



Comprehensive Research Experience for Medical Students  
Summer Research Program 2019

Supervisor/Project Information Form

*Due February 20 2019 by email to [crems.programs@utoronto.ca](mailto:crems.programs@utoronto.ca)*

Supervisor Name: Dr. Owen Lyons

Project Title: Effect of Obstructive Sleep Apnea on Aortic Dilatation

Hospital/Research Institution: Women's College Hospital/UHN-Toronto General Hospital

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Field of Research (2 keywords): sleep apnea, aorta

Department: Medicine

School of Graduate Studies Appointment (IMS, LMP, IHPME etc)? Yes/No: No      If YES, please name:

Project Title: Effect of Obstructive Sleep Apnea on Aortic Dilatation

Brief Project Description (< 300 words):

Obstructive sleep apnea (OSA) is a common disorder, characterized by repetitive collapse of the upper airway during sleep. It is well established that OSA is a causal factor in the pathogenesis of hypertension and leads to increased risk of stroke, myocardial ischemia and heart failure. More recently, there is emerging evidence to suggest a link between OSA and aortic dilatation. There are several pathophysiological mechanisms by which OSA could potentially lead to dilatation of the thoracic aorta. Obstructive apneas, characterised by unsuccessful inspiratory efforts against an occluded airway, lead to 1) exaggerated negative intrathoracic pressure swings 2) hypoxia, and 3) cortical arousals, with subsequent increases in sympathetic nervous activity and blood pressure surges, all of which may potentially contribute to aortic dilatation, by increasing shear and mechanical wall stresses on the aorta.

We hypothesize that the degree of aortic dilatation will correlate with the degree of OSA severity in patients who have undergone a sleep study for assessment of possible OSA. Patients who have undergone both an overnight sleep study and echocardiography will be identified from our sleep lab database at UHN. We will correlate the degree of aortic root dilatation, measured by echocardiography, with the degree of sleep apnea severity and other clinical and polysomnographic factors.

This retrospective study is a sub-study of a larger collaborative project between the Divisions of Respiriology at WCH /UHN and the Division of Vascular Surgery at UHN. The retrospective nature of the study means the student, who will be first author on the study, will be able to complete the project during the allotted summer period. The student will be supported 1) in data acquisition and data analysis, 2) in preparing an abstract to submit for presentation at one of the Canadian Respiriology/Vascular surgery annual meetings, and 3) drafting a first author publication.