Determining the Right Dialysis Access for Every Patient

Where do we have data to form an algorithm, and what do we do when we don't?

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In general, "right" and "wrong" is influenced by each individual's age, gender, experiences, level of professional knowledge, and skills. This is no different for physicians who manage patients with end-stage renal disease (ESRD) and decisions regarding the right approach to dialysis access for an individual patient. A specific population such as the ESRD population is managed best by small expert teams performing expert tasks.[1-3] In dialysis access decisions, in addition to relying on physician experience and skill, patient-centered care is also essential, in which an informed patient and family are a part of the decision-making process. It is possible to achieve value in ESRD care while optimizing patient quality of life. Perhaps the most important question asked of the patient should be: "What do you want me to do for you?" Algorithms are available to guide decisions about dialysis, but how should you approach a patient with clinical characteristics that do not follow the usual care model? This article stresses the importance of considering all options for dialysis access, as well as individualizing care based on the patient's best interests and long-term goals.

HEMODIALYSIS OR PERITONEAL DIALYSIS: WHICH ONE IS "RIGHT?"

The concept of "peritoneal dialysis (PD) first" implies that PD should be offered as the first dialysis modality whenever feasible (Figure 1). PD provides a survival benefit for the first few years after dialysis initiation.[4-11] Patients who receive a kidney transplant while on PD have less delayed function with better transplant outcomes as compared to patients on hemodialysis (HD) prior to transplant.[12,13] While a patient is on PD, plans can be made to place a native vein fistula, as the PD option allows extra time for the arteriovenous fistula to mature. In patients with challenging vascular anatomy, creative access options (eg, two-stage surgical procedures) that do not employ damaging catheters are possible to optimize the access outcome.

An informed patient and family will choose PD in up to 40% of cases.[4] All patients deserve to be informed and make the final decision themselves and rather than being told what the decision should be. The lack of training or experience for nephrology trainees and practitioners can make it uncomfortable to care for patients requiring dialysis or to advocate for PD.[14] Surgeons who do not place PD catheters may not inform (or may misinform) their patients about their options for dialysis access. When there is uncertainty about the appropriateness of PD, the right thing to do is to refer the patient to someone who is willing and well versed in this strategy as renal replacement.

There may also be economic disincentives in recommending PD as a treatment option. For example, a medical director of an HD unit with empty chairs may be biased in favor of HD and may also not be adequately trained in PD dialysis initiation or delivery. Finally, societies such as the International Society for Peritoneal Dialysis and ESRD networks have separate organizations further confounding progress. The governing societies of PD and HD are not acting in concert; hence, the information transmitted becomes skewed (biased) both to patients and medical professionals. Add this to the economic forces driving patient care for ESRD and dialysis. The responsibility for adjusting defects in the system rests on opinion leaders in ESRD societies. For progress to happen, cooperation and transparency are key components. PD and HD must not be seen as competitive

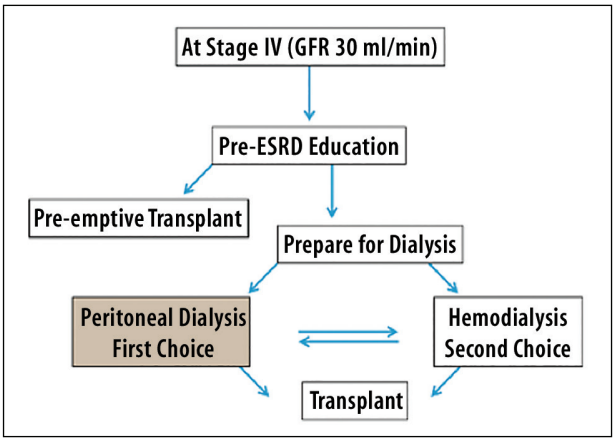

Figure 1. ESRD treatment modality algorithm. Although rarely reflected in reality, this diagram depicts a patient-driven ESRD modality sequential treatment strategy for early detection of kidney disease and progression prevention, emphasizing the benefits of PD as the first option. Reprinted with permission from Davidson I, Gallieni M, Saxena R, et al. A patient-centered decision-making dialysis access algorithm. J Vasc Access. 2007;8:59–68.

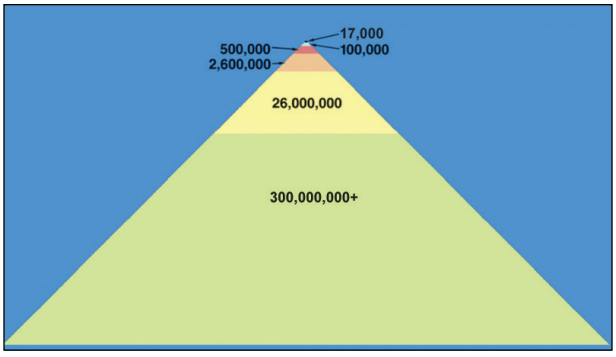

Figure 2. The ESRD pyramid. Of over 300 million people in the United States, approximately 26 million have various stages of kidney disease. Of these 26 million people, only 10% (or 2.6 million) are aware of their disease or under active treatment; however, most will die from related comorbidities before requiring dialysis. Of the almost 500,000 people on dialysis in the United States, approximately 20% (100,000) will die per year, which almost equals the attrition of new patients. Per year, only 3.4% (about 17,000) of patients on dialysis receive a kidney transplant. Data from National Kidney Foundation. Fast facts. https://www.kidney.org/news/newsroom/factsheets/FastFacts#Ref. Accessed May 17, 2016. Note: The National Kidney Foundation compiled data from multiple sources.

therapies, but rather as complementary, where dialysis access options are considered integral parts of a thoughtful long-term plan to provide patients with optimal renal replacement therapy, including transplantation.

Opinions, systems, and institutions are in a constant slow drift into failure or success. Although visionary leadership is key for success, drifts occur without any discernible individual impact.[15-17] The following case example highlights some core issues with the current living donor kidney transplantation process.

CASE EXAMPLE: PREEMPTIVE KIDNEY TRANSPLANT

You are a board-certified vascular surgeon in a large health care system and are asked by the transplant nephrologist to place vascular access in a 35-year-old woman. The patient has polycystic kidney disease, as do three of her siblings, one of whom is on HD in a different state. The patient and her husband present you with several articles on living donor transplantation; however, the nephrologist has told them that living donor transplants are not performed at your institution. The patient's husband insists that he is going to be his wife's kidney donor. They also firmly state that they will not have any children but may possibly adopt in the future. The patient had a tubal ligation 2 years earlier. The husband has type O blood, and the patient has type A blood. Her estimated glomerular filtration rate (GFR) is 18 mL/min/1.73 m^2, down from 22 mL/min/1.73 m^2 6 months ago. Her husband's serum creatinine level is 0.85 mg/dL. The patient's husband underwent duplex ultrasonography, which revealed two normal kidneys and only one artery on the left side. Before you start asking them questions, the patient says: "I will not go on hemodialysis. I am going to have a living donor transplant before I consider dialysis. We want you to help and refer us to a program that does preemptive transplants."

What is the best way to manage this case? What is the right thing to do? Few patients are this informed and proactive, and clearly, this patient is taking her health seriously and looking at all potential options to optimize her quality of life. Preemptive transplantation should be explored as an option for all patients facing dialysis (Figure 1); however, a potential barrier is the reluctance to ask a friend or relative for a kidney.

Most transplant programs are not actively pursuing the preemptive living donor option because it may not align with economic interests. Changing the culture of institutions occurs slowly, and some institutions are more successful than others. The concept of achieving success in business through change was not fully understood until 2007, when Leonid Hurwicz, Eric Maskin, and Roger Myerson, winners of the Nobel Prize in Economic Science, described their work in mechanism design, which focuses on how institutions are manipulated into

changing their value systems to produce socially optimal results. The general idea is that "the best intentions for public good will go astray if the institutional arrangements are not consistent with the personal self-interests of the decision makers."[18]

A patient's denial of disease and delays in treatment are also major barriers to transplantation. Every dialysis access patient has a very personal case history. It is the medical professional's duty to listen and work with the patient to make a decision that is right for that particular patient. If your knowledge and skill base cannot fulfill this goal, then the right thing is to ask for help from more experienced colleagues.

PATIENT RESPONSIBILITY AND PREVENTION

Twenty-six million people have kidney disease from treatable conditions such as diabetes, hypertension, and damaging lifestyles (Figure 2).[19,20] Smoking cessation, blood pressure control, diet changes, and weight management can help delay renal failure and increase quality of life for the patient. The mortality risk for some common diseases is higher than for some risks of daily living, emphasizing the importance of preventing disease progression in the ESRD population.

SUMMARY

In order to make the right clinical decisions for our patients, we rely on knowledge, skills, and social intelligence. There is no substitute for adequate training in skill and knowledge. Although harder to define, attitude and a person's value system make up the majority of professional success. The patient should always be included in clinical care decisions, with consideration of quality of life and long-term care goals. ■

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