Evaluation of Potential Renal Transplant Recipient

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Timing Of Transplantation Referral

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Patients should be referred to a transplantation program when the eGFR is <30 mL/min/1.73 m2.

- Allows **sufficient time** for a complete evaluation and for interventions that may be required to address relative contraindications prior to transplantation.
- It also allows an opportunity for the candidate to **explore his/her potential living-donor** options in a timely manner, which may facilitate a transplant before needing dialysis.

Timing of Transplantation

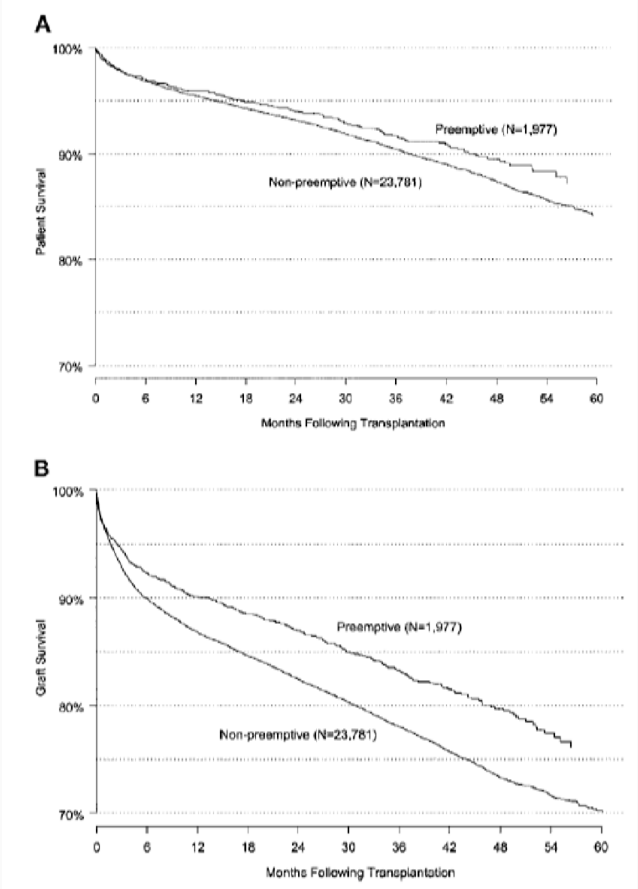
Timing of Transplantation

- The optimal timing of transplantation is not known with certainty.
- Patients should not undergo renal transplantation until renal function has irreversibly deteriorated beyond a threshold level of clearance.
- This absolute level remains unclear but should represent a degree of renal function not associated with signs or symptoms of uremia.

Timing of Transplantation
Pre-emptive Transplant

- The 2005 Canadian Society of Transplantation (CST) consensus guidelines suggest that transplantation should not be performed unless the GFR is <20 mL/minute and there is evidence of progressive, irreversible deterioration over a period of 6 to 12 months.
- An exception may be made in cases in which the combination of kidney and nonrenal solid organ transplantation is being considered.

Preemptive Kidney Transplantation: The Advantage and the Advantaged

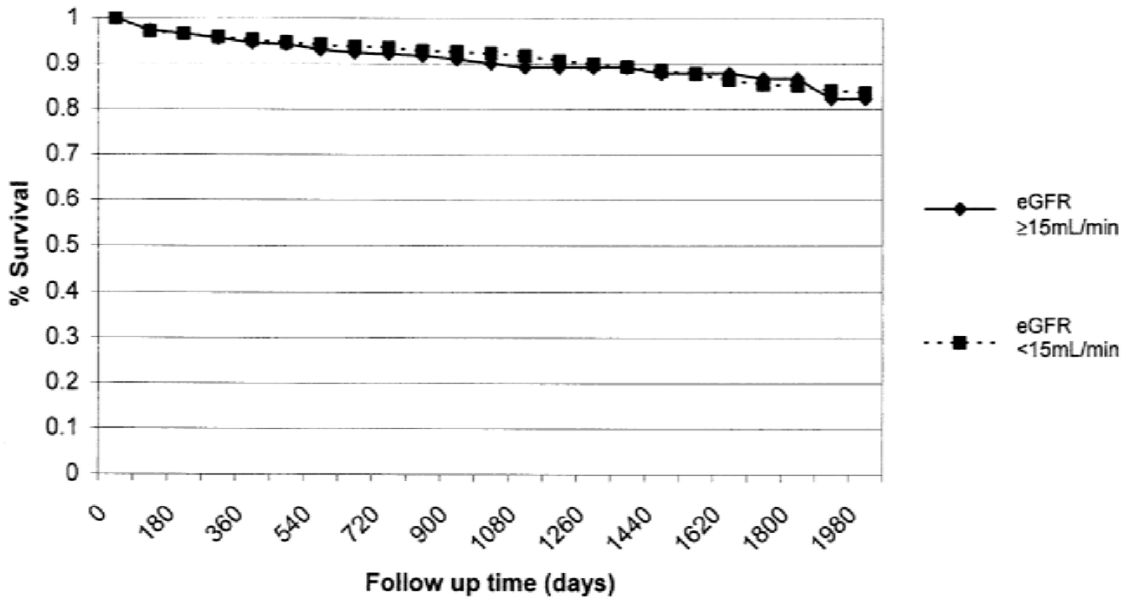


J Am Soc Nephrol 13: 1358–1364, 2002

Transplantation at higher levels of renal function does not confer superior outcomes than transplantation at lower levels.

American Journal of Kidney Diseases, Vol 42, No 6 (December), 2003: pp 1275-1282

The Impact of Residual Renal Function on Graft and Patient Survival Rates in Recipients of Preemptive Renal Transplants



Allograft survival by eGFR strata matched for propensity.

INITIAL EVALUATION

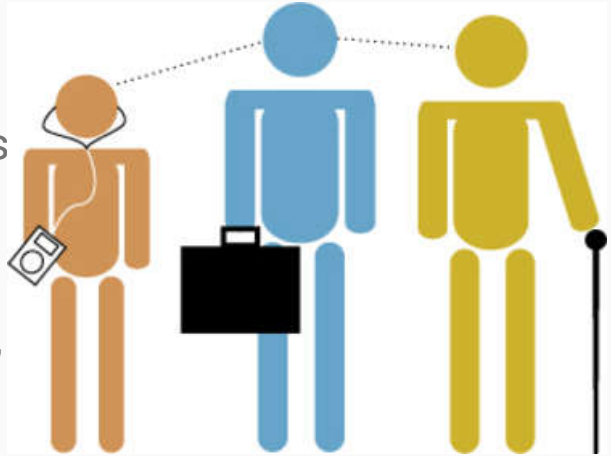
Absolute contraindications

- Active infections
- Active malignancy
- Active substance abuse
- Reversible renal failure
- Uncontrolled psychiatric disease
- Documented active and ongoing treatment nonadherence
- A significantly shortened life expectancy.

“Recipient age alone is not a contraindication to transplantation.
”

Recipient Age

- Recipient age alone is not a contraindication to transplantation.
- Many patients >60 years of age and selected patients >70 years have been transplanted safely and with an acceptable rate of long-term graft function
- However, in order to be evaluated for transplantation, patients should have an estimated life expectancy exceeding the anticipated waiting time for a kidney,



Relative contraindications

- Malnutrition
- Primary oxalosis
- Active systemic diseases that may have caused kidney failure (such as ANCA-associated vasculitides or SLE)
- Systemic amyloidosis, particularly those with cardiac involvement, may not be candidates for renal transplant due to high mortality.

Initial Screening Studies

Initial Screening Studies

- Blood type, CBC, BUN, creatinine, electrolytes, calcium, phosphorous, albumin, LFT, PT, PTT, PTH level, and HbA1c (for diabetic patients).

- A pregnancy test for potentially fertile women.

- Serologic testing for HIV, HBsAg, HBsAb, HBcAb and HCV.

Initial Screening Studies

●Human leukocyte antigen (HLA) typing and a panel reactive antibody assay to detect for previous sensitization.

●Urinalysis and urine culture for urinating patients. If proteinuria is detected, further testing (eg, 24-hour urine collection, serum and urine electrophoresis, serum free light chains)

●Drug screen.

●Purified protein derivative (PPD) testing and/or chest radiograph to exclude tuberculosis.

● The interferon-gamma release assays may be used among patients from endemic areas, those who have had exposure to tuberculosis, and if PPD or chest radiograph is abnormal.

●Chest radiograph and electrocardiogram (ECG).

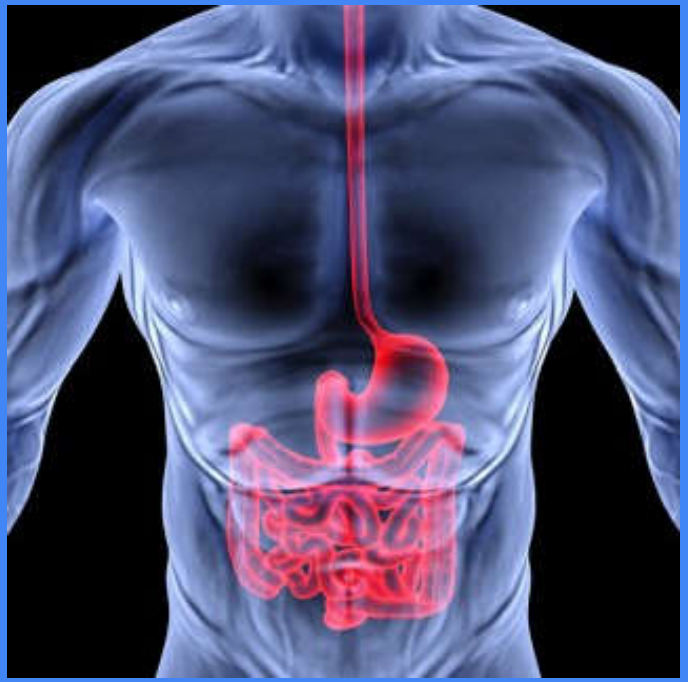
Initial Screening Studies

- All men should have a careful testicular examination.
- Men >50 years of age should have measurement of PSA and a digital rectal examination.
- Black men and men with a family history of prostate cancer should have a PSA measurement and a rectal examination starting at age 40 to 45 years.

Initial Screening Studies

- All women should have a careful breast examination and papanicolaou smear.
- Women >40 years of age should have mammography; the age for mammography should be lowered to 35 years if there is a history of breast cancer in the premenopausal years in a first-degree relative.

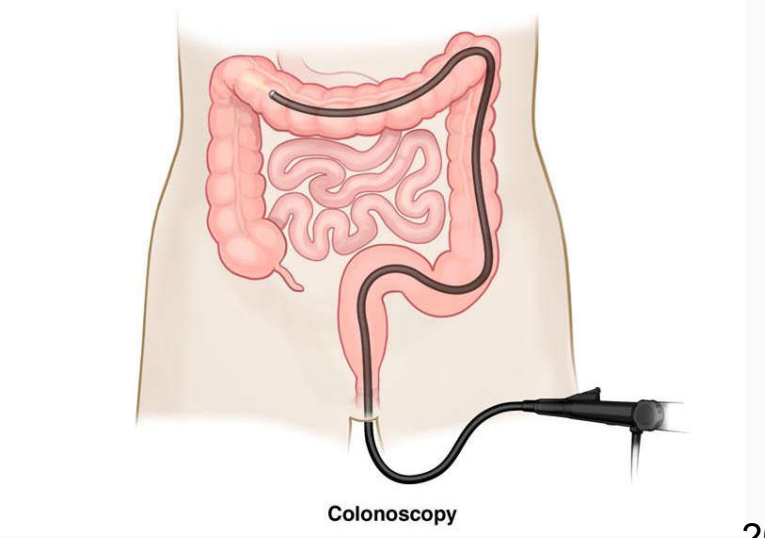
Gastrointestinal disease



Initial Screening Studies

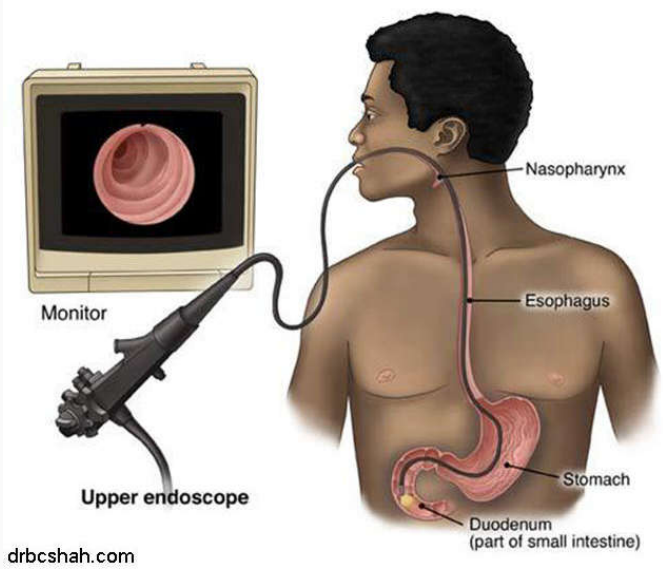
●All patients >50 years of age should have screening colonoscopy.

● Patients who have a history of Barrett's esophagus should also have esophagogastroduodenoscopy (EGD).



Active peptic ulcer disease

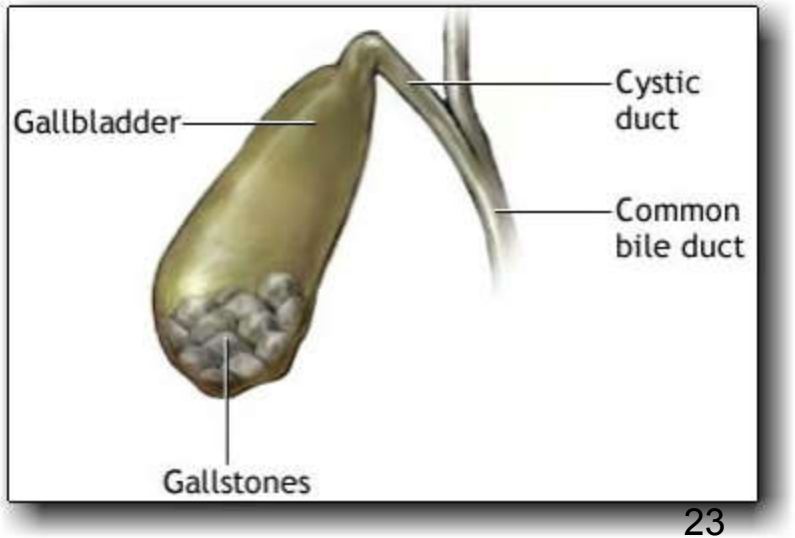
- Active peptic ulcer disease is a relative contraindication to transplantation.
- Patients with active peptic ulcer disease should be adequately treated, with resolution of lesions confirmed by endoscopy prior to transplantation.
- Patients with symptoms or prior peptic ulcer disease may require endoscopy in order to exclude active disease.



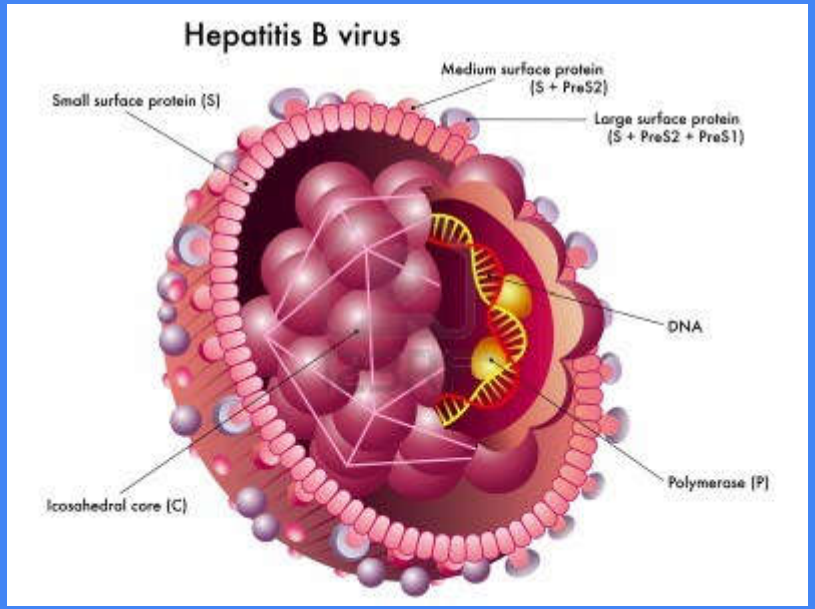
Patients with bridging fibrosis or cirrhosis based on liver biopsy and/or clinical parameters may not be suitable candidates for kidney transplant alone and should be considered for combined liver-kidney transplant.

Cholelithiasis

Prophylactic cholecystectomy is not routinely performed.



Hepatitis B virus infection



Hepatitis B virus infection

•HBsAg and anti-HBs, and, if both are negative, anti-HBc should be tested.

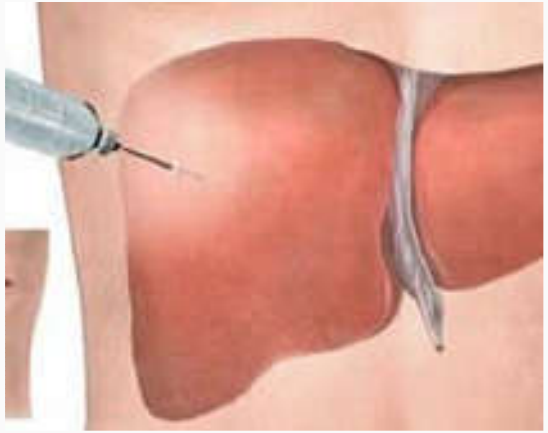
• Chronic HBV infection is not a contraindication to kidney transplantation.

•Patients should be tested for HBeAg and serum HBV DNA. Patients who are HBeAg positive or have high levels of HBV DNA prior to transplantation are at higher risk for reactivation.

Hepatitis B virus infection

•Patients with decompensated cirrhosis and those with compensated cirrhosis and portal hypertension are not eligible for kidney transplantation, but may be considered for combined liver and kidney transplantation.

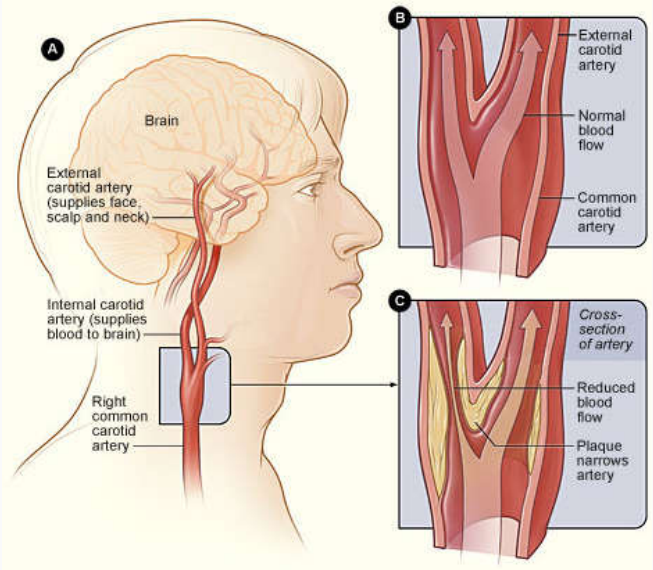
•It is advisable that HBsAg-positive patients undergo liver biopsy to determine whether cirrhosis is present.

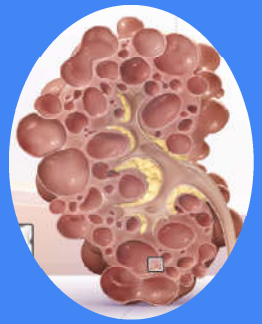


Cerebrovascular disease

Cerebrovascular disease

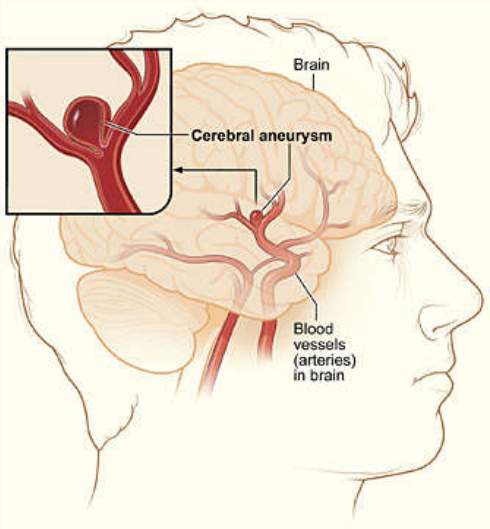
Older patients with risk factors such as hypertension, cigarette smoking, and hypercholesterolemia should be carefully examined for evidence of carotid stenosis, which should be evaluated and addressed prior to transplantation.



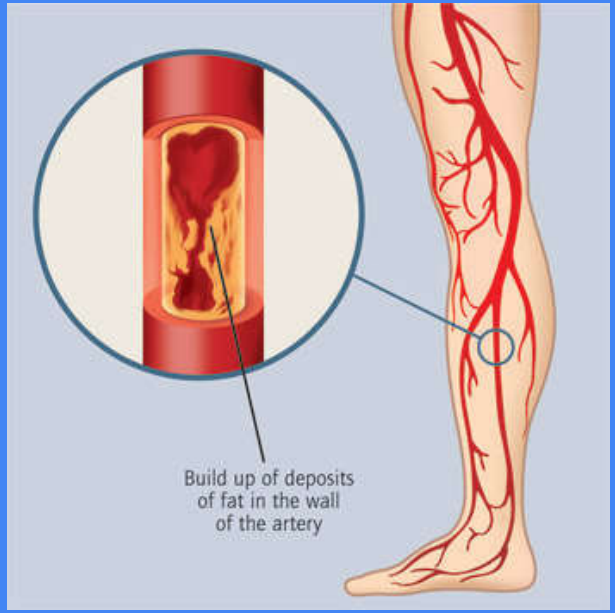


ADPKD

- Screening MRA in all transplant candidates with ADPKD who have a history of headaches or a family history of aneurysm.
- Those found to have aneurysms >7 to 10 mm in diameter warrant neurosurgical evaluation prior to transplant.

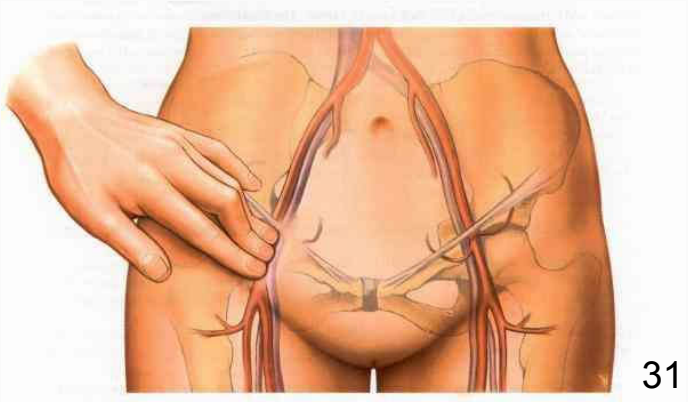


Peripheral Vascular Disease



Peripheral Vascular Disease

Bilateral femoral and pedal pulses should be carefully assessed in every transplant candidate, particularly those with diabetes, cardiovascular disease, or history of peripheral vascular disease.



Severe bilateral iliac or lower-extremity arterial disease or large abdominal aneurysms that are not amenable to intervention are contraindications to transplantation.

Pulmonary disease

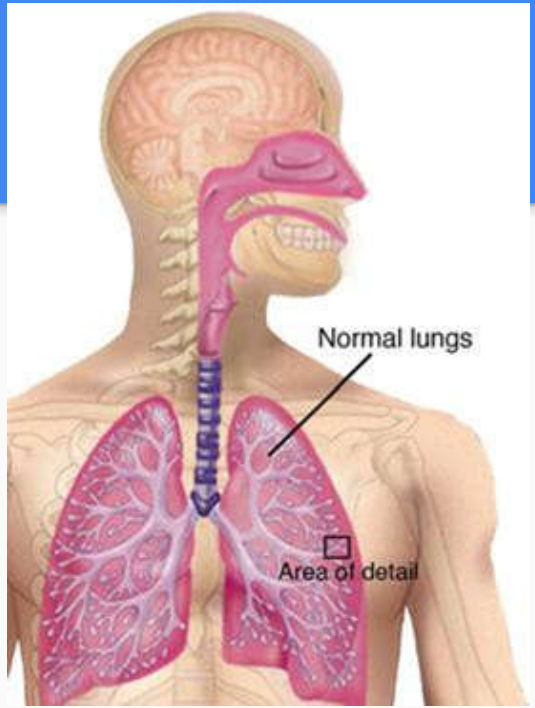
- There are little data on the optimal pretransplant evaluation of patients with pulmonary disease.
- At minimum, the evaluation should be consistent with that for the general population who undergo a preoperative pulmonary assessment

Pulmonary disease

Patients with the following clinical features should not be candidates for kidney transplantation:

●Home oxygen therapy requirement.
●Uncontrolled asthma.
●Severe cor pulmonale or uncorrectable moderate to severe pulmonary hypertension.
●Severe chronic obstructive pulmonary disease/pulmonary fibrosis/restrictive disease

● Uncorrectable moderate to severe pulmonary hypertension may not be eligible for kidney transplant.



Pulmonary disease

All patients should discontinue smoking since it increases the risk of allograft loss and patient death.

In one study, patients with a 25-pack-year smoking history at the time of transplantation had a 30 percent higher risk of allograft failure than those who either had never smoked or had smoked less.

Malignancy

Malignancy

- A waiting period free of recurrence of 2-5 years for most patients with a history of carcinoma.
- Five years:

  Breast cancer with regional node involvement, bilateral disease, or inflammatory histology.

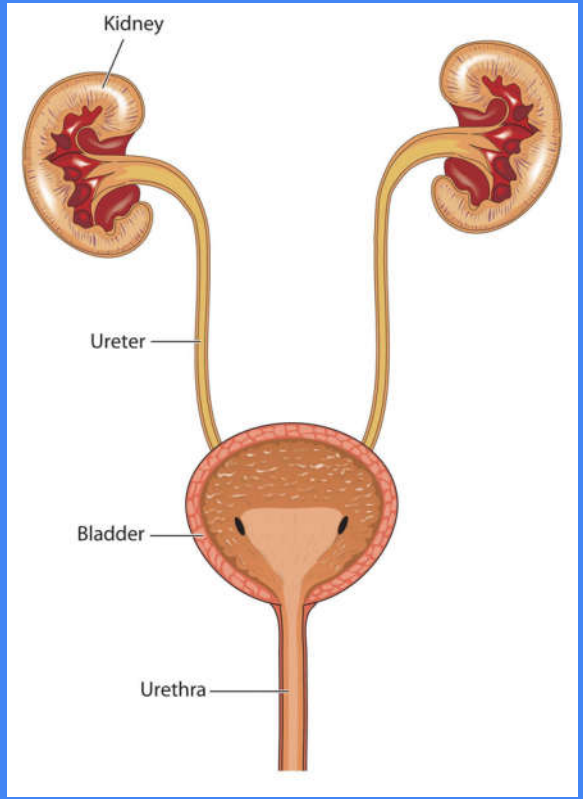
  Malignant melanoma, to colorectal carcinoma other than in situ duke's A or B1 carcinoma, and to invasive cervical cancer.

- A 2-year wait may only be considered for in situ lesions (eg, ductal carcinoma in situ).

Malignancy

- No waiting period is required for BCC or SCC of the skin, in situ bladder cancer, all noninvasive papillary tumors of the bladder, and asymptomatic solitary renal cell cancers <5 cm.

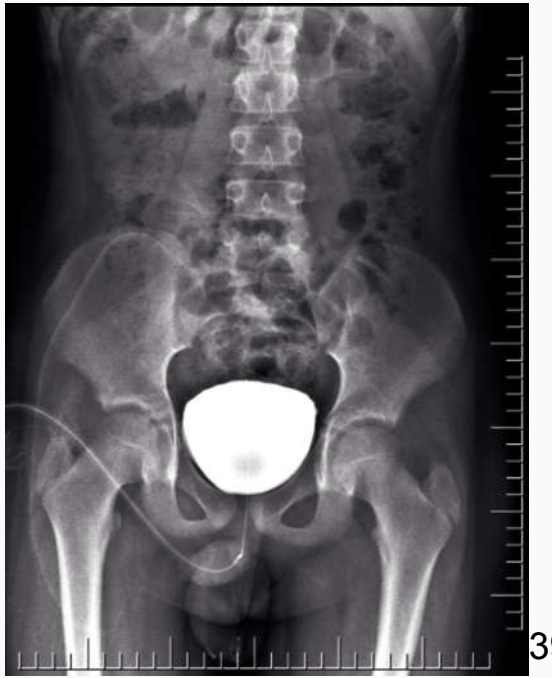
Abnormal lower urinary tract



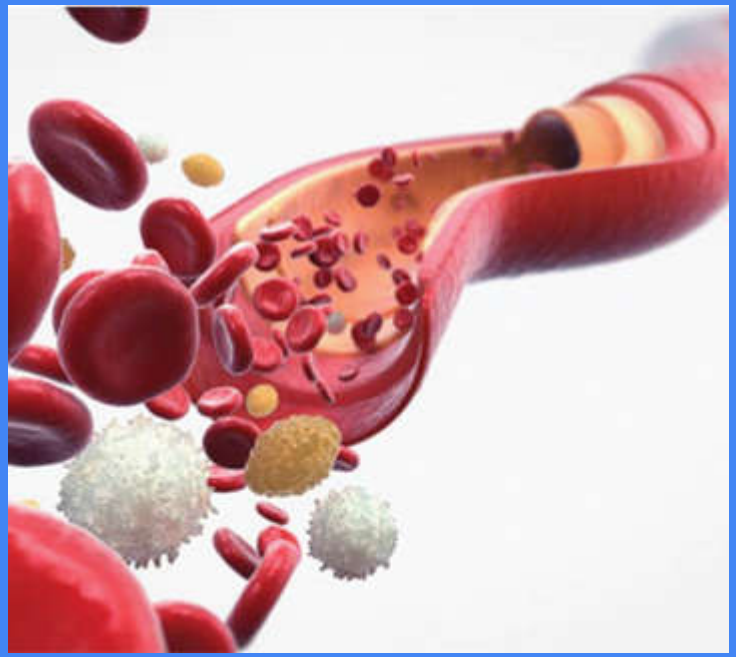
VCUG

A voiding cystourethrogram with or without urodynamics is often performed for patients with

- Bladder dysfunction,
- Bladder augmentation, or substitution;
- History of recurrent UTI;
- Pyelonephritis or reflux; and/or inconclusive findings on baseline ultrasonography.

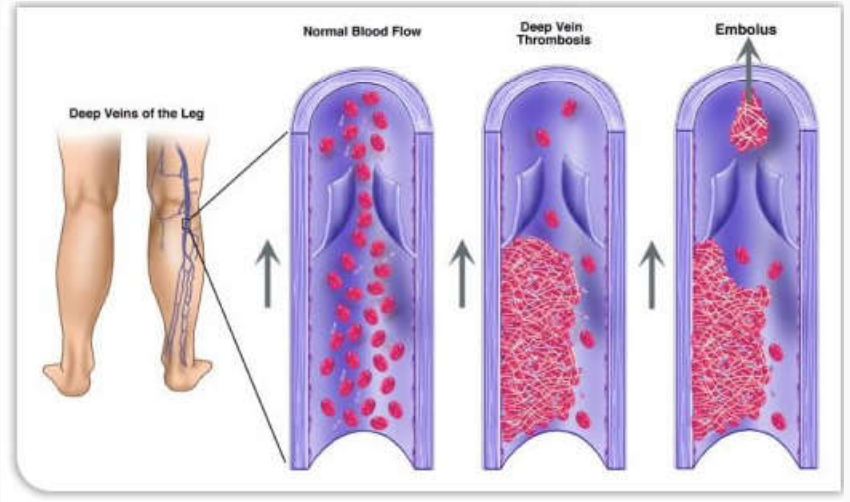


Hematologic disorders



Evaluation For Underlying Hypercoagulable State

- Recurrent miscarriage
- Arterial/venous thrombosis
- Hemodialysis graft or fistula thrombosis
- Lupus
- Prior unexplained graft thrombosis
- Abnormal PTT or PT



Retransplantation

Obesity

Obesity

- Obese patients (defined by a body mass index [BMI] >30 kg/m2) are at increased risk for adverse outcomes including **DGF**, surgical complications including poor wound healing and infection, and new-onset diabetes after transplantation.
- Some transplant centers exclude extremely obese patients (such as a BMI >35 to 40 kg/m2), with referral for consideration for weight-loss surgery
- Weight loss prior to transplantation is often recommended.

NEPHRECTOMY PRIOR TO TRANSPLANTATION

Nephrectomy Prior To Transplantation

- ADPKD: recurrent, symptomatic, cyst-related complications or kidney size that would make the transplant surgery difficult.
- The presence of recurrent pyelonephritis with vesicoureteral reflux has traditionally been considered an indication for pretransplant nephrectomy.
- Recurrent infection occurring in association with nephrolithiasis.
- Children with massive proteinuria, as observed in congenital nephrotic syndrome of the finnish type

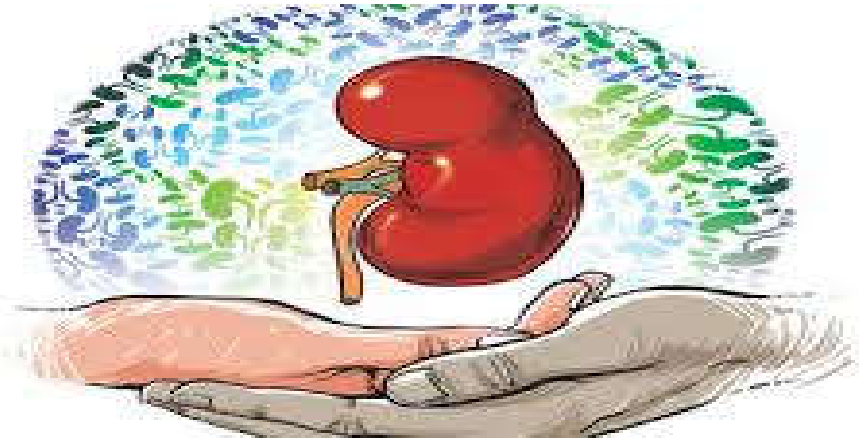
Nephrectomy Prior To Transplantation

A post-nephrectomy waiting time of six weeks is usually recommended to ensure that the wound is not infected and that the patient has adequately healed prior to the transplant surgery.

Retransplantation

The majority of centers do not require a minimum waiting time prior to the second or third transplant; however, those patients who are highly sensitized usually have to wait longer for cadaver kidneys.

Recurrent disease, particularly if rapid, may influence whether to use a living donor in retransplant attempts. As an example, among patients with primary focal segmental glomerulosclerosis (FSGS), recipients who develop recurrent disease in the first transplant are at very high risk (up to 75 percent) for recurrence in subsequent allografts.



PRETRANSPLANT SCREENING OF DONOR AND RECIPIENT FOR INFECTIOUS DISEASES

THE GOALS OF PRETRANSPLANT INFECTIOUS DISEASE SCREENING

1. identify conditions which may disqualify either donor or recipient;
2. identify and treat active infection pretransplant;
3. recognize and (if possible) define the risk of infection and develop strategies for preventing and mitigating posttransplant infection;
4. implement preventative measures, including immunizations

EVALUATION FOR INFECTION RISK

History

✓Pets including cats, dogs, rodents

✓Unusual exposures such as well water, unpasteurized dairy products, or imported cheeses

✓Employment and hobbies including exposures to soil, birds, and toxins (endemic fungi, atypical mycobacteria)

✓ History of urinary tract infections

✓ History of sexually transmitted diseases

✓ High-risk behaviors for (HIV) exposure

✓ Vaccinations and childhood illnesses

✓Prior surgery such as splenectomy, porta-systemic shunting, or sinus surgery

✓ Drug and alcohol use

✓Prior hospitalisation

✓Previous history of hepatitis, peritonitis

✓Contact with a patient with T.B or BCG vaccination

ANATOMIC PREDISPOSITIONS TO INFECTION SHOULD ALSO BE IDENTIFIED

- ➢Vesicoureteral reflux
- ➢Sinus obstruction
- ➢Cardiac valvular abnormalities
- ➢Intravascular clot
- ➢Prosthetic biomaterials such as vascular grafts, artificial joints, dialysis access fistulae, or catheters

DRUG HISTORY

1) Immunosuppressive regimens
2) T cell or B cell depletion for rheumatologic disease
3) Chemotherapy for cancer

LABORATORY TESTING

Tests to obtain in all transplant candidates

A:Serology tests

1) **CMV**
2) **HSV**
3) **VZV**
4) **EBV**
5) **HIV 1,2**
6) **HBV: HBsAg, HBsAb, HBcAb (IgG,IgM)**
7) **HCV**
8) **Treponema pallidum**

B:Other tests

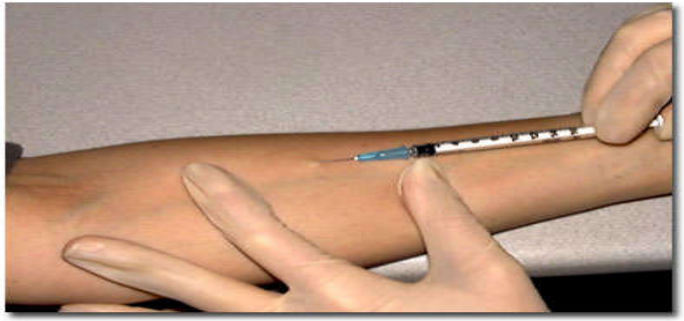
1) **U/A,U/C,**
2) **PPD or quantiferon,**
3) **CXR,**

C:TESTS TO OBTAIN FROM TRANSPLANT CANDIDATES WITH EXPOSURES IN ENDEMIC AREAS

- ✓ Leishmania
- ✓ Strongyloides stercolaris
- ✓ Histoplasma
- ✓ Coccidioides
- ✓ Trypanosome
- ✓ Stool ova and parasites for strongyloides stercoralis
- ✓ Urine ova and parasites for schistosoma

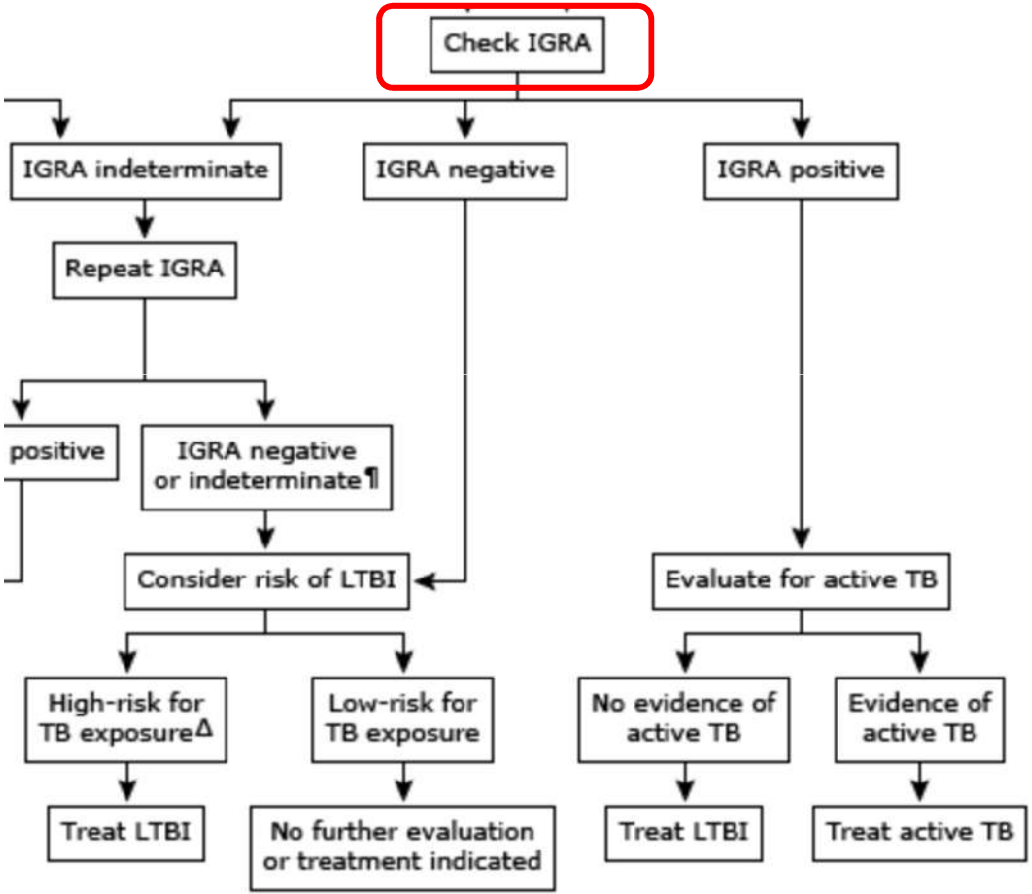
DETECTION OF TUBERCLOSIS

1-PPD skin test



2-interferon gamma release assay (quantiferon)

Screening solid organ transplant candidates for latent tuberculosis



INDICATION FOR T.B PROPHYLAXIS

1-positive PPD test or quantiferon test

2- history of contact with a patient with active T.B before transplantation.

3- Recipients of transplants from donors with a history of untreated tuberculosis

✓Prophylaxis: INH 5 mg/kg/day (maximum 300mg) for 9 months

VACCINATIONS

1- HBV vaccine if HBs Ab level is <10

2- Pneumococci vaccine(if did not inject in past 5 years)

3- Influenza vaccine

4- HPV vaccine

5-VZV vaccine (in VZV Ab negative patients 2 doses and in VZV Ab positive in age>60 years one dose is recommended)

6- Live vaccine (if indicated) must be used at least 4 weeks before transplantation


THANK
YOU