

CATEGORY 2
QAPI, SAFETY AND REGULATORY

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QAPI, Safety and Regulatory



Title:

Utilizing Online Educational Modules and Flowcharts to Improve Organ Check-In and ABO Verification Compliance

Primary Author/Credentials/Organization/City/State:

Lindsay Adamski, MPH and Fauzia K. Butt, MD, FACS, Penn State Health Milton S. Hershey Medical Center, Hershey, PA*

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Problem/Situation: Issues with proper ABO Verification and solid organ check-in are the two citations most often mentioned during site surveys of transplant programs by UNOS and CMS. While the transplant staff is well-versed in the need for accurate and timely documentation, constant OR staff turnover, along with changes in leadership, has made it challenging to educate non-transplant staff about the process and its importance. Prior to a UNOS site visit in June 2019, our team realized that we were inconsistently compliant with organ check-in and ABO verification procedures. Our kidney, liver and living donor kidney transplant programs were cited for non-compliance with these regulations. We were motivated to improve our compliance with these regulations by increasing staff understanding of the importance of accurate and timely documentation.

Methods/Practices/Interventions: Our transplant center utilized our institution's online training system, Compass, through which educational modules are regularly assigned to the staff in order to meet certain requirements during employment. A module detailing the processes of Organ Check-In and ABO verification was created and assigned to the OR staff to complete. In order to test the knowledge acquired, a quiz was given immediately following the training module. A score of 84% was required to pass and receive credit for the training. This training module could easily be assigned to new staff as needed. In addition, flowchart posters were created as a visual reference to outline the ABO verification process for living donors and all recipients (Figures 1 and 2). These posters were placed in the operating rooms usually utilized for living donor and recipient procedures. Portable, laminated versions were also created as quick reference guides for use in other operating rooms, as needed. In order to understand the impact of this plan, overall compliance, as well as individual organ program compliance, was evaluated before and after implementation.

Findings/Solutions/Conclusions: Implementation of the online educational modules and visual flowcharts resulted in the improvement of compliance with regulatory requirements at our center. Results are provided in Table 1. Overall compliance at our center for both ABO verification and the Organ Check-In procedure increased from 77% to 97%. Individual organ program compliance also increased for all programs. Overall compliance at our transplant center has remained at 100% as of October 16, 2020, demonstrating the effectiveness of the online educational modules and visual flowchart guides.

Implications/Relevance: Adherence to ABO verification and Organ Check-In regulations is an essential component of a successful transplant program. Our center recognized that we needed to improve our compliance with these regulations and developed a detailed educational module with accompanying quiz questions and visual flowcharts that could be used as a quick reference in the OR. Implementation of these measures successfully increased our overall compliance, as well as compliance within each organ-specific transplant program. Our training module, quiz questions and visual guides can easily be duplicated at any transplant program to assist in the education of new OR staff, without adversely risking adherence to regulations.

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References:

1. UNOS Policy 5.7: Organ Check-In. https://optn.transplant.hrsa.gov/media/1200/optn_policies.pdf. Accessed 12/1/2020.
2. UNOS Policy 5.8: Pre-Transplant Verification. https://optn.transplant.hrsa.gov/media/1200/optn_policies.pdf. Accessed 12/1/2020.
3. UNOS Policy 14.7: Living Donor Pre-Recovery Verification. https://optn.transplant.hrsa.gov/media/1200/optn_policies.pdf. Accessed 12/1/2020.

Figures/Charts/Tables:

Figure 1: Visual Flowchart for ABO Verification for Living Donors

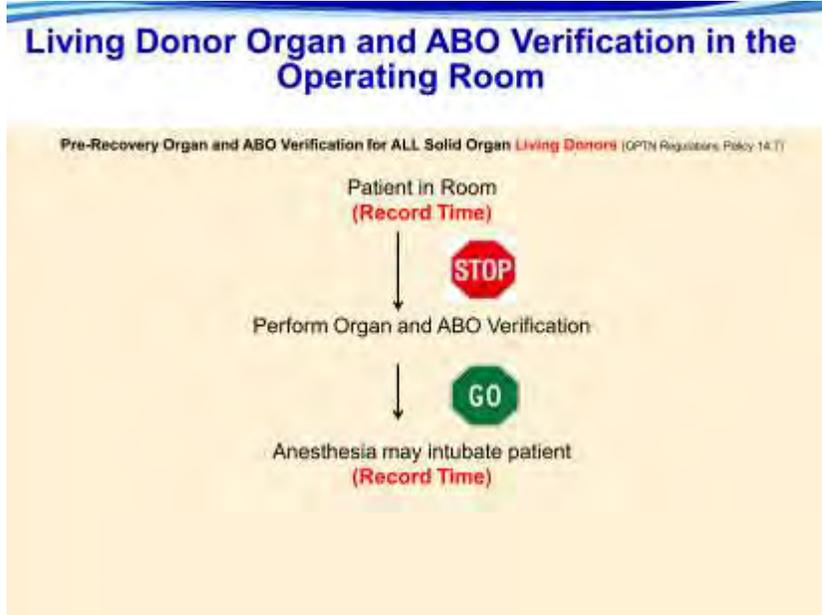


Figure 2: Visual Flowchart for ABO Verification for All Recipients

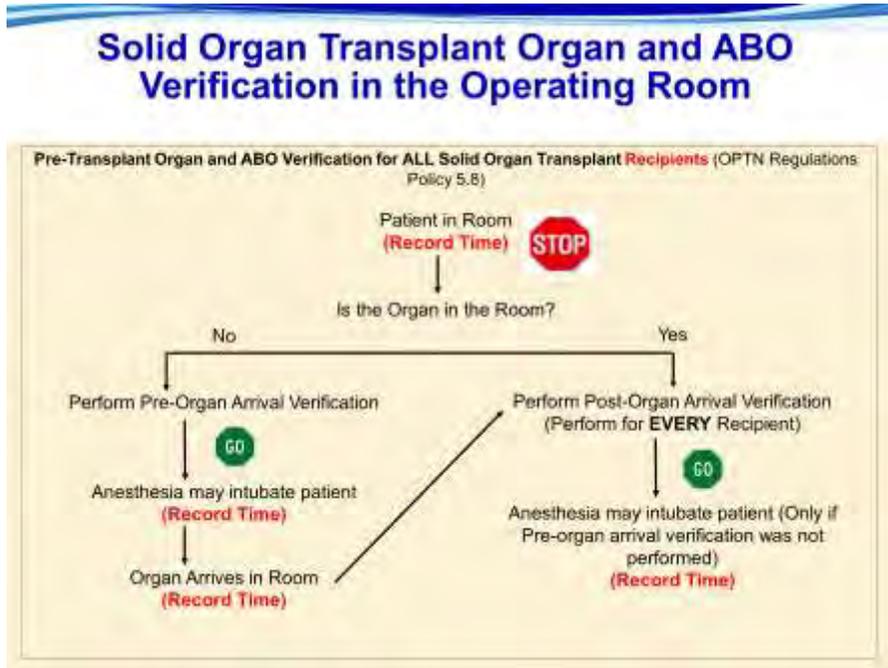


Table 1: Overall and Individual Program Compliance with ABO Verification and Organ Check-In Regulations

	Overall	Adult Kidney	Pediatric Kidney	Living Donor Kidney	Liver
Pre-Implementation 7/2018-6/2019	77%	78%	75%	67%	85%
Post-Implementation 7/2019-7/2020	97%	97%	100%	94%	96%

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Title:

Utilization of an *SRTR Cohort Visualization Tool* to Increase Team Understanding of SRTR Reporting Cohorts

Primary Author/Credentials/Organization/City/State:

Brendan Kimball/MBA/Boston Children's Hospital/Boston/MA

Problem/Situation: Our Pediatric Transplant Center supports five pediatric organ transplant programs (heart, lung, liver, kidney, intestine). The comprehensive QAPI program meets monthly with each program and quarterly with all programs together to review metrics, outcomes, and progress on quality improvement initiatives.

While reviewing outcomes metrics and SRTR data, it became apparent that prospective assessment of the SRTR reporting cohorts and the number of serious adverse events (patient deaths or graft failures within 1 year of transplant) that would result in a UNOS flag would be an important strategy.

The primary aim was to create a visual tool that would prospectively inform organ transplant programs of which transplanted patients would be reflected on specific SRTR reports. A secondary aim was to visually present the impact of patient deaths or graft failures within 1 year of transplant on eliciting a UNOS flag in a given SRTR reporting period. The final aim was to project the longitudinal risk for patients who are currently being considered for transplant.

Methods/Practices/Interventions: To create the visual display of SRTR cohorts a simple Excel line-dot graph was created. All transplants are presented at the bottom of the graph to illustrate a running list of transplants for that program. The SRTR cohorts are then displayed sequentially as you move up the graph. This highlights how the constant 2.5 year SRTR reporting period slides forward 6 months for each cohort. By following one patient (dot) up the graph you can see which patients will be captured in each SRTR reporting period. Green dots indicate a patient or graft survival at least 1-year post-transplant. Red dots indicate patient death or graft failure within 1 year of transplant. White dots indicate patients who have not yet reached their one year transplant anniversary.

To determine the number of patient deaths within 1 year that would cause a UNOS flag we leveraged two existing SRTR tools: the CUSUM reports and the 1 Year Expected Survival Excel Worksheet. By uploading the most recent CUSUM data into the Excel Worksheet and manipulating the data to match the file format we were able to then select which SRTR date range we wanted to include. The selected data was then reflected in the "Flag Criteria" of the worksheet which reveals how many events would cause a UNOS flag for that population.

Findings/Solutions/Conclusions/Implications/Relevance: The creation of this visual tool has greatly improved our teams' understanding of SRTR report cohorts as well as the risk of being flagged by UNOS for adverse outcomes. We update these visuals regularly and share them at monthly QAPI meetings to ensure ongoing transparency and awareness of our post-transplant patient panel. This tool has also helped to inform clinical staff of temporal trends in patient outcomes. We plan to create similar visuals for 3-year patient survival.

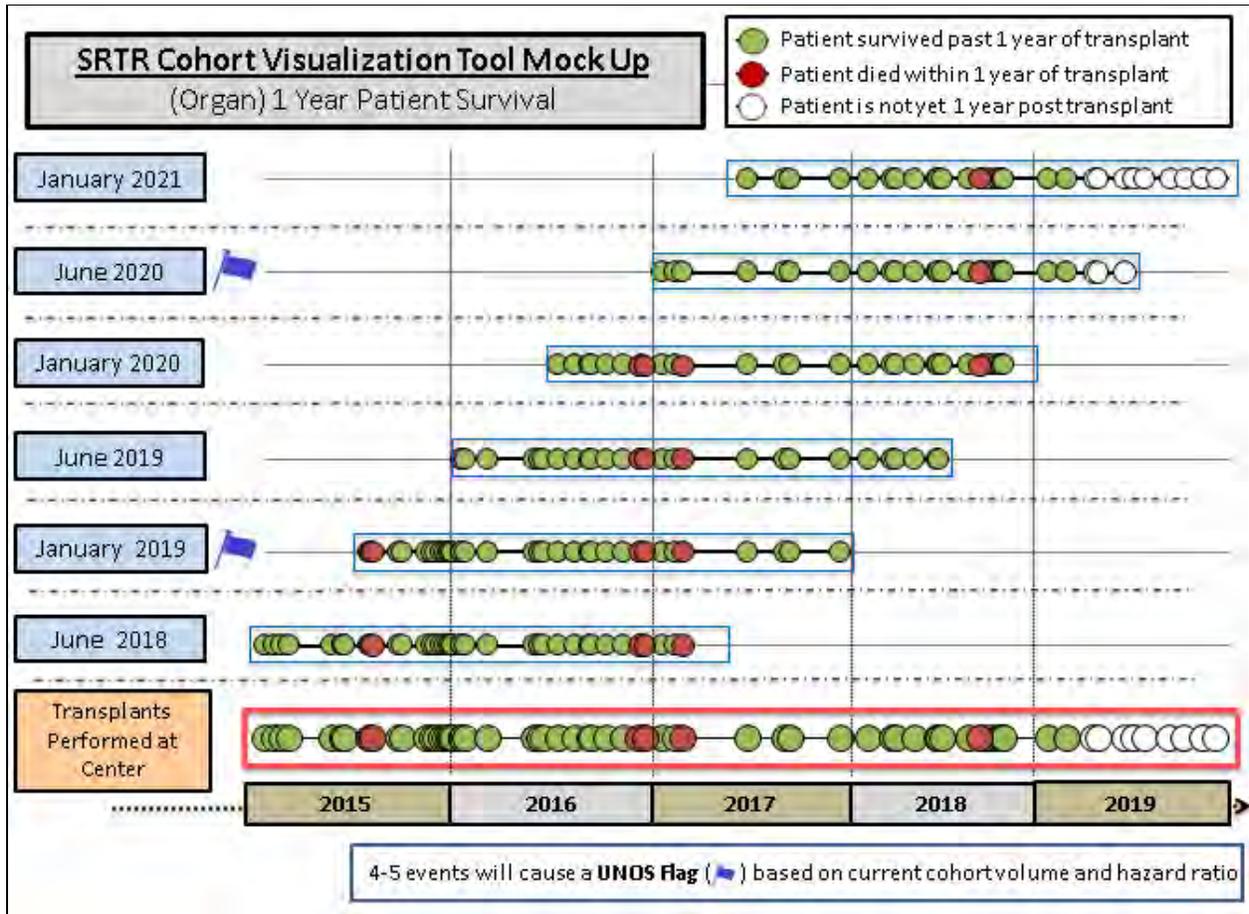
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References: N/A

Citations: N/A

Figures/Charts/Tables:

Figure 1: SRTR Cohort Visualization Tool (Mock Up)



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Title: Successful CMS Recertification Survey during the COVID19 Pandemic

Primary Author/Credentials/Organization/City/State:

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Problem/Situation: Our 5-organ transplant program (Pediatric Transplant Center, PTC) entered the CMS recertification window in April 2020. Although surveys were being delayed once the COVID19 pandemic was underway, preparation for this survey was necessary. COVID-specific complications to this preparation and the actual conduct of the survey were recognized, mostly related to the predominance of virtual work and the need for physical spaces that allowed the survey to be done within established COVID protocols. Other complicating variables included the new CMS regulations that had been introduced on March 29, 2019, the introduction of state rather than national surveyors, and the planned contemporary implementation of a new EMR transplant module (OTTR) during the survey window. The CMS surveyors arrived unannounced on October 5, 2020 for a 4-day survey.

Methods/Practices/Interventions: 1) At least 1 member of Transplant Administration was designated to be on-site every Monday, Tuesday and Wednesday. 2) Select remote staff were instructed to quickly come on-site with no notice when the surveyors arrived. 3) Transplant administration collaborated with institutional operations to allocate appropriate physical spaces, and make documents and EMR available with no notice. This required 2 Command Centers (rather than the usual 1) in order to accommodate staff, as well as rooms with sufficient space for surveyors. 4) For the many staff members who were working virtually, remote training sessions were instituted. **Table 1** demonstrates the number and disciplines of the staff who required CMS-regulations training and the number and who was trained to utilize the transplant-specific EMR module, so that documentation could be efficiently reviewed. 5) CMS Survey preparation was incorporated into the regular QAPI meetings of the PTC. 6) The PTC staff and institution Regulatory Preparation Team conducted 2 COVID-specific preparation meetings. 7) Regular maintenance of survey-required documentation, such as policies, Quality Management, patient lists and adverse event management was not interrupted by the change to virtual work. Once the survey began, intra-institutional communication was established using the Cerner Messenger app and transplant-specific distribution lists.

Findings/Solutions/Conclusions: The processes included in the preparation for and the conduct of the CMS recertification survey are shown in **Figure 1**. Training was active and ongoing at the time the survey was begun. At the start of the survey, planned interventions were promptly and efficiently implemented by PTC staff, multidisciplinary transplant providers, and the institution's Emergence Management and Regulatory Preparation teams. As a result, the requisite staff and documents were available to the surveyors without delay, and the designated physical spaces and computers that were accessible to the surveyors allowed strict observance of COVID protocols. Surveyors toured 4 in-patient units, reviewed 30 patient charts, attended a kidney transplant clinic, and reviewed all PTC policies. In addition, the Quality Management Plan and minutes of recent organ-specific QAPI meetings were reviewed. Two adverse events were assessed in detail. The surveyors interviewed 5 bedside staff, 2 transplant patients and family members in person and 1 by telephone. The recertification survey was completed in 1.5 days instead of the anticipated 4 days. No deficiencies were recognized and no citations were assigned.

Implications/Relevance: Success with CMS recertification surveys is essential to the ongoing success of organ transplant programs. Proper preparation is multifaceted, multidisciplinary and across the institution, and is critical to this success. The physical limitations imposed by the COVID19 pandemic provided new and unforeseeable challenges to this complex preparation and the conduct of the survey itself. Careful consideration of this process can be associated with a favorable outcome.

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References: N/A

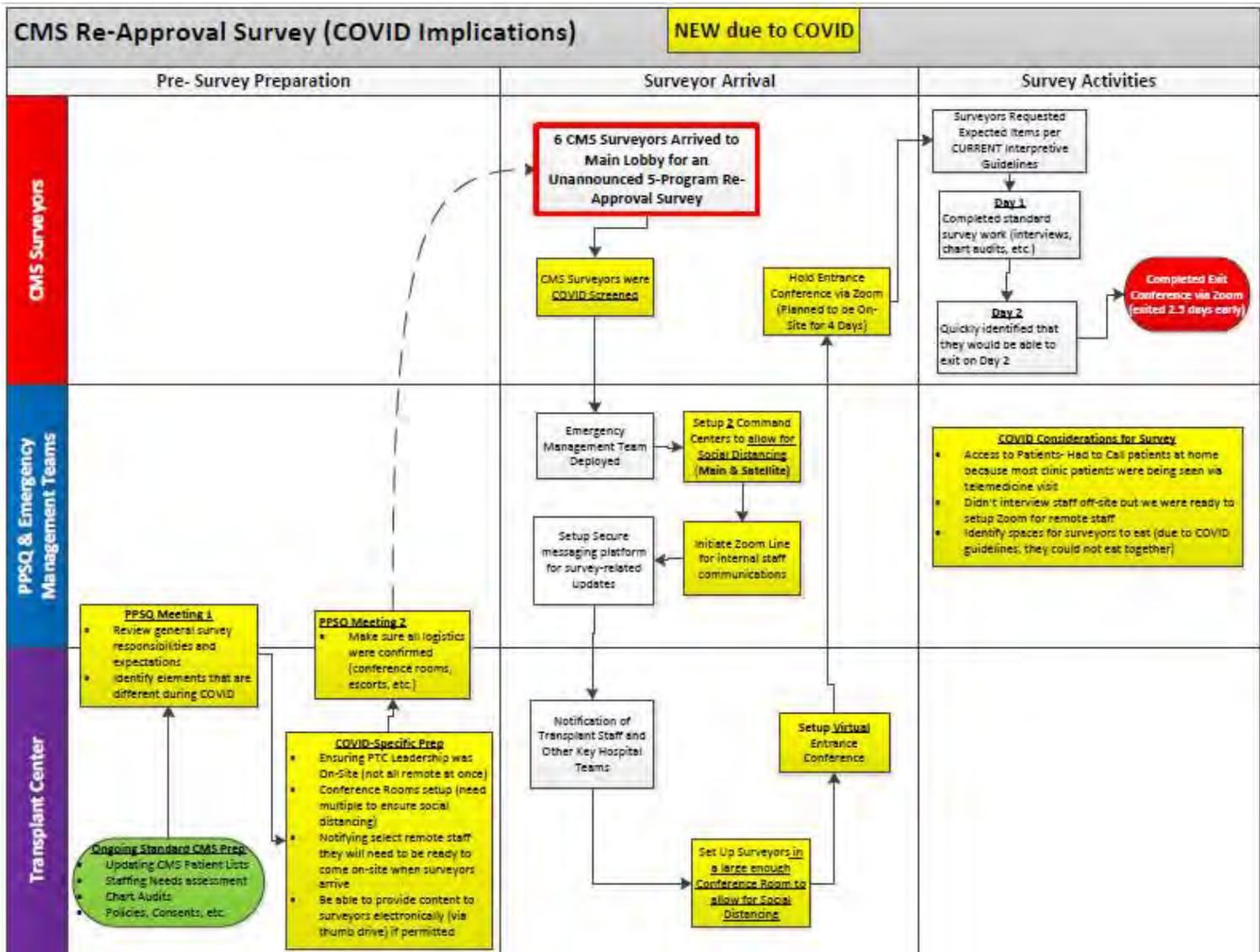
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Figures/Charts/Tables:

Table 1- Staff Who Required CMS Training and Training to Utilize the Transplant-specific EMR (OTTR)

Discipline	# Staff	CMS Training Conducted	OTTR Training Conducted
Physicians & Surgeons	25	Y	Y
Transplant Coordinators	14	Y	Y
Bedside Staff	470	Y	N
Administrative Staff	11	Y	Y
Social Workers	7	Y	Y
Dieticians	7	Y	Y
Pharmacists	2	Y	Y
Psychologists/Psychiatrists	3	Y	Y

Figure 1: Implications of COVID19 on Survey Preparation and Execution



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Title:

Implementation of an Immunization Process to Improve Vaccination Rates in Solid Organ Transplant Candidates

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Problem/Situation: Solid organ transplant recipients are at an increased risk of contracting vaccine-preventable diseases due to their lifelong immunosuppressive regimens. However, vaccination rates among solid organ transplant candidates (SOTCs) fall far short of the recommended guidelines set by the Centers for Disease Control (CDC).¹ In addition, immunosuppression regimens diminish cell-mediated immunity and antibody production, which attenuates post-transplant immunization effectiveness.² This highlights the importance of immunizing patients prior to transplant, which was previously not an area of focus for our patients. Our goal was to achieve significant improvement in our influenza, pneumococcal, hepatitis, and tetanus/diphtheria/pertussis immunization rates per CDC recommendations in our SOTC population by developing a standardized immunization process.

Methods/Practices/Interventions: A dedicated transplant pharmacist and nurse transplant coordinator developed a standard immunization process. Based on CDC guidelines, the process included general immunization principles, assessment guidelines, indications, and schedules and was fully implemented in January 2018. Each SOTC was seen by a pharmacist for a comprehensive immunization assessment and personalized plan. This was documented in the electronic medical record (EMR) and communicated with the transplant coordinator for monitoring and implementation. Assessments were done on an annual basis until transplant. If immunizations were unable to be completed prior to transplant due to factors such as short listing time or critically ill status, remaining vaccines were resumed one year post-transplant.

The process was evaluated by examining the immunization status at the time of transplant in 42 SOTCs who were listed and transplanted at our center. Pre-implementation data was gathered for 22 SOTCs who were transplanted between February 2016 and June 2017. Post-implementation data was gathered for 20 SOTCs who were transplanted between January 2018 and March 2019. Success was defined as a SOTC having a documented immunization assessment in the EMR and either being fully immunized prior to transplant or on track to being fully immunized when transplanted. The Fisher Exact Test was performed to compare success rates between the two groups.

Findings/Solutions/Conclusions: Of the pre-implementation patients, 36% were successfully vaccinated compared to 85% of the post-implementation patients ($p=0.0018$; Figure 1). All of the pre-implementation successes were due to having documented assessments and appropriately working towards completing immunizations when transplanted. None were fully immunized prior to transplant. Of the 17 successful post-implementation SOTCs, in addition to documented assessments, 8 were fully immunized prior to transplant while 9 were on track to complete their immunizations (Figure 2).

Implications/Relevance: Our program was able to significantly improve immunization rates among our SOTC population, decreasing their risk of vaccine-preventable diseases. We did this through implementation of a procedure distilled from CDC guidelines. Essential elements of the implemented process included 1) a standardized, comprehensive procedure, 2) education of staff, patients, and caregivers, 3) dedicated team members, and 4) commitment to continued examination and improvement of the process. Going forward, providing education and incorporating the remaining staff in the immunization process will continue to improve our program's success. We believe that by adapting a similar process, improved immunization rates are also achievable by other transplant centers.

Primary Author/Co-Authors: Stacie Brooks, RN, BSN, Steven Metz, PharmD, BCPS

Citations:

1. Centers for Disease Control and Prevention. *Epidemiology and Prevention of Vaccine-Preventable Diseases*. Hamborsky J, Kroger A, Wolfe S, eds. 13th ed. Washington D.C. Public Health Foundation, 2015
2. Infectious Disease Clinics of North America. *Immunization of Solid Organ Transplant Candidates and Recipients*. Donata-Santana C, Theodoropoulos N, 2018-09-01, Volume 32, Issue 3, Pages 517-533

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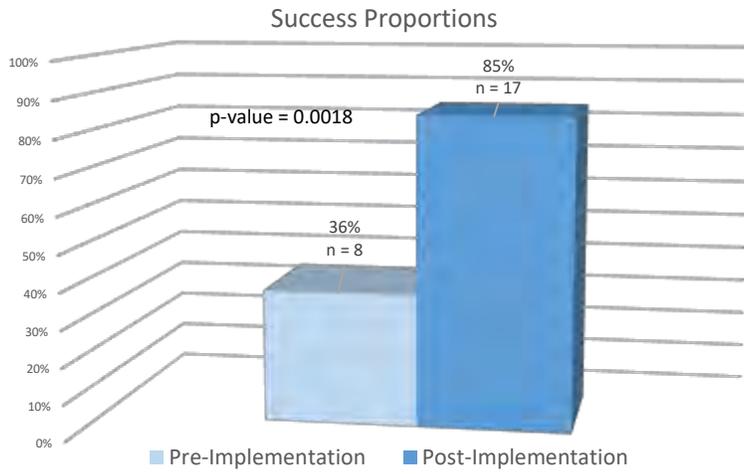


Figure 1

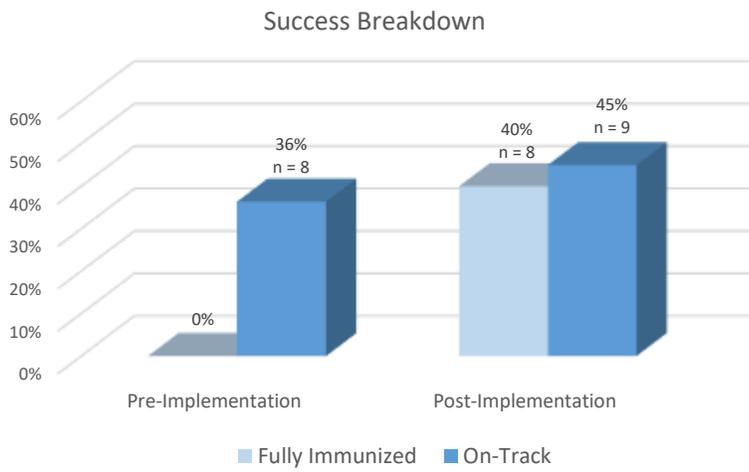


Figure 2

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Ensuring Transplant Educational Opportunities During Covid-19: A New Platform for Staff Education

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Problem/Situation: Transplant programs are mandated by the Centers for Medicare and Medicaid Services (CMS) to ensure that all staff involved in the care of transplant patients have initial and on-going educational training. In 2020 hospitals and transplant programs were challenged during the Covid-19 pandemic in caring for patients, and in maintaining core functions such as patient selection committee meetings. With the inability of staff to meet in-person, programs resorted to virtual platforms for patient selection and staff meetings. Similar platforms also needed to be created to ensure that both new and seasoned transplant center staff could attend Center-wide educational opportunities.

Methods/Practices/Interventions: Our Center in collaboration with the hospital's Center for Clinical and Professional Development created a 15-week "Transplant Boot Camp" educational series which was offered virtually via Zoom video conferencing and provided nursing contact hours. Once a week, for 15 weeks (from July thru November) a 1-hour educational conference was offered where experts in various clinical arenas presented a relevant clinical topic. Topics included: opportunistic infections in transplant; transplant medication overview; living donor transplantation; hepatocellular carcinoma and liver transplantation; HLA and DSA testing; what's new in heart transplantation; finance and case management; kidney transplantation; nutrition and the transplant population; pediatric transplantation; ventricular assist devices; ethics in transplantation; acute alcoholic hepatitis; Covid-19 in solid organ transplantation; and lung transplantation.

The educational presentations were recorded on Zoom and then housed on a newly created Transplant Center Share Point site where staff could access via computer and/or smart phone. In addition, the recordings were then available to post on a learning management system where nurses could then access these and obtain nursing contact hours.

Findings/Solutions/Conclusions: A 15-week "Transplant Boot Camp" educational series was conducted via video conferencing during the Covid-19 pandemic. Remote access enabled staff to attend conferences which were typically held in-person allowing for continuing education. Staff attendance rates varied from 10-50 attendees per session and evaluation forms demonstrated a high success rate. Staff who were unable to attend the conference and who would have missed these sessions, now had the opportunity to participate when convenient via a newly created Transplant Center SharePoint site. A library of educational offerings was created in a learning management system. These sessions can then be assigned by nursing leadership for staff to complete and obtain nursing contact hours and to demonstrate compliance with continuing transplant education.

Implications/Relevance: Transplant programs can continue to offer continuing education to their staff and ensure compliance with CMS despite the COVID-19 pandemic by utilizing virtual platforms and creating clinical libraries. Coordinating efforts with the institution's nursing education department offers an opportunity to provide nursing contact hours and create virtual clinical libraries – further expanding staff access to educational opportunities.

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References: n/a

Citations: n/a

Figures/Charts/Tables: n/a

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Title:

It Takes a Village to Raise Vessel Storage Compliance

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Problem/Situation: Deceased donor vessel storage, use and disposal is carefully regulated by UNOS. In June 2016, a UNOS site survey at our transplant center revealed delays in timely disposal of stored vessels. From January 2015 through June 2016, 42 deceased donor vessels were stored and 4 vessels were not destroyed within the required 14 days of recovery. Further audits revealed that one HCV+ vessel was stored, and not disposed of immediately. Also, not all TIEDI forms were completed within the required 7 days. It was felt that staffing was inadequate for these processes to be performed properly. Our goal was to develop a process for the proper storage and disposal of deceased donor vessels to reach 100% compliance at our institution.

Methods/Practices/Interventions: A multi-disciplinary team was created for this project, including OR leadership and the transplant quality team. An internal review of policy compliance identified a lack of leadership supervising staff education and policy adherence. Our team determined that OR leadership should take primarily responsibility for this process, ensuring thorough training of the nursing staff in the storage and disposal process, and UNET reporting requirements. At least one trained nurse was made available at all times. The transplant quality analyst functioned as a resource for the OR staff and provided weekly and monthly audits. Revisions to the vessel storage policy were made and the form utilized to track vessel storage and disposal was updated. Vessels were discarded 13 days post-recovery to ensure compliance with current regulations. The processes we utilized are illustrated in Figure 1.

Findings/Solutions/Conclusions: From FY15/16 through the first half of FY19/20, 100% compliance was achieved with the disposal of stored vessels within 14 days. Process changes and staff re-education resulted in 100% compliance with the immediate disposal of vessels prohibited from storage. From FY18/19 through the first half of FY19/20, 100% compliance was attained with reporting the disposal of stored vessels. These results are summarized in Figure 2. There were two validations of the new processes; in both instances, the transplant quality analyst served as backup to ensure compliance with our policy. A UNOS site survey in June 2019 resulted in zero violations with vessel storage. Achievement of 100% compliance required participation of several staff members from multiple departments. It truly takes a village to raise vessel storage compliance.

Implications/Relevance: Our experience reinforces that more than one person is needed to share responsibility for the vessel storage process. OR staff were primarily responsible for adhering to the storage, disposal and reporting procedures. The transplant quality team served as backup by performing internal audits and confirming compliance. We achieved 100% compliance in all areas of vessel storage, disposal and reporting. During our 2019 site survey, the surveyor remarked that “usually, vessel storage citations are pages long.”

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References:

1. UNOS Policy 16.6 Extra Vessels Transplant & Storage. https://optn.transplant.hrsa.gov/media/1200/optn_policies.pdf. Accessed 12/4/2020.

Figures/Charts/Tables:

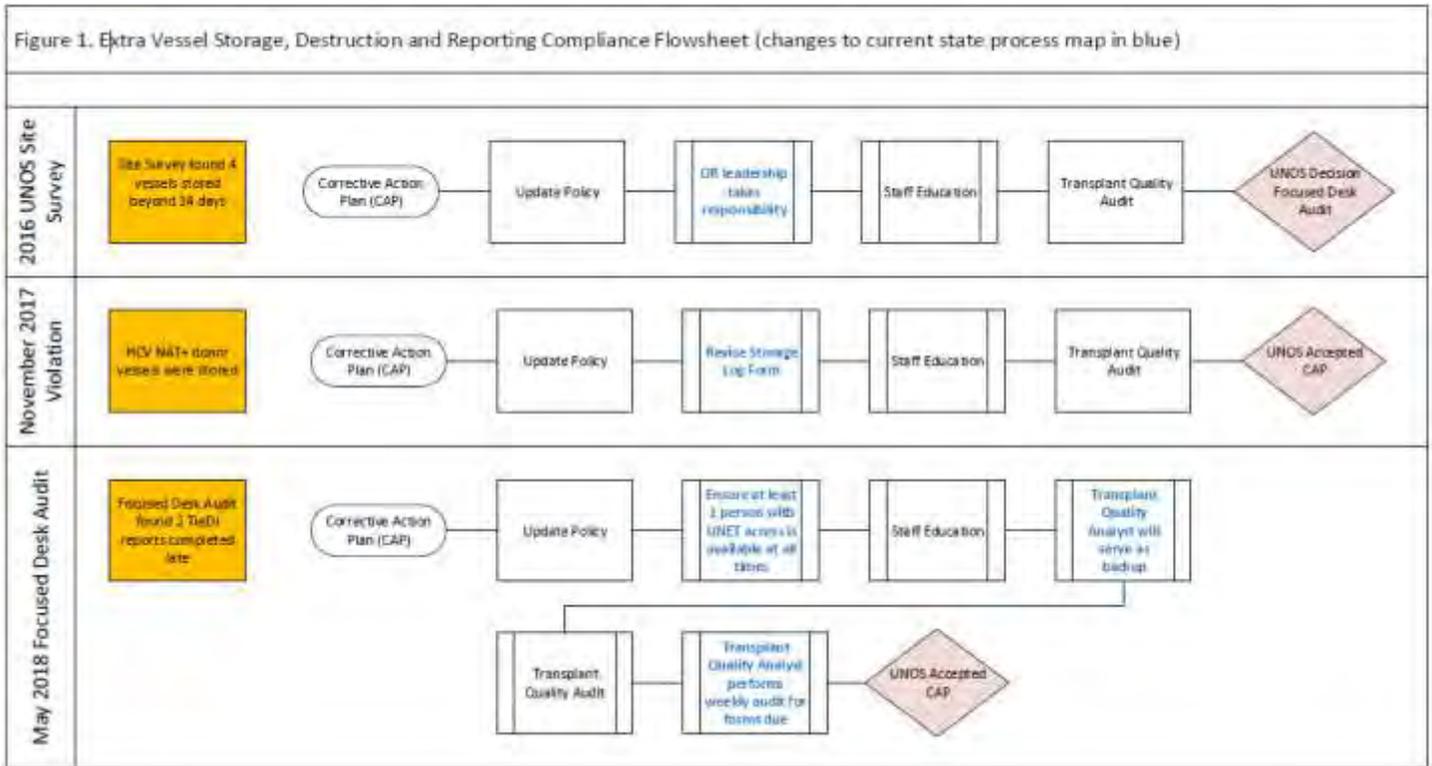


Figure 2. Results of Internal Audits

	Destruction within 14 days Compliance	Immediate Destruction Compliance	Reporting within 7 Days Compliance
FY14/15	79%	N/A	100%
FY15/16	100%	N/A	100%
FY16/17	100%	N/A	94%
FY17/18	100%	100%	96%
FY18/19	100%	0%	100%
FY19/20 to 12/31/2019	100%	100%	100%

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Title: One Center's Journey Through the COVID 19 Pandemic – Lessons Learned

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Problem/Situation: Beginning in late February 2020, the transplant center was faced with emergency planning in anticipation of the COVID 19 epidemic. The center located in the quad state area was acutely affected by the first significant COVID 19 surge in the United States. The transplant programs in this region were all challenged with addressing continuing to conduct transplant surgery safely. It is understandable that information sharing was lacking within the transplant community in the quad state area. Our large volume transplant center, comprised of the heart, lung, kidney and liver programs, had established an emergency plan. Our emergency plan was flawed in as much as it did not address the challenges of a pandemic. By early April, the hospital was experiencing the highest volume of COVID 19 patient admissions in the city. This further challenged the transplant service to assure for continuity of care and patient safety while supporting the operations of the health system stressed by the COVID 19 pandemic. All of this occurring in an environment with a dearth of information and changing information from local, state and national directives as the COVID 19 pandemic unfolded. This abstract will address the quality and safety measures implemented and the lessons learned and applied as the second surge was faced in the late Fall of 2020.

Methods/Practices/Interventions:

Leaders of the transplant services began in late February 2020 to address the need to implement significant changes in transplant program processes necessitated by the expanding COVID 19 pandemic. The leaders worked closely with the hospital pandemic command center to assure that transplant services were aligned with the organization. Changes were implemented by the transplant leadership which included but were not limited to the following:

Monitoring of Listed and Post- Transplant Patients: Home monitoring of listed and post- transplant patients through the use of the HGE COVID Symptom Tracker™ app was implemented on March 19,2020; a COVID 19 Safe Practices FAQ sheet was developed and distributed to all transplant patients.

Donor Selection and Recipient Monitoring During the Call in Process: Surgeon's reviewed donor offers with the hospital emergency command center to assure that services would be able to be provided during the height of the surge; Candidate Lists were continually reviewed by the surgical and medical directors; a script was developed and implement for use when calling in patients for transplant including informing the potential recipient of additional precautions taken in the selection of donors and COVID 19 symptom assessment of the potential recipient prior to organ acceptance; COVID 19 testing and chest CT scan imaging was implemented for all donors prior to organ acceptance and recipients upon admission for transplant surgery; all hospital visitation was restricted.

Transplant Leaders Meetings: On March 25, 2020, daily video meetings with the medical and surgical directors, transplant infectious disease (ID) specialist and operational leaders were initiated to review topics such as daily transplant admissions, hospital COVID 19 capacity, supply of PPE and blood products, COVID 19 testing availability and review of regional county and state COVID 19 transmission data and the ability to perform transplants based on available hospital resources. The transplant ID specialist provide real time city, region, state and CDC data to assist in informing the decision making process.

Team and Patient Meetings: All team meetings were converted to a virtual format; in person patient education classes were suspended and converted to online videos for the patients to view prior to starting transplant evaluation and at time of discharge from the hospital following the index admission.

Inpatient Patient Management: Inpatient transplant patients were cohorted to 3 specific transplant units in the non COVID 19 hospital and staff on these units were restricted from working in the COVID 19 hospital.

Outpatient Patient Management: April 1, 2020 outpatient transplant evaluations and clinic visits were placed on hold and outpatient testing was limited to urgent studies for clinical management. Kidney transplant outreach efforts assured for safe management of dialysis patients and continued referrals to the system and initial screening was virtual versus in person. Despite lack of testing, team members met virtually to facilitate the patient's evaluation once testing resumed. Transplant Call Center and operations were moved off site; all staff were provided with the internet capability to seamlessly continue with patient contact while working off site.

Recovery Plan - Resuming Full Transplant Operations: Transplant surgery resumed in late May. The transplant programs coordinated with the Hospital Recovery of Services Planning Committee with outpatient evaluations for all programs resuming on June 1, 2020. The Health Systems free standing outpatient facility was used to minimize potential COVID 19 exposure at the main hospital. Outpatient COVID 19 testing practices prior to select procedures were followed in accordance with the hospital directives. All employees conducted daily COVID 19 symptom assessment via the HGE COVID Symptom Tracker™.

Findings/Solutions/Conclusions:

The transplant program's experience from the COVID 19 surge of the Spring of 2020 has served to inform the current practices as the region experiences a second surge in COVID 19 cases. Lessons learned have allowed for continued operations in all phases of transplant both inpatient and outpatient. Critical lessons learned included the need to respond in real time to changing information as data emerged during the initial phases of the pandemic; transparency in communication with the hospital leadership and consistent and frequent contact with patients and staff allowed for continuity in an ever changing pandemic environment. Of note, the need for a comprehensive emergency plan including pandemic planning was identified with consideration for coordination with other transplant centers in the region. Maximizing telemedicine applications, patient participation in accessing their medical record for updates and alerts and in home therapies are additional solutions to provide communication while assuring for patient safety during a pandemic.

Implications/Relevance:

The second COVID 19 surge demonstrated the opportunity to retest in the lessons learned during the first surge. Daily transplant leadership calls were found to not be necessary but a weekly or bimonthly calls based on community spread were resumed. Moving all outpatient transplant testing to the free standing health system site provided the ability to continue to safely conduct the essential transplant evaluation testing for all organ programs. Increased outpatient COVID 19 testing availability has assured for continued operation for outpatient services and testing. On a national level, a call for increased transparency and coordination in the wider transplant community was identified by this transplant center. A need for collective transplant community communication to share experience across areas will assure for ongoing communication of learned experience that may be applied at other centers.

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References: United Network for Organ Sharing. (2020, April 17). New York vs. COVID -19: We ARE Winning! Lecture presented in <https://unos.org/covid-webinars/>.

American Society of Transplantation. (2020, March 23). COVID -19: Organ Donation and Transplant Town Hall Webinar #1. Lecture presented in <https://www.youtube.com/watch?v=LUM8-vDH-kl>.

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Problem/Situation: Individual Member Focused Improvement (IMFI) is an initiative of the OPTN. The goal of IMFI is to monitor and improve OPTN member performance through the use of quality improvement tools and engagements custom designed for the member and their unique needs. The OPTN is a central hub in the transplant community, uniquely positioned to share effective practices, information, and expertise with members. IMFI engagements may include coaching sessions, training and education, customized data analysis, and/or consultative peer mentorships, with the goal of helping the individual member improve performance in the identified project area to increase organ donation and transplantation. To assess the OPTN and Membership and Professional Standards Committee (MPSC)'s capabilities and capacity to provide these customized QAPI engagements, the OPTN selected a pilot member based on performance data and the individual member's request for assistance. The pilot project has involved a wide-array of QAPI services with the member organization ranging from UNET Data Portal training to virtual process mapping, allowing the project team to test organizational capacity to provide such services and plan for future broader scale deployment. In the near future, two additional, smaller scale pilots will be developed to run simultaneously. Data gathered during the three pilots will be used to estimate the time and resources needed by the OPTN and staff and help to determine how many improvement projects can be undertaken at one time. The IMFI framework, metrics, and resources continue to be refined in the multi-year discovery and design phase.

Methods/Practices/Interventions: The selected pilot member and the project team defined the scope of the IMFI pilot engagement and developed a specific project aim. Staff subdivided the pilot aim into three project-level goals to allow testing of resources and QAPI tools, the collection of customer feedback along the way, and iteration of the IMFI project framework all while helping the member achieve their over-arching goal. The pilot location's high level goal was to increase access to kidney transplant among patients with ESRD in the pilot member's area. The first project goal was to help the pilot member better manage their kidney waitlist. The OPTN provided education, training and coaching focused on the OPTN's Kidney Waitlist Management Tool and additional data tools and reports. The virtual training was completed in three sessions from August to October 2020 with a follow up in November 2020. The pilot member was tasked with completing an improvement commitment worksheet to demonstrate how they incorporated their learnings into their processes. The second pilot project goal was to help the pilot member identify improvements in their referral process. The project team assisted in process mapping their workflow from referral to waitlist and consulted on improving inefficiencies in December 2020. The third project-level goal for the pilot location was to complete an acceptance criteria analysis to improve the pilot member's deceased donor offer acceptance. Staff provided the pilot member customized data analysis to review the member's baseline data and metrics with the goal of discussing the findings and potential areas for improvement. Quantitative metrics reviewed with the pilot member included deceased donor transplant count (overall, KDPI 51-85%, PHS increased risk), deceased donor organ/offer acceptance rates (overall, KDPI 51-85%, PHS increased risk), characteristics of donors offered and donors accepted (KDPI, PHS increased risk), waitlist mortality rates, transplant rates, comparisons to their region and the remaining centers in the nation, when applicable. As part of the third project level goal, their team will consult on improving their acceptance criteria with transplant community subject matter experts (OPTN volunteer workforce).

Findings/Solutions/Conclusions: The OPTN's IMFI transitioned to a virtual endeavor due to the COVID-19 pandemic requiring adjustments to the project. The IMFI pilot engagement allowed the OPTN to develop and offer remote assistance and support to the member during the pandemic. The qualitative data collected in the pilot has been very positive. 100% of respondents recommended the UNET data portal training. 80% of participants felt their knowledge improved or improved greatly by participating in the coaching sessions. The pilot location continues to work to incorporate the utilization of the data portal tools into their workflows and evaluate improvements developed as part of the data analysis. The project team is considering adding other potential metrics to the data analysis to include waitlist mortality rates pre- and post-IMFI, transplant rates pre- and post-IMFI and 1 year graft survival, pre- and post-IMFI.

Implications/Relevance: IMFI, for the first time, will provide an avenue through which the OPTN can use its unique position in the community and subject matter expertise to serve as an improvement partner to the members. While this particular proposal will focus on the initial IMFI pilot project, that and the future two smaller scale pilots will ultimately help determine staffing, scalability of services, and future deployment of the initiative across the membership. IMFI will allow the OPTN to share effective practices and data with the community and facilitate peer mentorship to support the donation and transplant community. IMFI allows the OPTN to serve as a collaborative improvement partner with members and to collect lessons learned and distribute the learnings across the

membership. The transplant community is eager to connect and share innovations and experiences to help improve the fields of donation and transplant. The goal of IMFI is to help individual members improve while helping all of the donation and transplant community improve.

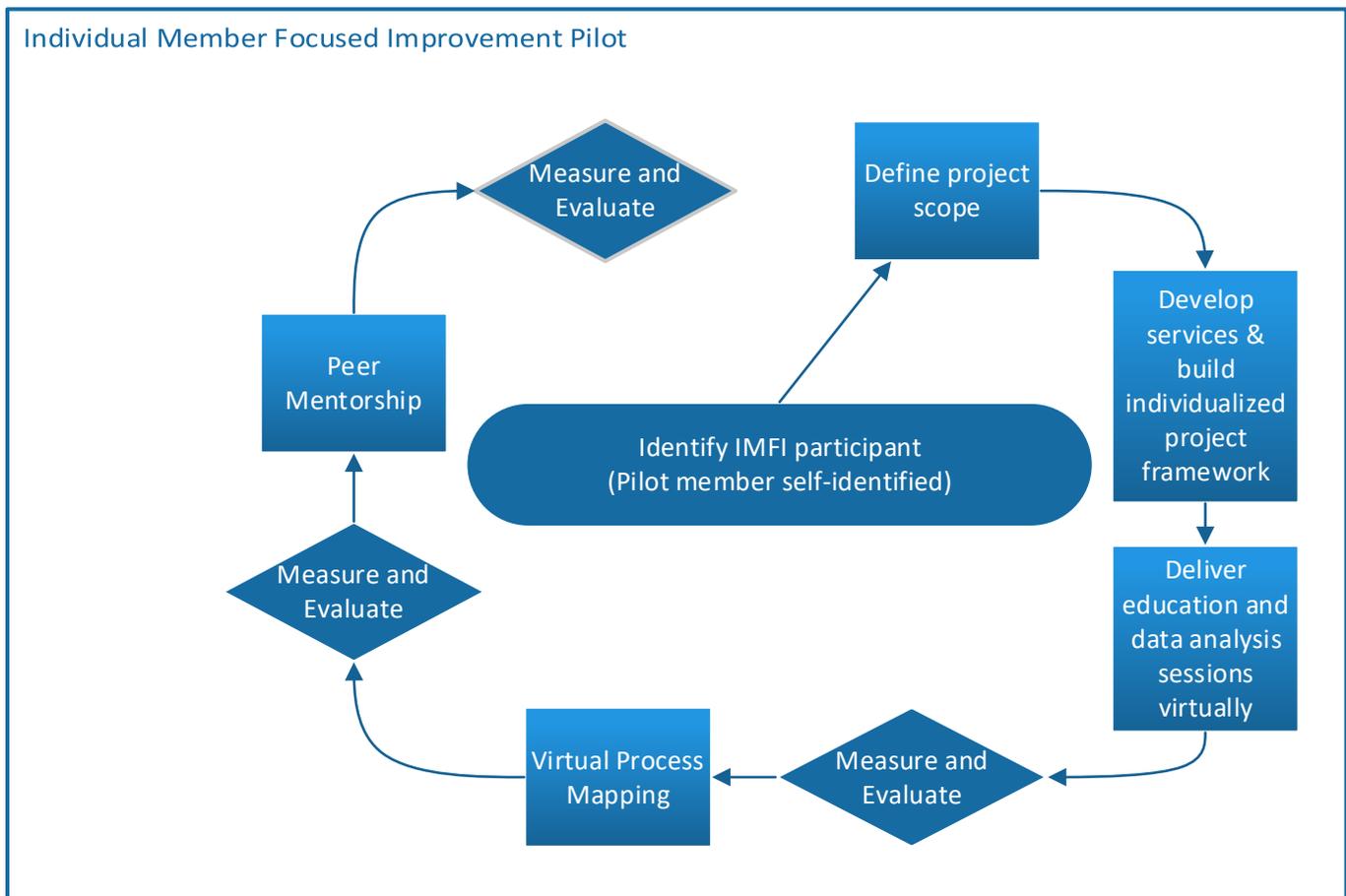
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Medication Education Pilot Program to Improve Patient Outcomes for Adult Heart Transplant Recipients

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Problem/Situation: *In early 2019, our high-volume adult heart transplant program noted an alarming trend of potentially serious post-transplant medication errors occurring within outpatient clinical settings. In order to mitigate and prevent any further potential harm to our patient population, a multidisciplinary team of transplant specialists collaborated and identified a need to implement a quality improvement initiative focused on developing a multifactorial medication education program for adult heart recipients. Primary goals were established, including enhancing transplant patient knowledge, increasing stakeholder and provider engagement, reducing the incidence of medication errors, and defining target patient populations for supplementary intense educational interventions.*

Methods/Practices/Interventions: *After reviewing current educational practices amongst cardiologists, transplant coordinators, social workers and pharmacists, our team initiated a Medication Education Didactic (MED) pilot program comprised of auditory, visual and kinesthetic teaching materials to be incorporated into daily clinical practices. Primary MED interventions consisted of pharmacist-driven educational tools, including sample discharge medication lists, immunosuppression and post-transplant medication flashcards, and a pre versus post teaching assessment (See Fig. 1). Other programmatic improvements included implementation of new team virtual rounding structures, coordinated discharge medication handoff between transplant team staff, and the development of novel technological media, such as patient medication education videos (See Fig. 2).*

In order to evaluate the effectiveness of these new educational tools and resources, the pilot program initially enrolled 31 heart transplant candidates of various racial, ethnic, and gender demographics. Furthermore, the team decided to elicit direct feedback from both the transplant recipients and providers enrolled in the MED program, thereby establishing a pathway for continuous process improvement.

Findings/Solutions/Conclusions: *Our primary statistical outcome analyzed heart transplant patient pre versus post assessment scores, with a mean pretest score of 55.11 (SD 15.523) and a mean posttest score of 90.46 (SD 10.167). There was no significant correlation between pre and posttest assessment scores. However, there was a negative correlation significant at the 0.01 level (2-tailed) between posttest scores and the patient's primary language, whereby non-English speakers were shown to have significantly lower posttest assessment scores than native English speakers after the initiation of the MED program. To assess for stakeholder feedback and engagement with the pilot program, the team administered qualitative surveys to staff (five outpatient nursing staff and five outpatient physicians) along with a sample cohort of patients (n = 15), in order to evaluate their experiences and understanding. Below is the qualitative analysis of our survey results:*

- *80% of patients reported rarely or never having been confused about their transplant medications post-discharge, and none reported frequent confusion.*
- *After having received medication education, 14 out of 15 patients (93.33%) reported feeling moderately to extremely comfortable or knowledgeable about their immunosuppression medications. Similarly, 93.33% reported knowing the names and dosages of their post-transplant medications moderately to extremely well.*
- *In terms of the patient perceptions towards medication education, all patients sampled thought that post-transplant medication education was either extremely important, or very important.*
- *Majority of patients thought that their transplant team provided excellent explanations regarding their post-transplant medications, with only one patient noting that the discharge pharmacist could have dedicated more time to explaining the medications prior to discharge.*
- *For transplant staff, over half of providers were not at all familiar or only slightly familiar with the MED program (no difference noted between physicians or transplant coordinators)*
- *All nursing staff reported that medication education was extremely important in providing effective patient care post transplant. Likewise, 4 out of the 5 physicians reported similarly, with only one physician reporting it was very important.*
- *60% of staff reported seeing moderate to extreme improvement in patient medication comprehension since initiation of the MED program. However, more than half of staff respondents did not observe a reduction in patient confusion regarding their immunosuppression medications post discharge.*
- *70% of staff observed a positive change in provider engagement with care coordination during virtual rounding, and 90% reported that the new virtual rounding has been either moderately beneficial or greater.*

To support the above data, we went on to conduct an in-depth quantitative chart analysis of each patient that underwent the MED program, and found that there were no documented medication errors in their first 30-days post discharge.

Implications/Relevance: Our initial data implies that the MED program is a highly effective method for improving patient post-transplant outcomes and the quality of care delivered in outpatient clinical settings. This study suggests intensive instruction and teaching from a dedicated pharmacist exponentially increases patient medication knowledge and engagement. Moreover, our team identified that adult heart transplant recipients who are non-native English-speakers would benefit from increased intensive educational sessions prior to discharge. Additional translated written materials and technological media are currently under development to assist with overcoming this potential language barrier. Based on the patient and provider feedback collected, further research is ongoing to fully characterize all the benefits of the MED program. Furthermore, our qualitative analyses have led our team to enact future plans for surveying all adult heart transplant patients going through the MED program moving forward. Plans are also underway to advance and implement a robust education curriculum for transplant team members regarding the program's objectives and its importance in post-transplant care. Due to the overwhelming success of this pilot study, MED program initiatives are expanding across our institution's solid organ transplant programs.

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Figures/Charts/Tables:

Fig. 1 MED Program Interventions

Root Cause	Tested Solution	Responsible	Due
Materials	Medication Flashcards	Pharmacist	Prior to discharge
Measurement	Pre and Post Test Medication Assessment	Pharmacist	Prior to discharge
Technology	Virtual Rounding	Pharmacist, Cardiologist, Inpatient Coordinator, Social worker	Prior to discharge
Process & Systems	Discharge Medication Handoff	Pharmacist, Cardiologist, Inpatient Coordinator	Prior to discharge
Materials	Sample Medication List	Pharmacist	Pre transplant and Prior to Discharge
People	Medication Video Consultation	Cardiologist, Pharmacist	Post Discharge
Technology	Patient Medication Education Videos	Quality Manager	Pre transplant and Prior to Discharge

Fig. 2 MED Program Workflow

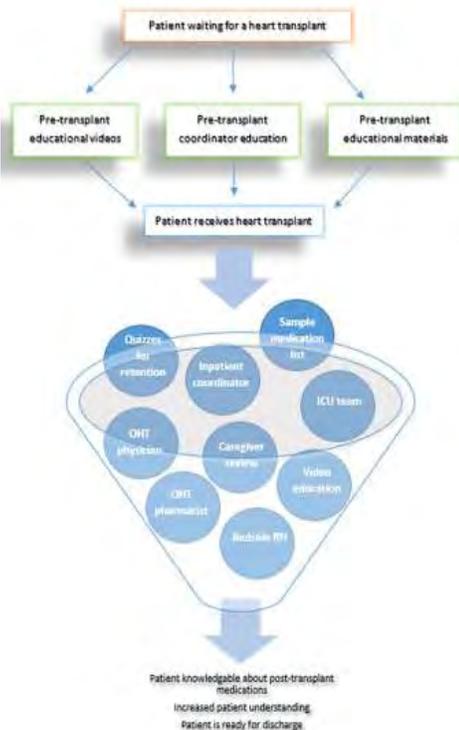
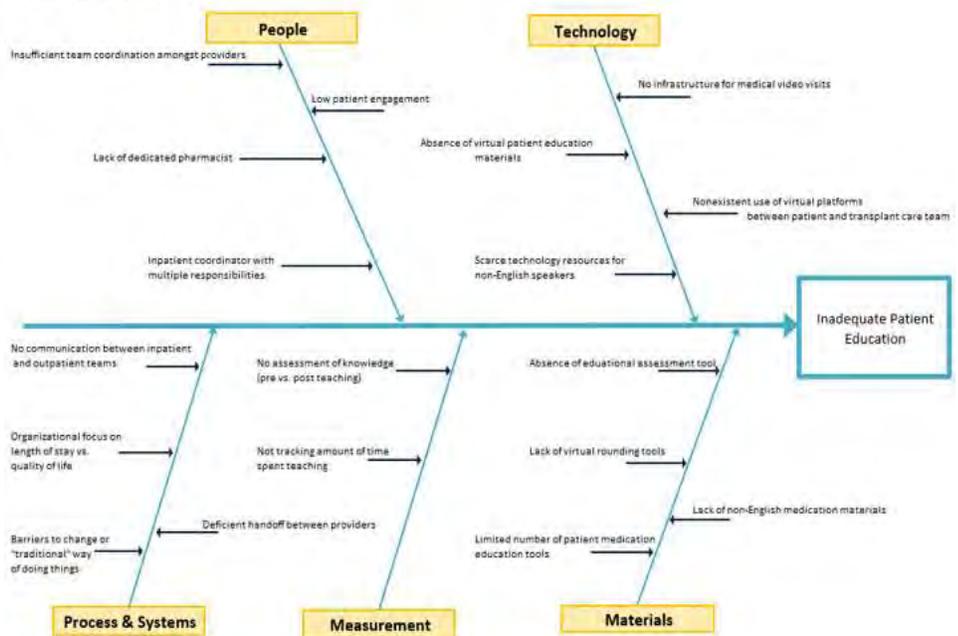


Fig. 3 Root Cause and Effect



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Managing High-Risk Diabetes in Waitlist and Post-Transplant Patients with Tableau

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Randall O. Watkins

Problem/Situation: In 2019, our transplant center wrapped up a multi-year Six Sigma Green Belt project to study and improve 3-year post-transplant survival for all organ groups. Infection was determined to be a top cause of post-transplant graft loss and death. Based on a large data study per DMAIC principles, multiple factors were identified as possible root causes and contributors to infectious bad outcomes, one of which was diabetes. This led to further data studies in our population indicating many improvements were needed in managing our candidate and recipients' diabetes risks. As a result, guidelines and processes were put in place for flagging high-risk diabetes patients based on their glucose and A1c lab values. High lab values are supposed to trigger flagging and subsequent referrals/consults with Endocrinology. Unfortunately, managing the lab data and keeping up with high-risk patients became a labor-intensive endeavor for this Senior Quality Leader and the Transplant RN Coordinators leading to sub-optimal detection and follow-up with high-risk patients.

Methods/Practices/Interventions: To support more efficient data collection and detection per the 1stSTEPS Diabetes High-Risk Guideline, a new database was created of EPIC glucose and hemoglobin A1c lab data for the previous 1.5 years; this new database is updated weekly from a Business Objects report which runs automatically and pulls the latest lab data. Next, Tableau was connected to this database and a prototype dashboard was built (see graphic on second page). The prototype Diabetes Dashboard was reviewed with the QAPI management team and Local Quality Councils for feedback. It has been approved for use and formally published on our Tableau Server.

Findings/Solutions/Conclusions: The new Tableau Diabetes Dashboard has become an easy and efficient tool used weekly to alert this Senior Quality Leader and Transplant RN Coordinators of patients with high glucose and hemoglobin A1c labs taken over the previous week. The team of RN Coordinators from all organ groups then follow up accordingly with as many as 10-30 waitlist and post-transplant patients/week needing additional care/education.

Implications/Relevance: Approximately 37-40% of our waitlist patients and transplant recipients have been formally diagnosed with diabetes. An unidentified number are borderline and are at risk of developing de novo diabetes especially once they are transplanted and receive prednisone for immunosuppression. Our transplant center views unmanaged diabetes as a significant safety issue for the patients under our care. Appropriate management of diabetes is vital for long-term survival and quality of life.

Primary Author/Co-Authors: Watkins, Randall O., BSEE, SSBB

References: 1stSTEPS Diabetes High-Risk Guidelines

Citations: none

