative infectious disease marker (IDM) tests. Organs from donors that meet hemodilution criteria are classified as increased risk for transmission of infectious diseases. However, assessment of hemodilution is not uniformly applied to non-infectious testing including ABO determination.

Practice: ABO determination is performed using two methods, forward and reverse typing. Like IDM tests, reverse typing identifies antibodies in a donor's serum (anti-A or anti-B), and may be falsely negative due to hemodilution following large volume infusion with either crystalloids or colloids. In contrast, forward ABO determination uses commercial antisera to identify whether donor specimens contain red blood cells (RBCs) with A and/or B sugars on their surface. Forward testing can also be influenced by hemodilution in donors who are transfused with large amounts of O-blood (if the donor is non-O). Current practice does not distinguish between blood product and other intravenous fluids as a source of hemodilution. Though massive blood transfusion of Type O-RBCs is known to result in an ABO discrepancy in subsequent testing, there are no widely accepted practices to assess hemodilution for ABO typing in the setting of organ donation.

Findings: We experienced a case of ABO discrepancy after massive blood transfusion resulting in hyperacute rejection and allograft loss. The donor was a 51 female blood group A, as determined by pretransfusion blood group testing. Prior to organ allocation, she received 21 units of type O packed RBCs within a 24-hour period and progressed to brain death. When authorization for organ donation was obtained, two hemodiluted and one non-hemodiluted samples were run for blood typing. The ABO report resulted as forward O, reverse A discrepancy. Allocation match runs were generated with O blood type. Both kidneys and the liver were recovered. The right kidney was allocated within the local center to a blood type O recipient and within 6 hours developed hyperacute rejection and graft loss. The left kidney was allocated to a nonlocal zero mismatch blood type A recipient, who fared well. The local liver recipient, also blood type O, was treated with plasma exchanges and usual immunosuppression and maintained good graft function.

Conclusion/Relevance: ABO discrepancy following blood transfusion is a rare event which can result in catastrophic outcomes. Hemodilution assessment should be applied to ABO typing, especially when no pre-transfusion specimen is available. Following this event, a formal root-cause analysis was convened involving the OPO, transplant hospital, and transfusion medicine team. Through this collaborative effort, specific guidelines were formalized for donor ABO assignment in the presence of discrepant base-typing. Our guidelines now recommend consultation with transfusion medicine when ABO discrepancy is suspected, and the OPO staff reviews any available donor records for pre-transfusion specimens. If the discrepancy cannot be resolved, a match run sequence with the more restrictive blood type is used for allocation. We have used this ABO discrepancy event as an opportunity for joint process improvement between the OPO and the transplant hospital. Efforts should be made to standardize these practices as organ sharing revisions will result in hospitals and OPOs working more frequently with new partners outside of historic Donor Service Area boundaries.

Victoria Hunter, BSN, RN-C, CCTC, Arika Hoffman MD, Sue Miller RN, CCTC, Scott Koepsell MD, PhD, Clifford Miles MD, Nebraska Medicine, Omaha, Nebraska, Kyle Herber, Live On Nebraska.

ABSTRACT C2-E

LIVER TRANSPLANT (LT) WAITLIST MANAGEMENT & IMPROVEMENT OF MORTALITY ON THE LIST

Zeynep Tulu, MS, MEMP, CSSBB, Stanford Health Care, Palo Alto, CA

Problem/situation:
All patients evaluated for LT are listed with the goal of receiving a transplant. Our center's December 2017 liver transplant SRTR report showed that our observed waitlist mortality rate was 11.8 per 100 person years (ppy), higher than the expected of 11.4/ppy and higher than our OPO rate of 11.7/ppy. Our program, one of the high waitlist volume programs with ~500 patients on the list, completed a study, reviewed mortality on the waiting list and also waitlist attrition, including reasons for removals. It was noted that at the time, number one reason for removal from the list was for reasons due to death/ too sick, and transplantation was the second reason for removal.

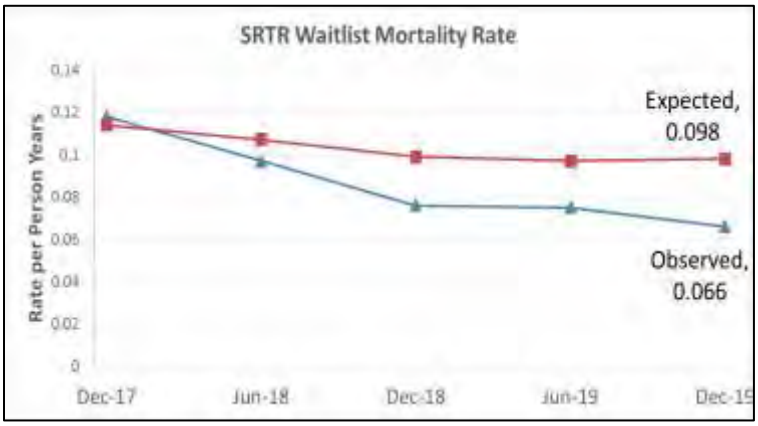
Methods/Practices/Interventions:
Initially, we reviewed the MELD scores of the patients removed for death/too sick reasons. Surprisingly, one third of the patients had low (<20) MELD scores. We completed chart reviews to understand causes resulting in undesired outcomes. The following factors were identified as contributing factors: 1. access, 2. patient management and regular check-ins, especially for those patients followed at outreach clinics; candidacy reassessment, follow-ups and 3. clinical factors, such as stroke, deconditioning/frailty, or diabetes. To increase access, the program implemented a new NP clinic. To improve patient management and follow-up, standard work was developed for outreach clinics, and standardized documentation was created; clinic schedules and after visit summaries were shared with nurse coordinators for greater effectiveness in patient care coordination. To ensure all patients, including low MELD patients are being contacted and updated labs are being received, the program manager implemented a visual management system to track progress. In addition, the program developed a protocol, requiring low MELD patients to be seen in clinic at a minimum of every 6 months, alternating between hepatology and internal medicine. During these clinics, the program also focused on health maintenance and candidacy reassessment through collaboration with internal medicine.

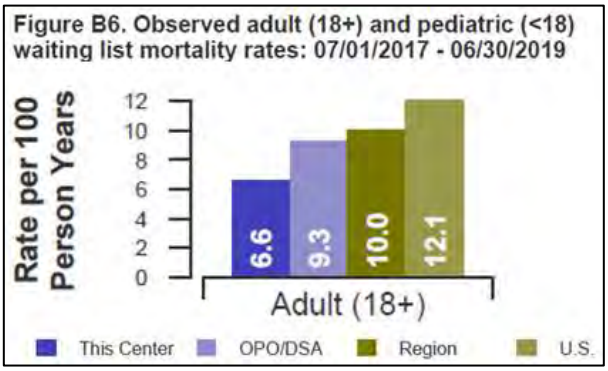
Findings/Solutions/Conclusions:
Program has monitored N and % of expired MELD scores as a process metric. While at the beginning, 24% of the ~500 patients (mostly inactive and lower MELD scores) had expired MELD scores, after implementation of the various interventions, currently, only 5% of the patients have expired MELD scores, actively being tracked on the manager's viz board.

The outcome metrics include:

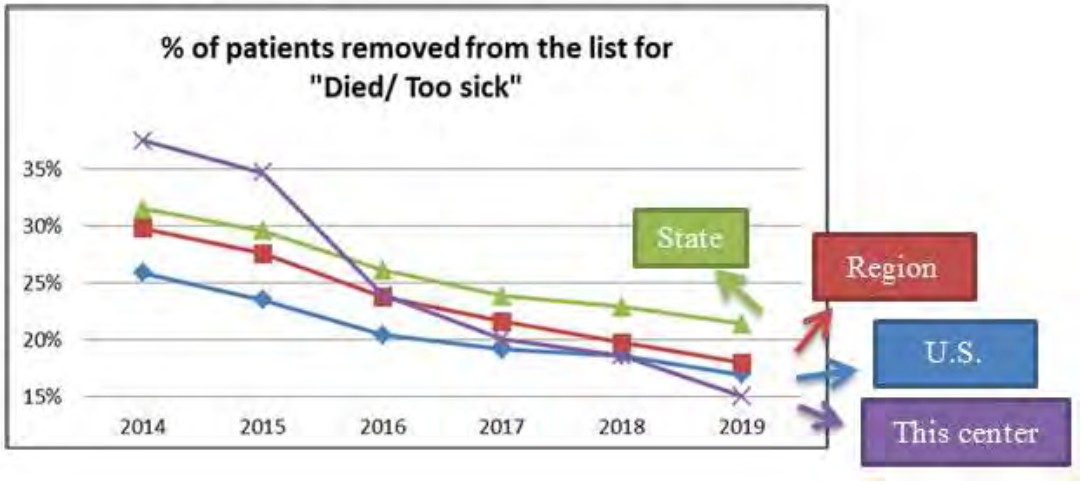
1. SRTR waitlist mortality

Our program's observed waitlist mortality has improved steadily over the years, as noted in the run chart below, and SRTR's comparison chart from the most recent SRTR report, December 2019.





2. Waitlist attrition, internally defined as % of patients removed due to death/too sick: At the beginning of this project, this center's attrition rate was higher than other programs in our State, in same Region and in the US. Program's attrition rate improved steadily over the years, and improved from highest to lowest in the last two years, as seen in the chart below. Also, as desired, #1 reason from removal has changed from death/too sick to transplantation.



Phase	% of patients removed due to death / too sick	#1 reason for WL removal
"Before"	36.5%	Death/too sick
2018	18%	Transplant
2019	15%	Transplant

4. **Implications/Relevance/Learnings:**

Effective waitlist management strategies are essential to maintain a healthy list, to confirm candidacy and ensure patient readiness for transplant. Program's quality initiative resulted in interventions that enhanced waitlist management strategies and significantly improved waitlist attrition and mortality rate. Program has achieved the lowest mortality rate over the last 5 years that is also better than the OPO, Region and US rates.

Zeynep Tulu, MS, Lupe Hogan, RN, Waldo Concepcion, MD, Aijaz Ahmed, MD,
Andy Bonham, MD, Amy Gallo, MD, Marc Melcher, MD, Paul Kwo, MD, Carlos Esquivel, MD

ABSTRACT C2-F

IMPROVING HEART TRANSPLANT PATIENT SURVIVAL OUTCOMES

- A COMPREHENSIVE & MULTIDISCIPLINARY APPROACH-

Zeynep Tulu, MS, MEMP, CSSBB, Stanford Health Care, Palo Alto, CA

Problem/situation:
Our center's observed one year survival after heart transplant in the Scientific Registry of Transplant Recipients (SRTR) January 2018 and July 2018 public reports was lower than expected 87% vs 91%, respectively. The January 2018 & July 2018 report cohorts included patients transplanted in 2016, 2017 and 2017.

Methods/Practices/Interventions:
The heart transplant QAPI program completed root cause analysis (RCA) for each patient death within 1 year. RCAs focused on clinical factors for recipients and donors, as well as processes. In addition, pre-transplant, transplant, post-transplant and donor data were collected and analyzed, comparing those who were alive at one year compared to those who died prior to one year.

Pre-transplant process and data review revealed opportunities in patient selection and waitlist management.

- Pre-transplant frailty was identified as a risk factor for our patients. To address this, our physical therapy and nutrition teams collaborated, developed and implemented a pre-transplant frailty assessment during evaluation. After successful implementation, this initiative has been expanded and is now performed a minimum of every 3 months while the patient is listed for transplant.
- In addition, many of the patients who died were urgently listed. As a result, we developed specific urgent listing criteria and processes such that any urgent listing requires a meeting with minimum quorum and supporting documentation.

Transplant process and data review revealed that post-transplant nutrition management, especially for hemodynamically unstable patients was not optimized.

- Transplant nutritionists, in collaboration with the surgical quality chair and CTICU director, developed and implemented nutrition guidelines for hemodynamically unstable heart transplant patients in the ICU. After successful implementation and monitoring for a 3-month period, which demonstrated a significant decline in the rate of feeding related complications, the entire CTICU has adopted these protocols.

Post-transplant process and data review demonstrated a need for more regular follow-up of our listed patients

- The program established high-risk patient surveillance program. High-risk criteria were defined. Reasons for being high-risk were not only medical, but also included social and financial factors. The medical director established a process to conduct a weekly interdisciplinary review to discuss high risk post-transplant patients and develop monitoring and treatment plans.

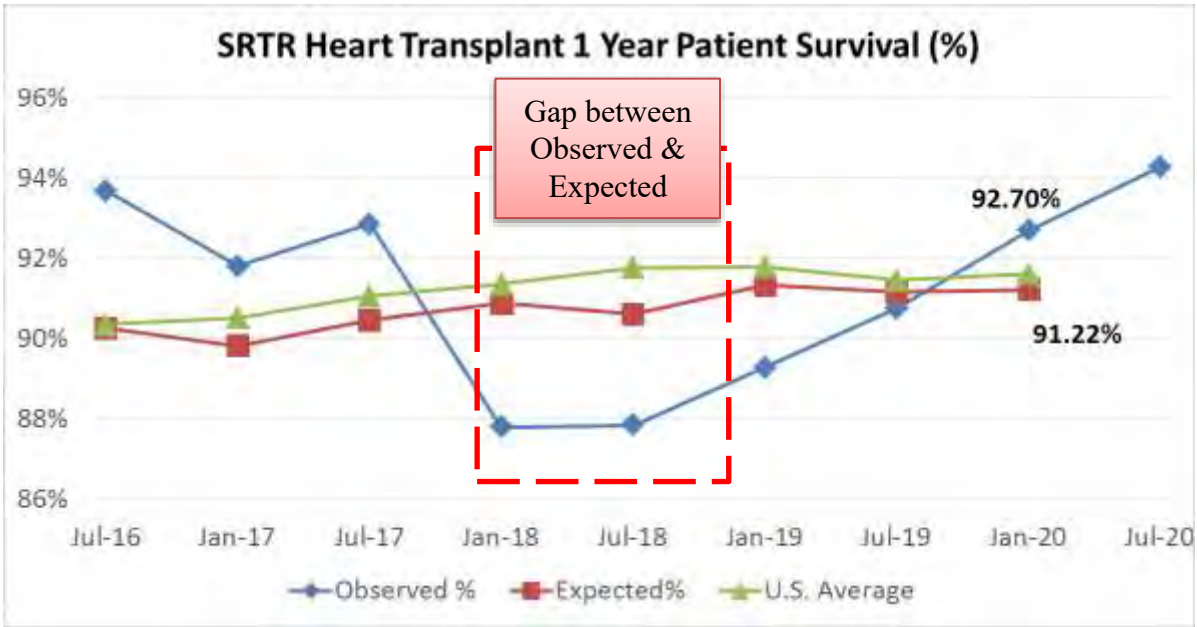
UNet data accuracy and SRTR expected outcomes calculation were also reviewed during this time period.

- The program manager created a checklist with data definitions and sources and trained the nurse coordinators to use the checklist to ensure all pertinent data was captured. In addition, the program manager created and utilized a report directly from the electronic health record containing accurate source data for UNet data entry and increased efficiency and effectiveness.

Lastly, the program manager audited each form submitted to database until 95%+ accuracy has been achieved constantly for a period of 3 months.

Findings/Solutions/Conclusions:

Since implementation of the interventions in 2017 and 2018, the program's post-transplant survival has improved. According to the most recent January 2020 SRTR report, which includes transplants between July 2016 and December 2018, our 1 year observed survival is now higher the SRTR expected (Figure 1). Although the follow-up for the July 2020 SRTR report is still ongoing, our projected survival will improved even further.



Implications/Relevance/Learnings:

A thorough RCA process and a data driven QAPI program identified actionable factors to improve patient survival after heart transplantation. These factors were used to implement and develop several successful interventions and a subsequent improvement in patient survival. To sustain these outcomes, a number of ongoing processed have been initiated: 1. Annual review of all RCA correct action plans by the program quality council 2. Development of a QAPI dashboard to include metrics that have been identified as root causes/contributing factors and metrics monitoring outcomes and; 3. Auditing of UNet Tiedi forms by the program manager bi-annually to ensure accurate data submission. Improvement and sustainment efforts have resulted in successful results and enhanced patient outcomes.

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Ranna Modir, RD, Leanna Tu, RD, H. Packard, RN, P. Oyer, MD

ABSTRACT C2-G

IMPROVING THE KIDNEY TRANSPLANT RECIPIENT SELECTION PROCESS

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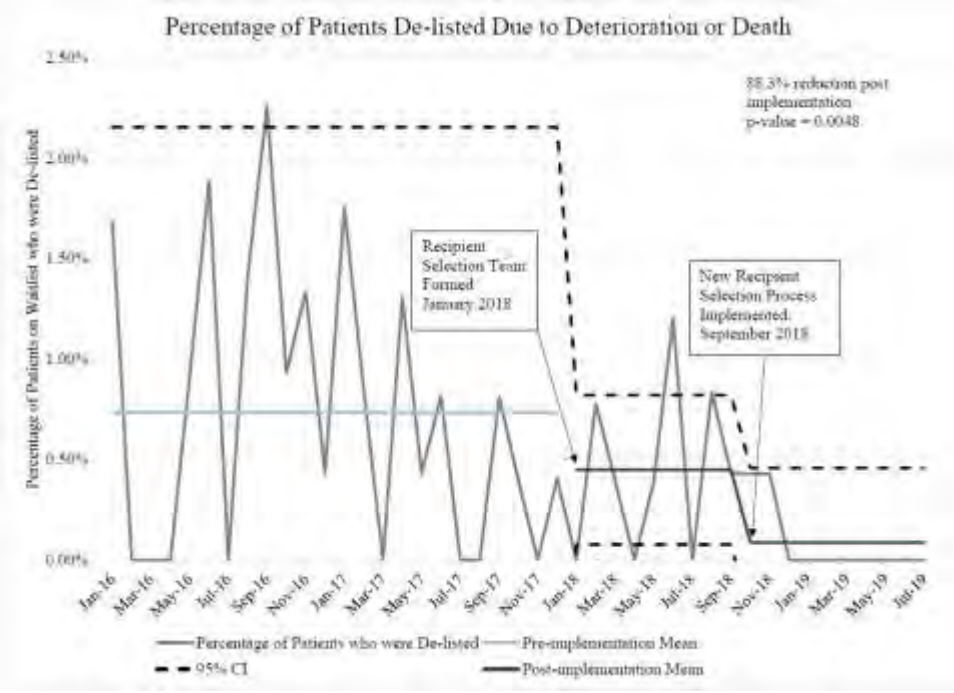
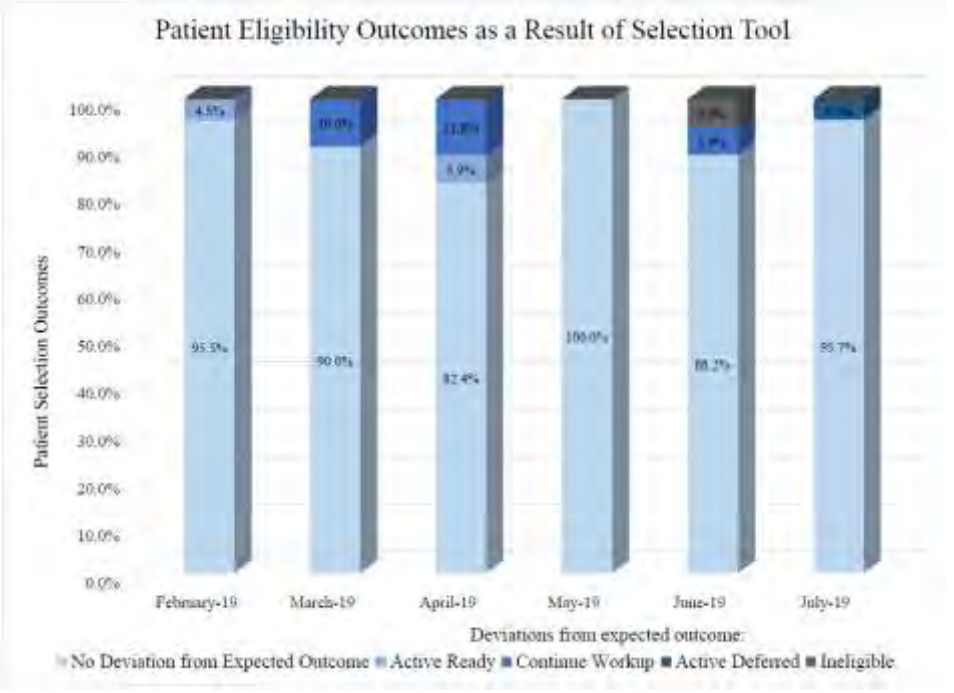
Problem: Determining eligibility for kidney transplantation is an intricate process requiring comprehensive testing, medical and psychosocial evaluations from a vast multi-disciplinary team. These patients often have multiple, complex co-morbidities further complicating their evaluation process. The communication of accurate and timely clinical information is crucial to effectively determine whether a patient is an appropriate candidate. In order to improve patient outcomes, this Kidney Transplant department initiated efforts to increase interdisciplinary collaboration and engagement in the patient selection process and improve the efficacy of the information used to determine a patient's eligibility.

Methods: We evaluated the selection team's perceptions of the current process's effectiveness and value of their contribution to the final decision regarding patient eligibility prior to and after implementation of selection tool. We assembled a multidisciplinary team to improve the current process for patient selection. After reviewing 1 year and 3 year outcome data we identified key opportunities for improvement. The team utilized best practices and incorporated required evaluation elements into the development of a comprehensive medical and psychosocial Patient Selection Tool. Our patient evaluation process includes Nurse Practitioner or Physician Assistant review prior to patient presentation to the multidisciplinary team. Further enhancements include the development of a transplant specific frailty assessment tool. This evaluation tool was trialed at recipient selection meetings. The team instituted a program requirement for all patients to have a completed Patient Selection Tool prior to being presented for selection meeting.

Findings: These process changes and development of these tools improved accuracy of relevant clinical information needed for patient assessment. The transplant department reported enhanced interdisciplinary engagement in selection process. Staff survey results improved overall by 32.08%. Noteworthy survey improvements were: staff perceptions of the quality of the clinical information necessary to determine a patient's eligibility for transplantation. Improved by 45.8%. Most significantly, the team observed a decreased percentage of patients de-listed due to clinical deterioration or death by 88.3% Repeated measures ANOVA to assess significance (p-value= 0.0048). This new process accurately tracks the eligibility outcomes of patients who are presented for selection. Between February 2019 – July 2019: 115 patients were presented for selection. 11 patients were determined to have a different eligibility status than the status that the transplant coordinator initially proposed at Patient Selection meeting. Incorporating key stake holders in the development of a selection tool was essential to the creation of an effective tool and process. Surveying staff for feedback on the selection process and suggestions for improvements fostered staff engagement in the implementation of the new selection process. A continuous effort to re-evaluate current processes and identify opportunities is needed to sustain improved trends. Monthly review of patient selection outcomes allows team to evaluate process on a continuous basis.

Implications: This tool has enhanced the safety and efficiency of our process for evaluating patients by tracking all standard testing, outcomes and any additional needs that are often identified. These modifications have significantly improved the accuracy and quality of the information presented and discussed at our patient selection meetings resulting in a population of patients who are truly optimized for transplant. This approach proves that a multidisciplinary effort is fundamental to creating a culture of safety where all individuals are focused on maintaining excellence in patient care. Lastly, this work is a needed contribution to the gap in available evidence based frailty assessment tools specific to kidney transplant patients.





Mary Cassidy RN CCTC, Amanda Fortuna MPH, Dawn Francisquini MSN RN CCTC

ABSTRACT C2-H

DATA QUALITY IMPROVEMENT: ONE CANNOT MAKE BRICKS WITHOUT CLAY

Kimberly Uccellini, MS, MPH, United Network for Organ Sharing, Richmond, VA

PROBLEM: There are over 20,000 official Organ Procurement and Transplant Network (OPTN) data elements. Such volume, submitted from a variety of sources, can cause data inconsistencies that need to be identified and addressed to avoid decisions made based upon incorrect information.

These data are used for organ allocation, policy development, compliance monitoring, performance evaluation and improvement and to answer research questions. The expectation is that OPTN members will submit accurate data upon entry and subsequently perform quality checks prior to data submission. The expectation of data quality assurance has led some members to question whether the submission timeframes should be extended, and point to the lack of a singular requirement for timely data submission as a problem. They also point out the ability of members to change data indefinitely after submission and the high volume of changed data as reasons to question the data's accuracy and integrity.

Finally, data element definitions exist within Help Documentation in UNet^{sm}; however, definition content is not routinely revised, nor structured consistently. Therefore, data may not be entered consistently by members.

INTERVENTIONS: A new Data Governance (DG) department at the United Network for Organ Sharing (UNOS) is responsible for facilitating and coordinating decisions regarding how data are created, collected, processed and manipulated, stored, made available for use, or retired. The OPTN Data Advisory Committee (DAC) has been designated an operating committee of the Board of Directors tasked with overseeing changes to OPTN data. UNOS DG and the DAC collaborated to employ a three-part approach to improve data quality and integrity:

- ***Policy:*** Data governance defines and aligns rules. The DAC sponsored a policy proposal modifying *Policy 18 Data Submission Requirements* in the fall 2019 public comment cycle. This proposal established a single set of data submission deadlines, provided additional time to perform data quality assurance of data prior to submission, and instituted a process members must follow to make data changes.
- ***Process:*** Data governance seeks to resolve issues. A more robust data definition process was developed to ensure definitions are consistently and systematically updated. Requests to clarify a data definition can be made by member or internal UNOS staff. A definition goes through several rounds of review by subject matter experts before a final updated definition is published in Help documentation and a notice is sent to members.
- ***Tools:*** Finally, data governance monitors compliance while providing support to data stakeholders. As part of the modifications of *Policy 18 Data Submission Requirements*, existing tools available in the UNet Data Services portal were refined to help members identify issues prior to submission, and new Data Services portal tools created to provide members with a comparison of their own data quality versus aggregated data quality measures of all members.

FINDINGS: While the impact of the changes to *Policy 18 Data Submission Requirements* have not yet been assessed, UNOS DG and Research have monitored awareness and usefulness of the data definition process and the data portal.

TMF and AOPO conference attendees were surveyed in May and June 2019, respectively. Participants were asked to voluntarily provide feedback regarding clarifications to the data definition process. Fifty-two percent (n=27) of respondents indicated the data clarifications were useful for them and their jobs. Sixty percent (n=31) of respondents have read the clarified definitions in member communications. Sixty-three percent (n=33) of respondents know how to submit a question regarding data definitions.

Figure 1: Voluntary survey responses gauging awareness of clarifications to UNet field definitions

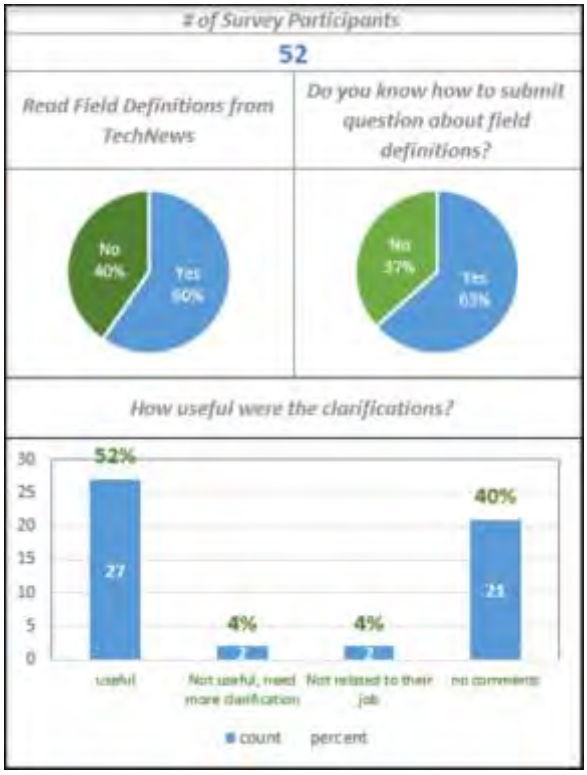
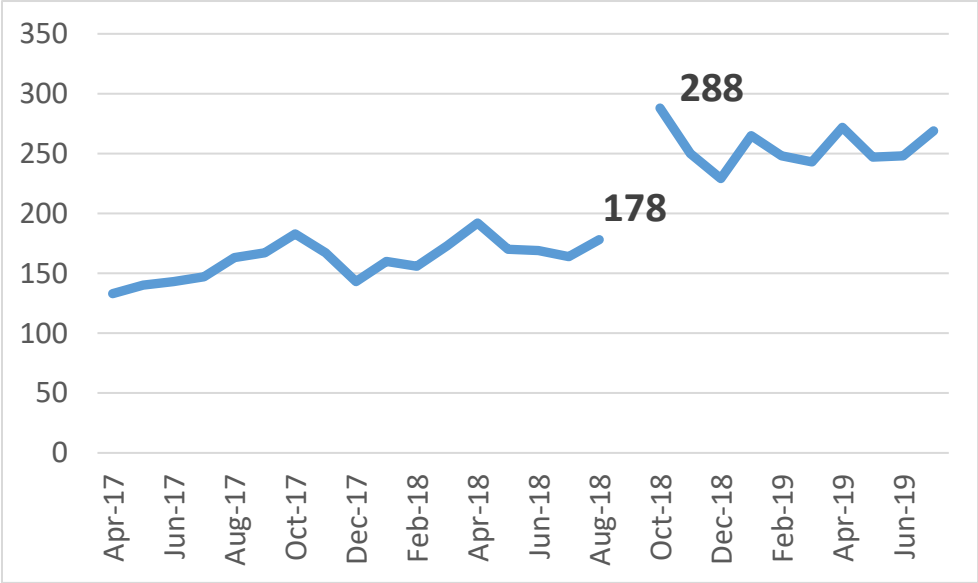


Figure 2: Unique Centers and OPOs Accessing Data Services Portal Each Month: April, 2017-July, 2019



IMPLICATIONS/RELEVANCE: The quality of healthcare data impacts every decision made along the patient care continuum. As OPTN data are used for organ allocation, policy development, compliance monitoring, performance evaluation and improvement and to answer research questions, it is essential that members act as data stewards to help improve data integrity. UNOS DG and the DAC will continue to support efforts to improve the quality of OPTN data.

Kimberly Uccellini, MS, MPH

ABSTRACT C2-I

EARLY EXTUBATION IN LIVER TRANSPLANT PATIENTS

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Problem/Situation: Early extubation, defined as removal of the endotracheal tube in the operating room (OR) immediately after surgery, has been shown to contribute to a shorter, less complex post-operative course for liver transplant patients. A recognition was made that more liver transplant patients were appropriate candidates for early extubation at our transplant center. This opportunity would improve the quality of care by decreasing Intensive Care Unit (ICU) and post-transplant hospital length of stay (LOS) while also providing cost savings and increased bed availability for the transfer and admission of other critically ill patients.

Evaluation: Baseline ICU and post-transplant LOS data for 2017 liver transplant patients (N=50) at our center revealed a mean length of stay in the ICU of 3.5 days and post-transplant length of stay of 10 days. A comparison was made to provide background through the Scientific Registry for Transplant Recipients (SRTR) and Vizient Top 10 liver transplant centers by volume for 2017. The SRTR data revealed median time in the hospital after transplant to be 9 days for all transplant centers in the United States. The Vizient comparison group revealed a mean ICU LOS of 7 days.

Interventions: No standardized protocol was in place at our transplant center for early extubation of liver transplant patients. A "Liver Transplant Early Extubation Guidelines and Reference" document was created after an extensive literature review in collaboration with surgical leadership of the transplant center, liver transplant anesthesia and the operating room. The guideline ensured consistency and established parameters for safe, early extubation of liver transplant patients and provided a tool for the multi-disciplinary team to reach a collaborative decision for early extubation. Early extubations in liver transplant recipients increased to 58% in 2018 and 81% in the first half of 2019, a striking increase from the baseline of 6% of early extubations in 2017. We then compared the following outcomes: ICU LOS, post-transplant LOS, Model for End Stage Liver Disease (MELD) score at time of transplant and the direct medical costs of liver transplant recipients that were extubated in the OR between 1/1/2018 and 6/30/2019 versus those recipients that were not extubated in the OR in the same time period.

Results:

Table 1. Comparison of outcomes between liver transplant recipients that were extubated in the OR to those not extubated in the OR.

Liver transplant cohort 1/1/2018-6/30/2019 *	Extubated in the OR Mean (SD) N=88	Not extubated in the OR Mean (SD) N=47	P value
Lab MELD at time of offer	21.7 (9.8)	28.6 (11.5)	<0.001
LOS in the ICU, days	2.1 (2.3)	4.2 (6.3)	0.003
Total post-transplant LOS, days	5.8 (3.4)	11.2 (13.4)	<0.001
Direct cost $, mean (SD)	143,789 (29,425)	191,867 (88,387)	<0.001
Direct cost $, median ($25^{th}$ %, 75^{th} %)	133,584 (126,541, 156920)	168,438 (139331, 213483)	<0.001

* Multi-organ transplant and re-transplant patients were excluded from the data collection.

Conclusions: Early extubation of liver transplant patients at our transplant center led to noteworthy decrease in the ICU and post-transplant LOS. There were no post-operative respiratory complications or re-intubations in the patient population. A median direct cost savings of $34,854 per case was achieved and over 250 patient bed days were freed for backfill patients. In conclusion, we found that protocolizing clinical practice has shown to help drive process improvement and improve communication between the multi-disciplinary teams.

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