Comprehensive Research Experience for Medical Students  
Summer Research Program 2018

Supervisor/Project Information Form  
Due February 14 2018 by email to crems.programs@utoronto.ca

PLEASE SUBMIT IN WORD FORMAT ONLY. PDF will not be accepted

Supervisor Name: Marcin Wasowicz  
Hospital/Research Institution: Toronto General Hospital  
Email: marcin.wasowicz@uhn.ca  
Field of Research (2 keywords): Lung Transplantation, Transfusion  
Department: Department of Anesthesia and Pain Management  
School of Graduate Studies Appointment (IMS, LMP, IHPME etc)? Yes/No:  
If YES, please name: Adjunct Professor at Dept. of Chemistry, Faculty of Science, University of Waterloo  
Project Title: Use of Point-of-Care Coagulation Testing-guided Transfusion in Lung Transplantation. Comparison to clinically based management protocol.

Brief Project Description (<300 words):
Lung transplantation is a life-saving procedure for patients with end-stage lung disease, including COPD, interstitial lung disease, cystic fibrosis and pulmonary hypertension. Currently, over 170 lung transplants per year are performed at Toronto General Hospital, with the numbers expected to surpass 200 per year in the near future. In many cases patients undergoing lung transplantation require temporary support with extracorporeal circulation, which needs systemic anticoagulation. Therefore, bleeding, coagulopathy and need for transfusion are common perioperative events carrying significant potential for morbidity. Studies have demonstrated that large volume transfusions in lung transplants increase the risk for graft dysfunction, duration of mechanical ventilation and length of ICU/hospital stays.  

Rotational thromboelastometry (ROTEM) is a viscoelastic testing method used to assess hemostasis potential of whole blood. ROTEM technology allows for assessment of clotting formation potential in a given patient, with results generated more quickly than that of conventional laboratory testing (i.e. CBC and coagulation profile). Furthermore, ROTEM provides insight into whether absence of clot formation may be due to deficiency of platelets, clotting factors or fibrinogen. The usefulness of ROTEM testing has been established in the literature in areas such as trauma, cardiac surgery, and cardiac and liver transplantation. At Toronto General Hospital, a ROTEM-based point-of-care testing laboratory provides routine, protocolized support for cardiac surgery as well as cardiac and liver transplantation cases.  

In January 2018, a protocol for the regular use of ROTEM in lung transplantation was instituted with the goal to improve and minimize perioperative transfusion in this patient population. The proposed project would involve the research student collecting data to assess the impact of this protocol on transfusion practices and transplant outcomes. This would entail retrospective chart review of cases done before and after the protocol was established, and management of a data collection database for this purpose. Opportunity to observe and gain exposure to the point of care testing lab, and lung transplantation cases are also present.