

Early Stops on the Road to Transplant: Lessons From the German Transplantation Registry



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Kidney transplantation remains the optimal form of renal replacement therapy, providing longer patient survival and improved quality of life compared with dialysis. In addition, compared with chronic dialysis, kidney transplantation offers significant cost savings to the healthcare system. The economic advantages of transplantation provide a clear incentive for countries to study their transplant system in order to identify ways to get more patients off of dialysis. However, despite the known benefits of transplantation, timely access to transplant remains a challenge. In Spain, which has one of the highest transplant rates in Europe,¹ only 14% of patients with end-stage kidney disease are on the waiting list.² The low percentage of waitlisted patients is similar in Argentina (17%) and the United States (18%), whereas in Australia only 26% of patients with incident

end-stage kidney disease from 2006 to 2015 were transplanted or placed on the waitlist list.^{3–5} This low percentage likely underestimates the scope of the transplant access problem, because previous work from the United States has suggested that there is a sizable population of patients on dialysis who are never listed for kidney transplant despite having comorbidities and predicted life expectancy that is similar to the waitlist population.⁶ Access to transplantation can be affected by medical comorbidities, regional differences in listing practices, and race or ethnicity.^{7,8} These findings have come from detailed analyses of national dialysis and transplant registries, emphasizing the importance of robust data collection: in order to identify barriers in access to transplantation and study the impact of policy changes intended to increase access to transplantation, it is essential to have longitudinal data available for analysis.

Despite the importance of transplant registries for analyzing processes and outcomes, many countries do not have one established. In 2016, the German

government approved the creation of a national transplant registry, allowing for future studies to better understand the kidney ecosystem in Germany, where the transplantation rate lags behind many other European countries.¹ In an article recently published in *Kidney International Reports*, von Samson-Himmelstjerna and colleagues provide a retrospective analysis of the recently created German Transplantation Registry.⁹ They included 43,955 individuals who were on the waiting list for a primary kidney transplant between 2006 and 2016. They focused their analysis on several important questions: How long does it take patients to be waitlisted for kidney transplant after starting dialysis? Is there variation in time to waitlisting among the different transplant centers in Germany? How did patients fare after placement on the wait list, and were there any identifiable factors which were associated with worse outcomes among waitlisted patients?

After excluding recipients who received a preemptive deceased donor transplant (which is no longer possible in Germany), they found that individuals who ultimately received a living donor kidney transplant were placed on the waiting list more quickly than those who did not have a living donor. Not surprisingly, time to transplant was shorter among individuals who received a living donor kidney. Despite the quicker access to transplantation among recipients with a living donor, only 28.5% were able to receive a preemptive living donor kidney transplant. Although this rate is disappointingly low for a procedure that is considered the optimal form of renal replacement therapy, it is similar to the rate of preemptive

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living donor kidney transplant reported in other countries (South Korea, 22%; Australia, 32%; and United States, 31%).^{S1–S3}

When analyzing waitlisting times at the 38 transplant centers that performed at least 250 kidney transplants over the study period, they found only modest variation among the centers, and the correlation between center size and listing time was weak. However, they were able to identify several medical factors associated with increased time from dialysis to listing: a history of HIV, hepatitis B or hepatitis C; increased body mass index; use of hemodialysis rather than peritoneal dialysis; and degree of sensitization. In contrast, patients with nondiabetic causes of end-stage kidney disease had shorter times to listing. The majority of waitlisted patients were transplanted eventually (64.5% at 10-years). Factors that were significantly associated with death or removal from the wait list included age, male sex, higher panel reactive antibodies, body mass index, and diabetic nephropathy. These findings are similar to what has been reported from other countries.^{4,8}

This study has several limitations which are inherent to retrospective registry analyses. The registry does not include data on patients who were never referred for transplant evaluation, patients who were referred but never initiated evaluation, or patients who initiated but never completed their transplant evaluation. Detailed information on medical comorbidities is missing, precluding a more complete analysis of which medical factors may impact waitlist access in Germany. The authors do not provide an analysis of regional differences in waitlist access in Germany. Geographic disparities in waitlist access have been found in registry analyses

from other countries,^{8,S4,S5} and future work should explore whether such disparities exist in Germany as well. The study also lacks data on race or ethnicity and immigrant status, factors which have been associated with reduced access to transplantation in other countries.^{4,S6,S7} von Samson-Himmelstjerna *et al.*⁹ included only primary kidney transplant candidates in their analysis. Many patients will require repeat transplant in their lifetime, and it will be important to examine transplant access in this subpopulation. Finally, the current study only examined patients who were on the waitlist from 2006 to 2016. The kidney transplant rate in Germany decreased over this time (a period which included a transplantation scandal that may have impacted access by reducing trust in the transplant system),¹ and future work will be needed to examine changes in access to transplant over time. Additional research can be found in the supplemental references.

The road to transplantation has numerous barriers that impede access for individuals, including system-level factors, provider-level factors, and patient-level factors. Identifying and studying these barriers require ongoing data collection. Despite the limitations of the current study, von Samson-Himmelstjerna and colleagues are to be commended for their analysis of the available data in order to begin to answer the important questions they pose in their study. The deficiencies in the waitlisting process they identified are not unique to Germany, and the work of von Samson-Himmelstjerna *et al.*⁹ highlights the importance of establishing national transplant registries in order to review outcomes, identify barriers to transplant, and hopefully intervene to improve both access and outcomes.

Hopefully, with further data collection and analysis of the German Transplantation Registry, they would be able to identify specific areas for targeted interventions, and design policies and practices that can increase access to transplantation for patients with end-stage kidney disease, both in Germany and abroad.

DISCLOSURE

All the authors declared no competing interests.

SUPPLEMENTARY MATERIAL

Supplementary File (PDF)

Supplementary References.

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