RESEARCH SCHOLAR PROGRAM – 2018

SUPERVISOR & PROJECT INFORMATION FORM

Please complete and return, via email only (crems.programs@utoronto.ca) by **November 3rd 2017** *(forms received after this date will not be posted).*

Supervisor Information

Name: Lianne Singer

Email: ;lianne.singer@uhn.ca

Degree: MD

SGS Appointment: IMS, IHPME

Academic Rank: Associate Professor

Field of Research: Health Outcomes

Research Institution Affiliation (if applicable): TGRI

Allocation of student contact time (number of hours per week YOU are available to the student for any concerns or to review progress): 2 hrs/wk; student will also be working with a senior research coordinator, PhD co-investigator, and likely a PhD student

Title: Frailty and Sarcopenia in Solid Organ Transplantation (FROST Study)

Description (max 500 words): As older and more medically complex individuals are accepted as organ transplant donors and recipients, transplant programs face unprecedented challenges. Evolving transplant candidacy criteria may offer great benefits to a widening segment of society. However, age and medical complexity are invariably associated with a higher risk of adverse health outcomes. Frailty, defined as a loss of reserve capacity leading to increased vulnerability to stressors, may have significant implications for organ transplant donor and recipient selection, and optimization of transplant outcomes. Sarcopenia, or abnormal muscle mass, strength or function, may also adversely affect recipient outcomes and may be modifiable. The **overall objectives** of our research program are to develop novel multi-dimensional frailty indices for organ transplant donors and recipients based on cumulative deficits, compare frailty and sarcopenia assessment methods in organ transplant candidates, explore the reversibility of frailty and sarcopenia with transplantation, and study the associations of donor and recipient frailty/sarcopenia with organ transplantation outcomes.

Sample Size
N= 240. Subjects will be enrolled in the pre-transplant period and we estimate that 120 subjects will be transplanted during the study period..

Study Population
Patients active on waiting list for solid organ transplants (lung, heart, liver, kidney)

Accrual Period
2 years

Study Design
Prospective cohort study

Study Duration
3 years; all subjects followed for at least 1 year after enrollment

Study Agent/ Intervention/ Procedure
Multidimensional frailty and sarcopenia assessments

Primary Objectives

1. identify the single measure or combination of lab-based sarcopenia measures (muscle mass, muscle strength or mobility) that is/are the strongest predictors of pre- and post-transplant outcomes.

2. evaluate and compare the predictive validity of the cumulative deficits frailty index and the phenotypic frailty index by evaluating associations with waiting list and post transplant survival, hospital length of stay, primary graft dysfunction, post-transplant frailty, opportunistic infections, health-related quality of life, and healthcare utilization one year before and after transplantation.

Secondary Objectives

3. examine the concurrent validity of clinical measures of muscle mass and strength to evaluate sarcopenia in transplant candidates.

4. determine the predictive validity of the donor frailty index by evaluating associations with primary graft dysfunction, best attained graft function, and post-transplant survival after adjustment for recipient factors.

5. determine whether associations between recipient cumulative deficits and clinical outcomes are modified by a high psychosocial protective index

6. determine whether sarcopenia and frailty are independently predictive of pre-and post-transplant outcomes

Exploratory Objectives
1. describe prevalence of cognitive impairment, anxiety and depression in organ transplant candidates and their association with post-transplant outcomes.

2. evaluate the relationship between serum biomarkers of inflammation and muscle growth with muscle mass in transplant candidates.

3. evaluate the relationship between serum biomarkers of inflammation and muscle growth with pre- and post-transplant outcomes.

Endpoints of the study
Waiting list and post transplant survival, hospital length of stay, primary graft dysfunction, maximal attained organ function, post-transplant frailty, opportunistic infections, health-related quality of life, and healthcare utilization one year before and after transplantation.

Student role
The student Research Scholar will participate in all aspects of the study including enrolling and evaluating study subjects, and analyzing and reporting study results. The student will have primary responsibility for Exploratory Objective 1 and in particular describing the baseline prevalence of cognitive impairment, anxiety and depression in this patient cohort as we expect that all baseline assessments will be done before the end of the student's research period.

If human subjects are involved, have Ethics been obtained?

☐ YES   ☐ NO   ☒ Application Submitted   ☐ N/A

Do you expect this work will be published within the 20 months? Yes, the student project can be published within 20 months. The other objectives will require a longer follow up period but the student may still be involved and credited for his or her participation.

☒ YES   ☐ NO   ☐ Uncertain

Student's roles and responsibilities (please be specific)

Please indicate who will serve as the student's direct report (PI, PhD student, technician etc…)

The student will enroll and administer study assessments to patients at TGH (including cognitive and psychiatric screening questionnaires) after appropriate training and in collaboration with other study personnel. He or she will also have the opportunity to observe and assist with muscle functional assessments which will be done at the Department of Physical Therapy. The student will review patient charts to collect clinical data for calculation of cumulative deficit frailty index, this will include identifying patients' various medical conditions. The student will create an abstract and a research manuscript based upon the assigned research objective. The student will present and discuss their work at our weekly lab meetings. He or she will be closely supervised by our senior research associate and will also meet with Dr Singer for regular one-on-one meetings in addition to the weekly lab meetings.