Biostatistics 651 Project
Kidney Transplantation Data Description

1 Introduction

End-Stage Renal Disease (ESRD) is one of the most deadly and costly diseases in the US. On December 31, 2017, there were 746,557 prevalent cases of ESRD in the US, which represented an increase of 91.1% since 2000. From 2015 to 2017, Medicare fee-for-service spending for beneficiaries with ESRD rose by 6.2%, from $33.8 billion to $35.9 billion, accounting for 7.2% of overall Medicare expenses. While a kidney transplant is the preferred treatment for ESRD, the demand far exceeds the supply. In 2017, only 2.9% of incident ESRD patients received a kidney transplant. Less than 40% of patients listed (i.e. waiting list) for transplant underwent transplant within 3 years.

The mortality of kidney transplant recipients is thrice higher than that of the general population. Identifying risk factors associated with post-transplant mortality is pivotal in prolonging the survival of transplant patients and optimizing organ allocations. Post-transplant mortality outcomes are influenced by both the performance of transplant centers, donor characteristics (e.g. donor age, race and comorbidities) and transplant recipient characteristics (e.g. age, race and comorbidities).

Further information about ESRD can be found from The United States Renal Data System (USRDS), which is a national data system that collects, analyzes, and distributes information about ESRD: https://www.usrds.org/

Further information about the kidney transplant data can be found from The The Scientific Registry of Transplant Recipients: https://www.srtr.org/about-the-data/the-srtr-database/

2 Data

We restricted the study cohort to adult (age $\geq$ 18) recipients who received deceased donor kidney transplantation between January 1, 2005 and December 31, 2005 in the transplant centers that completed at least 100 kidney transplants within the year of 2005. The analysis cohort includes 2,436 patients and 19 centers with the number of patients per center ranging from 101 to 198. Outcome is defined as 5-year post-transplant patient status (living, death, graft failure). A total of 303 patients (12.4%) and 447 patients (18.3%) experienced death and graft failure after 5 years since transplant, respectively.

The objective of this project is to examine risk factors associated with post-transplant mortality, which is pivotal in prolonging the survival of transplant patients and optimizing organ allocations.

3 Data Dictionary

Variable	Description
DON_HIST_DIAB	Donor history of diabetes
DON_ECD	Meets expanded donor criteria for kidney
DON_GENDER	Donor gender
DON_HTN	Donor history of hypertension
DON_RACE	Donor race
DON_BMI	Donor BMI
DON_AGE	Donor age in years
REC_GENDER	Recipient gender
REC_COLD_ISCH_TM_20	Recipient cold ischemia time $>$ 20 h
REC_RACE	Recipient race
REC_DIAB	Recipient diabetes status and type
REC_DIAL_YRS	Recipient years on dialysis
REC_AGE_AT_TX	Recipient age at transplant
REC_BMI	Recipient BMI
event	5-year post-transplant patient status (1=living, 2= death, 3=graft failure)
center	Transplant center ID