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# Ontario's Referral and Listing Criteria for Adult Heart Transplantation

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Version 4.0

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# Adult Heart Transplantation Referral & Listing Criteria

## PATIENT REFERRAL CRITERIA:

The patient referral criteria are guidelines which a Health Care Provider would utilize to refer a patient to a transplant center for assessment. The criteria identified below are the conditions for which a patient should be referred for heart transplant assessment.

- 1) **Advanced Heart Failure:** Referral for heart transplantation should be considered for patients with advanced heart failure failing optimal medical and surgical (if appropriate) therapy. Such patients would have one or more of the following:
  - Late-stage heart failure due to any cause [American Heart Association (AHA) stage D];
  - Patients who have significant cardiac dysfunction with marked symptoms of dyspnea, fatigue end-organ hypoperfusion at rest or with minimal exertion despite maximal medical therapy and/or surgical therapy;
  - Refractory symptoms requiring specialized interventions to manage symptoms or prolong life; or,
  - Pulmonary hypertension and chronic right-sided heart failure (Right Atrial Pressure [RAP] >15mmHg and a cardiac index <2.0 L\*min<sup>-1</sup>\*m<sup>-2</sup>) Selected patients who have chronic right-sided heart failure with severe pulmonary vascular disease.
- 2) **Anticipated Survival:** Referral for heart transplantation should be considered for patients with poor anticipated survival without a transplant.
- 3) **Quality of Life:** Referral for heart transplantation should be considered for patients who would experience an unacceptable quality of life without a transplant.
- 4) **Arrhythmias:** Referral for heart transplantation should be considered for patients who have refractory life-threatening arrhythmias despite optimal medication, surgical, and device therapy.
- 5) **Heart Disease:** Referral for heart transplantation should be considered for patients with complex congenital heart disease with failed surgical palliation or who are not amenable to surgical palliation at acceptable risk.
- 6) **Angina:** Referral for heart transplantation should be considered for patients with refractory angina not amenable to further revascularization.

Early referral is essential, allowing for pre-transplant problems to be addressed and resolved while the disease is relatively well-compensated.

## PATIENT LISTING INDICATIONS:

Each patient is assessed individually for their suitability for heart transplantation by the transplant program. The criteria identified below are the conditions for which a patient may be eligible to be waitlisted for heart transplantation in Ontario.

- 1) **Advanced Functional Class:** Patients considered Class III to Class IV (severe) according to the New York Heart Association (NYHA) functional classification system may be considered for transplant listing. Listing for heart transplant may also be considered for patients who have refractory life-threatening arrhythmias that are not amenable to treatment.
- 2) **Functional Capacity – Poor One Year Survival:** Patients with functional capacity resulting in poor expected one year survival may be listed for transplant. Such patients would meet the following criteria:
  - An absolute indication for listing includes patients with a peak  $\text{VO}_2$  of less than 10 mL/kg/min with achievement of the ventilatory threshold. Relative listing indications include patients with peak  $\text{VO}_2$  between 11 mL/kg/min and 14 mL/kg/min or less than 55% of the predicted value for the age group.
  - Listing may be considered for patients with a peak  $\text{VO}_2$  of 15 mL/kg/min or greater to 18 mL/kg/min or less with refractory angina or life-threatening arrhythmia. For patients treated with beta blockers, the threshold for transplantation should be lowered to less than 12mL/kg/min.
- 3) **Lack of Alternative Medical Options:** Patients who fail to respond to maximal medical therapy or the absence of alternative/conventional surgical options are eligible to be waitlisted for heart transplantation in Ontario.
- 4) **Contraindications:** The absence of contraindication(s) for transplant is required to be eligible to be wait-listed for heart transplantation.
- 5) **Rehabilitation:** The potential to undergo rehabilitation after transplant is required to be eligible to be wait-listed for heart transplantation.

## ABSOLUTE LISTING CONTRAINDICATIONS:

The following are conditions relating to the heart transplant candidate that constitute absolute contraindications to heart transplantation. As such, they prevent a transplant from being done until the condition is resolved.

- 1) **Liver Disease:** Patients with advanced primary liver disease are not candidates for heart only transplantation, but may be considered for combination heart-liver transplantation.
- 2) **Pulmonary Hypertension (PHT):** Patients with irreversible pulmonary arterial hypertension should not be considered for transplantation, but should be considered for advanced therapies to treat PHT.
- 3) **Malignancy:** Patients with recent active malignancy are not candidates for heart transplantation but may be considered for transplant when tumor recurrence is low based on tumor type, response to therapy, and negative metastasis work-up.
- 4) **Pulmonary Disease:** Patients with irreversible pulmonary parenchymal disease are not candidates for heart transplantation. Lung function should be assessed after optimal medical therapy for heart failure has been achieved. Candidates with a  $\text{FEV}_1/\text{FVC}$  ratio of less than 40% to 50% of predicted, or  $\text{FEV}_1$  less than 50% of that predicted despite optimal medical management for heart failure are poor candidates for transplantation.

- 5) **Consent:** Patients who do not want a transplant should not be listed for heart transplantation. Patients who are unable to give informed consent and do not have a substitute decision maker available, resulting in an inadequate or unsafe care plan post-transplant, are not candidates for heart transplantation.
- 6) **Systemic Disease:** Patients with primary systemic disease limiting long term survival are not candidates for heart transplantation (e.g. hepatic disease).
- 7) **Infections:** Patients should be free of active infection, whether of viral, bacterial or fungal origin. Patients with active AIDS are not candidates for transplantation.
- 8) **Psychosocial Considerations:** Patients must undergo a complete psychosocial evaluation prior to listing for transplant. Patients who display the following are not candidates for heart transplantation:
  - Drug or alcohol abuse (3 months abstinence is required and willingness to enter a structured rehab program);
  - Patients with severe cognitive-behavioural disabilities or dementia;
  - Psychiatric condition (unstable or chronic) leading to reduced chance of successful transplant due to compliance considerations;
  - Documented life threatening non-compliance; or,
  - Active smoking (3 months abstinence is required).

#### **RELATIVE LISTING CONTRAINDICATIONS:**

The following are conditions relating to the heart transplant candidate that constitute relative contraindications to heart transplantation. While each patient is evaluated on an individual basis, the presence of one or more of the following may preclude a candidate from being listed on the heart transplantation wait list.

- 1) **Age:** Patients with advanced age may not be eligible for heart transplantation.
- 2) **Pulmonary Hypertension:** Patients with a pulmonary vascular resistant (PVR) exceeding 5 Wood units may not be eligible for heart transplantation.
- 3) **Osteoporosis:** Patients with severe osteoporosis, with bone mineral density >2 standard deviations (SD) below normal or at high risk may not be eligible for heart transplantation.
- 4) **Obesity:** Patients with morbid obesity and a body mass index (BMI) of >35kg may not be eligible for heart transplantation.
- 5) **Diabetes:** Patients with diabetes with end organ damage may not be eligible for heart transplantation (e.g. neuropathy, nephropathy and retinopathy).
- 6) **Gastrointestinal Disease:** Patients with active peptic ulcer disease may not be transplanted until the disease is successfully treated. Patients with active diverticulitis may not be candidates for heart transplantation.
- 7) **Cachexia:** Patients with marked Cachexia (< 60% of ideal body weight) may not be eligible for heart transplantation.
- 8) **Functional Capacity:** Patients with a peak VO<sub>2</sub> (oxygen consumption) higher than 15 mL/kg/min without other indications for transplantation (excluding congenital cases) may not be eligible for heart transplantation.

- 9) **Pulmonary Infarction:** Patients with recent unresolved pulmonary infarction may not be eligible for heart transplantation.
- 10) **Technical Issues:** Patients who are surgically unsuitable, where a successful transplant is unlikely due to surgical risks/technical issues (e.g. excessive scar tissue in chest from previous cardiac surgeries), may not be eligible for heart transplantation.
- 11) **Peripheral and Cerebral Vascular Disease:** Patients with severe peripheral and/or cerebrovascular disease may not be eligible for heart transplantation when its presence limits rehabilitation and revascularization is not a viable option.
- 12) **Renal Dysfunction:** Patients with chronic kidney disease may not be eligible for heart transplantation alone.
- 13) **Amyloidosis:** Patients with primary or secondary amyloidosis may not be eligible for heart transplantation.
- 14) **Cardiac Disease:** Patients with myocardial infiltrative and inflammatory disease may not be eligible for heart transplantation. Patients with cardiac cirrhosis may not be eligible for heart transplantation.
- 15) **Social Support:** Patients for whom social supports are deemed insufficient to achieve compliant care in the outpatient setting.
- 16) **Malnutrition:** Patients with protein malnutrition may not be eligible for heart transplantation.

#### **GENERAL CONSIDERATIONS:**

In addition to the above criteria, the following should be considered when assessing candidates for heart transplantation.

- 1) **Human Leukocyte Antigen (HLA) Sensitization:** Transplantation of sensitized recipients is associated with significant risk for early graft failure and reduced survival as a result of humoral rejection. Recognition and measurement of the degree of sensitization to HLA antigens is an important part of the evaluation of transplant candidates.

## Version Control:

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