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| PROCEDURE TITLE: Kidney and Pancreas Recipient Evaluation | |
| APPLICABLE FACILITIES: (Check all that apply)  EHC EDH EHH EHI EHN EJCH ELTAC ESJH  EUH EUHM EUHS EUOSH EWWH RJV-ERH RJV-ESOP TEC/ESA | |
| EFFECTIVE DATE: 06/01/2022 | ORIGINATION DATE: 08/22/2006 |

SCOPE:

The Emory Transplant Center Kidney and Pancreas Transplant Program.

PURPOSE:

The kidney and pancreas transplant team (physician or advanced practice provider) will order basic testing, abdominal imaging, cardiac testing, and discuss the needs for health maintenance screening after the patient’s history and physical examination is performed. Additional testing and imaging may be ordered if indicated.

PROCEDURE:

BASIC TESTING  
All patients who are evaluated for a kidney and/or pancreas transplant will have the following basic testing ordered by the kidney/pancreas team member as a part of the transplant evaluation:

* EKG
* Chest x-ray, PA and Lateral views
* Laboratory Testing (see EeMR power plan)

ABDOMINAL IMAGING

Patients evaluated for a kidney and/or pancreas transplant may have selective basic abdominal imaging studies performed in the Department of Radiology. The purpose of these studies will be to define the vascular anatomy for the intended operation and may serve as screening for abdominal malignancies. The following patients may be candidates for cross-sectional imaging:

* Candidates undergo CT scan abdomen-pelvis without contrast
  + If they are on peritoneal dialysis with residual urine output or
  + If they are not dialysis dependent
* Candidates undergo CT scan abdomen-pelvis with and without contrast
  + If they are on hemodialysis or
  + If do not make urine and are on peritoneal dialysis and have no contrast allergy.

ADDITIONAL RADIOLOGICAL IMAGING

The following studies may be ordered as indicated:

* Carotid doppler ultrasound if one or more of the following are present:
  + - History of CVA or TIA
    - Bruit on physical exam
* CT of Chest, without contrast
  + - History of abnormal chest x-ray
    - History of significant lung disease (ex: sarcoidosis, TB, histoplasmosis, malignancy, recurrent pleural effusion, etc.)
    - History of other malignancy to rule out metastasis

PULMONARY TESTING:

Pulmonary Function Tests may be ordered as indicated:

* Extensive history of tobacco abuse
* Significant emphysema or asthma, or as otherwise clinical indicated

# CARDIAC TESTING PRE-TRANSPLANT

Prior to transplantation, all patients will undergo a cardiac risk assessment and cardiac testing will be performed as warranted by the patient’s medical history. The purpose of these studies is to screen for findings that could potentially impact the patient’s outcome after transplant, evaluate cardiac function and discover underlying coronary artery disease. All patients will have cardiac risk assessment performed by the transplant nephrologist. Additional Cardiology consultation will be ordered for select patients.

## LISTING PHASE

1. EKG: All patients
2. Transthoracic echocardiogram (2D echo): All patients

## WAITLIST PHASE (Transplant phase)

1. In-addition to updated EKG and echo (within the last 2 years)
2. Stress Test:

All patients > 45 years

And

For patients < or equal to 45 years

* SPECT if >=3 risk factors including:
  + HTN
  + DM
  + DLD
  + Smoking
  + Cardiovascular disease
  + Dialysis > 1yr
  + LVH

### TYPE OF STRESS TEST:

1. Exercise SPECT: on all patients who can safely walk on the treadmill
2. Pharmacologic SPECT: If patients cannot achieve target HR or prefer pharmacologic SPECT can be converted on the spot
3. Cardiac PET for patients with a BMI >38 or otherwise indicated.

If stress test is normal further cardiac risk assessment with be done by transplant nephrology at the time of evaluation or waitlist conference.

## CARDIOLOGY CONSULT

The following patients will be seen by Transplant cardiology / CT Surgery consultant:

* ef less than 40% or significant change in ef since last echo
* Any defect noted on Stress testing
* Insulin dependent diabetics under consideration for pancreas transplantation
* Valvular heart disease (moderate or severe valvular dysfunction) on echo in a euvolemic state
* Aortic root dilatation greater than 4.0 cm -referral to CT Surgery

## PULMONARY HYPERTENSION CONSULT

Patients with moderate to severe pulmonary hypertension (RVSP > 60) on transthoracic echo after attempting to achieve euvolemic state by intensifying dialysis for 3 months are referred to Emory Pulmonary Hypertension Clinic

## WAITLIST re-testing

1. EKG-recommend every 2 years > 45yrs
2. Echo-recommend every 2 years > 45yrs
3. Stress-recommend every 5 years or earlier if pt develops cardiac symptoms

Stress Testing Procedure:

For patients having their stress test performed in The Emory Clinic Echocardiography Lab/Cardiac Imaging Center located in building A of the Emory Clinic on the tunnel level, the following applies: If the cardiac imaging center staff is unable to perform the cardiac testing, the staff will inform the patient’s recipient coordinator or kidney/pancreas transplant mid-level. The recipient transplant coordinator will inform the medical secretary senior of the kidney/pancreas transplant department to reorder this testing for another date.

Cardiac testing is positive as determined by the attending cardiologist:

* The Emory Transplant team will schedule the patient for cardiology consultation if not already completed. The recipient transplant coordinator will inform the medical secretary senior and the patient of the need to schedule a cardiology consult. The medical secretary senior will schedule a cardiology consult with a cardiology transplant physician.
* Invasive cardiac procedures deemed necessary after cardiology consultation will be ordered by the Cardiology Department. The Emory Cardiology financial staff will be responsible for obtaining financial authorization for the invasive procedures ordered.
* The patient’s transplant coordinator will inform the patient, the patient’s referring nephrologists and dialysis unit of the test results. The communication will be documented in EeMR.

Cardiac testing is suboptimal as determined by the attending cardiologist:

* The Emory Transplant team may order follow-up cardiac testing as directed by the attending cardiologist.

Cardiac testing is negative:

* The kidney/pancreas transplant coordinator will present the information at the patient’s selection conference.

HEATH MAINTENANCE TESTING: Additional testing at Emory or a local hospital/office should be obtained based on age, sex and medical guidelines. The patient will need to have these records sent to their coordinator via mail or fax. It is the patient's responsibility to communicate results.

Colorectal cancer screening: We recommend that patients have a screening colonoscopy per American Cancer Society guidelines at the age of 45. We require a screening colonoscopy is completed by at least age 50. For high risk patients, screening should be earlier. Discontinue screening at age 75 or when the life expectancy is less than 10 years. In 2018, the American Cancer Society updated its guidelines for screening people at average risk for CRC to add a “qualified” recommendation to begin screening at age 45 years (compared with the previous starting age of 50 years) and a strong recommendation to screen those age 50 years and above. Patients at increased risk including those with a personal history of colorectal cancer or adenomatous polyp, a first degree relative with colorectal cancer or inflammatory bowel disease for greater than 8-10 years should be referred to GI to discuss earlier screening that can start as early as 40.

Breast Cancer screening: We will require all women starting at age 45 to receive at least one screening mammogram per the American Cancer Society Guidelines. They should have a repeat mammogram every 1 year. Discontinue screening at age 74 unless expected life expectancy is at least 10 years. Patients at increased risk including those with a family history of breast cancer in a first-degree relative but do not have a known genetic syndrome should start screening at 40 especially if the family member had premenopausal breast cancer.

Patients with a genetic syndrome should have yearly mammogram and MRI scheduled six months apart.

Prostate Cancer screening: In average risk patients, discussion should start regarding screening at the age of 50. In those with family history of prostate cancer, discussions should be started earlier. Digital rectal exam is no longer recommended. USPSTF just released newer guidelines encouraging discussions between ages 55-69. New data suggests screening offers a small potential benefit for reducing prostate cancer mortality and metastatic disease although many men will experience harm. Recommends against screening past 70. When decision made to screen, would recommend getting PSA starting at the age of 50 every 2 years.

Lung cancer screening. We recommend that patients who are at high risk should undergo annual low-dose computerized tomography (LDCT) per US Preventive Services Task Force (USPSTF) recommendations. (Patients can get this done with their local physicians.) Patients are considered high-risk if they are adults 55 to 80 years old with a 30 pack-year smoking history who are currently smoking or have quit within the past 15 years. Screening can be stopped when the patient has not smoked for 15 years.

GYN/PAP: We recommend that women between the ages of 21-29 undergo a gynecologic exam and pap smear every 3 years and for women between the ages of 30-64, a pap smear every 3 years or pap smear + HPV testing every 5 years. Screening is no longer recommended after age 65.

The medical secretary senior will schedule testing and fax requisitions to the appropriate departments, complete with reason for testing, statement of basic history provided by midlevel provider.

* Example: Non-Contrast CT Abdomen and Pelvis: Reason: Renal Transplant Evaluation
* Example: Stress test: Reason: Renal Transplant Evaluation, Abnormal EKG

Patients will be provided an itinerary for all testing and consultations at Emory. The medical secretary will provide patient with basic written information about the tests to be performed, preparation instructions and directions to scheduled testing.   
  
RELATED DOCUMENT(S)/LINK(S):

EeMR Powerplan: OUTPATIENT Pre-Renal Transplant Evaluation Lab Orders

Kidney Evaluation Cardiac Testing Algorithm

DEFINITIONS:

N/A

REFERENCES AND SOURCES OF EVIDENCE:

1.Kidney Transplant List Status and Outcomes in the ISCHEMIA-CKD Trial

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2.Initial Invasive or Conservative Strategy for Stable Coronary Disease. N Engl J Med 2020 Apr 9;382(15):1395-1407. doi: 10.1056/NEJMoa1915922. Epub 2020 Mar 30.

3. Coronary-Artery Revascularization before Elective Major Vascular Surgery

Edward O. McFalls, M.D., Ph.D., Herbert B. Ward, M.D., Ph.D., Thomas E. Moritz, M.S., Steven Goldman, M.D.,William C. Krupski, M.D.,\* Fred Littooy, M.D., Gordon Pierpont, M.D., Steve Santilli, M.D., Joseph Rapp, M.D.,Brack Hattler, M.D., Kendrick Shunk, M.D., Ph.D., Connie Jaenicke, R.N., B.S.N., Lizy Thottapurathu, M.S.Nancy Ellis, M.S., Domenic J. Reda, Ph.D., and William G. Henderson, Ph.D.

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<https://www.cancer.org/healthy/find-cancer-early/cancer-screening-guidelines/american-cancer-society-guidelines-for-the-early-detection-of-cancer.html>