Post-transplant Rehabilitation: Optimizing Long-term Outcomes after Transplant

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BOUNDLESS

Identifying the Need for Post-transplant Rehabilitation

Improvement in **quality of life** is a primary goal of solid organ transplantation

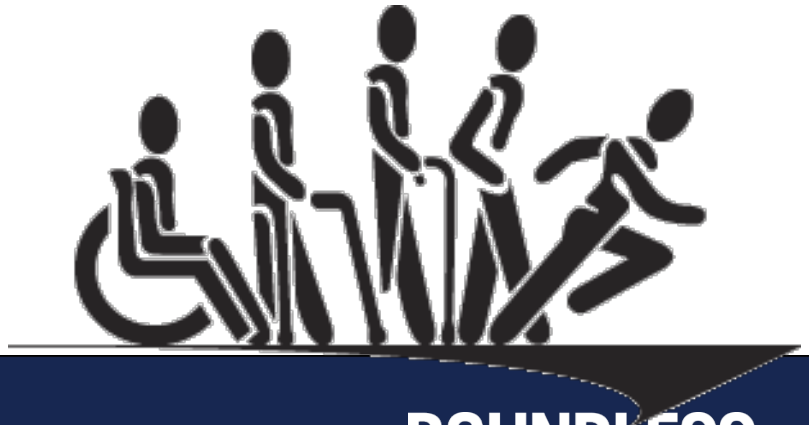
Need to improve **long-term outcomes** after transplant beyond *survival*

- Many transplant recipients do not reach their expected level of function and fulfillment of personal and societal roles
- Emphasizes the need for rehabilitation

Goals of post-transplant rehabilitation

improve **physical limitations** of reduced exercise capacity and muscle weakness

- immobility and bedrest
- early medical complications (e.g. acute rejection)
- long term complications from immunosuppression
- ongoing, episodic medical complications



Goals of post-transplant rehabilitation

Improve treatment **adherence**

Address **sleep** quality

Address **mental health** issues

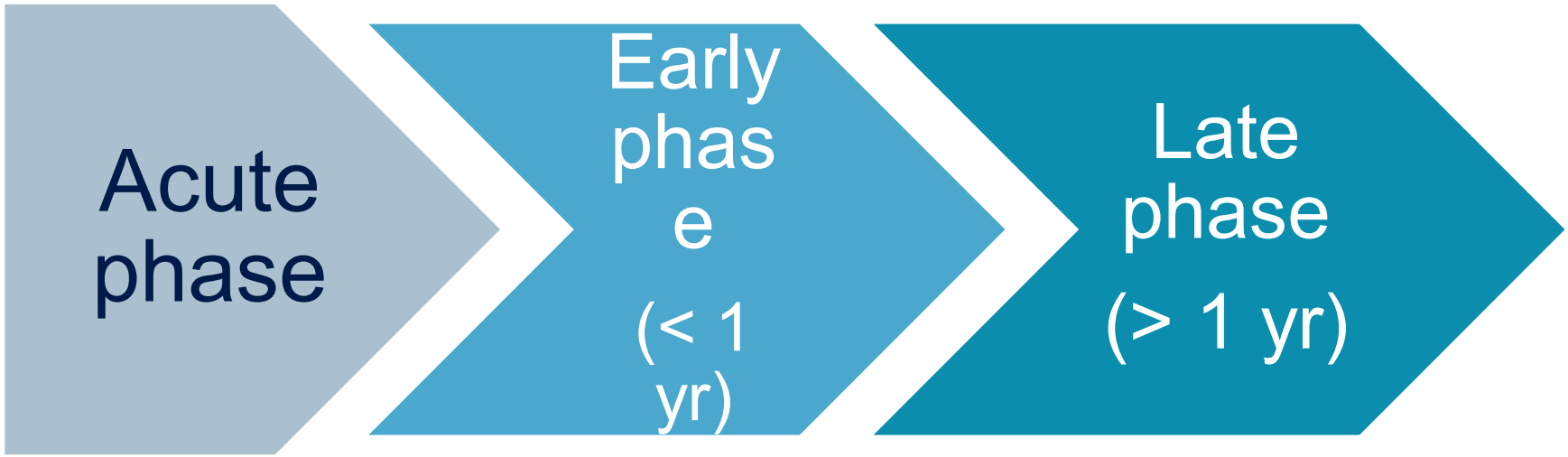
Provide **social support** and peer network

Assist with **return to work**

Post-Transplant Rehabilitation

Rehabilitation occurs along the continuum of post-transplant care

Early phase: hospital based programs



Structure of Post-Transplant Rehabilitation

No set model for rehabilitation programs

Example – lung transplant rehabilitation (Wickerson et al., 2016)

Exercise training:

- **Acute phase**: Early mobility in ICU and acute care ward
- **Early phase**: mandatory outpatient exercise program for 3 months post-transplant
  - dietitian, social worker, psychiatry
  - Inpatient rehab (if needed)
- **Late phase**: Ongoing physical activity counseling > 3 months

Outcomes of rehabilitation

Janaudis-Ferriera et al. 2021 – Systematic review and meta-analysis of exercise training

Janaudis-Ferreira & Mathur, 2019 – Joint Position Statement from CST and CAN-RESTORE on Exercise Training

Improvements with exercise training:

- Aerobic capacity
- Muscle strength
- Quality of life
- Cardiovascular risk factors (e.g. diastolic blood pressure)
- Depression and anxiety?

Patient Perspectives on Rehabilitation

(Fuller et al. 2014)

Study on perspectives of lung transplant recipients undergoing post-transplant rehabilitation

- Lung transplant recipients perceived post-transplant exercise rehabilitation as **a highly valuable tool that assisted them to return to "normal life."**
- Lung transplant recipients thought that group exercise was **motivational, offered peer support**, and therefore was advantageous to assist them **achieve their desired physical performance level** following transplantation.

Patient Perspectives on Rehabilitation

(Schoo et al. 2016)

- **100% of the SOT recipients** who had participated in a pre and/or post transplant rehabilitation program in Canada thought that the **program was beneficial to their health and wellbeing**.
- **Factors influencing attendance in rehab:**
  - physician recommendation
  - perception of benefits
  - health status and symptoms

Availability of Rehabilitation Programs

Survey of Canadian transplant centres (Trojetto et al, 2011)

20% of centres offered rehabilitation

- **Pre-transplant** rehab: 50% of heart and 80% of lung transplant programs
- **Post-transplant** rehab: 67% of heart and 100% of lung transplant rehab programs
- **Underserviced:** liver and kidney transplant recipients

Gaps in Knowledge and Future Directions for Research

- **Multidisciplinary approach** to rehabilitation to address the spectrum of needs for transplant recipients
- Availability of programs specific to transplant recipients
- Delivery modes (e.g. virtual care)
- Evidence for **long-term outcomes (> 1 year)**
  - cardiovascular risk factors, quality of life, survival
- Reducing barriers to physician counseling to encourage attendance in rehabilitation

Key References

1. Fuller LM et al. Patients' expectations and experiences of rehabilitation following lung transplantation. Clin Transplant. 2014;28(2):252-8.

2. Janaudis-Ferreira T et al. The effects of exercise training in adult solid organ transplant recipients: A systematic review and meta-analysis. Transplant International. Feb 21, 2021 (e-pub).

3. Janaudis-Ferreira T & Mathur S et al. Exercise for Solid Organ Transplant Candidates and Recipients: A Joint Position Statement of the Canadian Society of Transplantation and CAN-RESTORE. Transplantation. 2019; 103(9): e220–e238.

4. Schoo E et al. Solid-organ transplant recipients' opinions of pre- and post-transplant supervised exercise programs: a brief report. Physiotherapy Canada. 2017; 69(2):178–183.

5. Trojetto T, et al. Availability, characteristics, and barriers of rehabilitation programs in organ transplant populations across Canada. Clin Transplant. 2011;25(6):E571-8.

6. Wickerson L et al.. Physical rehabilitation for lung transplant candidates and recipients: an evidence-informed clinical approach. World Journal of Transplantation. 2016; 6(3): 517-531.

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