



Overcoming Inequity in Access to Kidney Transplantation: A Quality Improvement Project

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ABSTRACT

Background. In 2018, DaVita dialysis clinics in Poland introduced a new pathway to improve the referral of dialysis patients for kidney transplantation. It was designed to meet formal requirements for timely referral for transplant assessment and measures to have the patient “active” on the waiting list. The pathway aimed to mitigate the existing inequitable access to transplantation surgery for patients with end stage kidney disease under the care of ambulatory dialysis clinics. The consequences to the patient of lack of contact with nephrologist when called in for transplant surgery during out-of-office hours was a major concern. We reviewed the effectiveness of whether the new procedure impacted facilitating a patient's call for a transplant surgery when dialysis clinics were not operating.

Methods. We collected data on the number of transplantations performed and the number of calls for surgery according to a conventional or new procedure over a 30-month period.

Results. In our study, 269 patients received a deceased donor kidney transplant, and 205 candidates (75%) were called for transplantation during the working hours of dialysis clinics, according to the standard procedure, of which 4 patients were discharged for various reasons. In addition, 69 candidates (25%) were called outside clinic working hours through the new procedure process, of which 1 patient was discharged during a phone call due to infection.

Conclusions. DaVita's Poland new transplant access procedure effectively supports a patient's call for transplantation during outpatient dialysis clinics' closure hours.

PATIENTS with end-stage kidney disease (ESKD) cannot survive without kidney replacement therapy. Kidney transplantation is the best form of kidney replacement therapy for eligible patients with ESKD [1]. After receiving a successful kidney transplant, quality of life is improved and life expectancy is prolonged compared to patients awaiting transplantation or remaining on a dialysis program [2,3]. Best outcomes are observed if the patient receives a kidney from a living donor before commencing dialysis (pre-emptive transplantation) [1].

Patients with ESKD who wish to pursue organ transplantation undergo an extensive evaluation process that assesses the risk of early and late complications including those related to immunosuppressive treatment. Not every patient with ESKD is a suitable candidate for kidney transplantation for a number of

reasons. In addition to medical and surgical complexities, issues related to social determinants of health can also be of concern [1,4].

The average waiting time for a first kidney transplant from a deceased donor was 430 days in Poland in 2020 [5]. The transplant waiting list is maintained as an electronic system supported by the Polish Transplant Coordinating Centre.

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Registration of medical data of potential transplant recipients into the electronic system is performed by nephrologists in dialysis or nephrology clinics (patients with ESKD-5D or chronic kidney disease, respectively). Several regional qualification centers make the final approval for the transplant wait listing. Surgery takes place at the transplant center that procured the kidney. When a donor is identified, a list of potential recipients is created based on a central algorithm considering several factors such as blood type and human leukocyte antigen compatibility. The transplant center makes the final selection from the list of potential recipients [6].

The transplant center coordinator calls the dialysis clinic where a potential transplant recipient is treated to inform the patient that they may have a suitable donor organ available. This is followed by the standard pretransplant surgery assessment including clinical examination, basic laboratory tests, electrocardiogram, chest radiograph, and finally referral to the transplant center.

Most dialysis clinics in Poland operate based on contracts with National Health Fund for an ambulatory type of service and do not operate 7 days a week, 24 hours a day. A consequence of this working arrangement is a gap when dialysis clinic staff are unavailable to facilitate the last step in the transplant assessment suitability if this occurs outside of working hours. The potential ramification for this is the risk for the patient of losing a chance for receiving a successful transplant.

To address this system deficit we introduced a novel internal transplantation procedure for Davita dialysis clinics in Poland to ensure timely patient referral for a transplant waiting list and smoother access to transplantation surgery outside of the dialysis clinic's operating hours. An important goal was to facilitate and improve contact between transplantation coordinators and potential recipients, exchange of essential clinical information, and mitigate the risk of a patient missing the opportunity to be called for transplant surgery.

The study's objective was to evaluate the effectiveness of this new local transplantation procedure in supporting a dialysis patient acceptance for transplant surgery outside the dialysis clinic's operating hours.

METHODS

Our transplantation procedure was introduced in 2018 and covers 2 main aspects of the kidney transplant process: 1. timely referral for transplantation assessment and remaining "active" on the waiting list; 2. ensuring a patient is ready and available for transplant surgery irrespective of the time an organ becomes available at a transplant center. The latter was the quality improvement initiative aiming to acknowledge and mitigate the existing problem with equitable access to transplantation surgery for patients with ESKD treated in ambulatory dialysis clinics. The procedure requires the dialysis clinic to implement the following requirements: a dedicated form for documentation of any clinical contraindications for potential transplantation surgery reviewed



Fig 1. Transplant folder.

for each patient at each dialysis session by a physician; simple options for transportation to the transplant center for every dialysis patient during hours when the dialysis clinic is not operating; education of a wait-listed transplant candidate on which information to convey when called by the transplantation coordinator and how to organize transportation to the transplant center; provision of a transplant folder to every wait-listed patient (Fig 1).

The transplant folder is a cardboard folder containing a script on how to communicate with a transplant coordinator when they call, including telephone number for the local transportation provider; compartments for all medical records and documents needed for the transplantation process according to the Polish rules, including referral letter; a local transplant card the patient carries to each dialysis session.

Based on a clinical assessment, the physician on duty confirms whether or not the patient has any contraindications to transplantation at the time of assessment and completes an appropriate record with a signature and date. This document provides a check that the patient has had a recent clinical assessment and has no signs of active infection.

The key assumption of this transplantation procedure is that the coordinator can get all the relevant information they need from the patient directly and not the dialysis clinic. The patient is educated, equipped with the skills and appropriate tools to communicate about their health based on the script printed on the first page of the transplant folder (Table 1). The patient can arrange their transport themselves or through the transplant center. This whole process can be done without the involvement of the dialysis clinic team.

The information on how this process is organized is entered into the electronic waiting list system, so it is available to all transplant coordinators in the moment of potential recipients list generation.

We collected the following data from the electronic medical record 30 months after implementing the procedure in 66 DaVita dialysis clinics in Poland: the number of kidney transplants performed since the procedure was launched, the number of calls for transplantation surgery through conventional methods between the transplant coordinator and the dialysis clinic during working hours; the number of calls for transplantation surgery made directly to potential recipients outside the dialysis clinic's working hours through the new procedure.

RESULTS

Deceased donor kidney transplantation was performed in 269 patients within the study time frame (8.9 transplantations per month). Over the study period, 261 kidney transplants, 7 simultaneous pancreas-kidney transplants, and 1 liver-kidney transplant were performed across several different transplant centers.

In addition, 205 potential recipients (75%) were called for transplantation during the clinic's operating hours according to the conventional process. Of the patients admitted to the transplant unit following this pathway, 4 were rejected from organ transplantation for various reasons.

Another 69 potential recipients (25%) were called for transplantation through the new transplantation procedure, and 68 patients were admitted and had a successful surgery. One patient was rejected during initial telephone review, because of symptoms of active infection.

DISCUSSION

Our DaVita transplantation procedure is the first such initiative in dialysis clinics in Poland as far as we are aware. It was

Table 1. Guidelines Printed on the First Page of the Transplant Folder

You are a patient accepted and entered on the Kidney Transplantation Waiting List. You may receive a phone call from the transplant center as a potential recipient after initial system match when your dialysis clinic is not operating. Talk and convey the information to transplant coordinator according to the following instructions:	
1. Provide the coordinator with the following information about yourself:	
Name.....	
Age.....	
I am a dialysis patient at a dialysis clinic in.....	
I live in.....	
My last dialysis treatment was scheduled on (insert date), I was examined by the physician on duty, who found no contraindications to kidney transplantation. I am currently feeling good/well. Today I have no fever, sore throat, diarrhea or other new complaints since my last dialysis (report if any of these symptoms are present).	
2. Ask and write down the name and exact address of the hospital from which you are receiving the call, to convey the coordinates to the driver who will transport you. You will then give these details to the transport driver.	
3. Write down the name and phone number of the transplant coordinator who calls you.	
4. Call the transportation coordinator (the phone number is in your "Transplant Folder") and tell the driver the address and name of the hospital you will be going to and arrange a time to leave.	
5. Do not forget to bring your "Transplant Folder" and personal belongings.	
6. Do not forget to bring any medicines you are taking on regular basis.	
7. Refrain from eating and drinking from this point on.	
8. If you are on permanent anticoagulants - do not take them at this time - but confirm this by phone with the coordinator.	
9. Ask your family/friend/driver to call the dialysis clinic during office hours to inform them of this call and a final decision when accepted for the transplant."	

designed in response to a systemic gap in a form of the lack of contact with patients during periods when an ambulatory dialysis clinic is not operating and traditionally required clinical examination of a patient performed by a dialysis clinic physician. Successful information exchange between a dialysis clinic and transplantation center, rapid clinical assessment and speedy transport to a transplant surgery center are essential for successful kidney transplantation surgery. Failure of the process results in a patient potentially missing out on a life-saving transplant. Furthermore, when contact with a dialysis clinic is impeded because of clinic opening hours the delay to a coordinator and a subsequent potential recipient increases. The time for a patient to arrive to the transplant center should be as short as possible to limit cold-ischemia time of the organs harvested for transplantation. A short cold ischemia time is associated for both early and late graft and patient outcomes [7,8].

Over the past 30 months, 69 of our patients have been contacted and called outside dialysis clinic operating hours. It can be assumed that without the implementation of our procedure most of these patients would not receive a transplant at least in

that attempt. Our study shows that the number of rejected patients ($n = 1$) remains very low and at a comparable level to the rejected patient in the standard day transplant flow in Poland.

A systematized and straightforward clinical evaluation of a patient active on a waiting list by a physician every dialysis session to exclude contraindications for a transplant surgery is feasible and improves patient access to transplantation. Currently, in Poland, physician evaluation of every patient is required before each dialysis session, and so this new work flow does not increase the burden of activities for a physician and complements their workload. Our procedure did not address patients being on transplant preemptive waiting list nor for peritoneal dialysis ones as they do not attend a clinic on a frequent basis and therefore cannot be assessed in the same regular manner as an in-center hemodialysis patient.

Feedback from dialysis clinic staff suggests that patients actively using the transplant folder are more likely to ask questions about their current health situation and are more engaged in their dialysis care. Better patient engagement and education anecdotally may lead to better prognosis after kidney transplantation [9], but further studies with longer follow-ups and robust outcomes are needed. Education can alleviate the stress of the uncertainty of waiting [10] and maximize the chance of transplant success [11].

Self-management and personal accountability can improve patient concordance with care and promotes better transplant outcomes [12]. The use of transplant folders fits into this self-care paradigm and supports wider initiatives such as individualized care planning, education, and shared decision-making. A patient who is more engaged with the transplant folder material may be an early indication of better graft outcomes and concordance with treatment. Reduced concordance can lead to chronic antibody-mediated rejection which is one of the most common causes of late loss of graft function [13].

CONCLUSIONS

In conversations with transplant coordinators at partner transplant centers the new DaVita transplant folders are highly valued because they systematize and facilitate the gathering of complete patient clinical information in the period before transplant surgery in 1 place.

Our transplantation procedure might serve as an important tool in reducing the inequity of access for kidney transplantation which in ambulatory dialysis clinics in Poland due to operating hour restrictions. Other possible benefits, although not assessed by this program include increased patient engagement, cooperation and understanding of transplantation and their care; better clinical evaluation of patients in dialysis clinics; faster recipient qualification for kidney transplantation surgery. We intend to investigate these 3 potential benefits in further research.

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