Ontario’s Referral and Listing Criteria for Adult Lung Transplantation

Version 2.0

Trillium Gift of Life Network
Adult Lung 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. In general, referral for lung transplantation assessment is advisable when patients have a less than 50%, 2- to 3-year predicted survival or New York Heart Association (NYHA) class III or IV level of function, or both.

The criteria identified below are the agreed upon conditions for which a patient should be referred for lung transplant assessment.

1) **Chronic Obstructive Pulmonary Disease (COPD):** Referral for lung transplantation should be considered for patients with a Body-Mass Index, Airflow Obstruction, Dyspnea, and Exercise (BODE) index score of greater than 5.

2) **Cystic Fibrosis and Other Causes of Bronchiectasis:** Referral for lung transplantation should be considered for patients with cystic fibrosis and other causes of bronchiectasis. Such patients would have one or more of the following:
   - Forced Expiratory Volume (FEV1) below 30% predicted or a rapid decline in FEV1, especially in young female patients;
   - Exacerbation of pulmonary disease requiring ICU stay;
   - Increasing frequency of exacerbations requiring antibiotic therapy;
   - Refractory and/or recurrent pneumothorax; or
   - Recurrent hemoptysis not controlled by embolization.

3) **Idiopathic Pulmonary Fibrosis and Non-Specific Interstitial Pneumonia:** Referral for lung transplantation should be considered for patients with histologic or radiographic evidence of Usual Interstitial Pneumonia (UIP) irrespective of vital capacity. Patients with histologic evidence of fibrotic Non-Specific Interstitial Pneumonia (NSIP) may also be referred for lung transplant assessment.

4) **Pulmonary Arterial Hypertension:** Patients with a New York Heart Association (NYHA) functional class of III or IV, irrespective of ongoing therapy and rapidly progressive disease, may be referred for lung transplant assessment.

5) **Sarcoidosis:** Referral for lung transplantation should be considered for patients with sarcoidosis if they are NYHA functional class III or IV.

6) **Lymphangioleio-myomatosis:** Referral for lung transplantation should be considered for patients with lymphangioleio-myomatosis if they are NYHA functional class III or IV.

7) **Pulmonary Langerhans Cell Histiocytosis (Eosinophilic Granuloma):** Referral for lung transplantation should be considered for patients with pulmonary Langerhans cell histiocytosis if they are NYHA functional class III or IV.
PATIENT LISTING INDICATIONS:

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

1) **Chronic Obstructive Pulmonary Disease (COPD):** Listing for lung transplantation may be considered for patients with COPD. Such patients would meet the following criteria:
   - Body-Mass Index, Airflow Obstruction, Dyspnea, and Exercise (BODE) capacity index of 7 - 10, or at least one of the following:
     - History of hospitalization for exacerbation associated with acute hypercapnia (PCO₂ exceeding 50 mm Hg);
     - Pulmonary hypertension or cor pulmonale, or both, despite oxygen therapy; or,
     - Forced Expiratory Volume (FEV₁) of less than 20% and either Carbon Monoxide Diffusing Capacity (DLCO) of less than 20% or homogenous distribution of emphysema.

2) **Cystic Fibrosis and Other Causes of Bronchiectasis:** Listing for lung transplantation may be considered for patients with cystic fibrosis or other causes of bronchiectasis. Such patients would have one of the following:
   - Oxygen-dependent respiratory failure;
   - Hypercapnia; or,
   - Pulmonary hypertension.

3) **Idiopathic Pulmonary Fibrosis and Non-Specific Interstitial Pneumonia:** Listing for lung transplantation may be considered for patients with idiopathic pulmonary fibrosis or non-specific interstitial pneumonia. Such patients would have:
   - Histologic or radiographic evidence of UIP and any of the following:
     - A DLCO of less than 39% predicted;
     - A 10% or greater decrement in forced vital capacity (FVC) during 6 months of follow-up;
     - A decrease in pulse oximetry below 88% during a 6-Minute Walk Test (MWT); or,
     - Honeycombing on High Resolution Computed Tomography (HRCT) (fibrosis score of >2).
   - Histologic evidence of NSIP and any of the following:
     - A DLCO of less than 35% predicted; or,
     - A 10% or greater decrement in FVC or 15% decrease in DLCO during 6 months of follow-up.

4) **Pulmonary Arterial Hypertension:** Listing for lung transplantation may be considered for patients with pulmonary arterial hypertension. Such patients would have one of the following:
   - Persistent NYHA class III or IV on maximal medical therapy;
   - Low or declining 6-MWT;
   - Failing therapy with intravenous epoprostenol, or equivalent;
   - Cardiac index of less than 2 liters/min/m²; or,
   - Right atrial pressure exceeding 15 mm Hg.

5) **Sarcoidosis:** Listing for lung transplantation may be considered for patients with sarcoidosis. Such patients would meet the following criteria:
   - Impairment of exercise tolerance (NYHA functional class III or IV) and any of the following:
     - Hypoxemia at rest;
     - Pulmonary hypertension; or,
     - Elevated right atrial pressure exceeding 15 mm Hg.
6) **Lymphangioleiomyomatosis**: Patients with lymphangioleiomyomatosis may be considered for lung transplantation. Such patients would have one of the following:
   - Severe impairment in lung function and exercise capacity (e.g., VO2 max < 50% predicted); or,
   - Hypoxemia at rest.

7) **Pulmonary Langerhans Cell Histiocytosis (Eosinophilic Granuloma)**: Patients with pulmonary langerhans cell histiocytosis may be considered for lung transplantation. Such patients would have one of the following:
   - Severe impairment in lung function and exercise capacity; or,
   - Hypoxemia at rest.

8) **General**: Patients not included in the preceding categories but have a poor quality of life (based on the clinical judgment of the care team at the time of assessment) may be considered for lung transplantation.

**ABSOLUTE LISTING CONTRAINDICATIONS**:

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

1) **Psychosocial Issues**: Patients must undergo a complete psychosocial evaluation prior to listing for transplant. Patients who display the following are not candidates for lung transplantation:
   - Documented non-adherence or inability to follow through with medical therapy or office follow-up, or both;
   - Untreatable psychiatric or psychologic condition associated with the inability to cooperate or comply with medical therapy;
   - Absence of a consistent or reliable social support system; or,
   - Active alcohol or other substance misuse within last 6 months.

**RELATIVE LISTING CONTRAINDICATIONS**:

The following are conditions relating to the lung transplant candidate that constitute relative contraindications to lung 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 lung transplantation wait list.

1) **Age**: Patients older than 65 years may not be eligible for lung transplantation. Older patients have less optimal survival, likely due to comorbidities, and therefore recipient age should be a factor in candidate selection. Although there cannot be endorsement of an upper age limit as an absolute contraindication, the presence of several relative contraindications can combine to increase the risks of transplantation above a safe threshold.

2) **Medical Stability**: Patients with critical or unstable clinical conditions (e.g., shock, mechanical ventilation or extra-corporeal membrane oxygenation) may not be eligible for lung transplantation.

3) **Functional Status**: Patients with severely limited functional status with poor rehabilitation potential may not be eligible for lung transplantation.

4) **Infection**: Patients with colonized and highly resistant or highly virulent bacteria, fungi, or mycobacteria infection may not be eligible for lung transplantation. Patients with non-curable chronic extrapulmonary
infection including chronic active viral hepatitis B, hepatitis C, and human immunodeficiency virus may not be eligible for lung transplantation.

5) **Obesity:** Patients with severe obesity defined as a body mass index (BMI) exceeding 30 kg/m² may not be eligible for lung transplantation.

6) **Osteoporosis:** Patients with severe or symptomatic osteoporosis may not be eligible for lung transplantation.

7) **Mechanical Ventilation:** Patients with mechanical ventilation may not be eligible for lung transplantation. However, carefully selected candidates on mechanical ventilation without other acute or chronic organ dysfunction, who are able to actively participate in a meaningful rehabilitation program, may be successfully transplanted.

8) **Disease:** Patients with untreatable advanced dysfunction of another major organ system (e.g. heart, liver, or kidney) may not be eligible for lung transplantation. Coronary artery disease not amenable to percutaneous intervention or bypass grafting, or associated with significant impairment of left ventricular function, is an absolute contraindication to lung transplantation, but heart-lung transplantation could be considered in highly selected cases.

Other medical conditions that have not resulted in end-stage organ damage, such as diabetes mellitus, systemic hypertension, peptic ulcer disease, or gastroesophageal reflux should be optimally treated before transplantation. Patients with coronary artery disease may undergo percutaneous intervention before transplantation or coronary artery bypass grafting concurrent with the procedure.

9) **Malignancy:** Patients with malignancy in the last 2 years, with the exception of cutaneous squamous and basal cell tumors, may not be eligible for lung transplantation. In general, a 5-year disease-free interval is prudent. The role of lung transplantation for localized bronchioalveolar cell carcinoma remains controversial.

10) **Deformity:** Patients with significant chest wall/spinal deformity may not be eligible for lung transplantation.
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