

Selection and Preparation of Kidney Transplant Recipient

The pre-transplantation evaluation is a multidisciplinary process that is performed well in advance of the renal transplantation operation & immune suppression. Evaluation for transplantation is a complex and time consuming process. A tremendous amount of information must be collected, reviewed, analysed, and synthesized in a cost effective manner.

The purposes of the evaluation are following:

To diagnose the primary renal disease and its risk of recurrence in the kidney graft.

To rule out active invasive infection.

To rule out a high probability of operating mortality.

To assess compliance.

To rule out active malignancy and

To whom it may concern, rule out unsuitable condition for technical success.

The pre-transplant evaluation usually takes place in an out-patient setting. A multi disciplinary team of transplant surgeons, nephrologists, nurses, social workers, nutritionists and financial coordinators form the core group that evaluated the patients. A transplant coordinator with expertise in the evaluation process coordinates the pretransplant evaluation. The main function of the transplant coordinator is to facilitate the referral consultation process, oversee the evaluation, present finding of the evaluation to the transplant team, and follow through with the team's recommendations.

PRELIMINARY SCREENING:

Initially preliminary information (i.e. information to determine financial feasibility) is collected from and shared with the patient and family (i.e. risks and benefits). In addition, attempts should be made to identify obvious barriers to transplantations such as ischemic heart disease or substance abuse.

Absolute and relative contraindications to kidney transplantations are listed in table.

Table: Contraindication to Kidney Transplantation

Contraindication	Absolute	Relative
Cancer	X	
HIV positive/ AIDS	X	
HCV Infections		X
HBV infection		X
Morbid obesity		X
Atherosclerosis		X
Cardiac Disease		X
Uncontrolled hypertension		X
Smoking		X
Unresolved psychosocial issues		X

Active UTI	X	
Active tuberculosis	X	
Irreversible heart failure	X	
Irreversible lung failure	X	
Irreversible liver failure	X	
Active systemic disease (i.e, lupus, sickle cell disease, Wegener's disease)	X	

The relevant issues which need a complete evaluation are:

KIDNEY DISEASE RECURRENCE:

Following diseases has risk of recurrence after transplantation

High risk of recurrence- Focal segmental glomerulosclerosis, haemolytic-uremic syndrome, and primary oxalosis

Moderate risk of recurrence- Diabetes mellitus and IgA nephropathy

No risk of recurrence- Auto Somal Dominant polycystic kidney disease(ADPKD), renal dysplasia, and Alports Syndrome without antiglomerular basement membrane antibodies.

Infection

Infection must be detected and treated before transplantation or prevented with immunizations.

Serologic testing for cytomegalovirus (CMV), human immune deficiency virus (HIV), Epstein-Barr virus, hepatitis B and C is mandatory. The treatment of chronic, active hepatitis B and C is evolving and patients with active hepatitis C infection may benefit from antiviral therapy before transplantation.

Unless the patient is protected by antibody development after infection or prior immunizations, the following immunizations are given to transplantation candidates: hepatitis A, hepatitis B, pneumococcus, diphtheria, tetanus, pertussis, polio, varicella, measles, mumps, and rubella.

Active Malignancy

A waiting time of 2 to 5 cancer-free years from the time of the last cancer treatment is recommended for patients who have had invasive malignancies, to reduce the risk of cancer recurrence. Shorter intervals from cancer treatment to transplantation are generally accepted for patients who have had low-grade, noninvasive cancers.

High Probability of Perioperative Morbidity or Mortality

Kidney transplantation candidates with a history of cardiac disease, cerebrovascular disease, or diabetes mellitus or who are older than 50year must undergo a cardiac performance evaluation.

Further testing and treatment are based on the results of a screening evaluation. It is recommended that patients older than age 50 year or with a history of coronary artery disease, cardiac symptoms, or insulin-dependent diabetes mellitus undergo stress cardiac testing with further diagnosis and treatment of significant cardiac disease before proceeding.

Cerebrovascular disease, peptic ulcer disease, and significant pulmonary disease must be detected and treated.

Cigarette smoking increases the risks of surgery, post-transplantation malignancy, cardiovascular disease, and renal allograft loss. It must be stopped before transplantation in patients who already have clinical evidence of vasculopathy or cardiopulmonary disease.

Noncompliance

Compliance issues are extremely important in the long-term management of kidney transplant recipients. The transplant social worker and transplant coordinator collaborate to collect information related to cognitive, behavioural, and financial factors that will be either assets or liabilities to the candidate and the family and social issues that may affect medical outcomes; for example –information related to education, current and previous employment and occupations, disability status, substance abuse (current and past use of alcohol, drugs, or tobacco), activity level (ie, active or sedentary), and history of adherence to the medical prescriptions. Many centres have financial specialists who assist patients with insurance costs, medication coverage, and additional services necessary to avoid a financial crisis later on.

Unsuitable Conditions for Technical Success

Evaluations of the vascular system and the urinary tract are necessary to identify problems that need to be corrected before transplantation or addressed at the time of transplantation.

Patients with symptoms and signs of lower extremity arterial disease or a history of abdominal or pelvic vascular surgery need to undergo a diagnostic evaluation to be certain that revascularization of a kidney graft is possible.

Vascular screening with Doppler flow studies and/or angiography may be required for correct vascular evaluation and/or treatment before transplantation.

Renal transplantation patients at risk for graft thrombosis are those with previous vascular access thrombosis, previous venous thrombosis, antiphospholipid antibodies, and previous large vein renal transplant thrombosis. Patients can be evaluated with the activated protein C-resistant ratio (factor V Leiden mutation), protein C activity, protein S activity, antithrombin III activity, homocysteine level, prothrombin gene mutation, and antiphospholipid antibodies.

The purposes of the urologic evaluation are to determine the suitability of the urinary bladder or its substitute for urinary tract reconstruction and to determine the necessity for removal of the native kidneys before or at the time of renal transplant. The urologic evaluation includes a history for urologic disease and operations on the urinary tract, a physical examination including the location of the scars, abdominal catheters, and stomas that may interfere with transplantation;

urinalysis; urine or bladder wash cluttring; and ultasonography of the abdomen and pelvis to include a postvoid bladder image, the kidneys, and the gall bladder.

Further study of the urinary tract is indicated for a history of urologic abnormalities, nonglomerular hematuria, single organism bacteriuria, calculi, hydronephrosis, ADPKD significant bladder residual urine, or inconclusive preliminary imaging studies.

The generally accepted indications for pretransplantations nephrectomy are outlined in

Table—Indications for Pretransplant Nephrectomy

1. Renal stones are not cleared by minimally invasive techniques or lithotripsy
2. Solid renal tumors with or without acquired renal cystic disease
3. Polycystic kidneys taht are symptomatic, extend below the iliac crest, have been infected, or have solid tumors
4. Significant proteinuria not controlled with medical nephrectomy or angioablation
5. Recurrent pyelonephritis
6. Grade 4 or 5 hydronephrosis