Preparing for Your Heart and Lung Transplant

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Heart Transplant

Indications for Heart Transplant

- End stage heart disease not amenable to other medical or surgical therapy
- NYHA Class III-IV symptoms on optimal medical therapy and prognosis for 1 year survival < 50-75%
  - Can be demonstrated by poor performance on metabolic exercise stress test
- Diseases leading to end stage heart disease:
  - Congenital heart diseases
  - Ischemic cardiomyopathy
  - Non- ischemic cardiomyopathy (i.e. familial, idiopathic)
  - Valvular disease
  - Refractory ventricular arrhythmias

Potential Contraindications for Heart Transplant

- Advanced age > 70
- Active infection
- Severe pulmonary hypertension
  - PAS > 60, PVR > 3.5 irreversible with inotropes
- Acute pulmonary embolism
- Morbid obesity BMI > 35
- History of tobacco and/or substance abuse within 6 mos
- Cachexia
- Cancer- case by case basis
- Major systemic disease
- Diabetes with end organ damage
- Lack of adequate social and financial support
- Major psych illness that cannot be sufficiently managed to allow safe post transplant care
- History of nonadherence to treatment

Referral for advanced heart failure therapy evaluation

- Patients with end-stage heart disease not amenable to other medical or surgical therapy may be referred by cardiologist or may self refer

- Heart transplant/ LVAD (left ventricular assist device) evaluation may occur simultaneously

- Heart transplant office will ask finance office to obtain financial clearance for evaluation

  -financial clearance is a 2 step process-> clearance for evaluation followed by clearance for listing or VAD implant AFTER full evaluation has been completed

Heart Transplant Evaluation

- Consults: cardiologist, transplant nurse coordinator, social work, nutrition, finance, surgeon
- Diagnostic studies: CTs, MEST, echo, RHC/LHC, peripheral and carotid dopplers, PFTs
- Labs: ABO, CBC, CMP, coags, lipids, serologies, HLA tissue typing and antibody screen
- Health Maintenance exams in accordance with age: colo, mammo, pap, PSA, dental
- Other studies as needed based on results of evaluation

Evaluation phase

- Schedule initial visit in the evaluation clinic for heart transplant and/or LVAD teaching
- Evaluation consent obtained (required) prior to any testing
- Perform chart review to determine what testing is needed based on age and health history per our evaluation protocol
- Schedule all necessary testing for outpatient evaluations
- Goal- complete inpatient evaluations in 2-3 days/ outpatient evaluations in 4-6 weeks

Selection committee

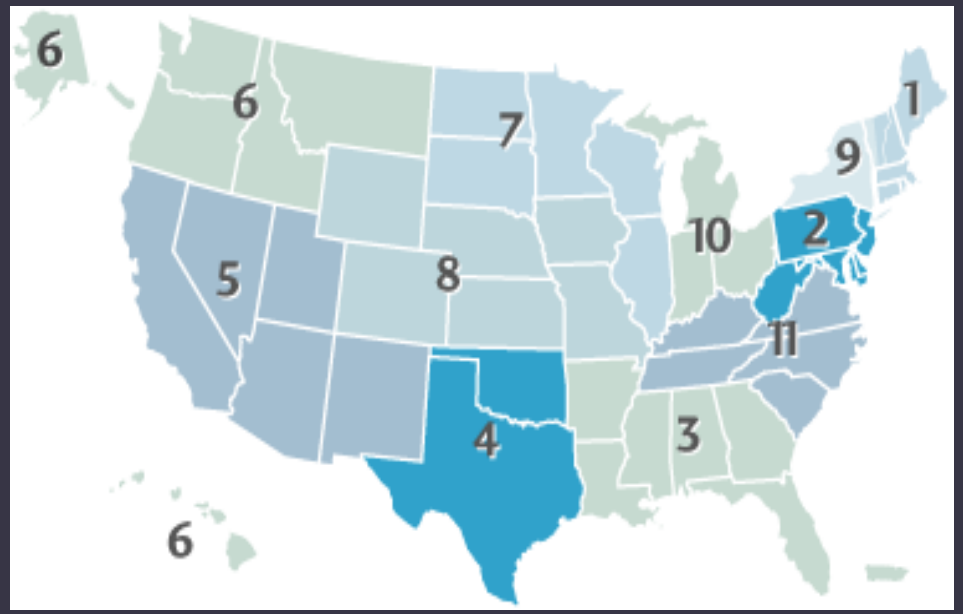
- All heart transplant and LVAD evaluations will be reviewed by the selection committee after all evaluation testing has been completed
- Insurance clearance for listing and or VAD implant will be obtained once patient is deemed an appropriate candidate
- Candidate will be listed for heart transplant if approved
- A listing letter will be sent to all patients that are activated on the UNOS transplant waitlist

United Network for Organ Sharing (UNOS)

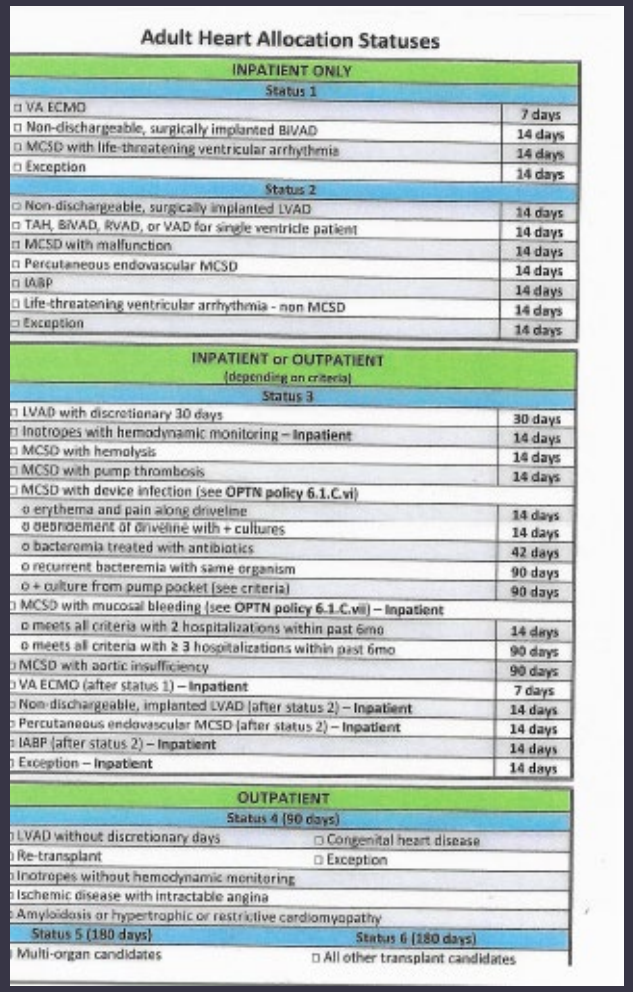
- The National Organ Transplant Act 1984
- Non-profit member organization established in 1984
- Membership includes transplant hospitals, organ procurement organizations (OPO's), independent histocompatibility labs, general public members, and voluntary health organizations

UNOS

- Purpose – to facilitate every organ transplant performed in the United States and ensure that organs are procured and distributed in a fair and timely manner



Heart Listing Status



Adult Heart Allocation Statuses

INPATIENT ONLY	
Status 1	
□ VA ECMO	7 days
□ Non-dischargeable, surgically implanted BiVAD	14 days
□ MCSD with life-threatening ventricular arrhythmia	14 days
□ Exception	14 days
Status 2	
□ Non-dischargeable, surgically implanted LVAD	14 days
□ TAH, BiVAD, RVAD, or VAD for single ventricle patient	14 days
□ MCSD with malfunction	14 days
□ Percutaneous endovascular MCSD	14 days
□ IABP	14 days
□ Life-threatening ventricular arrhythmia - non MCSD	14 days
□ Exception	14 days

INPATIENT or OUTPATIENT (depending on criteria)	
Status 3	
□ LVAD with discretionary 30 days	30 days
□ Inotropes with hemodynamic monitoring – **Inpatient**	14 days
□ MCSD with hemolysis	14 days
□ MCSD with pump thrombosis	14 days
□ MCSD with device infection (see **OPTN policy 6.1.C.vi**)	
o erythema and pain along driveline	14 days
o debridement of driveline with + cultures	14 days
o bacteremia treated with antibiotics	42 days
o recurrent bacteremia with same organism	90 days
o + culture from pump pocket (see criteria)	90 days
□ MCSD with mucosal bleeding (see **OPTN policy 6.1.C.vii**) – **Inpatient**	
o meets all criteria with 2 hospitalizations within past 6mo	14 days
o meets all criteria with ≥ 3 hospitalizations within past 6mo	90 days
□ MCSD with aortic insufficiency	90 days
□ VA ECMO (after status 1) – **Inpatient**	7 days
□ Non-dischargeable, implanted LVAD (after status 2) – **Inpatient**	14 days
□ Percutaneous endovascular MCSD (after status 2) – **Inpatient**	14 days
□ IABP (after status 2) – **Inpatient**	14 days
□ Exception – **Inpatient**	14 days

OUTPATIENT	
Status 4 (90 days)	
□ LVAD without discretionary days	□ Congenital heart disease
□ Re-transplant	□ Exception
□ Inotropes without hemodynamic monitoring	
□ Ischemic disease with intractable angina	
□ Amyloidosis or hypertrophic or restrictive cardiomyopathy	
Status 5 (180 days)	**Status 6 (180 days)**
□ Multi-organ candidates	□ All other transplant candidates

- New status criteria effective October 15, 2018
- Active Status 1-6 with Status 1 most critical
- Organs allocated to most critically ill patient in 500 mile radius

Waitlist Phase

- Follow-up visits at least every 3 months
- Keep transplant office updated with changes medical condition, weight, phone numbers, and **insurance** changes
- You may be listed at multiple centers if your insurance allows it
- Continue to study information regarding post-transplant care and ask questions
- If available attend virtual support group meetings
- Be prepared to be admitted to wait for heart transplant


LIFE ON EARTH
by Ham
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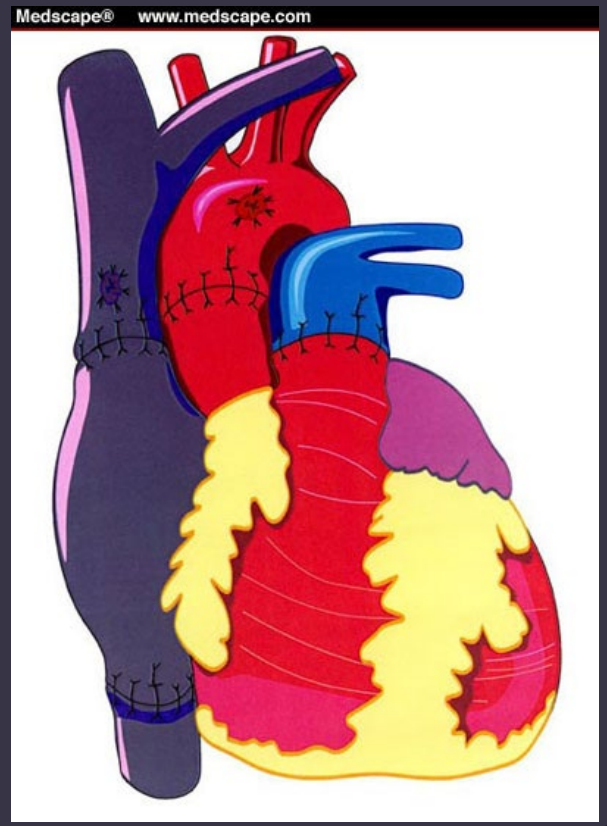
Heart Transplant Surgery

- Orthotopic Heart Transplant (OHT)
- Matched based on blood type and body size
- Sternotomy
- Donor heart transplanted within 4-6 hours
- Primarily bicaval technique



Post-operative Phase/Care

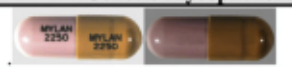
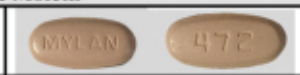
- ICU for 2-4 days
- Hospitalized 10-14 days
- Teaching regarding medications, exercise, diet
- Medication teaching done with you and primary care giver

The Denervated Heart

- Resting heart rate is 90-110
- Heart rate is dependent on circulating hormones called catecholamines such as epinephrine and norepinephrine so the response is slower
- Need to warm-up and cool-down with exercise and change position slower

Medications

- Immunosuppression – three drug regimen
  - Tacrolimus – main anti-rejection, mainstay for life
    - Trough level essential part of care, give 8am/8pm in hospital
      - Level too high → can cause kidney injury
      - Level too low → can lead to rejection of transplanted organ(s)
    - Side effects of a HIGH level: increased tremor, frontal HA, HTN
    - Interaction with grapefruit, pomegrantate, marijuana → AVOID
  - Cellcept
    - Side effects: GI distress, bloating, diarrhea, nausea, neutropenia
  - Prednisone
    - Dose weaned as an outpatient
    - Side effects: increase blood sugars, slow wound healing

Cellcept® (Mycophenolate Mofetil)		
Manufacturer	**250 mg Capsule**	**500 mg Tablet**
Roche		
Generic Mycophenolate Mofetil		
Mylan / UDL		
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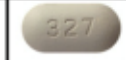
Sandoz		
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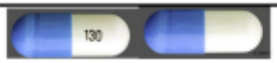
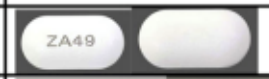
Zydus		
Accord		
Endo		
Prograf® (Tacrolimus)		
Manufacturer	**0.5 mg capsule**	**1 mg capsule**	**5 mg capsule**
Astellas			
Generic Tacrolimus			
Sandoz			
Dr Reddy's Laboratories			
Mylan	Hard-shell gelatin capsule with a light orange opaque cap and a gray opaque body filled with white to off-white powder, axially printed with **MYLAN** over **2045** in black ink on both the cap and the body	Hard-shell gelatin capsule with a light blue opaque cap and a gray opaque body filled with white to off-white powder, axially printed with **MYLAN** over **2046** in black ink on both the cap and the body	Hard-shell gelatin capsule with a rubine red opaque cap and a gray opaque body filled with white to off-white powder, axially printed with **MYLAN** over **2047** in black ink on both the cap and the body.
Watson			

Post-Discharge

- Weekly visits with heart biopsies and clinic visits
- Frequent labs
- Cardiac Rehab after first 12 weeks
- Medication adjustments
- Monitor for side effects of medications, infection and rejection
- Stay in close contact with team


Always be
Psalm 27

Lung Transplant

Indications for Lung Transplant

- Requiring O2 at rest or exertion
- Multiple hospitalizations
- Decline in PFTs
- CO2 retention
- Decreased QOL

- Diseases leading to end stage lung disease:
  - COPD and A1AD
  - IPF/ILD
  - CF and bronchiectasis
  - PAH
  - Sarcoidosis

Potential Contraindications for Lung Transplant

- Active smoking, <6 mos abstinence
- Active substance abuse
- Age > 75
- Severe diffuse coronary disease not amenable to revascularization
- Bone marrow dysfunction
- Severe neuro deficits
- Major psych illness that cannot be managed to sufficiently allow post- op care and safety
- Deconditioning
- Previous chest surgery/transplant
- Achalasia
- Other end organ disease
- Morbid obesity BMI >30
- Severe malnutrition/cachexia BMI <17
- Chronic pred use > 20mg/day
- Psychosocial/financial concerns
- Cancer in last 5 yrs, except local skin ca
- Colonization w/ resistant infections
- Chronic mechanical ventilation/ ECMO- unless tolerating PT

Lung Transplant Evaluation

- Consultations: Pulmonology, Transplant Nurse Coordinator Teaching, Social work, Nutrition, Thoracic Surgery (Infectious Disease and ENT for CF)
- Diagnostic studies: CT scans (Chest, Abdomen and Pelvis), VQ Perfusion scans, Echocardiograms, Right and Left Cardiac Catherization, Bone Density Study, Swallowing Studies, SNIFF testing, Pulmonary Function Testing, 6 min walk testing.
- Labwork -ABO, CBC, CMP, coags, lipids, serologies, ABGs, HLA tissue typing and antibody screens
- Health Maintenance exams in accordance with age: Colon screening, mammography, Pap testing and GYN exam, PSA, Dental clearance
- Other studies as needed based on results of evaluation

Lung Transplant Activation

- UNOS (United Network of Organ Sharing) Lung Allocation Score (LAS)
  - Score 0-100
  - Based on patient data such as PFTs, 6MWT, labs, diagnosis, O2 requirement
  - Can be updated as needed

Local→ Region→ National

- LAS
- ABO
- Size

Lung Transplant Surgery

- Single -Thoracotomy Incision
- With or without bypass
- Can be an option for diagnoses such as IPF and ILD

- Double -clamshell incision
- With or without bypass
- Necessary for diagnoses such as CF, Sarcoidosis and Pulmonary Hypertension

Post- op Care:

- Continue mobility and pulmonary toilet
- Discharge teaching with post- transplant coordinator
- Bronchosopies
- Spirometry
- Monitor for side effects of immunosuppression
  - BP
  - Renal function
  - Blood glucose

Post Discharge and Beyond

Follow up care includes:

- Weekly clinic visits
  - Frequent labs
  - Pulmonary Function testing
  - Pulmonary rehab
  - Medication adjustments

Ongoing surveillance for:

- Chronic rejection
- Bronchiolitis obliterans syndrome
- Restrictive allograft syndrome
- Malignancy
  - Skin
  - PTLD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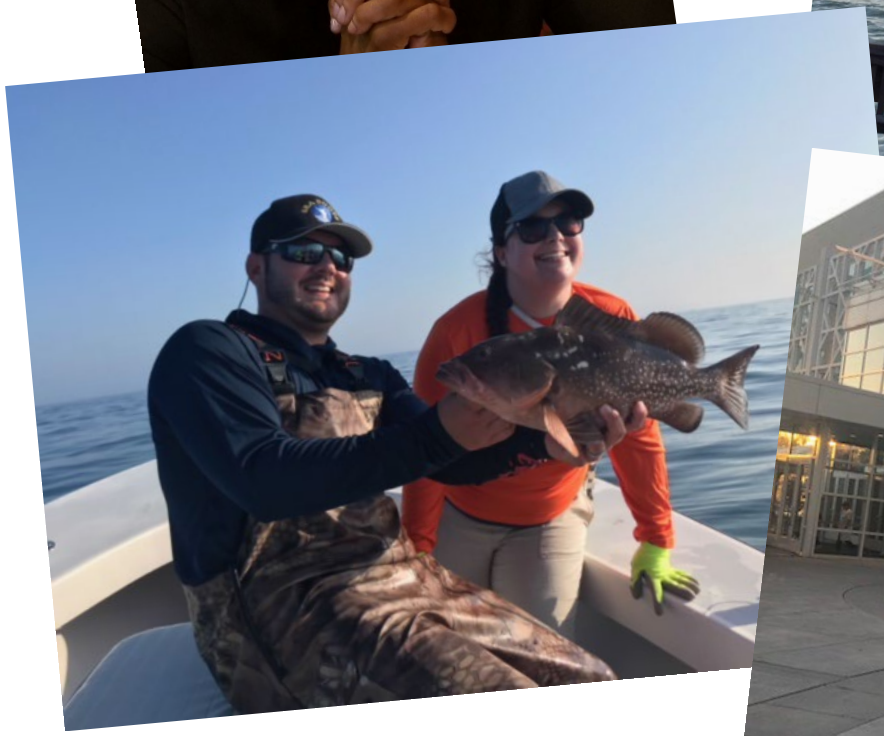

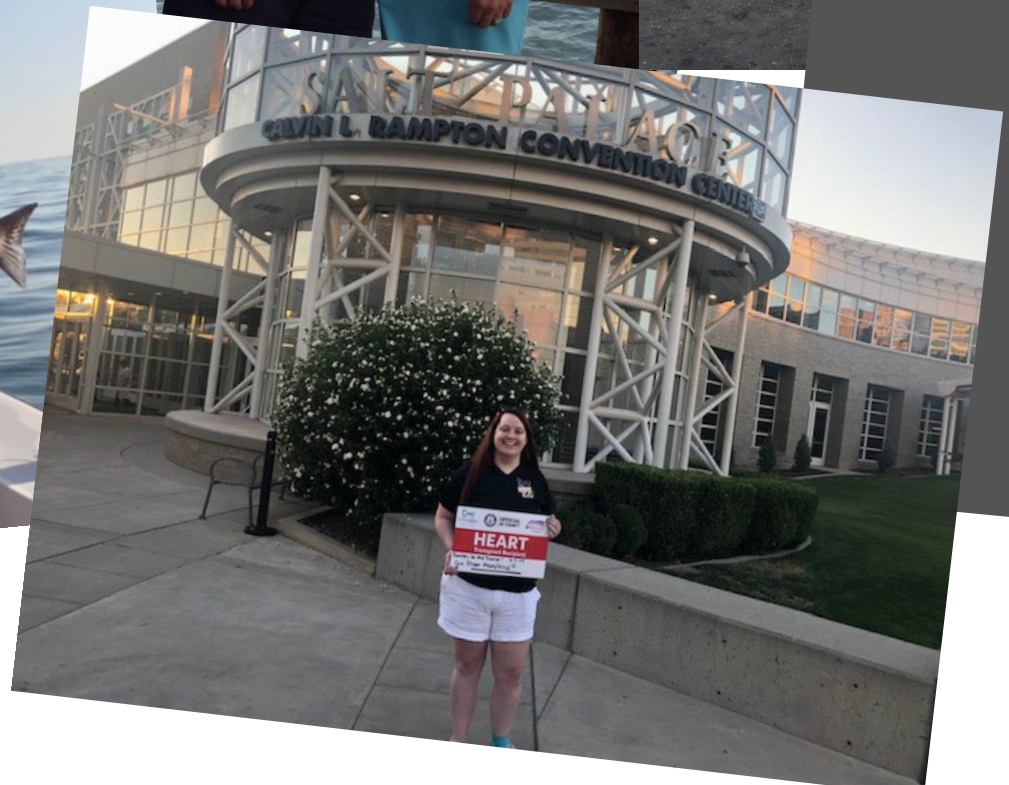
CALVIN L. RAMPTON CONVENTION CENTER
HEART


AA1
people, places & things
pp&t
For Harford woman, the beat goes on
Going on 25 years after heart transplant