



Advanced Practice Providers in Transplant Nephrology

By Meera P. Suthar

The role of advanced practice providers (APPs) has evolved over the last few decades, with data showing that APPs in nephrology can directly improve kidney outcomes in patients with chronic kidney disease (1). The population of kidney transplant recipients (KTRs) in the United States is growing annually, and in 2021, the United Network for Organ Sharing reported the largest number of organ transplants completed in a single year (2). With the exception of 2020, which was affected due to the COVID-19 pandemic, kidney transplants have increased 8 consecutive years in a row (3) (Figure 1). APPs are an integral part of the multidisciplinary transplant team, and their knowledge and experience in transplant are vital to the continued growth and success of transplant programs.

In the 2022 National Kidney Foundation/Council of Advanced Practitioners survey, 25% of nephrology APPs reported managing outpatient transplant patients (4). The complexity of care for transplant patients, pre-, intra-, and posttransplant, requires a multidisciplinary approach. APPs are able to step in at all aspects of transplant, working as the pre-evaluation coordinators, assisting in surgery, managing post-op patients, and following patients in the transplant clinics. APPs have learned the preferences of the transplant surgeons and nephrologists in their programs, which in turn, translates to a better teaching experience for residents and fellows as they rotate through transplant. APPs are responsible for many different roles in transplant centers:

- ▶ Managing and completing pre-transplant evaluations
- ▶ Managing annual or semi-annual re-evaluations
- ▶ Assuming care in the immediate and remote posttransplant phase
- ▶ Working as providers in outpatient clinics
- ▶ Managing inpatient medical kidney transplant services
- ▶ Managing transplant patients admitted to intensive care transplant units
- ▶ Performing procedures, such as transplant biopsies, inser-

tion of central lines, wound debridement, and surgical assisting in the operating room (5)

- ▶ Intervening in patient safety initiatives, clinical research, and quality improvement projects (6)

In academia, APPs provide much-needed continuity of care because fellows and house staff rotate frequently. The traditional paradigm requires restarting the educational process from the beginning—weekly, monthly, or at best, yearly—for house staff and fellows rotating through transplant. A well-trained and educated APP can continue to improve and develop important skills and more in-depth knowledge of the field. The University of Michigan compared length of stay (LOS) and 90-day readmissions among 2913 KTRs before and after the addition of APPs to the team. Data collected in 2011 showed a lower LOS between the time periods (mean 5.5 ± 5.1 days vs. mean 4.5 ± 3.4 days; $p < 0.001$) with the addition of APPs. Regarding readmissions, before the addition of APPs to the team, there was a +3.2% yearly increase in readmissions, whereas after the addition of APPs, there was an absolute -1.8% yearly decrease in readmissions (7).

With a growing population of patients requiring kidney transplants and at a time when there is a decline in the number of trained transplant nephrologists and surgeons, APPs are vital to the growth and sustainability of transplant programs and to the future of transplant nephrology (8). There are evolving residency and fellowship programs for APPs in abdominal transplant at Duke University (9) and the Mayo Clinic (Arizona) (10). These programs can help expand future APP growth in transplant nephrology. ■

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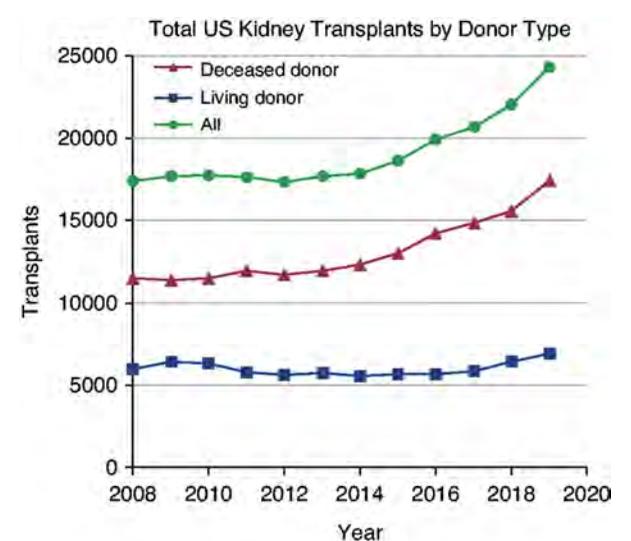
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Figure 1.



Adult and pediatric US kidney transplant recipients, including re-transplant and multi-organ. Reprinted from Wang and Hart (3).