

## Undergraduate Research Symposium May 19, 2017 Mary Gates Hall

### Online Proceedings

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#### POSTER SESSION 1

MGH 241, Easel 162

11:00 AM to 1:00 PM

##### **Perioperative Activity in Thoracic Surgery: Does Adherence to Daily Activity Monitor Use Predict Actual Activity?**

*Emilee Kauer, Senior, Biology (Molecular, Cellular & Developmental)*

*Mentor: Stephen Kaplan*

*Mentor: Richard Thirlby*

*Mentor: Michal Hubka*

Recovery after thoracic surgery can be prolonged and fraught with complications if patients are not active after surgery. Postoperative recovery can strongly be influenced by preoperative baseline activity level and overall fitness. Surgeons have historically relied upon patient report to understand these variables; however, given the ubiquitous nature of activity monitors in today's society, a new opportunity is presented to objectively evaluate perioperative activity. As part of the Perioperative Activity and Outcomes study at Virginia Mason Medical Center, thoracic surgery patients begin wearing a Fitbit prior to surgery and return the device approximately three to five weeks after surgery. However, there are several patient factors that influence the data, such as simply forgetting to wear the device. The objective of this study is to understand whether or not days missed wearing a Fitbit is associated with objective measures of activity. I hypothesize there is a negative correlation between the number of days a patient does not wear their Fitbit and their average daily steps. I will stratify the analysis by preoperative and outpatient postoperative periods, both of which are times where it is incumbent upon the patient to wear the device. In essence, poor compliance with wearing the device may be a surrogate for low activity. The conclusions I draw from this research will contribute to a risk stratification model for improving patient outcomes. By identifying patients at-risk for slow recovery, tailored interventions can be employed to optimize recovery, prevent complications, and improve overall patient outcomes, satisfaction, and quality of life following thoracic surgery.

#### SESSION 1B

##### **TECHNIQUES FOR IMPROVING QUALITY OF MEDICAL CARE**

*Session Moderator: Eric Seibel, Mechanical Engineering*  
**MGH 228**

12:30 PM to 2:15 PM

\* Note: Titles in order of presentation.

##### **The Role of Socio-Geographic Factors in Recovery after Thoracic Surgery among Rural and Urban Populations**

*Aneasha J. (Aneasha) Morris, Junior, Biochemistry*

*Mentor: Stephen Kaplan*

*Mentor: Richard Thirlby*

*Mentor: Michal Hubka*

Social determinants of health are non-biologic factors that can strongly influence individual health status, healthcare access, and disease vulnerability. While this subject is well studied, limited data exists on the influence of these social factors on surgery, and more specifically, recovery after surgery. The burden of surgical disease remains taxing globally and disproportionately affects marginalized populations. Due to the limited access to higher level surgical care, patients often travel from eastern Washington and various other rural areas to Virginia Mason Medical Center for cardiothoracic procedures. Through this study I aim to identify social-geographic factors that contribute to this burden, and determine the discrepancies that generate variances in recovery. I hypothesize that among patients undergoing thoracic surgery at Virginia Mason Medical Center, distance from Seattle will be associated with measures of recovery in the postoperative period. I quantify the postoperative recovery of patients by measuring length of stay, postoperative complications, and readmission. Due to the burden of transport, inconvenience, missed work, increased personal costs, and other socioeconomic issues, I expected to see slower recovery, and possibly greater complications among patients coming from further distances. By first characterizing the problem, I then identify unique challenges that arise among various demographics of patients, creating a tailored perioperative education. This optimizes clarity in communication of postoperative planning and potential complications to create an improved set of guidelines, specified towards particular demographics of patients.

## POSTER SESSION 2

Commons West, Easel 19

1:00 PM to 2:30 PM

### **Evaluating Appendicitis Treatment Options of Drugs and Appendectomy by Comparing Patient Clinical Health Outcomes**

*Derek Chen, Senior, Biology (Molecular, Cellular & Developmental)*

*UW Honors Program*

*Mentor: David Flum, Surgery*

*Mentor: Sierra Widmer-Rodriguez, Surgery*

Approximately 300,000 cases of appendicitis are diagnosed in the United States on a yearly basis. Appendicitis is the condition in which the appendix, located in the right lower quadrant (RLQ) of the abdomen, becomes inflamed usually due to a bacterial infection. A common symptom of appendicitis is when RLQ pain is sustained over time. We, the Surgical Outcomes Research Center (SORCE), hypothesize that antibiotics for intra-abdominal infections recommended by the Infectious Diseases Society of America and American Surgical Association are just as effective as appendectomies for treatment. This project will illustrate to both clinicians and patients that they will have more options when treating appendicitis. The Comparing Outcomes of Drugs and Appendectomy (CODA) clinical trial aims to investigate appendicitis treatment options and understand if antibiotics are just as good as appendectomies (the current standard of care) from the patients' and clinicians' perspectives. Previous studies in Europe suggest the usage of antibiotics is a viable option when treating appendicitis. Patients consenting to the CODA trial are randomized to determine which treatment they receive, either the surgical appendectomy or the antibiotic medication. If the patient wishes to not be randomized, they can opt-into an observational or electronic medical record cohort in which they choose their treatment option. We are currently still in the data collection stage as we continue to monitor and assess patient reported and clinical outcomes for two-years following initial presentation. This research is important because patient reported outcomes gained from the trial will educate patients about their treatment options, therefore patients can decide the treatment best suited for them. In addition, the same results may demonstrate to current healthcare professionals that appendicitis may be treated though other methods, namely antibiotics, which if successful, will revolutionize current perspectives on how appendicitis is treated in the United States.