2020 TMF Abstracts

Category 3- Clinical, Operations & Innovations

ABSTRACT C3-A

HARNESS THE POWER OF TRANSPLANT/OPO DATA AND PREPARE FOR THE FUTURE

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Problem

Transplant centers are overwhelmed with data. While all healthcare is dealing with data overload, transplant centers are uniquely challenged:

- 1. Transplant has lots of moving parts. We often follow pre-transplant patients for years and posttransplant patients for the rest of their lives. We follow them when they are in-patient and outpatient. We have a team of transplant staff dedicated to monitoring these patients and saving lots of data about them every step of their transplant journey.
- 2. Transplant data location is fragmented and no one source has a majority of transplant data. Some examples of where data is located are EMR, Transplant Specific Programs, Patient Experience surveys, Adverse Events Database, Patient Risk Scoring, Billing Programs, Time Clock, Time Studies, Employee Assessments, Quality Projects, UNOS/SRTR Data, etc.
- 3. Transplant administrators and clinicians need timely and accurate data to make optimal decisions.
- 4. The Centers for Medicare & Medicaid Services (CMS) Condition of Participation § 482.96 requires that transplant centers have a data-driven Quality Assurance and Performance Improvement (QAPI) program to monitor to monitor & evaluate performance of all transplantation services. CMS COP §486.348 requires Organ Procurement Organizations (OPO's) to have a data-driven QAPI program.

Method

We looked at service industries outside of healthcare that have learned to successfully handle large amounts of data (retail such as Amazon and Walmart, hospitality such as Marriott, and internet publishing such as Facebook). Looking at extremely large companies helps highlight how their use of data has contributed to their success.

Two factors stood out on how they were not only able to manage large amounts of data but how they actually used the data and leveraged it as a big part of what made them successful.

- 1. They built data warehouses to understand the data. There are also Data Lakes, Data Marts, etc. The key is to consolidate data in one place to make it easier to analyze. The data warehouse collects and manages data from varied sources to provide meaningful insights.
- 2. They automated data to the extent possible. Automation is one of the major forces that has led most industries to increased productivity. Healthcare can join other industries in benefiting from this area of automation.

Solution

We chose to implement the 2 key findings of building a data warehouse and automating data as much as possible. We are fortunate to have a team member who not only has data experience in transplant and OPO's but also has experience in providing data solutions for several other industries. They were able to apply best practices from other industries to our data challenges.

Step 1 - Create the data warehouse. The following diagram illustrates our data warehouse.



Step 2 - Since all the updated data is being pulled into the data warehouse, we can easily use that data to automate events such as triggers, alerts, real-time dashboards, live regulatory reminders, etc.

Relevance

Data warehouses and data automation can help any transplant center or OPO turn the problem of being overwhelmed by data into a strength by leveraging data into a strategic information advantage. They are inexpensive and technically not difficult to build or maintain. Tools like SQL, Excel, and Tableau can create a basic system. Transplant is complex with many moving parts and making decisions without having the full panorama of data is less than optimal. These tools provide the right information in real-time so we can make the best operational, tactical, and strategic decisions. The data warehouse provides the right information and data automaton makes sure that it is real-time information.

The future is arriving quickly for transplant centers and OPO's with Artificial Intelligence (A.I.) and machine learning. Living donor paired exchanges are already using A.I. and the complexity of transplant will certainly be tackled by advances in machine learning soon. If your transplant center doesn't have a data warehouse and doesn't use data automation it will not be able to benefit from the upcoming advances in technology.

Authors: John Files, BS and Jaison Abraham, BS

ABSTRACT C3-B

AN OPO EXPERIENCE IN DETERMINING A RELIABLE WAY TO CAPTURE ALL KIDNEY ANATOMICAL ERRORS AND DETERMINE AN ACCURATE ERROR RATE

Kimberly Koontz, MPH; Alan Farney, MD; Tim Stapleton

Purpose: This project was a prospective study done at one Organ Procurement Organization (OPO) that began on January 1, 2019. The purpose of the study was to investigate whether errors in kidney anatomy were under reported or incorrect.

Method: A kata board was used to identify the challenge and current condition for the direction of the project.

Focus Process:	Chal	hers ge:
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The OPO staff reviewed the current condition with one of the local transplant surgeons. During the review, several challenges were identified:

- There is no standard way of documenting (staff variations)
- Tools are not readily available
- Staff are not empowered to question the surgeon
- Surgeons are not communicating when there is an error
- The process to report anatomical variations and/or surgical damage was difficult and inconsistent

A PDCA (Plan, Do, Check, Act) cycle was used to address continuous improvements in the processes and to help form the target condition.

- 1. Reviewed the anatomy form to ensure that all needed information was available and that the form was clear.
- 2. Standardize the kidney anatomy time out so that it is completed based on the form (Left to Right).
- 3. Following each local donor at this OPO, where a kidney was transplanted locally, the transplanting surgeon was contacted by CDS staff to determine whether the anatomy was as reported.
- 4. Complete an anatomy verification
- 5. Review for challenges and opportunities.

<u>Results</u>: During the 2 month study cycle (Jan 1, 2019 – Feb 28, 2019), 57 local kidney allocations were completed. The OPO staff obtained feedback on 52 of those cases for a 91% response rate. In 47 of the 57 cases, kidney anatomy was reported accurately for an 82% accuracy rate. Any variations that were reported were not anatomical variations but were surgical damage.

The PDCA confirmed that the process of reporting surgical damage was an obstacle. The issue was presented at a Kidney Utilization review meeting where the completion of a survey was discussed with the four local transplant programs. The surgeons recommended a survey that would be emailed at the completion of allocation for the feedback to be timely and easily recalled. The survey included:

- UNOS and laterality of organ received
- Was the anatomy as expected?
- Was the organ preservation as expected?
- Was the allocation process as expected?
- Was the communication as expected?
- Was the transportation as expected?

The OPO began the survey email on April 4, 2019. From 4/4/19-5/19/19, this OPO sent 26 links via email, 6 were completed and returned for a 23% response rate. At the next utilization review, the feedback form data was reviewed, where it was discovered that when utilizing survey software, surgeons were only allowed to complete the survey once. The OPO built the survey as a web link on their website and began emailing the new link on June 11, 2019. Following creating the link, the OPO sent instructions on adding the link as an app on their phone on July 19, 2019.

Anatomy Feedback Survey response rates						
June response Rate 13%						
July response Rate	38%					
August response Rate	50%					
September response rate	35%					

Additional information gained from the survey through 9/30/2019 was 4 cases of unreported surgical damage, an issue with a biopsy slide, 1 allocation issue, and 1 communication issue. The information also lead to the development and tracking of accurate surgical error rates.



Future Considerations: As there is broader sharing, this OPO will need to consider embedding the survey link into a QR code to be sent with the organ.

Kimberly Koontz, MPH

ABSTRACT C3-C

EVOLUTION OF A TRANSITION TO ADULT CARE PROGRAM

Megan Bisek, MA, Children's Hospital Colorado, Aurora, CO

Problem: Adolescence and young adulthood is a high-risk period for transplant recipients. The combination of poor medication adherence, neurocognitive dysfunction, social and family adjustments and increased responsibility lead to increased rejection, graft failure and utilization of Emergency Department resources. Without preparation through education and structured interventions, most patients do not transition smoothly to adult transplant care.



Transplantation. 2011 Dec 15; 92(11):1237-43

Interventions:

Our center implemented a multidisciplinary transition to adult care program to improve graft and patient outcomes for our young adult patients. Initially, the program began with an annual transitions seminar which included a day of integrated clinic visits with both pediatric and adult transplant providers, psychosocial support for both parents and teens with sessions led by transplant psychologists, an insurance and medication adherence overview and a tour of the adult transplant facility.

As the program further developed, additional interventions beginning at the age of 14 and at least oneyear post-transplant included readiness assessment and education during clinic visits, collaboration and patient follow up with adult providers and a transitions outreach program that included social events for young adults and families. After feedback from the "transition champions", young adult transplant recipients who successfully moved to adult care, education about legal substances (THC and alcohol), reproductive health and safe over the counter medications were added to the seminar curriculum. The transition champions also provided valuable insight which guided overall content for the program.



Results:

Graft and patient outcomes were assessed longitudinally over one year following transition to adult care. Those that participated in the transition seminar experienced decreased rejection and graft loss and had fewer days between the last pediatric appointment and first adult appointment.

	Transition Group N=10	Non-Transition Group N=12	р
Rejection	0 (0%)	6 (50%)	0.009
Mean days (SD) between Peds to	106 (59)	132 (144)	0.1
Adult Appointment			
Graft loss	0	2 (16.7%)	0.005

As the program evolved to include outreach events, education and assessment during clinic visits and additional collaboration with adult providers, data collected at the transition day seminar indicated 31/33 (94%) reported feeling "very satisfied" or "satisfied" overall with the event and 22/33 (67%) reported feeling "much more" or "more" prepared to transition to adult care.

Implications:

We realized the importance of reaching young adult patients on many different levels – during clinic visits, through peers at outreach events and with the assistance of adult providers. Feedback from transition champions was very valuable and it will be important to continue their involvement in the program.

Authors: Mary Chandran, PharmD, <u>Megan Bisek, MA</u>, Margret Bock, MD, Adrianne Sikora, BSN, Elizabeth Steinberg, PhD

ABSTRACT C3-D

THE JOURNEY HOME FOLLOWING LIVER TRANSPLANTATION: TOOLS FOR SUCCESSFUL DISCHARGE PLANNING

Rebecca Rengering, MSN, RN, CPN Cincinnati Children's Hospital Medical Center, Cincinnati, OH

Problem/situation: Implementing tools for successful discharge planning has resulted in a significant decrease in length of stay following liver transplant. Scientific Registry for Transplant Recipients (SRTR) ranks hospital performance related to length of stay following transplantation. Our center was ranked as having one of the highest median lengths of stays compared to 16 other pediatric liver transplant programs. Our center is a moderately large pediatric transplant program, performing an average of 20-25 liver transplants annually. In May 2019, our median length of stay for the last 10 rolling transplant recipients was 27 days. Having an extended length of stay can negatively impact patient outcomes and health care costs associated with health care delivery. We developed two clinical tools to standardize the discharge planning process with the goal to improve the clinical team's awareness of discharge readiness and guide the patient/family along the journey to home. The tools developed included a rounding tool tracking the patient's progress in meeting necessary milestones required for discharge and a patient pathway providing a visual path for patients and families toward discharge.

Methods/Practices/Interventions: For this project, the Model for Improvement by Langley et al was utilized to develop a theory for improvement using a key driver diagram as the structure. The key drivers that were identified were:

- a. Transparent process
- b. Seamless communication
- c. Patient and family engagement
- d. Consistent Information
- e. Available Feedback
- f. Clear Expectations and Goals

The following interventions resulted from these drivers and through testing by the group through PDSA cycling.

- a. Created a patient pathway as a visual to guide patients and families along the journey towards home.
- b. Created an inpatient rounding communication tool to improve consistency and accuracy of information related to discharge readiness organized by 4 phases of milestone achievement.

- c. Developed a process for implementing both tools.
- d. Updated the patient pathway based on immediate patient/family trial and feedback.
- e. Updated clinical rounding tool based on feasibility testing.

Findings/Solutions/Conclusions: Through team collaboration and testing of various interventions and processes, the median length of stay following liver transplantation was reduced from a median of 20 days to 13 days.



Implications/Relevance: State the implications/relevance of the findings/solutions to the award

category selected

- a. Increased operational efficiency of the liver transplant program by eliminating communication barriers and standardizing the discharge process.
- b. Decreased health care costs by shorter length of stay.
- c. Decreased median length of stay
- d. Increased patient and family engagement

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ABSTRACT C3-E

THE DEVELOPMENT AND IMPLEMENTATION OF AN INTERDISCIPLINARY PEDIATRIC TRANSPLANT PATIENT & CAREGIVER GROUP

Katherine K. Bedard-Thomas, Ph.D., Cincinnati Children's Hospital Medical Center, Cincinnati, OH

Purpose: Although some view solid-organ transplantation as a cure, transplantation is more accurately understood as a trade of a life-limiting condition for a chronic condition. Transplant is accompanied by a high level of medical monitoring and life-long adherence that is required to prolong the health of the grafted organ and maintain overall patient health and wellbeing. In addition, patients and their families are at risk for not only difficulties with maintaining this life-long adherence, but also potential psychosocial difficulties. Research has shown the crucial need for psychosocial support for solid organ transplant patients and their families throughout the transplant process in order to assist with adjustment, anxiety, depression, learning difficulties, adherence, socialization, trauma responses, and other additional psychosocial concerns that may arise throughout the lifespan. Although extensive psychosocial support is provided throughout inpatient and outpatient transplant-related encounters at this large free-standing children's hospital, two primary gaps were identified 1) opportunities for individuals with a shared experience of solid organ transplant to connect, and 2) curriculum to support developmentally appropriate knowledge about solid organ transplant for patients as they age. An interdisciplinary team of psychosocial providers came together to address this gap through developing the Solid Organ Transplant: Peers, Relationships, Education, Support, Socialization (SOT PRESS) group.

Method: The interdisciplinary psychosocial care team included clinicians from psychology, social work, and child life. These professionals collaborated to design a quarterly outpatient group intended for pediatric patients currently listed for, or who have received, a solid organ transplant and their caregivers. An 8-session curriculum was developed for patient groups in order to guide learning about transplant, socialization, and processing of experiences. Attendees were divided up into 4 groups: 8-12 yrs, 13-16 yrs, 17 yrs and older, and caregivers. Group facilitators planned each session utilizing the curriculum as a guide and developmentally appropriate techniques to encourage participation, learning, and relationship building. Facilitators of the caregiver group prepared prompts to help initiate conversation and encourage healthy group dynamics, as well as provided basic information about what their children would be learning in their group session to allow opportunity for questions, concerns, and general discussion. Each session was advertised through email correspondence, promotion on social media, and direct communication with patients and families during healthcare encounters. The groups took place on a weekday evening and started with a shared meal with all attendees followed by smaller breakout groups. At the conclusion of the group, patients and caregivers were reunited and group facilitators provided brief explanations to caregivers about the topics covered to encourage continued conversation at home. A survey was given to all attendees to gather feedback on each session.

Results: Thus far, a total number of 41 unique individuals have attended group across two sessions (15 patients; 26 family members/caregivers). Attendees represented all solid organ groups transplanted at the hospital (13 liver; 13 kidney, 9 heart, 3 lung, 2 multivisceral, and 1 multiorgan), varying times since transplantation (range = pre-transplant to 19 years; median = 4 years; mean = 50 .79 months), patient ages

(range = 8 to 31 years; median = 13), and distance they live from the hospital (mean = 21 miles). Surveys given to attendees included both multiple choice and open-ended questions regarding why they attended, most helpful aspects of the group, ratings of their experience, and how to improve the group. Feedback from the first two support groups was overwhelmingly positive with average ratings of overall experience a 4.9 on a Likert scale ranging from 1) Very Negative to 5) Very Positive. Of those who responded to the survey, it was discovered that the majority of caregivers noted the most helpful aspect of the group was to feel connected (95% of response rate) and meet other parents of children with similar conditions (95%). Whereas, the majority of patients noted the most helpful aspects of the group were to meet others with similar conditions (73% of response rate), to feel connected (64%), and share their story (55%). Additionally, following positive feedback from the first session, the second session was increased in length from 1.5 hours to 2 hours due to attendees wanting more time. After the first session, surveys were slightly modified for the youngest age group in order to better match developmental level.

Conclusions: Though a newly established endeavor, SOT PRESS has thus far shown itself to be a muchappreciated addition to attendees' transplant experiences through providing opportunities for pediatric patients and their caregivers to connect with others. The plan is to continue collaboration between psychosocial disciplines and solid organ transplant teams, as well as assess attendee feedback, in order to build and maintain a group setting that meets the unique needs of these patients and their families. The overall goals remain to continue encouraging connection through shared experiences, while also increasing developmentally appropriate information about transplantation and, ideally, having a positive impact on overall health and wellbeing.

<u>Katherine Bedard-Thomas, PhD;</u> Nicole Tanghe, MA, CCLS; Tiffany Rybak, PhD; Kathryn Yoder, MSW, LSW; Kelsey Loftus, BS, CCLS; Dana Bakula, MS; Kelly Range, MEd, CCLS; Alexa Morrison, CCLS, and Carly Coz, MSW, LSW.

ABSTRACT C3-F

CONNECTING TWO LUNGS: IMPLEMENTATION OF TELEHEALTH TECHNOLOGY TO MEET PRE-TRANSPLANT PATIENT EDUCATION NEEDS

Daniel Miller MHA, BSN, RN. Hospital of the University of Pennsylvania, Philadelphia, PA.

Problem and Situation:

Patient and caregivers are required to undergo organ specific transplant education during their evaluation for transplant candidacy. In this single center experience, patients and support people are required to attend onsite education before placement on the transplant waiting list. Transplant nurse coordinators have identified logistical challenges to meeting this requirement often result in patient dissatisfaction and delayed time to wait listing. HIPPA compliant technology has been leveraged to fill this gap in care by delivering patient education in a video conferencing format. Through telehealth activities, our organization has pursued performance improvement strategies focused on increasing accessibility for patient and caregivers by reducing travel burden for those coming from afar.

Methods and Intervention:

Professional guidance was provided by institutional Connected Health services. With their assistance connected health, innovative telehealth strategies using audio video conferencing software (Vidyo) was utilized to connect distant learners (learner) to transplant nurse coordinator (educator) through live virtual support education class that aimed to supplement our current patient education model.

The scope of the project initially limited to pre transplant ambulatory evaluation patients. Participants were invited to participate in the online education through email invitation. Classes were led by a nurse coordinator in the evening once a month in attempt to attract those who have conflicts during standard operating business hours. Content of the class focused on relevant transplant topics such as evaluation testing, transplant wait list, donor criteria, and post-transplant care. Afterwards, post education surveys were emailed to the participants for the intent of measuring the level of satisfaction with method delivery and accessibility.

Results and Findings:

The virtual telehealth education class pilot took place over 22 months and has educated 124 total (37 patients and 87 caregivers). The median participation was 5.6 individuals per class. Of those whom have participated in the online class and completed the post education class survey 83.4% have rated their overall satisfaction 4-5 out of 5. Furthermore, online surveys, they expressed much pleasure with mode of delivery, device used, and other technical aspects of using the online software application.

Implications and Conclusion:

Telehealth has been identified as an integral aspect of the strategic plan and delivery of transplant services. The performance improvement project confirms the added value of online patient and caregiver education in meeting the gap in care for distant learners. These activities support the transplant program's alignment with regulatory requirements, and informed consent, and the imperative of delivering patient and family centered care. The pilot project continues its work by bringing education to distant learners and has served as an example for other interdisciplinary telehealth education and support endeavors. Further study will focus on expanding the current education delivery model to include multidisciplinary material, content, and provider appointments.

Daniel Miller MHA, BS, BSN, RN; Liz Deleener, MBA, BSN, RN; Nancy P. Blumenthal, DNP, ACNP-BC, CCTC; Kate Ventura, MSN, RN, ACNS-BC

ABSTRACT C3-G

EASE OF DONOR SURVEY LEADS TO MORE LIVING KIDNEY DONATIONS

Christina Karapelou, DNP, APRN-BC, RN, Jackson Memorial Hospital, Miami Transplant Institute, Miami, FL

Problem: The living donor team has experienced a decreased number of living donor transplants. Additionally, there was lack of follow-up with donor screenings due to staff inefficiencies.

Methods: This project utilized the lean six sigma approach to review the current living kidney donor (LKD) evaluation. A multidisciplinary team was assembled including the transplant clinical assistants, transplant nurse coordinators, transplant administration, and a transplant nephrologist. The team started with a root cause analysis to identify opportunities for improvement in the donor evaluation process. The fishbone diagram (Figure 1) highlights the six major areas that were reviewed including: referral, chart management, donor clinic, selection, communication, and day of surgery.

Findings/Solutions/Conclusions: A root cause analysis (Figure 1) revealed that there were inefficiencies in several aspects of the donor evaluation process. As a multidisciplinary team, all opportunities were correlated with degree of difficulty for implementation and degree of impact. The biggest impact to increase volume was determined to be the referral process. The crux of the issue within the referral process was management of the initial LKD survey. The backlog of work from this initial screening process transmitted into delays later in the evaluation process and lead to donor drop out and/or loss to follow-up. This was validated by quality data that had a large number of referrals and a number of referrals with no identified end-reason. The institution changed their paper screening process into a website driven screening tool that allowed for transparent processes and the monitoring of cycle times. This allowed for identification of time periods in which the team was struggling to follow processes (i.e. staff on vacation) which provided an opportunity to intervene.

Through the use of this tool, the team acknowledgement of the survey and RN screening cycle times considerably improved (Figures 3 & 4). Team acknowledgement improved from a median of 168 hours to 18 hours. The RN screening time improved from 408 hours to 25 hours. This saved over 334 hours of time for the LKD team throughout the year. Most importantly, there was an association between the implementation of this new tool and the average number of transplants completed. The number of living donor transplants significantly increased from an average of 5.06 to 7.64 per month (p-value 0.003).

Implications/Relevance: Utilizing the new LKD electronic screening tool created transparency of processes that trickled into other areas of the LKD evaluation. This allowed for the manager to more directly oversee the operations of the team with the ability to troubleshoot in real time. The capacity to track donor cycle time also permitted management to justify current staffing, as during times of low staffing, cycle times were significantly impacted. Cycle time is a respected measure of business efficiency that can be translated to the healthcare setting and proved to be substantially impacted by changing a paper process to a website driven process. This allowed for the capture of definitive moment in time that the client entered the healthcare system, followed by a few other key time points. Other areas of transplant such as recipient referrals and living liver donor referrals could potentially benefit from a similar process. Additional research is needed to determine a gold standard for measuring healthcare system efficiency. Further investigations could be completed to ascertain the impact that this process had on client and staff satisfaction.

Christina Karapelou, DNP, APRN-BC, RN, Meghan Muldoon, MPH, CPHQ

Figure 1.

Root Cause Analysis



Figure 2.



Figure 3.



Figure 4.



ABSTRACT C3-H

EFFECTIVE TRANSITION OF TRANSPLANTED PATIENTS BACK TO COMMUNITY PROVIDERS Amy Harshman – Associate nurse manager, kidney acquisition – Jackson Memorial Hospital – Miami, FL

Problem: Our center is one of the largest kidney transplant programs in the country who has historically managed all aspects of post-transplant care throughout the lifespan of the allograft. With this model, we found that demand for resources heavily outweighed the supply of expert transplant coordinators. Further, we were unable to accommodate patients for frequent visits and found that our resources were predominantly being used for primary care management in patients who were transplanted greater than 5 years, leaving scarce resources dedicated towards specialized transplant management in this population. As a result, there was and has been a high rate of burnout resulting in staff turnover, along with patient dissatisfaction, and limitations to program growth.



Methods: Our transplant center decided to explore the effectiveness of transitioning patients back to their community providers for long-term management at five years post-transplant to address the challenges identified with life-long management. Patients were evaluated based on 4 criteria: stable allograft function within 30% of baseline for 1 year, negative virology studies, no active malignancy, and stable immunosuppression regimen as evidenced by a lack of neutropenia or thrombocytopenia for at least 6 months. Additionally, patients must already have a provider established before care was transitioned safely.

To implement this new model, patients were evaluated by a nurse coordinator to determine eligibility based on the set criteria. Next, the coordinator would have had an in-depth discussion with the patient regarding the transitioning of their care including obtaining the community provider's information. All information was sent to the transplant provider for final review and approval and a discharge summary was written and sent to the community provider. The letter included a detailed history of post-transplant care, specific recommendations regarding lab monitoring, target immunosuppression levels, and general health maintenance endorsements such as cancer screening, immunizations, cardiovascular disease prevention, and bone disease prevention. A workflow for physician-to-physician consultation was created to provide expertise to these community providers should there be a concern at any point in future management.



Findings: Our resource allocation has seen a significant shift from primary care management to the specialized transplant management needed for acutely ill and newly transplanted patients. The result of which has been an increase in the number of transplants performed while maintaining reasonable patient-to-nurse ratios. There has been an increase in overall graft survival rate at 1 and 3 years post-transplant in addition to an optimal improvement in outcomes after transition from inpatient admissions. We are able to accommodate frequent clinic visits, which allows for a continuous reassessment of the patient's plan of care and their compliance. Additionally, we have noticed an increase in patient satisfaction and overall employee satisfaction with a decrease in staff turnover.



Implications: In centers such as ours that have a high transplant volume, leadership should consider evaluating the need for implementing a transitional model of care for their transplant recipients. The implications of our model in the areas of discharging patients back to their community providers that would support program growth, sustaining excellent outcomes, and efficient resource utilization, were all beneficial in increasing patient satisfaction, patient compliance, and recruiting & retaining experienced and quality talent. Transitioning patients back to their community providers allows program coordinators and physicians more time to evaluate and address acute transplant issues, educate patients, and consistently re-evaluate individual plans of care.

Amy Harshman, MSN, RN, BSN; Christina Karapelou, DNP, APRN-BC, RN

ABSTRACT C3-I

A PILOT STUDY OF MKIDNEY: A NOVEL MOBILE HEALTH PLATFORM TO SUPPORT OPTN LIVING DONOR FOLLOW-UP DATA COLLECTION

Macey Henderson, JD, PhD, Johns Hopkins School of Medicine, MD

Purpose: Transplant hospitals struggle to meet Organ Procurement and Transplantation Network (OPTN) requirements for LKD follow-up. In the face of barriers such as cost, LKD inconvenience, and the burden of data collection, they lack the tools to improve LKD engagement. To address this critical health system failure, we built the mKidney[®] System based on input elicited from LKDs, transplant providers, and thought leaders in the field of transplantation.

Method: Key features of the mKidney[®] System include a HIPAA-compliant patient-facing smartphone app and transplant provider-facing web portal, automated short message service (SMS) text messages, email, and push notifications, and data export functionality. We are conducting an ongoing randomized controlled trial (RCT) to evaluate the impact of the mKidney[®] System on rates of post-donation follow-up, in preparation for a fully-powered multi-site clinical trial (NCT03400085). Participants are randomized to the intervention (mKidney[®] System) or control arm (standard of care) using block randomization, and follow-up compliance is tracked over time (Figure). Follow-up compliance is ascertained through linkage to national registry data (SRTR).

Results: To date, our pilot study population includes 237 participants; of whom, 101 have 6-month donor follow-up available from the SRTR registry. Clinical follow-up required for compliance was completed by 46/46 (100%) of participants in the mKidney[®] arm vs 53/55 (96.4%) of participants in the control arm (Fisher exact p = .5). Required lab follow-up was completed by 45/46 (97.8%) of participants in the mKidney[®] arm vs 46/55 participants (83.6%) in the control arm (Fisher exact p=0.02).

Conclusions: Designed specifically to facilitate the collection and reporting of LKD follow-up data, the mKidney® System is a promising new solution to improve historically poor care management for LKDs in the US.

Figure. Schematic of Study Design.



<u>Macey Henderson, JD, PhD</u>, Carolyn Sidoti, BS, Wanying Zhang, MD, ScM, Madeleine Waldram, BA, Alvin Thomas, MSPH, Michael Levan, BS, Allan Massie, MHS, PhD, Adam Bingaman, MD, Rachel Forbes, MD, MBA, Gretchen Edwards, MD, Kara Warmke, RN, BSN, Kaylin Centanni, RN, BSN, Dorry Segev, MD, PhD

ABSTRACT C3-J

CUSTOMER SERVICE DRIVEN ORGAN RECOVERY MODEL

Matthew Wadsworth, MBA, CPTC, Nevada Donor Network, Las Vegas, NV

Purpose: To evaluate the customer service driven organ recovery practices of a 501(c)3 not-for-profit organ procurement organization (OPO) to combat against intraoperative declines. Since 2008, this OPO's designated services area (DSA) has had only one local transplant program; this is a kidney only program. From 2016 – 2019, this program was a single-surgeon program which didn't allow for local abdominal recovery services. As a result, all procurement had to be completed by incoming teams including kidney only donors. This model did not allow for expedited cases and did not allow for strong back-ups for organs that were ultimately declined in the operating room. In 2016, the OPO partnered with an outside surgical group to provide all organ recovery services allowing for, "local" recovery to be available to outside centers. This partnership aimed to provide better service to surrounding transplant programs, incentivize the procuring surgical group, and position the OPO for expedited liver placement.

Method: The OPO and surgical recovery group signed an agreement late 2016 that would allow for 24/7/365 organ recovery for outside centers that requested it. The OPO agreed to pay the surgical group an activation fee, the recovery fee per organ, and cover all transportation costs associated with the recovery; there was not an on-call compensation model within the agreement. Should the recovery group ultimately receive the liver for one of the transplant programs they served, they would absorb the transportation costs, but keep both the activation and recovery fee. Although this agreement called for surgical coverage when needed, it is important to share that both groups were transparent about their needs for recovery times and worked collaboratively to schedule ORs that fit both the OPO and the surgical groups schedule considering the time of day, special occasions, and professional and personal obligations. Should the OPO have multiple cases, they would do their best to stack the ORs back-to-back and provide accommodations for the surgeon at the cost of the OPO. The OPO notified the surgical recovery group of all cases early in the process, so they could identify a back-up recipient should the primary center as well as primary back-up centers decline the organ. Any time constraints were relayed early in the case, so that we could plan accordingly, and schedule the OR time proactively. The OPO provided a surgical first assist to the surgeon and is currently putting all OR coordinators through a certification program in order to provide better customer service.

Procurement times were also scheduled in collaboration with the accepting center which also lead to early morning recoveries, so that the transplant could take place during "normal" business hours. This service was developed to better serve regional and national transplant programs that are already stretched thin on resources, and therefor are forced to alter acceptance practices to meet both staffing and patient needs. In addition to the lack of resources, the traditional OPO culture includes pressuring transplant centers to schedule organ procurement as soon as possible due to their own staffing shortages.

Results: Since signing this agreement in 2016, and implementing it in 2017, the OPO has seen an increase in total donors by 60% and an increase in livers transplanted by 68%. The percentage of organ

donors that provide a liver for transplant has increased 5%. Prior to this agreement this surgical recovery group provided organ procurement on 2% of total donors for the OPO, and now provide procurement on 32% of all donor cases. Surgical recovery teams, anesthesia, and OPO personnel present during the recovery has been standardized for this DSA resulting in less need for hospital follow-up for OR related issues. From January 2017 to June of 2019, the procuring surgical group has received 30 livers for transplant from the OPO, and 60% of them have been placed with them after the primary, and primary back-up transplant centers declined intraoperatively.



Conclusion: A recovery model where the OPO, and the surgical group work collaboratively to provide superior customer service to each other and other transplant programs results in more organ donors, and more organs transplanted. The benefit of having a surgeon present that represents multiple transplant programs and isn't solely employed by the OPO allows for expedited liver allocation should the primary, and primary back-up centers decline within the OR. In addition to standardizing the surgeons present, anesthesia was provided by one of two anesthesiologists, and OPO staff present was one of two teams of two Surgical Recovery Coordinators. Standardization of individuals present reduces hospital complaints and allows for seamless communication within the OR.

In this new era of organ allocation, OPOs must staff adequately to provide customer service to the large number of transplant programs that they will be working with. OPOs must develop models such as this that allow for transplant programs to be supported on the organ procurement side. Furthermore, OPOs must guard against late organ declines that will likely occur more frequently with broader sharing. Changes to the OPO staffing model has allowed for more flexible OR times. These flexible OR times have allowed for standardized recovery services, and OR times that work for all interested parties. These combined changes, stemmed from a customer service driven mentality, has increased both total organ donors, and organs transplanted.

Matthew Wadsworth, MBA, CPTC

ABSTRACT C3-K

Feasibility Study of Telemedicine for Dialysis Patients Awaiting Transplantation

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Describing how technology may enable real-time, remote monitoring of transplant recipients to facilitate more rapid and personalized interventions

Telemedicine enables real-time, remote monitoring of transplant recipients to facilitate more rapid and personalized interventions. Our study intervention: telemedicine (TM) visits should have an effect in three key areas: clinic efficiency, patient adherence, and patient experience. We conducted a six-month prospective randomized-controlled clinical pilot study to evaluate the intervention for our transplant program. We targeted patients who are on hemodialysis and are listed for kidney transplant at this transplant center. Currently, there are 406 patients on the transplant waiting list who are receiving care at dialysis centers in the area. We selected 7 dialysis centers which had the highest number of patients on our transplant list in order to yield a target sample of 45. Eligible participants were randomized to 1 of 2 groups: usual care and telemedicine intervention. Patients were followed for 4 months post randomization to determine the number of days that elapse between randomization and routine transplant waitlist clinic visit. As in office waitlist clinic appointments experience 80-day wait, a 4-month follow-up seemed more than adequate to evaluate this primary outcome. The two study arms differ in the following ways: (1) patients in usual care (UC) arm underwent basic physical exam, (2) TM patient data (such as vitals and labs) was abstracted from the patient's dialysis record and shared electronically with the transplant center and (3) both arms completed post-intervention survey, however, the TM group's survey had some questions specific to the TM component of the visit. Thus far, we randomized 18 participants into 2 groups, 8 UC and 8 TM. Primary outcomes were waiting time, missed and rescheduled visits, and cost. Secondary outcomes were feasibility, patient acceptability, and other wait-related variables such as transplant wait-list status changes during the study. Our study is powered to detect a reduction in the number of days that elapse between randomization and the occurrence of the routine transplant waitlist clinic visit, and took into consideration loss of participants due to death, transplant, or drop-out in the next 4 months. An "intent-to-treat" (ITT) approach was used to address the specific aims. All participants were included in the data analysis in the treatment arm to which they were randomized, regardless of compliance, treatment received, or deviation from protocol. A descriptive analysis has been performed using appropriate graphical and numerical exploratory data techniques. The information obtained from this preliminary investigation of the data will be used to: (1) assess data quality and completeness; (2) describe univariate and bivariate distributions at each measurement time point; and (3) identify associations between variables. We will examine: (1) comparability of treatment arms at baseline (based on Chi-squared statistics or t-tests, as appropriate), (2) relationships between the response variables and potential covariates, and (3) predictors of missing data/drop-out. For waiting time, there is a mean of 92.0 days (SD=42.1) in

the intervention group compared to a wait time mean of 113.0 days (SD= 57.0) in the control group. The results are encouraging but not statistically significant (p=.36). When given the provider satisfaction survey, providers overwhelmingly preferred to see their patients via telemedicine as opposed to seeing in person in clinics. Providers' communication was unimpaired by using telemedicine and the inability to touch the patient did not impair the diagnosis or visit in any way. Patients in the UC arm reported they were satisfied with their inperson visit and were able to explain their health issues without any problems to their provider. We believe that TM, as a care delivery method, will improve patient access to care and transplant outcomes while reducing clinic overutilization and overall costs to both patients and providers. If the outcomes of the study are in line with our expectations then we would propose broader use of TM in all our affiliated dialysis centers.

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ABSTRACT C3-L

IMPROVING TIME FROM REFERAL TO TRANSPLANT FOR LIVING KIDNEY DONOR/RECIPIENT PAIRS

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Problem: Only 20% of living donor/recipient pairs were meeting program goal of referral to transplant in three months at a Midwestern program. Living donor transplant volume had also decreased and then stagnated for several years. Goals of the project were to increase the average monthly volume of living kidney donor transplants from 9 to 11 per month at a large Midwest transplant center and increase the number of living kidney transplant donor and recipient candidates completing evaluations in 12 weeks.

Method: Utilizing six sigma improvement methodology, a multi-disciplinary team was formed to identify barriers and brainstorm interventions to improve the work up process for both donors and recipients. Specifically, we defined standard expectations for "who will do what when" with standard documentation. Additionally, we identified opportunities to reduce the staff's workload and improve efficiencies. For example, instead of the transplant assistants making personal phone call reminders for the initial education session, there is now an automated message that is sent to patients and there was no increase in no show rates. As a group, we identified the need to be more proactive and effective in our communication with patients. We created informational one-pagers for patients about the process, educational videos and scheduled more frequent check-in calls. We also built standardized reports in our EHR to monitor donor and recipients as they progress in the evaluation and set critical values to monitor as part of our control plan. Finally, we considered dependencies on other key areas of the organization and worked to improve our partnerships accordingly.

Findings/Results: May – October 2019 there were 54 live kidney transplant surgeries compared to May – October 2018 when there were 59. On average, the number of donors who moved into the initial evaluation phased increased from 29 to 57 per month. Additionally, we saw on average, the number of recipients who moved from referral into evaluation increase from 23 to 30 per month. Specifically, when looking at the relationship with financial clearance, we saw a substantial increase in the percent of patients who were financially approved for evaluation within 3 days prior to the initial education day move from 0 to 35%. Unfortunately, we were not able to see a substantial impact to the % of patients who were seen by a cardiologist within 30 days.

Conclusions/Implications: There were a few takeaways identified throughout the project. It was identified that broad cultural shifts can present new and unique challenges to clinical areas (utilization of social media has significantly increased donor questionnaire submissions) that can be important to address in order to maintain service standards. Additionally, we saw the benefits of creating standard documentation requirements that allow for the utilization of additional EHR resources (can send mass messages, build reports etc.). Finally, one of the most important takeaways was how important it is to create structure cross-team collaborations when looking to make operational improvements.

Lydia VanZalen, BS; Brittany Russell, RN, BSN, CCTC; Gwen McNatt, APRN, PhD, FAAN; Joseph Leventhal, MD, PhD, FACS

ABSTRACT C3-M

MEASLES OUTBREAK RISK ASSESSMENT FOR TRANSPLANT CANDIDATES AND RECIPIENTS

Elana Kreiger-Benson, B.A., NYU Langone Transplant Institute, New York, NY

Purpose:

A measles outbreak began in our greater metropolitan area in late 2018 with ongoing transmission affecting children and vulnerable adults. Solid organ transplant recipients are at heightened risk for measles infection due to ongoing immunosuppression. In addition to ongoing initiatives to minimize general risk -- including surveillance of patients admitted from outbreak areas, limiting visitors to inpatient units, prohibiting non-immune children from visiting, symptom screening prior to ambulatory care visits, and providing informational packets -- we developed a systematic 3-part approach to address measles risk in our solid organ transplant program's adult population through: education focused on risk reduction for all at-risk patients and family members; screening to identify non-immune patients living in outbreak ZIP codes; and risk reduction for non-immune patients.

Methods:

All waitlisted and transplanted patients residing in any of 11 ZIP codes with recent measles cases in our area as of April 4, 2019 were included. The 11 outbreak ZIP codes included 5 ZIP codes with ongoing measles transmission, considered high risk outbreak ZIP codes. The electronic medical record (EMR) of patients born after 1956 was reviewed for measles serology results and vaccination documentation. Patients without immunity records were contacted and tested for immunity to measles. Non-immune patients were then assessed and managed with either MMR vaccine or intravenous immunoglobulin (IVIg), depending on their transplant phase and risk level. A 1-page measles patient education handout was created, reviewed for health literacy appropriateness, and utilized in English and non-English language versions.

Results:

Education and Screening: We identified 117 waitlisted or previously transplanted patients who resided in outbreak ZIP codes. Each received a measles patient education handout by mail. Among the 117 patients, 56 (47.9%) were presumed immune based on birth year of 1956 or earlier. Among 61 patients born after 1956, 5 (8.2%) had preexisting serologic evidence of measles immunity in the EMR (2 transplanted and 3 waitlisted patients) (Figure 1). Measles immunity testing was performed in 56 patients without EMR documentation of measles immunity (30 transplanted and 26 waitlisted patients): 43 (76.8%) tested immune, which included 27 transplanted and 16 waitlisted patients; 6 (10.7%) tested non-immune or equivocally immune, which included 3 transplanted and 3 waitlisted patients; 5 (8.9%) patients, all waitlisted, were reached and the outbreak risks were discussed, but did not present for testing; and 2 (3.6%) patients, both waitlisted, were unreachable after multiple attempts (Figure 2). To our knowledge, there were no cases of measles among patients in active follow-up at our transplant center.

Risk Reduction: Among the 6 patients who tested non-immune or as having equivocal immunity, 3 waitlisted patients received the MMR vaccine and 3 transplanted patients were treated case-by-case. Among the non-immune transplanted patients, 1 received IVIg; 1 was recommended to receive IVIg but declined due to loss of insurance; and 1 with an MMR dose documented in the city vaccine registry did not receive treatment due to a lower risk profile.

High Risk Patients: Among 61 patients born after 1956, 21 lived in 5 high risk ZIP codes with ongoing measles transmission. These 21 high risk patients had a range of outcomes. 3 (14.3%) were found to be non-immune or with equivocal immunity, which included 2 transplanted and 1 waitlisted patient. Among them, 1 transplanted patient received IVIg; 1 transplanted patient was counseled to receive IVIg but declined due to loss of insurance; and 1 waitlisted patient received the MMR vaccine but was unreachable to come for follow-up serologic testing.

Conclusions:

A systematic risk assessment during a large measles outbreak identified at-risk transplant patients and provided timely education, screening for measles immunity, and appropriate risk reduction interventions for non-immune patients. While a majority of patients could be screened and, if necessary, treated, obstacles to screening and treatment included an inability to contact patients and insurance limitations.





Figure 2. Measles immunity testing outcomes varied among 56 patients (30 transplanted and 26 waitlist patients) born after 1956 without documented immunity to measles.



Figure 3. Measles immunity testing outcomes varied among 21 patients (13 transplanted and 8 waitlist patients) born after 1956 living in high risk ZIP codes.

Citation of Previous Presentation:

Kreiger-Benson, E., et al. "Measles Outbreak Risk Assessment for Transplant Candidates and Recipients." Poster Presentation to be given at IDWeek (joint annual meeting of Infectious Diseases Society of America, Society for Healthcare Epidemiology of America, the HIV Medical Association, and the Pediatric Infectious Diseases Society), Washington, DC. October 2019.

Elana Kreiger-Benson B.A., Bruce Gelb M.D., Henry Neumann M.D., Sarah Hochman M.D., Jennifer Lighter M.D., Sapna A. Mehta M.D.

ABSTRACT C3-N

IMPROVING PATIENT THROUGHPUT FOR KIDNEY TRANSPLANT EVALUATION – PATIENT CARE TEAM MODEL Nicole M. Ali, MD, NYU Health Transplant Institute, New York, NY

Problem/Situation

Patient referrals for kidney transplant evaluations increased 436% between calendar years 2015-2016 to 2017-2018. This was largely due to changes in programmatic leadership and clinical strategy along with outreach efforts. During this time, the number of patients seen for kidney transplant evaluation visits also increased more than 400%, waitlist additions increased more than 300% and transplant volume increased 600%. While the clinical volume of the program grew rapidly, it was difficult to keep pace with staffing ratios. This lead to a backlog of patients in transplant workup.

By Oct 2018, there were more than 500 patients in workup for kidney transplant listing with some patients seen 1-2 years prior but who had not yet completed their evaluation testing. These patients were distributed among 4 pre-transplant coordinators. Despite significant improvement in the number of patients listed monthly (300% increase over prior years), the number of patients entering evaluation phase outpaced the number of cases which met a disposition (added to the waiting list or file closed).

Methods/Practices/Interventions:

Multiple contributing factors for the delay in throughput of patient workup were identified including but not limited to:

- Complex clinical cases needing strategic plans for efficient workup
- Lack of patient and dialysis center engagement
- Staffing deficits (changes in staffing and need for clerical support)

We had previously established clinical reports in our EMR (EPIC/Phoenix) which enabled coordinators to monitor patient progress through workup, follow up on testing results and coordinate care with the coordinator assistant. While this lead to improvements in workflow we still needed to do more to keep pace with the patient volume.

We implemented patient care teams comprised of the pre-transplant coordinator, a transplant physician (nephrologist and surgeon), and the transplant coordinator assistant (TCA). Four teams were developed with the goal of improving patient throughput and decreasing the number of patients in transplant evaluation. Each team was allowed to develop their own strategy on how to address the problem however guidance was provided in the form of patient reports and examples of strategic approaches.

Each patient care team determined their own strategy. Two teams met on a regular basis to review patients and updates while two team met ad-hoc. The transplant physician conducted patient visits in clinic for patients who were deemed complex candidates or who had not been seen in more than a year to re-assess their medical conditions. The coordinator-transplant physician team worked closely to determine appropriate dispositions for their patients with decisions ultimately made at the multidisciplinary selection committee meeting. Some patients were deemed not to be candidates after re-assessment with the transplant physician while others had re-invigorated support to complete their workup.

Findings/Solutions/Conclusions:

At the inception of this project, our program had 530 patients in kidney evaluation with some initial visits occurring 2 years prior. The number of patients in evaluation continued to rise steadily as patient referrals and evaluation visits had increased more than 400% over the previous years. Both patient and staff satisfaction were are risk if this trend continued. Implementation of the patient care team model has provided our coordinators with clinical support from a transplant physician to help navigate the workup

of complex patients, re-assess the candidacy of those who were initially seen years prior, and help coordinate clinical teams who impact the patient workup (i.e. cardiology/rheumatology/oncology in complex cases).

To assess the productivity of this method we reviewed the current disposition of the cohort of patients who were in evaluation at the time this was implemented. Of the 530 patients in evaluation, 56% have had a disposition determined. Thirty percent of patients completed workup and were added to the kidney transplant waiting list with 42 of these patients already transplanted in the past few months. This accounts for 27% percent of our transplants since this project started and 54% of our waitlist additions.

In addition, for the past 4 month we have seen a slow but steady decline in the total number of patients in evaluation despite increasing number of new patient evaluations. Prior to this the total number of patients in evaluation increased every month. This demonstrates that we are able to get more patients to a disposition in a timely manner and this patient care team model is effective.



Implications/Relevance:

Patient throughput is a challenge faced by many, if not all, transplant programs. As patients are increasingly medically complex, the testing for transplant evaluation can be extensive, time-consuming and costly. In addition, recent quality metric changes for dialysis centers which monitor the number of patients listed for transplant will lead to higher patient referrals to transplant programs. The increase in referrals and evaluation visits/testing can pose a significant challenge to programs even with adequate staffing ratios. Transplant programs will need to adapt to growing volume rapidly.

Our patient care team model aims to provide individualized testing strategies to patients with the coordinator and transplant physician working closely on the patient care plan. Rather than having patients complete a long list of tests, centers may need to prioritize testing such that the test which is most vital is completed first. The team's transplant physician is key to identifying and navigating the workup strategy for complex candidates. This enables patients and health systems to save time and financial resources. This approach to patient care has helped our team to start improving clinical care by utilizing the resources at hand and engaging care team members in developing innovative strategies to guide their patients through the transplant process. We expect to see continued improvement as our teams have now been able to develop good working relationships with each other and are focused on their strategies.

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ABSTRACT C3-O

IMPROVE TRANSPLANT DIETITIAN PRODUCTIVITY & STAFFING: HOW TO REALLOCATE TO AVOID THE TOO MUCH BUT NOT ENOUGH DILEMMA

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Problem: Having a dietitian as a member of the multidisciplinary transplant team is a relatively new concept. Prior to 2007, it is estimated only 7% - 59% of transplant programs (depending on organ type) incorporated dietitians and rarely in the pre-transplant phase or with living donation. Dietitians are now mandated by CMS to be part of the multidisciplinary care planning process in all phases of transplantation and donation. But a paucity of data exists on how to best optimize transplant dietitian productivity in the setting of regulatory compliance while also improving program metrics and maximizing patient outcomes.

Interventions: The 2019 Transplant Dietitian survey was conducted via Survey Monkey through the transplant dietitian list serve in the spring of 2019. This was done to help identify best practices and establish national benchmarks in all areas of transplant dietitian practices. Because these practices vary within different organ types, the survey consisted of three separate surveys specifically targeted to the three distinct types of transplant dietitians as follows: 1) Adult Kidney/Pancreas 2) Adult Heart/Liver/Lung/Intestine & 3) Pediatrics.

Findings: The 2019 Transplant Dietitian Survey resulted in 320 responses from 196 transplant centers, accounting for over 80% of all transplant centers nationally that do five or more transplants per year. Responses from 150 adult kidney/pancreas, 145 adult heart/liver/lung/intestine, and 95 pediatric transplant dietitians were realized.

Staffing ratio benchmarks were developed for each adult cohort by utilizing transplant dietitian FTE data collected from the survey and corresponding transplant program volume from July 2019 SRTR program-specific reports and are displayed in Graph 1. A straight FTE/transplant volume ratio can be useful identifying outliers, but a direct comparison is often difficult due to five common variances in practice for transplant dietitians.

Regardless of where on spectrum the variance in practice falls each process has the potential to enhance or detract from productivity if not utilized effectively. For purposes of this abstract only data on one of the five variances will be presented which is the process of how nutrition evaluations are performed for transplant listing. As shown in Graph 2, it is estimated that the majority (70%) of transplant candidates receive a full face-to-face nutrition evaluation with a transplant dietitian, increasing from 50% in 2015.



Graph 1.

Graph 2.

Do Dietitians Physically See All Transplant Candidates?



Most (93%) transplant dietitians agree that the goal of the pre-transplant evaluation is to provide medical nutrition therapy for nutritional issues that will affect transplant listing and improve post-transplant graft and patient survival.

Tackling nutritional issues outside this scope occurs less frequently (38-50%) and continues to decline as this practice can be viewed as impractical for a myriad of reasons, particularly with kidney transplant candidates. The time it takes to complete a pre-transplant nutrition evaluation can vary greatly among transplant programs as seen in Graph 3. Opportunity exists at improving the efficiency for most kidney/pancreas evaluations taking over 30 minutes and heart/liver/lung evaluations taking over 60 minutes.



At the other end of the spectrum 11-14% of transplant programs involve the transplant dietitian late in pretransplant process often during selection meetings and typically the day the candidate is wait listed. This is seen more as a formality to meet the CMS regulations and most all (96-98%) transplant dietitians feel uncomfortable clearing a candidate for transplant in this way. This practice also does not meet the established standards of nutrition assessment and misses real opportunity to help those with modifiable nutritional barriers otherwise deemed not a candidate get to transplant. Early pre-transplant nutrition intervention is particularly critical with heart, liver, lung and intestinal organ types as transplantation is often not realized until the patient deteriorates and nutritional status can be a major determinate between receiving a lifesaving allograft or not.

On paper transplant dietitians are active in the pre-transplant multidisciplinary care planning process with 93% documenting participation at least two different ways and 60% documenting three or more ways. Yet, 51% of all transplant dietitians say their services are underutilized by their transplant program, although down from 70% in 2015. Surprisingly, few transplant programs measure or implement quality and performance initiatives aimed at improving transplant dietitian productivity as seen in Graph 4.

Implications: The data presented is the first to establish national benchmarks for transplant dietitian productivity measures during the pre-transplant work up. Dietitian practices were shown to vary widely among transplant centers highlighted by inefficiency in some areas but underserved in others. This information can be utilized to help transplant programs better allocate their transplant dietitian resources in order to maximize program metrics and improve patient outcomes. It also highlights the need for transplant programs to start tracking metrics to help optimize transplant dietitian productivity. Lastly, although the data was not presented, additional opportunities exist with improving productivity in the four other common variances in practice for transplant dietitians (processes for re-evaluation, transplantation admission, post-transplant care, and readmissions) as well as in the pediatric cohort and with living donation.

Daniel Pieloch MS, RD, CPHQ – Robert Wood Johnson University Hospital Transplant Program

ABSTRACT C3-P

MAXIMIZING UTILIZATION OF A2/A2B DECEASED DONOR KIDNEYS

Laura Hulse, MSN, RN, CPHQ, Sentara Norfolk General Hospital, Norfolk, VA

Problem:

In 2014 blood type B candidates accounted for roughly 21% of our center's kidney waitlist but only 12% of deceased donor kidney transplants performed. With modification to the national kidney allocation system (KAS) on December 4, 2014, allocation of A2 and A2B (A, non-A1 and AB, non-A1B) deceased donor kidneys into eligible blood group B candidates (A2/A2B to B) was added with the goal of increasing access to transplantation, particularly for minority candidates. Transplant center-specific barriers to successful utilization of this component of the KAS had to be addressed in order for eligible candidates at our center to benefit from the allocation change.

Methods/Intervention:

Collaboration between the transplant center and the histocompatibility laboratory led to the selection of an acceptable anti-A IgG titer methodology in 2015. The histocompatibility laboratory proposed utilization of excess serum already available from monthly candidate samples for the titer specimens. As the selected anti-A assay was unavailable locally, specimens would be sent-out for anti-A IgG titers, requiring the histocompatibility laboratory to coordinate resulting and communicating eligibility to the transplant center. Following successful proof of concept, the process for sequential anti-A IgG titer testing to determine and renew candidate eligibility was initiated. Informed consent process for blood group B candidates was formalized and implemented by the transplant center in 2016. Challenges optimizing timely review of sequential anti-A titers and validation of eligibility per UNOS policy were noted in 2017. Subject matter experts from the transplant program and histocompatibility laboratory collected data to understand the scope of the problem and completed process mapping to identify gaps in workflow. Integrating workflow processes to take advantage of tools available within the electronic health record EPIC (checklists, scheduled tasks, creation of protocols, generation of reports, etc.) occurred in 2018.

Findings:

A year after center A2/A2B process implementation it was noted that a third of waitlisted patients didn't have A2/A2B eligibility documented in UNOS, prompting the team to study and redesign cumbersome and ineffective workflows. The value of EPIC reporting was utilized to develop checklist tasks for various clinical scenarios and timeframes needed for sequential anti-A titer collection and eligibility renewal in UNOS. A protocol was added to the transplant navigator to increase communication of A2/A2B consent and eligibility. Managers advocated for the addition of the anti-A IgG titer as an enterable test field within Beaker/EPIC allowed for the histocompatibility lab to capture the time and efforts as a unit of service. Audit of actively waitlisted blood type B candidates at end of 2018 found only one candidate was missing eligibility status in UNOS, a dramatic improvement from the beginning of the year.

Blood type B recipients presently make up 22% of deceased donor kidney transplants since centerspecific changes were initially implemented in 2016, an increase of 10% from pre-KAS. A2/A2B to B transplantation accounts for 46% of all blood type B deceased donor transplants at our program, a rate significantly higher than the 7% observed regionally or nationally (UNOS, 2019).



Center-Specific Deceased Donor Kidney Transplant Trends

Implications:

Our transplant center serves a predominately African American community, making up roughly 75% of our kidney waitlist. Addressing the disparities that exist for disadvantaged populations accessing deceased donor transplantation is critical. Complexities exist attempting to integrate A2/A2B to B transplant processes and procedures into existing workflows. Obstacles identified often include determining eligibility of B candidates, developing an effective patient education and informed consent policy, logistics of sequential anti-A IgG titer testing, and way to ensure timely renewal of eligibility per UNOS policy. By leveraging clinical experts, operation leadership, performance improvement methodology, and information technology resources, innovative solutions can maximize center utilization of the KAS A2/A2B to B allocation. Transplant centers facing similar challenges can learn from our experiences.

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ABSTRACT C3-Q

EFFECTIVENESS OF THE TRANSPLANT REFERRAL COORDINATIOR POSTION

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Situation: A large volume advanced heart failure, transplant, and mechanical circulatory support (MSC) center sought to improve the triage process for patient acuity in the referral process, by implementing a dedicated referral coordinator. The goal was to improve overall patient satisfaction with referral process, decrease number of days from intake of referral to date of initial clinic visit, streamline referral process, and establish a standardized process for physicians and transferring facilities wishing to refer patients.

Methods: In January 2019, this center added a full-time Transplant Referral Coordinator (TRC) role to the department team to streamline the referral process. Qualifications for the role included American Board of Transplant Certification as a transplant coordinator, a Bachelor of Science Nursing degree and experience in advanced heart failure/transplantation. The primary function of the role is to review each referral for patient acuity and to expedite those patients with higher needs through the referral process thereby decreasing the wait time to be seen and treated by an advanced heart failure cardiologist.

To assess the referral process, the TRC met with the referral assistants, transplant coordinators and the with nurse manager to discuss physician concerns with the current referral process. The assessment of the process included observing the referral assistants' work flow from the intake of the referral thru the initial visit. Through these discussions and observations, several barriers were identified including variability on referral review practices, extended time for scheduling of initial visit due to coordinator work load leading to delays in patients being seen, missing results and other documentation leading to decrease effectiveness in review of referral and at time of initial visit, chart abstraction and initial phone interview not consistently completed due to coordinator work load, and a lack of collaboration between team members. At the completion of the review process, several changes were implemented including;

- Creating the TRC role ensuring a department point person for referrals enabling all team member and patients to have one point of contact throughout the referral process.
- Relocation of the referral coordinator's workspace to establish closer working relationship with referral assistants.
- Ensuring that all patients are contacted by the TRC within 2 days of referral intake to assess acuity of patient, discuss initial visit, provide education concerning initial visit and advanced heart failure treatments.
- Customizing order and scheduling preferences for physicians.
- Developing guidelines for ensuring that all data for initial visit is acquired.

Conclusions: After 6 months of TRC implementation, data was analyzed to determine its effectiveness. The findings were that there was a 55% decrease in wait time of the initial visit. Consequently, this resulted in a 41 % decrease in the wait time for the patients needing to be evaluated. The results of the survey performed among staff revealed a 70% team satisfaction with the TRC role. Overall, the analysis revealed the TRC role has allowed for expedited identification of higher acuity referrals leading to those patients being seen sooner, decreased delay of referred patients being seen in our transplant clinic, and increased collaboration between coordinators and referral assistants.





Implications: With the addition of the TRC role, a marked decrease was experienced in the time delay for both the patients to be seen by an advanced heart failure cardiologist and to begin the evaluation for heart transplant or MCS. In addition, there has been an increase in overall satisfaction with coordinator team and physicians. The implantation of the dedicated TRC allows for improved efficiency in the referral process for patients, physicians, transplant coordinators and transplant assistants and has encouraged other organ groups to consider adopting a similar process for their patient population.

Melissa D. Dirmeyer RN, BSN, CCTC

ABSTRACT C3-R

CHANGING POST-TRANSPLANT CARE WITH TELEMEDICINE

Abhinav Rastogi, MBA, MIS, Temple University Hospital, Philadelphia, PA

Overview: In the ever-changing world of healthcare we are constantly looking for innovative strategies to improve patient care and population health, while also reducing cost. In 2018, we implemented a telemedicine program for Lung Transplant recipients with this purpose in mind. By simply logging a set of daily symptoms and vitals online, patients are instantly connected with their healthcare providers. When symptoms change from baseline, providers are alerted in an online portal, allowing same-day care intervention.

Overall, our program population saw a significant reduction in hospital LOS when compared to non-intervention patients, and fewer admissions post-enrollment. Simultaneously, we were able to better balance the workload of our transplant coordinators and staff by identifying and triaging patients in need of clinical intervention.

Problem: As a high volume lung transplant center, our institution was facing excess patient days and high readmission rates. We had become a destination transplant center with patients nationwide. The physical distance inevitably created a gap between patient and provider communication. Communication is particularly important in organ transplant recipients, as they can be highly unstable. We began looking for a simple solution to supplement the traditional methodology for managing patients; by immediately alerting providers of concerning symptom changes.

Prior to this initiative, providers relied heavily on patient phone calls and office visits for health status updates post-procedure. However, with a large volume of out-of-state patients, urgent office visits are not always feasible. Early intervention in patients who need highly skilled, complex care is critical to positive outcomes – not only on a patient care level, but on a cost saving level as well. The question became; how can we become more connected with our patients' health, sooner?

Intervention: Our Lung Transplant app provides a new way to gain insight into patients' day to day health by presenting daily vitals and symptoms in an organized portal and, more importantly, by creating alerts (Figures 1.1, 1.2) whenever a change from baseline is detected. This insight gives providers a unique opportunity to reach out to patients experiencing symptoms, potentially allowing us to intervene with medication, office visits, or planned hospital admissions prior to the point of becoming acutely ill. This ultimately helps reduce hospital admissions, ER visits, and LOS – effectively reducing healthcare costs.

Our initiative began in January 2018 with the enrollment of 50 lung transplant recipients - which has grown to 167 patients. Participants are enrolled into the program post-transplant and are instructed to submit a daily digital "Check-In" through an application on their smartphone, tablet, or PC. Patients report 10 disease-specific symptoms and vitals each day, which are algorithmically compared to a personal baseline. If a change from baseline is detected, our lung transplant nurse coordinators are alerted. The coordinators then triage and contact patients to arrange proper care; from administration of antibiotics, to urgent clinic visits.

Results: Since program start, this population has submitted a total of 29,757 daily check-ins. 19,576 (66%) of these depicted a change in one or more LTX specific symptoms, with 10% of all check-ins flagging for medical intervention. Average program compliance rate was 73%; 80.1% excluding outlier patients who were frequently hospitalized or technologically challenged. Technology issues were mitigated by allowing patients that were uncomfortable with technology to call in their symptoms.

A comparative analysis was done comparing a subset of patients enrolled into the telemedicine program to lung transplant recipients at our facility who were not enrolled (Figure 2.0). The Tele-health group spent less time in the hospital overall, with an average LOS of 9.3 vs. 11.5 days respectively. Tele-health patients had nearly twice as many clinic referrals because they were more connected with the transplant team. This communication also

helped avoid unplanned ER visits, and patients were direct admitted if needed. Tele-health patients saw an average of 1 less admission per patient compared to the control group, 2.7 v. 3.7 respectively. This group also spent less time in the ICU compared to the Control group; about 6% fewer ICU days. Tele-health patients saw an 87% discharge-to-home rate, compared to 75% of Control group patients, suggesting a reduction in the cost of care continuation post discharge. Additionally, we have seen a reduction in unnecessary calls to patients who did not require an intervention.

Relevance: Better outcomes can be achieved when patients are more connected with their healthcare providers. The risk of not talking to patients in a timely manner is huge at our facility – we receive between 200-350 calls per day, with 2.5 FTEs. The abandonment ranges from 8-20% and average call time is 2.5 minutes. This initiative helps to relieve excess phone calls, allowing staff to triage patients based on acuity – resulting in a more manageable workload for the staff and more timely delivery of care.





Compared Metric	Tele-Health Group	Control Group
# of Patients	103	218
# of Admissions	275	813
Patient Days	2,554	9,356
Average LOS	9.3	11.5
% ICU Days	9%	15%
% routine discharge	87%	75%
% clinic referrals	28%	15%

Figure 2.0

Abhinav Rastogi, MBA, MIS

Nicole Patlakh, BS

ABSTRACT C3-S

SELF-CARE SESSIONS IMPROVE WORK LIFE BALANCE AND STRESS MANAGEMENT IN TRANSPLANT COORDINATORS

Melissa Nugent, BSN, RN, CCTC, Texas Children's Hospital, Houston, TX

Situation:

The need for a self-care program to improve the perception of work-life balance and stress levels of Transplant Coordinators in a busy pediatric transplant center was determined by employee engagement survey results and from feedback given by the transplant coordinators and the transplant leadership team. The surveys and subsequent self-care sessions were for quality improvement purposes; therefore, human subjects' protection criteria were not met and IRB approval was not required.

Methods:

Transplant staff were polled to determine their interest in attending self-care sessions targeted to improve work life balance and stress coping skills. Session topics were decided based on research of common self-care principles, popular team building exercises, and team preferences. Sessions were 1 hour in length and are held monthly. Class topics included mindfulness training, empathy training, vision boarding, and other team building sessions. The participants completed a survey to compare their perception of work life balance and ability to handle stress at work before and after the introduction of self-care sessions.

Findings:

All survey participants answered that their ability to handle stress while at work and their perception of work-life balance has improved since attending the self-care sessions. Responses showed improvement in the participants' ability to disconnect from work communications during free time, improvements to loss of sleep over work issues, increased enjoyment of personal time without focusing on work matters, and ability to free their minds from work when away from it. Results indicate that the self-care sessions positively impacted our transplant staff's stress levels and perception of work-life balance.

Implications:

Coordinating care for high-acuity transplant patients requires long hours, on call commitments, loss of sleep, and excessive workloads which can lead to emotional exhaustion, high stress levels, decreased employee satisfaction, and staff burnout. Creation of a self-care program for our transplant staff has proven to improve employee satisfaction survey scores, decrease employee turnover rates, and improve the work-life balance of our transplant staff. An annual follow up survey will be completed to ensure that the self-care program topics continue to meet staff needs.

Melissa Nugent, BSN, RN, CCTC; Lisa M. Stark, MSN, RN, NEA-BC

Self-Care Sessions Improve Work Life Balance and Stress Management in Transplant Coordinators

Nugent, M.S. & Stark, L.M., (2019, August). *Self-Care Sessions Improve Work Life Balance and Stress Management in Transplant Coordinators [Poster]*. NATCO (The Organization for Transplant Professionals) 44th Annual Conference, Bellevue, Washington.

ABSTRACT C3-T

THE POWER OF PEERS: USING PEER MENTORS TO IMPACT READMISSION RATES IN TRANSPLANT Kristen Hill MS, APRN-CNS, AGCNS, The Ohio State University Wexner Medical Center, Columbus, OH

Problem/Situation:

There is an increasing number of patient's undergoing kidney transplantation in the United States. In 2018, over 21,000 patients received kidney transplants with more than 100,000 on the waiting list. Kidney transplant recipients also have a high occurrence of 30-day readmissions that can lead to high hospital costs and decreased quality of life. Due to the complexity of self-care after discharge, kidney recipients have high occurrence of 30-day readmissions that leads to high hospital costs and decreased quality of life. Previous research performed showed that high levels of post-transplant anxiety has a correlation with an increased likelihood of 30-day readmissions. The goal of this project was to design and implementation process of a randomized control trial (RCT) using a standardized post-transplant mentoring program in order to reduce 30-day readmission and post-transplant anxiety among kidney transplant recipients.

Methods/Practices/Interventions:

A randomized clinical trial was conducted from September 2017 to October 2018, among eligible kidney transplant patients at an academic hospital. Patients were randomly assigned in a 1:1 allocation to receive mentorship from a previous transplant patient via a series of phone calls during the first 30 days after discharge or standard hospital procedure. Standardization was conducted using principles of lean management systems. The control group will only undergo the standard posttransplantation discharge care that includes formal discharge instructions from a trained discharge transplant coordinator, weekly follow-up visits and 24-hour access to transplant triage call center. If the patient is assigned to the treatment group, they will receive the normal post-transplantation discharge care and be mentored by a previous transplant patient that is trained to hold a series of phone calls covering self-care topics.

Findings/Solutions/Conclusions:

The primary outcome measure was 30-day readmissions. Secondary measures included patient anxiety and preventable readmissions, defined as readmissions due to acute kidney injury (AKI). Posthoc measures used were 60-day readmissions, 90-day readmissions, and days to readmission. In this randomized clinical trial of 80 patients, kidney recipients in the treatment group were 2.43 times more likely to be readmitted within 30 days for more severe, non-preventable issues. However, the posttransplant anxiety was lower in the treatment group. Of the 80 kidney recipients in the study, 44 (55%) were Caucasian; 48 (60%) were male; and the mean (SD) age was 53.6 (10.5) years. 38 (47.5%) patients were randomized to the control group and 42 (52.5%) were in the treatment group. 8 patients (21.1%) of the control group were readmitted within 30 days after discharge compared to 16 patients (38.1%) of those in the mentored group. Controlling for demographic factors, mentored patients are 2.18 times more likely (95% CI, 1.07-4.42; P = 0.031) to experience a 30-day readmission. Patients in the treatment group. The

frequency of readmission due to AKI was 62.5% lower in the mentored group (Two-sample t-test; 95% CI, 0.28 – 0.97; P = 0.001). Post-hoc analysis shows that the main effect is not sustained for 60-day or 90-day readmissions. If readmitted within 90 days, patients in the mentored group are readmitted 32.4 days sooner (95% CI, -62.24- -2.55; P = 0.038).

Implications/Relevance:

Peer mentorship for kidney transplant recipients increases 30-day readmission rates and reduces post-surgery anxiety. Peer mentorship helps quickly identify lower acuity self-care issues and frees up hospitals to address more severe complications. The mentorship did not work as anticipated in decreasing the readmission rates however it did help to triage and identify more rapidly the post-transplant complications and allow for interventions to occur more rapidly on preventable complications versus the control group. This allowed for great stratification and prioritization of the issues being addressed in the treatment cohort versus the preventable issues being dealt with in the control group. The impact of this study should be repeat to test for duplicity. The study showed that the use of peer mentors increased the self-efficacy of the patients as well as utilized a previous untapped resource that is from a valuable non-monetary resource.

Authors:

Kristen Hill MS, APRN-CNS, AGCNS; Aravind Chandrasekaran, PhD; Susan Moffat-Bruce, MD, PhD, MBA; <u>Chelsea Horwood, MD, MPH</u>; Yeojun Chun PhD ©; Shannon Harris PhD

ABSTRACT C3-U

BUILDING A USER FRIENDLY IT INFRASTRUCTURE SUPPORT TRANSPLANT CENTER ACTIVITIES

Jeffrey M. Sneddon BS, The Ohio State University Wexner Medical Center, Columbus, OH

Purpose: In recent years most medical centers have adopted sophisticated electronic medical record systems (EMR). Although these EMRs have allowed for improvements across many aspects of the care continuum, they frequently lack proactive monitoring and reporting of key clinical and quality metrics required for transplant patients. We annually perform over 450 transplants and follow nearly 6000 patients in active pre and post-transplant phases. This large volume, along with the inadequacy of the EMR to efficiently monitor milestone events, required our center to become innovative and leverage other tools in order to manage these patients. To fill this void, we have developed reporting and alert systems to leverage data contained within the EMR as well as external resources (i.e. STAR files).

Method: By leveraging data available in the EMR and other sources, we built a framework that supported a reporting and messaging system that met the needs of our transplant center. In order to build this framework, which utilizes commonly available databases and reporting tools, we first examined what data elements we would need. We evaluated the EMR build, asking the question "How will the data in the EMR be used for reporting?" This allows for meaningful reporting to be accomplished without compromising our clinical workflow or wasting time by building reports that are not needed. With this in mind, via automated processes, relevant data from all sources are extracted, transformed, and loaded (ETL) into a relational database within the transplant center. The ETL process centralizes the data in one location, formatted for easy reporting. With this centralized data as a basis, we created a reporting portal with reports that can be run ad-hoc or on a schedule; staff can subscribe to the report, allowing them to be delivered via e-mail. In addition, a real-time messaging system was created that incorporates e-mail, text messaging, and paging to notify staff of critical events requiring action.

Results: The effectiveness of our reporting and alert systems is reflected by user adoption and improvement in key quality and compliance metrics. User adoption was determined by the number of reports generated monthly, either ad hoc or by subscription. Our center executes, on average, 1,534 subscriptions and 732 ad hoc reports per month. Subscription based reports are sent automatically, daily to monthly, to transplant center physicians and staff, senior administration, finance, and others. Our reporting system contains approximately 150 reports with at least 60 of these being high volume reports.

Monthly, our alert system sends 674 admission, discharge, and death alerts in real time to transplant staff and applicable ancillary services (i.e. Blood Bank). We keep alerts to a minimum to avoid "alarm fatigue", having only 5 alerts configured into the system. However, this small number of alerts have significantly improved waitlist compliance with removing or placing patients on hold. In addition, our alerts for tracking infectious disease testing, in 2 years since their implementation, have identified 255 instances where infectious disease testing, per protocol, was required. Prior to using this system, testing compliance was 70.4%. After adoption of this alert, compliance increased to 98.7 %. After adjusting the alert's algorithm for earlier detection, we were able to achieve 100% compliance (Figure 1). Other select positive outcomes of this system are shown in the chart below (Figure 2)

Conclusion: Our IT infrastructure has positively impacted several areas in the transplant center. Our reporting system assists staff across the care continuum by providing a concise reporting of a patient's progress in various phases of care. Our staff are able to work more efficiently because the reports and alerts reduce the need for chart review and eliminate the reliance on spreadsheets and Post-it notes for tracking. Compliance with critical quality metrics, while still not perfect, has increased significantly. Although we initially had concerns about creating these systems, 2 factors contributed to their adoption: 1) Careful assessment of the medical record build with a focus on reporting and 2) listening to and understanding the needs of the transplant staff.



Figure 2

	Delivery						
What	Method	Audience	Impact				
Expiring	Ad Hoc	Financial	Identifies ~ 100 patients / month needing				
Authorizations		Coordinators	authorization renewed.				
Financial Clearance	Ad Hoc	Financial	Tracks missing / changed financial information.				
		Coordinators					
SRTR Survival Dashboard		Quality meeting	Provides look ahead of upcoming SRTR releases				
			using available modeling.				
Living Donor	Ad Hoc	Donor	Prevents donors from being scheduled for				
Workup		Coordinators	donation before all requirements are met.				
Post-Transplant	Ad Hoc,	Coordinators	Tracks patient lab testing compliance.				
Compliance Subscription							
Quality Dashboard Dashboard		Quality Staff,	Aggregates key quality metrics. Decreases time				
		Physicians,	the quality staff requires to prep for meetings				
		Admin					

Jeffrey M. Sneddon, BS

Desmond Wong, BS

Laura Stillion, MHA, FACHE

ABSTRACT C3-V

PREDICTING DECEASED DONOR KIDNEY TRANSPLANT OUTCOMES: COMPARING KDRI/KDPI WITH MACHINE LEARNING

Eric Pahl, PhD Candidate. The University of Iowa, Iowa City, IA

Abstract:

INTRODUCTION: Kidney transplantation is an effective cure for patients suffering from endstage renal disease. Kidney transplantation is cost-effective, provides a significant survival benefit, and improves the quality of life for patients. One limitation on kidney transplantation is the appropriate assessment of donor quality, for which several indices have been created.

METHODS: Machine learning methods (MLM) were compared to kidney donor risk index (KDRI aka KDPI) for the ability to predict graft failure by 12, 24, and 36 months after deceased donor kidney transplantation (DDKT). The MLM model, an ensemble of thousands of randomly generated decision trees, was trained with the same data initially used to develop KDRI.

RESULTS: An MLM trained with the readily available recipient and donor variables performs significantly better than KDRI/KDPI when predicting graft failure by 12, 24, and 36 months after DDKT. When comparing equal prediction failure rates of 10%, MLM successfully predicted 126% more successful DDKTs (an additional 2,148) than KDRI/KDPI from 1995-2005. Over the entire ROC curve, the MLM performed statistically significantly better c-statistic than KDRI/KDPI in all predictions.

CONCLUSION: Using MLM, many high-KDRI kidney offers resulted in thousands of successful patient outcomes without increasing risk of predicted graft failure. The MLM provided a significant improvement over KDRI for the assessment of kidney offers and give clinical professionals an improved basis for making the critical decisions. This work lays the foundation for future MLM in organ transplantation and describes the steps to measure, analyze, and validate future models.

Author Disclosure Information: <u>Eric Pahl</u>, PhD Candidate: Health Informatics, Undergrad: Biomedical Engineering

ABSTRACT C3-W

CREATING A DEDICATED MULTIDISIPLINARY CENTER TO REVOLUTIONIZE LIVING DONOR TRANSPLANTATION

Kristi Caldararo, MHA | Thomas Jefferson University Hospital | Philadelphia, PA

Purpose: On December 14, 2016, we opened the NKTC (*name blinded as per submission guidelines*), the region's first multidisciplinary center dedicated to living donor transplantation. Since then, the staff and faculty of the NKTC have increased living donor transplantation at our center by 70% within a 3 year period (2016 – 2019). In the United States, there are approximately 115,000 people waiting for a transplant and only approximately 17,000 donors (*organdonor.gov, 2019*). Realizing this large gap between supply and demand in transplantation, living donation is the best option for patients to avoid years on the waiting list and have the opportunity to receive a living donor kidney that is statistically proven to work better and last longer than a deceased donor kidney.

Method: In order to create a state of the art living donor center with an unmatched patient experience, a team of administrators, physicians, contractors, and philanthropists joined together to create the vision for what was to become the NKTC. By using philanthropic and hospital financial support, we were able to fund programmatic improvements, research infrastructure, marketing/education materials, and capital expansion to create this destination center that enabled us to increase living donor volumes and build a world-class living donor kidney transplant program in the heart of our city.

Tactics:

Operations – We overhauled our scheduling, intake, triage, and clinic flow processes to enhance the patient and provider experience. A primary goal of this new clinic was to have increased access for our potential donors. We encourage transplant candidates to bring any potential donors to their evaluation appointment. The transplant team is able to meet with potential donors and can start the evaluation process during that same appointment using our in-house phlebotomist. All multidisciplinary team members and consults travel to the clinic to see patients as opposed to the patient having to schedule and attend appointments throughout our large academic campus. We have a robust telehealth program where we work up the donor remotely at the convenience of the patient allowing them to complete testing closer to home and only travel for the surgery. We also accommodate walk-in appointments for donors and expedited appointments for pre-emptive recipients.

Team Dynamic and Culture – All kidney transplant staff (physicians, surgeons, pre and post coordinators, MAs, front desk, dieticians, pharmacists, financial coordinators, and social workers) were involved in creating the newly revitalized vision of kidney transplant that puts live donation at the forefront as the first and best option for our patients. The leadership team hosted group meetings to engage staff in bringing this vision to life. It was no longer just the responsibility of the live donor coordinators to encourage live donation, rather it was the mission of the entire kidney team throughout the continuum of care. Staff were provided with talking points tailored to their job role regarding how to speak with patients about the benefits of live donation. If potential donors are not compatible with their intended recipient they are educated on our involvement in three paired exchange programs (NKR, UNOS, APD). Since the NKTC opened, we have seen increased interest in paired exchange due to our new training and educational tactics. We completed 11 successful pairs/chains since the NKTC opening, including 2 non-directed-donors and 1 remote donation.

Kidney Champion Sessions – We created a robust and effective kidney champion session program where friends and loved ones of potential recipients learn how to find a living donor. Our team of transplant professionals provide the champions with all the information they need to help the recipient receive the gift of life. The champion sessions are held bimonthly on week-day evenings and Saturday mornings on an alternating schedule. Sessions are taught by our RN coordinators and social workers with additional attendance from the multidisciplinary team. To date, we held 16 champion sessions and have 65 engaged kidney champions. We created informative short-clip videos for our live donors and kidney champions that are available on our website. We have support groups and created comprehensive training materials for our kidney champions that illustrate the use of social media and how to spread the word to friends, families, and the community regarding kidney disease and live donation.

Outreach – We equipped our dedicated outreach RN coordinator with educational materials for referring providers and dialysis centers related to our live donation program, expedited appointment process, better-than-expected quality outcomes, and unparalleled patient experience.

Results: The outcomes that are made possible through the NKTC allowed us to increase living donor transplantation at our center by 70% from FY2016 (20 live donor transplants) – FY2019 (34 live donor transplants). Of our 65 champions, 58% of them are currently associated with a potential donor, proving that the tactics used in the search for live donors are effective. We are able to accurately track this data through our Epic EMR and Qlik web-based application. To date, we completed 19 telehealth donor evaluations, 12 of which have since donated. Through the NKTC, we are better able to track efficacy of education and teaching through patient satisfaction surveys and "quizzes." Survey scores increased from 82% in 2016 to 96% in 2019. We were able to add an additional 25 appointment slots per month with our revised clinic schedule which opened up additional access for our patients. We decreased our time from referral-to-evaluation by 24 days and time from evaluation-to-listing by 45 days. We market the positive NKTC experience through patient testimonials and have increased donor and recipient referrals 189% from 410 in 2016 to 1,185 in 2019, and donor and recipient evaluations 50% from 503 in 2016 to 752 in 2019.



Conclusions/Relevance: Every 14 minutes, someone is added to the national waitlist for a kidney transplant (*National Kidney Foundation, 2018*). As the rate of deceased organ donations continues to stagnate, 80% of waitlisted patients are forced to go on dialysis and many wait more than five years for a kidney from a deceased donor (*United Network of Organ Sharing, 2018*). With each passing year on dialysis, their chances of survival suffer. The five-year survival rate for dialysis patients is less than half that of transplant patients. Living donor transplants offer better graft survival, decreased length of time on dialysis, and greater control over surgical timing, among other quality of life and clinical benefits.

The NKTC Center is not just a brick and mortar space, rather a brand centered on live donation and an unparalleled patient experience. The tactics used to create a state-of-the-art space, engage philanthropists, refine processes, and enhance the culture of our clinical and administrative teams has proven effective and beneficial to the patients we serve. This successful multidisciplinary approach to promote live donation can be replicated by others to achieve similar results and continue to help our patients bypass the long waiting list for transplant and drastically improve their quality of life.

Kristi Caldararo, MHA | Pooja Singh, MD

ABSTRACT C3-X

STREAMLINING THE LIVING KIDNEY DONOR TRIAGE PROCESS

Carolyn Light, MPA, UCSF Health, San Francisco, CA

PROBLEM: Living donor kidney transplantation is the preferred treatment for patients with end stage renal disease that are eligible for transplantation; it can shorten time on the waitlist and living donor grafts provide better post-transplant outcomes. At our transplant center, we have a very large waitlist. Consequently, the number of potential living donors interested in evaluation is also very large and we have limited resources available to process incoming donor applications. In 2018, we received 2,673 living kidney donor applications; 1,729 passed our online screening questionnaire and each of those 1,729 received a phone call from a triage nurse as a first contact. However, only 462 (26%) completed the second step of going to the lab to begin the evaluation process. Our goal was to reduce the amount of effort we were putting in to the 74% of donors who were not interested in pursuing donation. In 2019 we revised our workflow to eliminate waste and streamline the living donor triage process.

METHOD: We divide our donor evaluation into two parts: Donor Workup 1 (DWU1) and Donor Workup 2 (DWU2). DWU1 is conducted remotely; the potential donor fills out a health history questionnaire and then goes to their local lab to begin testing. The workflow changes we implemented focused on DWU1 only.

Prior to July 2019 our process had been for a triage nurse to serve as the first point of contact for all potential donors who passed the online screening questionnaire. If the nurse was able to reach the potential donor by phone she would provide some basic education about living donation. If they were still interested in proceeding with the evaluation, the nurse would send them to their local lab and an administrative assistant (AA) would register them in our electronic medical record.

Given that many people now prefer to communicate electronically in lieu of a phone call, we changed the workflow so that an AA would be the first point of contact. In the new process, all potential donors who pass the online questionnaire receive a template email from the AA with basic information on living donation and instructions to go to the lab. Once a potential donor goes to the lab and we receive the results, the patient is registered in our electronic medical record and the chart is passed on the triage nurse to continue the evaluation process. Donors who go to the lab are considered 'motivated donors'. In this new process, the nurse is only involved with those motivated donors who have passed screening, have labs results, and have demonstrated commitment to donation by going to the lab. Additionally the AA is spending less time registering donors in our EMR that will not proceed with evaluation (unmotivated donors).

CONCLUSIONS: We changed our process in July of 2019 so we are comparing data after the process change to the same period of time from the prior year. In quarter 3 of 2018 (July 1-September 30) we received 695 living kidney donor applications; 451 (65%) of them passed the online screening questionnaire and of those, 318 went on to be registered in our system and 134 (30%) went to the lab for basic lab draw. In quarter 3 of 2019 we received 809 living kidney donor applications; 543 (67%) of them passed the online screening questionnaire and of those, 168 (31%) had lab results and went on to be registered in our system.

After we implemented the process change, the time that the DWU1 team spent on potential donor applications decreased significantly. In quarter 3 of 2018 we spent approximately 419 hours contacting potential donors and sending them to the lab. In quarter 3 of 2019 we spent approximately 203 hours. The ratio of hours per motivated donor (total hours spent/number of motivated donors) decreased from 3.13 hrs to 1.21 hrs (61.3%). This demonstrates that by minimizing work spent on unmotivated donors, total workhours were both decreased in total and focused on motivated donors only.

	2018 Q3	2019 Q3
RN hours	180	0
AA hrs	239	203
Total hrs	419	203
Hrs/donor	3.13	1.21

DWU1 Team - Initial Contact

IMPLICATIONS: The change in workflow has reduced the amount of time our DWU1 team is spending communicating with potential donors who were not going to proceed with the donor evaluation. The overall time spent/donor has decreased by 61.3%. This has increased our nurse's bandwidth so she can spend more time with motivated donors who move on to the evaluation phase as well as time educating recipients about living donation. It has also reduced the amount of time that our AA is spending registering unmotivated donors. We have found that the percent of motivated donors who go on to initiate the evaluation has not decreased with this change from phone call to email as initial contact.

Kathryn Carmichael, RN, Helen Christensen, RN MHA, Brian Lee, MD, <u>Carolyn Light, MPA</u>, Cristina Maravilla

ABSTRACT C3-Y

ONLINE SCREENING QUESTIONNAIRE EXPEDITES LIVING KIDNEY DONOR CANDIDATE EVALUATION

Amy Woodard, RN, BSN, CNN, CCTC, UNC Center for Transplant Care, Chapel Hill, NC Alexander Toledo, MD, UNC Center for Transplant Care, Chapel Hill, NC

<u>Purpose</u>: The screening questionnaire is a standard component of living kidney donor candidate evaluation for early identification of acceptable / unacceptable candidates. Quickly identifying viable donors can improve efficiency and minimize time and complications of dialysis for recipients. We assessed the impact of providing online screening on both time to complete donor evaluation and likelihood of completing the screening.

<u>Method</u>: Our living donor team, consisting of one RN and one administrative assistant, previously screened potential donors with 8-10 questions over the phone to determine any absolute contraindications to donation. If none found, a packet of donor educational material and a full screening questionnaire were mailed to the potential donor. The potential donor would then complete the questionnaire and return it to our living donor RN for review. To expedite this process, the initial phone screening was eliminated and potential donors were directed straight to our center's website and online questionnaire for donors. The questionnaire was made available in both English and Spanish. We provided link to website in our recipient patient education class as well as on business cards of our living donor coordinator. We insured that our online educational materials and information mirrored our hard copy packet. We also mailed a hard copy packet to those that requested it because they had no computer/internet access or felt more comfortable with paper packet.

<u>Results</u>: We monitored how many calls and inquiries we received from 10/15/19 to 12/13/19. A total of 88 inquiries were made by phone call or email to the living donor team. The age ranges of these potential donors were from age 22 to age 73. Of these 88 contacts, 62 (70.5%) opted to visit our website to complete the questionnaire online vs. completing a paper questionnaire. The age of the potential donor did not correlate to preferred means of screening.

Conclusion: Regardless of age, the majority of donor candidates preferred online screening. With the online option, double the number of candidates were screened. Online screening also provided a dramatic improvement in rate of completing screening process and routinely did so in far less time. This allowed faster completion of donor evaluations, or faster refusals to allow recipients to immediately approach other potential donors. Another benefit was a decrease in workload for our living donor RN and administrative assistant.

Our next steps will be to streamline the online questionnaire content so that it may be completed more quickly. We will continue to direct potential donors to our online questionnaire and to educate recipients about the online option for donor screening.

Authors: Amy Woodard, RN, BSN, CNN, CCTC & Alexander Toledo, MD



ABSTRACT C3-Z

VISUALIZING PATIENT FLOW WITH TABLEAU AND EPIC

Randall Watkins, BSEE, SSBB, UNC Center for Transplant Care, Chapel Hill, NC

Problem Statement: Our transplant department has been on a Lean Transformation journey since 2016, during which we conducted multiple process-improvement Kaizens and projects to eliminate waste and defects, including a thorough Value Stream Analyses of our patient flow from referral to transplant. We launched weekly MDI (Managing for "Daily" Improvement) huddles around a simple whiteboard with basic data and control charts for metrics like New Referrals, Evaluation Starts, New Waitlists, and counts of our WIP (Work in Process). MDI huddles have benefited the teams in understanding the basic inputs and outputs of our patient flow. Unfortunately, a lack of real-time granularity in our data obstructed our ability to pinpoint where all of our patients are in the value stream (referral, evaluation, waitlist phases). In some cases, existing patient process data in EPIC were simply not harnessed. In other cases, data existed outside of EPIC or within non-discrete areas unusable for reporting. Thus, we continued to operate blindly in regards to obstacles impeding patient flow from referral to transplant. Imagine supervising a manufacturing line where you are unable to observe the details of production flow. Thus, our ability to "SEE" our patient flow real-time and make important process corrections in our huddles was greatly limited.

Intervention:

- Lean Management Retreat After conducting Voice of the Staff (VOS) focus group sessions, our transplant management team and quality coaches met at an offsite location to conduct a two-day Lean Retreat with the purpose of establishing project goals and new metrics for FY20/FY21. Projects discussed included overhauling the MDI Huddle process with a new set of MDI metrics that would lead to more consistent daily/weekly action, and implement the concept of "aging" (how long are patients waiting in various states). The quality coaches held subsequent meetings to finalize the list of new metrics for transplant management approval.
- 2. EPIC Data Improvements Based on VOS, external feedback, and the Lean Retreat, our EPIC Super User Group meets regularly to pursue multiple projects aimed at bringing workflows into EPIC and improving data point entry. One of these initiatives is to optimize the granularity and accuracy of data relating to status and reasons for patient location in the pre-transplant value stream thus allowing us to track status transitions and aging.
- 3. Visualizing the Value Stream in Tableau Based on the newly approved metric set, our team built the appropriate data reports, databases, and Tableau MDI visualizations of the pre-transplant value stream. The image below shows one of the dashboards with key information regarding inputs/outputs, WIP, and Aging ("Where are patients sitting at and for how long?"). We are rolling out the dashboard to the teams and will soon display the data on a large monitor in the office center for regular huddles. Staff are able to drill down to see their patient statuses with daily updated data.



Results: Within minutes of rolling out the prototype, the team began locating "outlier" patients with unexpected levels of "aging" in various phases and statuses. This allowed for immediate corrections and, in some cases, new appointments scheduled to move patients through. Further review of the dashboard by each of the organ teams has led to errors corrected and adjustments made in patient flow. One of the first areas of improvement uncovered is in the management of patient phase, status, and status reasons in EPIC across all organ groups. The EPIC Super Users Group will address this issue by launching efforts to standardize this data entry across our program.

Implications: The release of these new Tableau MDI dashboards, along with optimization of EPIC data entry, is <u>revolutionizing</u> how our transplant center conducts Managing for Daily Improvement huddles. Patient flow through our transplant processes is now more visible (akin to product flow in a factory environment). Visualizing rich EPIC data in this manner allows our teams to see accurately where patients are aging at higher than acceptable levels in various phases. We can then eliminate obstacles in our processes to move patients efficiently toward their life-saving transplants. Furthermore, the new dashboards and huddles will help optimize staff workloads leading to greater staff satisfaction and resiliency. We expect that regular huddles around this data will lead to process improvement projects for years to come.

Randall Watkins, BSEE, SSBB, Darren Flynn, MBA, SSBB, Kate Burnett, RN, Abby Bryson, MBA

ABSTRACT C3-A2

FORMING A LATINX KIDNEY TRANSPLANT CLINIC

Emily Arnold RN, MSN, CNN, UNC Center for Transplant Care, Chapel Hill, NC

Problem/Situation: Latinxs are the largest and fastest growing minority group in the United States and currently comprise close to 20% of the population of the United States (Lora et al., 2009). Litinxs are disproportionately affected by Chronic Kidney Disease and the prevalence of End Stage Renal Disease among Latinxs is 2-fold higher than in non-Hispanic whites, resulting in a greater need for kidney transplantation (Gordon et al., 2015). Hispanic patients undergoing chronic dialysis are less likely to receive a kidney transplant compared with non-Hispanic whites (Arce, Goldstein, Mitani, Lenihan, & Winkelmayer, 2013). This is thought to be in large part a result of language and cultural isolation. Culturally competent interventions have been shown to reduce health disparities in transplantation (Gordon et al., 2015).

Methods/Practices/Interventions: There was a lack of culturally competent services available in our transplant center for this growing population. In response, a monthly pre-kidney transplant clinic for Latinx patients was created in March 2019. These patients are assigned to a dedicated Latinx transplant team including an administrative assistant, nurse coordinator, certified medical assistant, social worker, financial coordinator and surgeon. This required hiring a new nurse coordinator and utilizing existing Latinx transplant staff previously working in non-kidney team role. Patient education materials were developed in Spanish. A dedicated phone line answered by Spanish-speaking staff was created. Written materials and a website about the clinic were established for marketing purposes. An article about the clinic was published in a local Latinx newspaper. Information about this clinic was provided to referring dialysis facilities.

Findings/Solutions/Conclusions: To date, 41 patients have been been evaluated for kidney transplantation in the Latinx clinic. Referrals of Latinx patients have n doubled from 28 in 2018 to 56 in 2019. In 2019, 11 Latinx patients received a kidney transplant compared to 4 in 2018.

Implications/Relevance: The Latinx clinic has been steadily growing over the last 9 months since it began. We plan to conduct additional outreach in the dialysis and Latinx community about the clinic. One major limitation to the clinic is that we do not have Latinx providers to fill all the roles on the transplant team, specifically transplant nephrologist and transplant psychologist. Spanish interpreters are utilized for these providers.

Authors: Emily Arnold RN, MSN, CNN; Marilyn Hanson RN, MSN

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ABSTRACT C3-B2

PREPARATION FOR CLINICAL TRIALS OF PIG ORGAN XENOTRANSPLANTATION: ONE UNIVERSITY'S EXPERIENCE

Brian Berthiaume, MHA – University of Alabama at Birmingham (ALUA)

Problem:

Organ donation rates have not kept pace with the global incidence of end-stage organ failure. Given recent experimental progress, xenotransplantation (XTx; i.e., pig-to-human) has the potential to provide an unlimited supply of donor organs. As the next step in this process is clinical trials, it is important to evaluate the readiness of stakeholders to initiate them. Transplant Administrators have an important role to play and will be expected to commit resources, oversee nursing staff development, and direct public relations efforts. In preparation for clinical trials, two initial questions were asked by the administrators of the respective institution programs: Is the current level of psychosocial and theological knowledge with regard to XTx adequate for an institution to initiate a clinical trial? Is public support for this potential new form of therapy strong enough for clinical trials to proceed in the near future? In an attempt to answer these questions, we will briefly review (i) the World Health Organization (WHO) guidelines for programs preparing for clinical trials, (ii) a preliminary meta-analysis of the published psychosocial and theological literature on the subject, and (iii) the initial findings of one university's multi-level surveys on attitudes towards clinical XTx.

Methods:

After IRB approval, a series of studies were conducted by the medical and nursing staff at two transplant programs affiliated with a university in the southeastern region of the US (i) to identify the most recent information on XTx relevant to preparation for a clinical trial, and (ii) to determine the medical, nursing, and community's understanding and willingness to consider the procedure. One group is preparing for a kidney XTx trial in adult patients (>60 years of age) on chronic dialysis, while another is preparing for a trial of heart XTx in infants with complex, life-threatening congenital heart disease. Prior research has shown that these two groups of patients are at great risk of being unable to secure organ donors, and would be the ones most likely to benefit from successful organ XTx.

Findings:

The published literature indicates that the majority of those surveyed – nursing staff, patients, and the community - are supportive of XTx, although preliminary results of the meta-analysis suggest that knowledge of psychosocial and theological considerations is limited, and an

understanding of the risk-benefit of XTx is equally limited. Results from the university's own multi-level public assessment found local acceptance of XTx, and a patient's willingness to accept the medical risk associated with it, but also determined that non-Caucasian patients were almost six times less likely to support XTx than Caucasian patients. Given that (i) most of the non-Caucasian patients in the survey were African-American, (ii) more than two-thirds of patients awaiting kidney transplantation at the university are African-American, and (iii) in the historical context of the US Public Health Service Tuskegee (Alabama) Syphilis Study, this finding necessitates an additional level of exploration and research prior to initiation of clinical trials.

We found the public at large to be supportive of XTx. Patients awaiting organ transplantation and those who have a close family member awaiting transplantation, e.g., mothers of infants with complex congenital heart disease, were especially positive and pragmatic in their attitude to XTx. If there was no realistic therapeutic alternative, a pig organ transplant would be welcomed. The findings clearly reflect the importance of the program's commitment to WHO expectations in regard to inclusion of the public's opinion, which is a necessary part of planning before initiating a clinical trial.

Implications:

The information that will be presented will highlight (i) the importance of medical and lay-public involvement in the development of protocols for implementation of clinical trials of XTx, (ii) the critical nature of multi-disciplinary collaboration in preparing for a clinical trial, (iii) that WHO-mandated assessment and planning are required at each center before seeking regulatory approval, and (iv) the level of responsibility that transplant administrators have in helping to assure the programs have proper oversight and meet all governmental and WHO and IXA guidelines. Pitfalls include (i) making potential patients fully aware of both traditional transplant options and XTx, (ii) proper training for nurses and other professional staff, (iii) communication strategies that both inform and educate the community as to the need for and program results. While this study focuses on clinical trials of XTx, it highlights how other transplant innovations could benefit from this kind of administrator-involved study.

<u>Brian Berthiaume, MHA</u>, Meloneysa Hubbard, MSN, Luz Padilla, MD, MSPH, David KC Cooper, MD, PhD, David Cleveland, MD, Debora Viana, MA, MSW, Wayne Paris, PhD

ABSTRACT C3-C2

KIDNEY & PANCREAS TRANSPLANT WAITLIST MANAGEMENT: A TIERED SYSTEM APPROACH

Anne Marie Lutrick, MSN, RN University of California Irvine, Orange, CA

Purpose: Developed and implemented an innovative kidney and pancreas transplant waitlist management system in order to more effectively and efficiently re-evaluate patients on a transplant center waiting list to ensure ongoing candidate readiness for deceased donor transplants.

Methods: Waitlisted patients were stratified into a four-tiered waitlist management system. The system estimated probability for receiving organ offers based on qualified wait time, blood group, age, calculated panel reactive antibody, organ type, and Hepatitis C consent status. Protocols were developed for comprehensive re-evaluation of candidates based upon tier status. Re-evaluation of each candidate included medical, psychosocial, nutritional, and pharmacological assessment. Transplant readiness was assessed by conducting retrospective chart reviews to determine if the transplant recipient was re-evaluated within 18 months prior to transplant. The transplant readiness of the cohort prior to implementing the tiered system (42 recipients transplanted between 4/1/2015 to 12/31/2016) was then compared to the post intervention cohort (94 recipients transplanted between 1/1/2017 to 8/31/2018). Data was compared with and without identified outliers, which included zero mismatch organs, directed donations, and recently listed patients that did not have the opportunity for waitlist management (i.e. those transplanted shortly after listing due to long qualified time).

Results: Using a retrospective analysis for the cohort prior to implementation of the tiered system, it was determined that 23 of the 42 recipients (54.8%) were re-evaluated within 18 months prior to transplant. Excluding pre-intervention outliers, it was determined that 28 of the 33 recipients (84.8%) were re-evaluated within 18 months prior to transplant. For the cohort after implementation of the tiered system, it was determined that 84 of the 94 recipients (89.4%) were re-evaluated within 18 months prior to transplant. Excluding post-intervention outliers, it was determined that 81 of the 84 recipients (96.4%) were re-evaluated within 18 months prior to transplant.

Conclusions: Implementation of the tiered waitlist management system increased the proportion of recipients that were optimized at the time of transplant, as recipients were found to be more up-to-date on pre-transplant evaluation requirements than previous waitlist cohorts.

Authors: Andrea Brazao, BSN, RN, PHN, Heather Busch, MSN, RN, PHN, <u>Kristen Ko, MSN, FNP-BC, PHN,</u> Anne Marie Lutrick, MSN, RN



	Re-Evaluated Within 18 Months of Transplant <i>With</i> Outliers*	Re-Evaluated Within 18 Months of Transplant <i>Without</i> Outliers*
Baseline Data (4/2015-12/2016, 42 total Deceased Donor Transplants)	54.8%	84.8%
Post-Tiered System Implementation (1/2017-8/2018, 94 total Deceased Donor Transplants)	89.4%	96.4%

"Outliers Include: 0 mismatch organs, directed donations, and recently listed patients that did not have the opportunity for waltitst management (i.e. those transplanted shortly after listing due to long UNOS qualified time)

Relevance to Conference: Waitlist management can be challenging for transplant centers, especially when their lists are large within DSA's with long waiting times. Finding ways to creatively manage patients using a tiered approach can provide transplant centers the ability to have patients ready when an organ becomes available. This topic provides a useful tool to manage patients on the waitlist.

ABSTRACT C3-D2

PROCESSING KIDNEY TRANSPLANT REFERRALS MORE EFFECTIVELY WITH A TEAM-DEVELOPED TOOL

Sandra Demasters-Reynolds, MSN, RN, CCTC, UF Health, Gainesville, FL

Problem: Our program receives referrals for patients of all ages, with a variety of medical conditions, for kidney transplant consideration. As the numbers of patients with ESRD or CKD have risen, so has the number of referrals. Unfortunately, the staff (physicians, surgeons, coordinators and support staff) and clinic space to process the increased numbers has not increased. We wanted to develop an easy to use tool to guide the initial transplant path for the increased number of referrals received. The goals associated with the implementation of the tool were:

- 1. Provide the kidney coordinators with a concrete process for determining the first transplant step for a referred patient.
- 2. Process the referred patients with minimal co-morbidities quickly in order to get those patients listed in a timely manner.
- 3. Spend less staff time, resources and patient time on testing for potentially poor candidates.

Method: Prior to the tool development, the transplant coordinator drove each patient referral on a case-by-case basis. The coordinator reviewed the records and would determine:

- 1. The patient should go to Medical Review Board (MRB) to discuss if they qualify to have a full evaluation.
- 2. The patient should have a nephrology consult only in order to determine if they qualify for full evaluation.
- 3. If more records are required before determining the patient's initial path.
- 4. The patient should proceed with full evaluation with testing.

A significant amount of time was required for each chart review prior to determining the best transplant path for the patient.

The team-developed tool, with involvement of physicians, surgeons, and coordinators, allowed the coordinators to calculate a score for each patient to determine the track the patient will follow. Since transplant referrals often come with minimal information, the tool had to be flexible and functional for each situation. The four clinical criteria included in the tool are generally included with the most referrals. The criteria are age, time on dialysis, diabetes and cardiac history. (Table 1)

TABLE 1: Patient Process Determination Tool

• Mark each of the co-morbidities below as known from the referral information.

COMORBIDITIES	SCORE 0	SCORE 1	SCORE 2	SCORE 3
AGE	<35	35 – 55	56-69	70 AND ABOVE
DIALYSIS TIME	NOD	1 YEAR OR LESS	1 TO 5 YEARS	>5 YEARS
DIABETES	NO DIABETES	DIET OR ORAL	IDDM (*HGB A1c <u><</u>	DM <u>></u> 10 YEARS
*use Hgb A1c		MED	8)	(*HGB A1c >8)
only if known at		CONTROLLED		
time of referral*		(*HGB A1c WNL)		
CARDIAC	NONE OR			
HISTORY	MINIMAL CAD	1 PREVIOUS	2 PREVIOUS	>2 INTERVENTIONS
if known	if known (<50%		INTERVENTIONS	
	OCCLUSIONS)			
TOTAL SCORE				

• Score will determine which will be the initial step.

Findings: Using the newly developed grid, we saw a large increase in the number of evaluations scheduled on a monthly basis. The number of referrals discussed at MRB increased, the number of nephrology consults decreased and the number of referred patients going straight to full evaluation dramatically increased. (Table 2)



TABLE 2: Referral Process Comparison Charts



Conclusions: As the numbers show, the majority of referred patients were qualifying for the full evaluation. The tool allows the coordinators to rapidly review a chart and determine the process the patient will take. Less time is spent up front and more focus on ordering needed testing at evaluation time.

A full evaluation involves many team members. Using the data, our team was able to increase social work coverage with a 1.0 FTE position and an additional transplant assistant, 1.0 FTE. The transplant surgeons and transplant physicians have opened additional clinic slots to accommodate the increased numbers of evaluations. For the short term, our system has been able to handle the increase in the evaluations. Issues have been identified and processes are being developed to handle various concerns which have been raised with the new data.

Sandra Demasters-Reynolds, MSN, RN, CCTC

ABSTRACT C3-E2

TIME SAVINGS ON TIEDI FORM COMPLETION WITH THE ASSISTANCE OF MICROSOFT EXCEL

Roy Hill; University of Pittsburgh Medical Center, Pittsburgh, PA

Purpose:

Completing UNOS Tiedi forms at a large transplant center can be time consuming and can have repercussions for late data submissions. While attempting to maximize staff productivity and meet the demands of our growing living donor program without adding additional staff, we have developed and implemented procedures to minimize the time required to complete Tiedi forms. Annually, we have experienced significant growth for both our living donor liver and kidney programs with greater than 170 combined living donor organ recoveries performed in 2019.

Method:

Our team of living donor transplant and data coordinators performed a 2 month review of the total time required to submit Living Donor Registration forms for both liver and kidney. 28 forms were completed during the review period. With manual data entry, we found it took an average of 12 to 15 minutes to complete each form.

The goal of our team was to automate or significantly minimize the manual data entry efforts required to complete the LDR forms. Using available resources and minimal assistance from our IT department, a custom report was created in our electronic medical records that included all available discrete data required for the LDR forms. The report was then exported into a Microsoft Excel file. With some initial set-up and organization of the data to match the format required for the Tiedi import, we were able to quickly separate liver and kidney data into the required fields, save the respective data into Text files then import the data back into Tiedi.

Results:

Initial assessment of our data collection found that we were able to import 80 percent of the required data into the forms. After importing our Text files into the Tiedi reports, an additional 2 month review was performed to assess the total time required to complete the LDR forms. 29 forms were completed in this time period and the average time to complete dropped to 5 to 7 minutes per form. During the review, all data was manually audited and found to be 100 percent accurate.

Conclusions:

By using a standard Microsoft application, a bit of initial set-up and organization, and minimal assistance from our IT department, we have reduced our time requirements for LDR form completion by over 50 percent. With applying our new procedures, data coordinators have been more responsive with LDR form completion. Moving forward, our team anticipates applying these procedures to other Tiedi forms for additional time savings.

Roy Hill; Erika Hill; Katrina Street

ABSTRACT C3-F2

ENHANCING THE ORGAN OFFER PROCESS THROUGH STREAMLINED COMMUNICATION Susan Neill-Fogus, BSN, RN, UT Southwestern Medical Center, Dallas, TX

Problem/Situation: The coordination of an organ transplant from time the organ offer is received until the patient arrives in the operating room can be a long and detailed process. Increasing transplant volumes at our transplant program led us to review the organ offer process. Our transplant program utilizes an outsourced service for coordination of activities surrounding organ offers. The timespan from the organ offer to transplant case completion is covered by this service and the DonorNet Coordinator role. The goal of this project was to identify a streamlined method of communication to reduce the number of phone calls made by the DonorNet Coordinators during the organ offer process by 40%, while maintaining communication to all significant parties regarding the organ offer, patient's arrival to the hospital, and updates to the transplant case by December 2019.

Evaluation: Collaborated with the DonorNet Coordinators to identify all phone calls made during the organ offer process that involved a patient being called in with an active organ offer. Identified to which departments' calls were being made and at what point of the process. This evaluation revealed that, at a minimum, 23 phone calls were made by the abdominal DonorNet Coordinators and 30 calls by the thoracic DonorNet Coordinators, some of these were duplicate or unnecessary. This cycle of calls could be repeated up to 3 or 4 times with updates or changes to the donor or recipient case. We identified which stakeholders truly needed to be notified via a direct phone call or would an alternate form of communication work for some departments.

Interventions: Engaged the Hospital's Office of Safety and Business Continuity to utilize the same system that is used for campus wide mass communication or alerts for incidents such as severe weather. This alert system is a web-based, highly customizable communication system that can quickly and easily deliver calls, texts, emails and pages to multiple staff and departments at once. In the alert system we were able to create organ specific templates which allowed the DonorNet Coordinator to send a simple group message to all relevant stakeholders with just a few clicks of a mouse to each recipient's preferred mode of communication. Direct phone calls would still be made to the Transplant Physician, Transplant Surgeon, and on-call Transplant Coordinator, admitting/bed control, operating room and HLA lab. The alert system would be used to communicate with other departments, such as, anesthesiology, surgical residents/fellows, lab, blood bank, pharmacy, the nursing supervisor and the hospital nursing units. The HIPAA compliant message would notify the recipients that a transplant patient is being admitted to the hospital and to refer to their transplant notification secure email or Epic® orders for further patient specific information. A follow-up message could easily be sent through the alert system at any point for updates to the ongoing case. The alert system was set to cycle through the recipients contact methods every five minutes, through three cycles, or until a confirmation was received. Easy to interpret graphics in the alert system allowed the DonorNet Coordinator a quick view of who received and confirmed the message in real-time. Trending of these graphics allowed us to identify which stakeholders were not consistently confirming the message so re-education could be provided on the importance of the call confirmation. If a confirmation was not received after the cycle of calls was complete, a direct call would be made to the party that did not confirm to ensure they received the message. Confirmation trends will continue to be reviewed as part of an ongoing QAPI initiative.

Conclusions/Relevance: These efforts created a more efficient workflow and generated a 68% reduction in the number of phone calls made by the abdominal DonorNet coordinators and a 53% reduction in phone calls for the thoracic DonorNet Coordinators for each round of calls made during the organ offer process. This reduction in phone calls projects to an approximate time savings of over 1,000 hours per year for the DonorNet Coordinators, based on transplant organ offers that involved a patient being called in with an active organ offer for 2018. The stakeholders have voiced appreciation for the real time communication and the DonorNet Coordinators have experienced decreased shift intensity and expressed increased employee satisfaction as a result of the more streamlined communication process.

Scott Bennett, MS, Samuel Blanchette NREMT-P, Rachel Crowe, MS, Stacey Chomiuk, BS, Robert Koppenaal, RN APC, Lauren Neal, BSN, <u>Susan Neill-Fogus, RN, BSN</u>, Derek Trabon, MHA

ABSTRACT C3-G2

CONNECTING TEAMS AND DATA SOURCES FOR EFFECTIVE MANAGEMENT OF TRANSPLANT PATIENTS Susan Neill-Fogus, RN, BSN, UT Southwestern Medical Center, Dallas Texas

Problem: Specialty registries are useful for measuring and improving the health of sub-populations of patients. Solid organ transplant program's patient outcomes are highly regulated and are particularly poised to benefit from these registries. The development of a registry provides transplant programs with the tools to study a complex patient population and ultimately gain the clinical insight needed to improve outcomes. Our transplant program had fragmented teams monitoring infections, using the United Network for Organ Sharing (UNOS) and Scientific Registry of Transplant Recipients (SRTR) data to monitor outcomes, and the Health System Electronic Health Record (EHR) to monitor process workflows. Developing data driven analytics was a necessity to meet the demands of our growing transplant program. A workgroup was created including members of Transplant Leadership, Transplant Quality, Health System Analytics (HSA), and Information Resources (IR) to advance the capabilities of disparate data sources and to connect teams to create actionable transplant data.

Methods: The workgroup met weekly to develop a platform known as the Solid Organ Transplant Analytics site, which contains reports and tools with the focal point being the Power Bi[®] based registry of our transplant population. We created this registry using the following data sources: Health System EHR, Clarity (Epic[®] Systems) and the OPTN Standard Transplant Analysis and Research (STAR) Files. Significant technical work was done in the background to consolidate this data into easy to use graphs, charts, and tables. Decisions about which medical areas to prioritize, as well as how to show the data visually, were made within this workgroup and included feedback from Transplant Leadership. When a new section of the dashboard was ready to be rolled out, considerable interaction occurred between the HSA and IR teams to ensure the data behind the visuals had been thoroughly tested. Regular maintenance requires monthly downloads of files from UNOS and SRTR along with manipulation of those files to facilitate the consolidation into the Health System Data Warehouse.

The Transplant Quality Manager worked with both the HSA and IR teams to ensure the data is accurate and aligned with the Transplant Quality Program. This data enables the transplant quality team to easily pull information for their scorecards and dashboards to help identify trends and monitor workflows. Furthermore, Transplant Administration utilizes the data set for operational trending and strategic planning, based on patient volumes and heat maps of selected patient populations.

Personnel from Transplant Administration, Transplant Quality, HSA and IR currently meet biweekly to discuss maintenance of the data as well as new functionality. Training of new physicians and administrative staff on the available data is performed on a regular basis to ensure broad awareness.

Conclusions: The creation of the Solid Organ Transplant Analytics site has allowed our program to connect actionable data into a single platform. The collaboration of highly-specialized teams has produced significant contributions:

- More effective identification of patient sub-populations within the transplant programs
- User-friendly interfacing with program submitted UNOS TIEDI[®] data for quality control and query functionality
- Historical review and predictive SRTR data modeling to signal changes across patient cohorts
- Executive view provides a snapshot of trends in referrals, evaluations, waitlist additions, transplants, length of stay, readmissions and survival for each solid organ transplant program
- Access to clinic volumes and patient throughput in each transplant clinic
- Easier and faster methods for delivering ad-hoc reporting results for physicians and staff

Implications/Relevance: The strength in the deliverables from our workgroup came from the collaboration of dynamic minds with innovative data extraction tools. As the transplant program continues to grow, so will the demand for information and new ways to combine and utilize disparate data sources to inform decision making.

Scott Bennett, MS, Kelly Boyce, BS <u>Leah Cady, BS, MBA</u>, Jessica Cohron, BA, Lisa Faz, BS, Ricardo M. La Hoz, MD, Denise McCauley, BS, <u>Susan Neill-Fogus, RN, BSN</u>, Donglu Xie, MS

ABSTRACT C3-H2

LAB DATA ENTRY TURN-AROUND TIME IMPROVEMENT AND STAFFING OPTIMIZATION

Joshua R. Koscher, BS, MBA, UW Health Transplant, Madison, WI

Purpose: Transplant patient lab result volumes have grown 37.4% in 4 years, contributing to longer turnaround times for availability in the electronic medical record, increased patient safety event reporting due to delays in care and decreased staff satisfaction caused by workload demands. Last fiscal year the administrative team processed 109,707 lab documents through optical character recognition (OCR) software provided by Extract Systems (LabDE), consisting of over 800,000 individual test results. Even with electronic assistance, the team is receiving over 500 documents per weekday (Fig. 1) and spending an average of 90 hours per week on lab entry work. Our aim was to develop and implement a sustainable staffing model that would decrease our average lab result turn-around time from 24.8 hours to 18 hours or less.

-Includes color	includes color gradient neat map: green indicates low volume, red indicates nigh volume																							
Day of the Week	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
Sunday	0.4	0.3	0.4	0,4	0.5	0.7	2.6	3.7	4.0	3.8	4.6	5.5	4.7	3.5	3.9	3.8	3.5	3.0	2.6	2.1	1.1	1.3	0.6	0.2
Monday	0.5	0.2	0.3	0.2	0.5	1.8	9.2	38.2	68.2	69.7	79.1	67.4	55.8	56.0	54.8	46.9	28.0	12.3	10.2	9.2	5.6	4.0	3.9	1.6
Tuesday	1.6	1.3	1.0	1.2	1.7	6.4	9.6	36.2	47.4	56.7	59.5	51.8	47.0	45.7	55.0	46.3	32.3	12.5	12.2	9.2	3.8	4.0	3.5	1.8
Wednesday	1.8	1.6	1.3	1.3	1.7	6.2	11.5	46.4	39.1	49.0	50.3	44.8	40.8	42.4	56.9	39.8	26.5	13.1	8.9	6.1	4.5	4.0	3.4	2.7
Thursday	1.8	1.0	1.3	1.2	2.0	7.6	11.7	38.8	40.5	50.9	54.3	43.3	34.4	38.7	42.6	33.0	23.2	12.7	8.8	5.9	3.5	3.8	2.2	1.1
Friday	1.7	0.8	1.7	1.2	1.8	5.3	7.7	27.4	38.4	46.2	41.1	37.0	33.0	37.5	38.8	28.7	22.2	9.9	7.7	3.4	2.9	3.0	2.8	1.3
Saturday	1.5	0.7	1.0	0.9	2.0	3.3	5.5	6.5	8.0	10.9	11.0	10.6	9.0	6.3	5.8	3.8	2.7	2.9	2.5	1.3	0.9	1.2	0.8	0.7

(Fig. 1) Average Number of Lab Result Documents Received by Time of Day

Method: FOCUS-PDCA methodology and the A3 process were used to determine our current state and to implement our change ideas. A multi-disciplinary team of administrative, clinical and leadership staff was formed. Document volume and processing data was extracted from the LabDE database along with patient safety event reporting from the Patient Safety Net system. Common causes of variation were identified through an Ishikawa diagram exercise (aka: Fishbone, Fig. 2) and improvement ideas were selected based upon impact and span of control. An FTE Reallocation Proposal was selected and approved by senior leadership (Fig.3). This was paired with the communication of new staff targets (entry minutes per day) and weekly productivity monitoring reports (including actual to expected entry minute ratios).

Causes Effect	CHANGE IDEA(S)	MEASURE(S)/OUTCOME(S)
The Frances	FTE Reallocation Proposal: Shift existing CDS service expense to the creation of 3 new LabDE entry positions within Transplant, resulting in 7 day/week coverage, improved accountability and budget cost savings.	Document Turn-Around Time (hrs.) Document Processing Rate (Docs./Hr.) # of PSNs (Patient Safety Reporting)
Takitakan Andrew	LabDE Entry Expectations: Involve all administrative team members in LabDE entry, set entry minute per day expectations and provide individual performance meetings and reports.	Active Entry Minutes Per Day Entry Actual to Expected Ratio > 0.80 # of Focused Entry Days or Work Stoppage

(Fig. 2) Ishikawa Diagram

(Fig. 3) Plan/Do Change Ideas

Results: We were able to reallocate existing expenses to hire 3 dedicated Ambulatory Documentation Specialists (2.0 FTE total, working remotely only on lab result entry) and implement lab entry performance standards with existing administrative staff. The new staffing model and optimization increased our coverage to 7 days per week, decreased our patient safety event reporting from 89 (Mar-Dec. 2018) to 0 (Jan-Sep. 2019) and reduced our average turn-around time from 24.8 hours (Jul-Dec. 2018) to an average of 9.5 hours (Jan-Sep. 2019, Fig.4).

The core administrative staff previously performing most of the lab result entry was able to reduce their daily work expectations from 120 minutes per day to 45 minutes or less. With this time savings, the team was able to reallocate work efforts towards patient care priorities and RN Coordinator support work, resulting in an estimated 1,065 hours of additional work time annually (equivalent to an additional 0.5 FTE employee, with an approximate cost savings of \$32,000 per year (salary/fringe).



(Fig. 4) Average Turn-Around Time

Conclusion: FOCUS-PDCA methodology and the use of an A3 can provide an organized roadmap for improvement work, help us to understand variation and guide our implementation of sustainable change. While working through the process, it is important to spend time identifying the true root cause of your issues before moving to potential solutions. Data should be used to measure your current state and it will serve as an effective driver by monitoring performance and ensuring individual accountability. By optimizing staff resources and technology, FTE and Cost savings may be realized where previously not thought to exist.

Joshua R. Koscher, BS, MBA and Kelly A. Hamel, BS

ABSTRACT C3-I2

DEVELOPMENT OF A RESPONSE PLAN TO SURGES OF POTENTIAL LIVING DONORS IN THE ERA OF SOCIAL MEDIA

Kristin Smith, MSN, RN, CNL Vanderbilt Transplant Center Nashville, TN

Problem: Living donor programs are challenged by low conversion rates from the initial living donor inquiry to actual donation. This process becomes increasingly more resource and time intensive as the pool of donors expands. In the era of social media, increasing numbers of recipients are utilizing this as a tool to find a living donor. While social media can be effective at finding potential donors, it can also have unexpected consequences, as large volumes of donors in a short period of time can paralyze transplant centers. Our center has had 5 recipients since 2018 that have had significant media coverage via a viral social media post. The first viral social media post resulted in over 800 potential donors in a short period of time. Our goals were how to operationally manage these high volumes from a personnel/staffing perspective and how to minimize the impact and not delay living donors for other candidates.

Methods/Practices/Interventions: A collaborative process improvement group was formed that included IT, social media/marketing, physicians, quality, executive leadership, coordinators and administrative staff. At our center, donor referrals are either received online and imported into our EMR or via a phone call. The online system allows coordinators to filter referrals by any identifier included on the intake form. The living donor team developed a separate workflow for large volumes of donors/viral social media responses associated with a single recipient (Figure 1). In addition, educational tools were developed for both donors and recipients to help navigate the use of social media and the donation process.

Findings/Solutions/Conclusions: After the first viral social media influx, all 800 donor referrals were processed through the usual workflow. This ultimately required cross training of additional staff from other departments and more than 60 hours of overtime to complete. After implementation of the new workflow, the 4 subsequent surges of donors have had minor impacts on the work load and required no additional burden on staff or overtime. Utilizing the online system to filter through these donors and communicate with them quickly via a mass email (Figure 2) helped to manage expectations of the donors and allow us to continue our goal of individualized care. These donors are also filtered from the general pool so that other recipients and donors do not experience longer processing times. Applying a multidisciplinary approach allowed us to create a big picture workflow that solved this complex issue seamlessly and efficiently.

Implications/Relevance: In the era of social media, news spreads rapidly and information can be shared globally in an instant. As avenues of communication transform, transplant centers must adapt, be innovative and work with technology to succeed. Our center has seen first-hand that the normal, manageable processes, can become unmanageable in a matter of hours. It is very difficult to find resources to assist when workloads surge. From a staffing/personnel perspective, the living donor team was able to develop a workflow that does not require any additional staffing, overtime or place extra burden on our program, recipients or donors. Working with a collaborative, multidisciplinary team to

develop a new process helped us to maintain our quality standards while providing the highest level of care to our patients.



Workflow for large volume donors associated with a single recipient

Mass email response for donors that do not meet secondary criteria

Thank you for your interest in living kidney donation and taking the time to complete our initial questionnaire. Fortunately, this recipient has already received many offers to donate and we are in the process of reviewing them. Although we do not need any additional information at this time, we may be contacting you again in the future.

If you are interested in donating a kidney to a different recipient on the XXXXXXXX kidney transplant wait list, please contact our Living Donor Program at XXX-XXX-XXX, option 2.

Thank you again for your interest in living kidney donation and the XXXXXXX Kidney Transplant Program.

Figure 2

<u>Kristin Smith MSN, RN, CNL</u>, Kara Warmke, RN, BSN, Kaylin Centanni, RN, BSN, Heather O'Dell MSN, ANP-BC, MMHC, Deonna Moore, PhD, MSN, ACNP

ABSTRACT C3-J2

MANAGING COORDINATOR PRODUCTIVITY IN A FLEXIBLE WORK ENVIRONMENT Heather O'Dell, RN, MSN, ANP-BC, NEA-BC, MMHC / Vanderbilt Transplant Center / Nashville, TN

Problem/Situation:

Managing coordinator productivity and accountability can be challenging in the highly dynamic field of transplant. As transplant programs grow, so do the complexities of managing staff and the oftenlarge volumes of patients processed through referral and evaluation each year. Further compounding the issue is the desire to pursue more flexible or alternative work arrangements for staff in an effort to decrease coordinator turnover and retain the highest performing employees. Additionally, there are not widely published metrics available that measure coordinator productivity and performance. **Methods/Practices/Interventions:**

Leveraging the functionality of the electronic medical record (EMR) we sought to create a Coordinator Dashboard to objectively measure the productivity and performance of pre-transplant coordinators, set benchmarks for expected productivity, and monitor accountability in the setting of increased workplace flexibility. We used a combination of automated and manual chart audits, looking at patients over a 3-month period, with the expectation to be reviewed quarterly. We evaluated time to first contact after evaluation testing, number of currently assigned and new patients assigned in the last 90 days to calculate a "carry rate," number of patients in evaluation 90-180 days and greater than 180 days, and number of patients listed for transplant by month. These metrics were evaluated at the workgroup and coordinator level. We also evaluated standard progression metrics for the group including time from evaluation to committee.

Findings/Solutions/Conclusions:

The transplant leadership team in collaboration with health IT was successfully able to design and implement a Coordinator Dashboard, leveraging the functionality of the EMR with minimal ongoing time investment to assimilate the data for quarterly reviews. This dashboard allows for objective monitoring and data driven decision making while maintain workplace flexibility.

Additionally, through this process we found significant variability in the efficiency and productivity of coordinators who were processing the same volume and types of patients in the same phase of care. Wide variations in workflow, unclear expectations and variable training or orientation backgrounds accounted for much of the discrepancies. Based on these findings we sought to also (1) further standardize practice, (2) establish appropriate target metrics, and (3) meet with coordinators individually to orient to new standards and address any perceived barriers.

Implications/Relevance:

Our preliminary results indicate that this coordinator dashboard could be an effective tool for setting reasonable productivity and performance metrics, increasing coordinator efficiency, and shortening time from evaluation to listing. This dashboard allows for flexible or alternative work arrangements, such as working from home or variable hours while maintaining accountability. This dashboard and similar metrics can be applied in different phases of transplant to achieve the same goals. Ultimately, this may also translate to cost savings through improved resource utilization.



Coordinator Dashboard (Group)

Coordinator Dashboard (Individual)



<u>Heather O'Dell, RN, MSN, ANP-BC, NEA-BC, MMHC</u>, Kristin Smith, RN, MSN, Deonna Moore, RN, MSN, ACNP-BC, PhD

ABSTRACT C3-K2

ELIMINATION OF PAPER RECORDS USING AN ELECTRONIC MEDICAL RECORD SYSTEM

Don Enck, BS, MMHC, Vanderbilt University Medical Center, Nashville, TN

Purpose: Our transplant center intake team manually processed over 5000 pages each month of patient records in a very labor-intensive process. Records were received via paper fax and then were sorted and distributed to the appropriate person handling that specific patient. After review, a custom bar-code label was printed for each unique record. Separator sheets were needed to divide multiple reports belonging to the same patient. Once this was competed, a custom cover sheet was printed and the records were placed into a pick-up bin for HIM to retrieve daily and delver to an offsite location for scanning and indexing. This process was cumbersome, error prone and required anywhere from 4-25 days for records to appear in the patient's charts. Our goal was to develop a more efficient process that resulted in fewer paper records being handled.

Method: An initial review showed each organ department (heart, liver, lung & kidney) used different model fax machines. A coordinated effort was initiated to phase out those machines in order to replace them with same model multi-function devices capable of fax to folder in each department. A unique folder was created on each organ's shared drive to receive electronic faxes. Next, a virtual print driver and record import software was installed on each intake staff members computer. This allowed the intake staff to directly upload records in to the electronic medical record with document naming and indexing options. Once that was accomplished the multi-function device vendor and our IT department worked together to convert incoming faxes to individual .pdf files, direct them to unique folders on each department shared drive and ultimately end all incoming paper faxes. Access was granted for each clinical and non-clinical staff member to their unique departments incoming fax folder.

Results: The amount of records manually processed and sent to our HIM team for scanning, indexing and importing into the electronic medical records has decreased from over 5000 to under 800 monthly. Utilization of paper, toner, fax cartridges and labels has dropped substantially. Using an electronic record system has reduced the amount of lost records, records placed in the wrong patient's chart and significantly reduced the time from receiving records to them appearing in the patient's electric medical record. Clinicians are very satisfied with the quick processing time since records often appear in the patient's chart the same day we receive them. Intake staff are satisfied with the reduced workload needed to process records.

Conclusions: Transitioning from a paper based record system to an electronic record system takes coordinated support from vendors, IT, HIM and intake staff. The time gained due to increased efficiency has resulted in less outstanding work and an overall quicker processing time of record work. Additionally, this has allowed some LPN staff to work on an entirely remote basis opening office space for others.

Don Enck, BS, MMHC

ABSTRACT C3-L2

ALEMTUZUMAB VERSUS ANTI-THYMOCYTE GLOBULIN FOR INDUCTION THERAPY IN KIDNEY AND KIDNEY-PANCREAS TRANSPLANT PATIENTS

Contact: Krista Taylor, PharmD, BCPS, Virtua Our Lady of Lourdes Transplant Program, Camden, NJ

Purpose: Alemtuzumab and anti-thymocyte globulin are two thymocyte-depleting induction therapy agents that are used prior to organ transplant in order to suppress the immune system so that it does not attack the new foreign organ. Since both exhibit great immunosuppressant activity that lasts for an extended period of time, they also make patients more susceptible to opportunistic infections such as BK virus and cytomegalovirus (CMV) to infect newly transplanted patients. The purpose of this study was to determine whether alemtuzumab or anti-thymocyte globulin is a better induction agent to prevent rejection and if either leads to more CMV and BK infections.

Methods: Male and female patients eighteen years of age and older who had undergone a kidney or kidney-pancreas transplant between January 1, 2014 and July 18, 2019 and who were started on immunosuppressant therapy that consisted of tacrolimus and mycophenolic acid were included in the study. If patients were started on or switched to immunosuppressant therapy which included cyclosporine, sirolimus, or everolimus they were excluded from the study. Patients who had undergone a simultaneous kidney-liver transplant were also excluded. Necessary patient health data was collected from medical charts via TransChart and Soarian Clinicals and deidentified for patient protection. Primary outcomes included the occurrence of CMV infections, BK infections, and organ rejection. T-test was used to analyze continuous variables and categorical variables were assessed using chi-square analysis. Study approval from the institutional review board and a waiver of consent and authorization were received prior to initiation of the study.

Results: Two-hundred nine patients were included in the study. Forty-three patients had received antithymocyte globulin for induction therapy and one-hundred sixty-six received alemtuzumab. 27.1% of patients who received alemtuzumab developed a BK virus infection which was significantly higher than the 6.98% who developed a BK virus infection in the anti-thymocyte globulin group (p = 0.005). There was not a significant difference between induction therapy groups in occurrence of CMV infections or organ rejection. Average tacrolimus levels one month prior to infection with BK virus were evaluated to determine if they had played a role in susceptibility but there was no significant difference between induction therapy groups (anti-thymocyte globulin = 6.73 ± 1.51 , alemtuzumab = 7.63 ± 1.87 , p = 0.49).

Conclusion: Alemtuzumab was associated with a greater number of BK virus infections when compared to anti-thymocyte globulin. Anti-thymocyte globulin may be a safer induction therapy option versus alemtuzumab in kidney and kidney-pancreas transplant recipients, conferring equal protection against rejection with a lower incidence of post-transplant BK viremia.

Authors:

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Previously presented as:

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ABSTRACT C3-M2

ENGAGEMENT OF LIVER TRANSPLANT WAITLIST CANDIDATES REGARDING THE OPPORTUNITY FOR LIVING DONOR LIVER TRANSPLANTATION

Annmarie Liapakis, MD, Yale New Haven Hospital, New Haven, CT

Problem:

The shortage of deceased donors and increased transplant waitlist time contribute to clinical deterioration or death in people with end stage liver disease (ESLD); leading to removal of 15% to 25% of waitlist candidates each year.¹ Efforts to decrease morbidity and mortality for those on the waitlist include living donor living transplant (LDLT), an established option that addresses organ shortage, waitlist time, and offers a survival advantage post-transplant.² However, eligible patients may not be equipped with knowledge and / or resources to seek out this opportunity. They require additional education and support from an interdisciplinary care team to increase acceptance of LDLT as a viable option and increase referral of donors for evaluation.

Interventions:

We developed a standardized workflow to implement a pilot outreach education program on LDLT on a monthly basis from November 7, 2017 to July 31, 2019. The program was designed to help waitlist candidates learn about LDLT and how to increase referrals, thus increasing their chances of getting transplanted. Information was focused to provide waitlist candidates and their families and friends with:

- A concise overview of LDLT and the opportunity for timely transplant
- Tools and resources to help pursue LDLT, i.e. spread word of their need for a living donor
- A first-hand perspective from those who have been through the process

Lastly, the number of candidates opting for LDLT and referrals pre- and post- intervention were compared and descriptively analyzed.

Findings:

In the 21 months prior to the outreach education program (February 1, 2016 to October 31, 2017), 418 people self-referred to be evaluated as a potential donor for 65 potential recipients opting to pursue living donation. Fifteen additional people self-referred as non-directed donors. Fourteen living donor liver transplants were completed. During the intervention period 73 potential recipients attended an outreach education session and opted to pursue living donation. This resulted in 837 self-referrals for 97 potential recipients. An additional 44 people self-referred as non-directed donors. Eleven living donor liver transplants were completed.

Implications:

A focused educational outreach program was associated with a rise in waitlist candidates opting to pursue LDLT and with a rise in referrals of potential living donors. Further benefits of programmatic approach, notably impact on actual transplantation rates, need to be evaluated. It is notable that there was an increase in non-directed donor referrals during the intervention period which may be related to an overall increase in community awareness.



AnnMarie Liapakis, MD, Sharon Klein, MPS RN CNML, Kelly Grimshaw DNP APRN CCRN CCTN, Chiara Palumbo, MD, Praveena Narayanan, MD, & Kara Ventura, DNP APRN CCTC

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