



# ROHINI

COLLEGE OF ENGINEERING AND TECHNOLOGY

Approved by AICTE and affiliated to Anna University Chennai (An ISO Certified Institution)

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## DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

### CBM352 Human Assist Devices

#### UNIT-I HEART LUNG MACHINE AND ARTIFICIAL HEART

##### Indications for Cardiac Transplant

Cardiac transplantation is considered in individuals with end-stage heart failure when other treatments have failed to provide adequate relief or when the prognosis is poor without transplantation. Indications for cardiac transplant may include:

1. **Severe Heart Failure:** When heart failure is severe and refractory to optimal medical therapy, including medications, device therapy (such as implantable cardioverter-defibrillators or cardiac resynchronization therapy), and surgical interventions.
2. **Reduced Ejection Fraction:** Patients with significantly reduced left ventricular ejection fraction (the fraction of blood pumped out of the left ventricle with each contraction).
3. **Functional Limitations:** Individuals experiencing severe functional limitations and a significant decrease in quality of life due to heart failure symptoms.
4. **Optimal Medical Management:** Patients should have undergone optimal medical management for heart failure, including medications, lifestyle modifications, and other appropriate therapies.
5. **Absence of Contraindications:** Candidates should not have contraindications to transplantation, such as active infections, significant comorbidities that would affect the success of transplantation, or other conditions that may limit life expectancy.
6. **Age and Overall Health:** While age alone is not a strict criterion, overall health and the ability to withstand the transplantation process and recovery are considered. The potential benefits of transplantation should outweigh the risks.

7. **Psychosocial Factors:** Candidates need to have adequate psychosocial support and be mentally prepared for the challenges associated with transplantation. This includes understanding and adhering to the post-transplant care and medication regimen.
8. **Informed Consent:** Informed consent is a crucial aspect of the transplant evaluation process. Candidates should understand the risks and benefits of the procedure and be willing to comply with the necessary post-transplant care.

It's important to note that each case is unique, and decisions regarding cardiac transplantation are made on an individual basis. Evaluation for transplantation involves a multidisciplinary team, including cardiologists, surgeons, psychologists, and social workers, who assess the overall suitability and potential success of the transplant for a particular patient. Additionally, advancements in medical therapies and alternative treatments are continually evolving, influencing the decision-making process for cardiac transplantation.

In adults, heart failure can be caused by:

- A weakening of the heart muscle (cardiomyopathy)
- Coronary artery disease
- Heart valve disease
- A heart problem you're born with (congenital heart defect)
- Dangerous recurring abnormal heart rhythms (ventricular arrhythmias) not controlled by other treatments
- Failure of a previous heart transplant

In children, heart failure is most often caused by either a congenital heart defect or cardiomyopathy.

Another organ transplant may be performed at the same time as a heart transplant (multiorgan transplant) in people with certain conditions at select medical centers.

Multiorgan transplants include:

- **Heart-kidney transplant.** This procedure may be an option for some people with kidney failure in addition to heart failure.

- **Heart-liver transplant.** This procedure may be an option for people with certain liver and heart conditions.
- **Heart-lung transplant.** Rarely, doctors may suggest this procedure for some people with severe lung and heart diseases if the conditions cannot be treated with only a heart transplant or a lung transplant.

