

Healthcare related activity following kidney transplantation.

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Introduction: Despite superior outcomes over dialysis, transplantation still involves invasive procedures, hospitalisation, clinic attendances, and heightened risk of intercurrent illness. It is important to know the breadth and depth of activity incurred by transplantation when considering the patient's journey, the resources required to support it, quality of service provision, and evolution of the model of care. In this study we demonstrate visually and numerically the healthcare activity experienced following transplantation.

Methods: Consecutive patients in the Glasgow Renal and Transplant Unit (UK) in receipt of a kidney transplant during 2015 were studied. Demographics and events of interest (hospitalisation, outpatient clinics, imaging, biopsy procedures, and infections) were collated from electronic patient records for 2 years following transplantation.

Results: 132 patients were transplanted. The median number of clinical contact days over 2 years was 47; 12 in-patient days, 3 day ward attendances, and 28 out-patient appointments; only in-patient days demonstrated significant inter-patient variability (IQR 16 days). 46% of clinical contact days occurred in the first 90 days post-transplant. There was no difference in combined clinical contact days by extended versus standard criteria donor (ECD vs SCD), nor by body mass index (BMI). In-patient days, however, were higher in both BMI >30 kg/m² (mean 27.9 days versus 17.0 with BMI <25 kg/m², p=0.05), and in ECD subgroups (median 18.0 versus 12.0 days, p<0.001).

A total of 64/132 patients (48.5%) experienced at least one clinically significant infection requiring antibiotics, antivirals, and/or a reduction in immune-suppression; 9/132 (6.8%) patients experienced 10 or more. 61/132 patients (46.2%) had an episode of leukopaenia (WCC <4x10⁹/L). An average of 8.2 imaging studies were undertaken per patient over the 2 years; half of these within the first 90 days (540/1090, 49.5%); 57.9% of studies were ultrasound scans.

Transplant kidney biopsy was performed on 86 occasions in 50/132 recipients (37.9%); 45/86 biopsies (52.3%) occurred in the first 90 days. 16/132 patients (12.1%) experienced an episode of biopsy-proven acute rejection, increased rejection rates associated with BMI >30kg/m² (8/33 (24.2%) vs 8/99 (8.1%) with BMI <30kg/m², HR 3.0 (1.2-7.3)). One year patient and graft survival rates were 97.0% (128/132) and 96.0% (123/128) respectively. ECD kidneys had higher rates of graft loss and death in the first year (combined outcome 10/30 (33.3%), versus 2/62 SCD (3.2%), HR 10.3 (95% CI 2.4 – 44.2) P<0.001, compared with 1/40 (2.5%) of live donor transplants. In the second year this reversed (0/20 remaining ECD kidneys, versus 3/60 SCD (5%), and 3/39 live donor (7.7%)

Discussion: The effect of aggregating this data is to provide a granular map of the post-transplant period. Significant clinical activity occurs across a range of inpatient, outpatient, and procedural domains, much of which falls within the first 90 days. Regarding subgroups, ECD kidneys and recipient BMI >30kg/m² were associated with increased number of in-patient days. Insight into post-transplant healthcare activity informs expectations of potential recipients, can guide quality and service evolution, and informs on differences in subgroups that may be a consideration when anticipating future demands of an evolving field.