2018 Cleveland Clinic Akron General
Research Fellowship Projects

Project 1

Project Titles:

1. Incidence of Malignancy Found in Hysterectomy Specimens
2. Aspiration Rate with Anesthesia for Cesarean Deliveries

Specific skills/training/education required/desired:
Request for minimum of M1 year completion. Microsoft Word, Excel, and PowerPoint experience required, review of electronic medical records.

Abstract of Research Plan 1:
Minimally invasive surgery (MIS) has improved surgical outcomes for patients undergoing hysterectomy. Advanced techniques such as power morcellation, fragmentation of the uterus into smaller pieces, have enabled surgeons to offer MIS for hysterectomies on a broader scale. However, if morcellation is performed on women who have an unsuspected uterine cancer, such as sarcoma, the procedure could potentially worsen the patient's prognosis by spreading the malignant tissue throughout the abdomen and pelvis. However, accurate estimates of malignancy discovered during hysterectomy or morcellation do not exist. The purpose of the current study is to determine the frequency and types of incidental neoplasms (i.e., those other than benign leiomyomas or adenomyomas) in hysterectomy specimens at our regional medical center.
This will be a retrospective review of all uterine pathology reports covering the fourteen-year period from January 1, 2000 through December 31, 2014. All patients aged 18 years and older who have uterine pathology reports will be included in the study. Patients having hysterectomies due to a malignancy will be excluded. Medical record numbers, uterine weight, and pathology results will be obtained from the pathology report. The corresponding medical record for each patient will be reviewed to collect demographic and clinico-pathologic characteristics including age, race, date of surgery type of procedure, type of surgeon, diagnosis, final pathology, etc. The operative report will also be reviewed for the words "morcellated" or "morcellation• in the document.

Abstract of Research Plan 2:
The Serious Complication Repository Project (SCORE) collected data from United States hospitals on 256,000 obstetrical patients over a five year period, from 2004 to 2009, to identify the most common anesthesia complications. Among all the patients in the study, 96,000 of which were cesarean deliveries, no aspiration events were documented. Furthermore, it demonstrated that even with failed regional anesthesia that was converted to general at the time of cesarean, no aspiration events occurred. Our institution currently follows the guideline of waiting between six and eight hours after a person has eaten before performing a cesarean section; this oral restriction frequently caused surgical delays for patients who present in active labor or with premature rupture of membranes and breech fetal orientation prior to their scheduled cesarean surgery date. Hence, we have selected to examine aspiration rates with spinal anesthesia both in scheduled and unscheduled cesarean sections as well as determine the rate of aspiration in cases converted from spinal to general anesthesia. The primary objective of this study is to determine the rate of aspiration in obstetric patients receiving spinal anesthesia for a cesarean section and for those requiring conversion to general anesthesia after a failed attempt at regional anesthesia.
This will be a retrospective chart review of all women who had cesarean sections performed at

Cleveland Clinic Akron General Medical Center from January 1, 2011 to December 31, 2016. Approximately 5,000 medical records will be reviewed for the presence or absence of aspiration as well as time between last oral intake and administration of anesthesia (regional and general).

Student responsibilities:
Student will be responsible for reviewing medical record for pertinent information and entering all data into database.

Clinical opportunities for the students:
The student will be able to shadow OB/GYN residents on labor and delivery, OB emergency triage, and at Access Point, the residency run women's health clinic. Opportunities to shadow sub-specialty physicians in private practice will also be available. Some shadowing in the operating room may be possible. The potential exists to continue to work on this project and become an author on presentations/ publications.

2018 Cleveland Clinic Akron General
Research Fellowship Projects

Project 2

Project Titles:

1. Patient Profiles and Patient Experience at Hospital Based vs Freestanding Emergency Departments within a unified hospital network.
2. Emergency Medicine Residents Perception and Utilization of Daily Attending Initiated Talk and Discussion

Specific skills/training/education required/desired:
Request for minimum of M1 year completion. Graduate or undergraduate student will be considered with prior research experience. Microsoft Word, Excel, and PowerPoint experience required, research design and methods, statistics.

Abstract of Research Plan 1:
Freestanding Emergency Departments are becoming more prevalent in today's medical landscape. The purpose of this project is to evaluate data from November 2016 – November 2017 from our six Freestanding Emergency Departments within the Cleveland Clinic health system. Our goal is to assess total length of stay, age, gender, race, insurance status, whether patients were discharged or admitted, ESI level, CPT codes and method of arrival. We will also evaluate for differences in these populations between sites and compare our finding to our 11 hospital based emergency departments. Participation in other projects may be included as research schedule permits.

Abstract of Research Plan 2:
As a teaching hospital, we strive to develop new vehicles to facilitate clinical education and open dialogue. The emergency department has recently initiated an attending led daily talk and discussion of ED related topics. The goal of this project is to evaluate the success of the program as it pertains to resident education. The project will entail tracking daily usage, topics taught, and attendance to each session followed by a perception survey. The study will also include a survey assessment of other residency programs within the institution related to the prevalence of daily attending initiated talks and discussion. Participation in other projects may be included as research schedule permits.

Student responsibilities:
The student will aid in data collection, manuscript writing, help complete a poster for presentation, attend skills workshops

Clinical opportunities for the students:
The student will have an opportunity to shadow in the Emergency Department, attend Emergency Medicine resident lectures, and attend Emergency Medicine resident orientation and procedural skills labs.

2018 Cleveland Clinic Akron General
Research Fellowship Projects

Project 3

Project Title:

1. Evaluating the incidence of c-spine damage with no neck pain following mild head trauma under the influence of drugs and/or alcohol
2. Emergency Medicine Residents Perception and Utilization of Daily Attending Initiated Talk and Discussion

Specific skills/training/education required/desired:
Request for minimum of M1 year completion. Graduate or undergraduate student will be considered with prior research experience. Microsoft Word, Excel, and PowerPoint experience required, research design and methods, statistics.

Abstract of Research Plan 1:
Head trauma with no associated neck pain is a common presentation to the emergency department. Trauma management guidelines indicate that you cannot clear a patient of concomitant neck injury if the patient is under the influence of drugs or alcohol. However, it is rare for a young patient to have a positive result from imaging studies when they report no neck pain. This creates a major expense for both the institution and the patient. This study will be to determine what percentage of adults age 18-64 who get a cervical spine CT or plain film after minor head trauma with no c-spine pain and reported drugs or alcohol on board had acute findings. The overall goal of this study is to develop a decision tool to clear a c-spine in minor head injury under the presence of drugs or alcohol. Participation in other projects may be included as research schedule permits.

Abstract of Research Plan 2:
As a teaching hospital, we strive to develop new vehicles to facilitate clinical education and open dialogue. The emergency department has recently initiated an attending led daily talk and discussion of ED related topics. The goal of this project is to evaluate the success of the program as it pertains to resident education. The project will entail tracking daily usage, topics taught, and attendance to each session followed by a perception survey. The study will also include a survey assessment of other residency programs within the institution related to the prevalence of daily attending initiated talks and discussion. Participation in other projects may be included as research schedule permits.

Student responsibilities:
Data collection, attending skills workshops, manuscript writing, and helping complete a poster for presentation.

Clinical opportunities for the students:
The student will have an opportunity to shadow in the Emergency Department, attend Emergency Medicine resident lectures, and attend Emergency Medicine resident orientation and procedural skills labs.

2018 Cleveland Clinic Akron General
Research Fellowship Projects

Project 4

Project Titles:

1. The Effects of an Increased Emphasis on Resident Education Regarding Operative Vaginal Deliveries on Maternal and Fetal Outcomes
2. Aspiration Rate with Anesthesia for Cesarean Deliveries

Specific skills/training/education required/desired:
Request for minimum of M1 year completion. Microsoft Word, Excel, and PowerPoint experience required.

Abstract of Research Plan 1:
BACKGROUND: Operative vaginal deliveries (OVD) are vaginal deliveries using forceps or vacuum extraction for either maternal or fetal indications. Current OVD rates are substantially lower than they were for current obstetricians who will be retiring in the near future. This reduced use of OVD in practice, especially in teaching hospitals, may be particularly important for obstetric education as many senior obstetrics and gynecology residents are uncomfortable using forceps. The success of OVD is dependent on the skill and training of the operator and inadequate training has been identified as a key contributor to adverse outcomes. In an effort to meet this educational need an obstetric teaching faculty at a tertiary care center in northeast Ohio embarked on a re-emphasis on didactic and experiential training in operative vaginal deliveries.
OBJECTIVES: The primary objective of this study is to compare the incidence of fetal and maternal complications after forceps and vacuum deliveries before and after implementation of increased resident education regarding OVD.
METHODS: This is a retrospective, single center chart review evaluating the incidence of fetal and maternal complications after operative vaginal delivery before and after implementation of a residency training program focusing on forceps and vacuum deliveries in patients admitted to Cleveland Clinic Akron General labor and delivery unit. The study will cover the years between 01 Jul 2010 and 30 Jun2013 as the pre-training period, 01 Jul 2013 to 31 Jun 2014 as the training period, and 01 Jul 2014 to 30 Jun 2017 as the post-training period.

Abstract of Research Plan 2:
The Serious Complication Repository Project (SCORE) collected data from United States hospitals on 256,000 obstetrical patients over a five year period, from 2004 to 2009, to identify the most common anesthesia complications. Among all the patients in the study, 96,000 of which were cesarean deliveries, no aspiration events were documented. Furthermore, it demonstrated that even with failed regional anesthesia that was converted to general at the time of cesarean, no aspiration events occurred. Our institution currently follows the guideline of waiting between six and eight hours after a person has eaten before performing a cesarean section; this oral restriction frequently caused surgical delays for patients who present in active labor or with premature rupture of membranes and breech fetal orientation prior to their scheduled cesarean surgery date. Hence, we have selected to examine aspiration rates with spinal anesthesia both in scheduled and unscheduled cesarean sections as well as determine the rate of aspiration in cases converted from spinal to general anesthesia. The primary objective of this study is to determine the rate of aspiration in obstetric patients receiving spinal anesthesia for a cesarean section and for those requiring conversion to general anesthesia after a failed attempt at regional anesthesia.

This will be a retrospective chart review of all women who had cesarean sections performed at Cleveland Clinic Akron General Medical Center from January 1, 2011 to December 31, 2016. Approximately 5,000 medical records will be reviewed for the presence or absence of aspiration as well as time between last oral intake and administration of anesthesia (regional and general).

Student responsibilities:
Student will be responsible for reviewing medical record for pertinent information and entering all data into database.

Clinical opportunities for the students:
The student will be able to shadow OB/GYN residents on labor and delivery, OB emergency triage, and at Access Point, the residency run women's health clinic. Opportunities to shadow sub-specialty physicians in private practice will also be available. Some shadowing in the operating room may be possible. The potential exists to continue to work on this project and become an author on presentations/ publications.

2018 Cleveland Clinic Akron General
Research Fellowship Projects

Project 5

Project Title:
Evaluation of the incidence and impact of Vitamin D Deficiency in Trauma Patients

Specific skills/training/education required/desired:
Request for minimum of M1 year completion. Graduate or undergraduate student will be considered with prior research experience. Microsoft Word, Excel, and PowerPoint experience required, research design and methods, statistics.

Abstract of Research Plan:
Vitamin D is vital to many physiologic functions, including proper calcium absorption (bone health), neuronal communication between the central and peripheral nervous systems, muscle contractility, and immune response to pathogens. Chronic hypovitaminosis D (low vitamin D level) can cause health issues related to the above. Trauma patients often suffer severe damage to one or more of these systems. In Northeast Ohio, vitamin D deficiency is pervasive. The goal of this study is to evaluate the vitamin D levels in trauma patients to evaluate incidence of deficiency and then determine potential impact on the hospital course including but not limited to including length of stay, infection rate, psychotic episodes, patient costs, and wound complications.

Student responsibilities:
Data collection, attending skills workshops, attending trauma grand rounds, attending research meetings, manuscript writing, and helping complete a poster for presentation.

Clinical opportunities for the students:
The student will have an opportunity to shadow Trauma surgeons and attend General Surgery lectures.

2018 Cleveland Clinic Akron General
Research Fellowship Projects

Project 6

Project Title:
1. Development of a Patient Decision Aid for ECG Screening in Athletes

2. Professional Women's Softball Injuries: A Epidemiological Study

Specific skills/training/education required/desired:
Request for minimum of M4 year completion. Microsoft Word, Excel, PowerPoint, and graphic design experience required.

Abstract of Research Plan 1:
Sudden cardiac arrest and death in athletes is a rare event. Developing a successful screening program for cardiac abnormalities that would predispose young athletes to sudden cardiac arrest is a desirable goal, although the epidemiology and current evidence available make this uniquely challenging. It remains poorly understood to what extent pre-participation screening of any kind has an effect on changing these outcomes. Pre-participation history and physicals are widely accepted and recommended by professional organizations, with a focus on specific cardiovascular screening history and exam. One strategy that has gained traction in recent years is the inclusion of a screening ECG during pre-participation exams. It is thought that ECG will detect cardiac abnormalities that would predispose athletes to sudden death, however evidence for this screening method is limited, and there is concern for high false positive rates, additional testing, overdiagnosis, and unnecessary removal from sport. It will be important for athletes and parents to be able to make an informed decision if ECG screening is offered. Evidence has shown that the best approach in this scenario is to develop a patient decision aid to facilitate informed, value-congruent decisions about screening tests such as the ECG. Thus, the objective of this study is to develop a patient decision aid for ECG screening of high school and collegiate level athletes and their parents.

Abstract of Research Plan 2:
Study 2: Limited research has been conducted to address the epidemiology of injuries in women's professional softball with previous investigations focusing on youth and collegiate athletes. The primary objective of this study is to report the epidemiology of Women's National Professional Fastpitch (NPF) softball pitching injuries during the 2017-2018 season. Prospective injury data will be collected from six professional softball teams during the 2017-2018 regular season. Weekly contact with ATCs for each team as well as the NPF will be used to collect injury and exposure data.

Student responsibilities:
Student will read relevant study materials and literature provided, edit decision aid to improve readability for lower literacy levels, develop graphics for decision aid to be submitted to marketing, participate in decision aid focus groups with athletes and parents, receive data collection training, and collect weekly 2018 NPF pitching exposure and injury data.

Clinical opportunities for the students:
The student will be able to shadow Family Medicine residents and attend weekly Family Medicine Didactics (Wed 1-5pm)

2018 Cleveland Clinic Akron General
Research Fellowship Projects

Project 7

Project Title:
Computational simulation of knee function related to patellar instability and surgical treatment

Specific skills/training/education required/desired:
Request for minimum of BS in mechanical or biomedical engineering or a related field. Microsoft Word, Excel, Matlab, and computational 3D modeling.

Abstract of Research Plan:
Dynamic simulation of knee motion will be used to evaluate how the femoral attachment point for a medial patellofemoral ligament (MPFL) reconstruction and the tibial attachment point for the patellar tendon, i.e. Tibial Tubercle Osteotomy (TTO) influence knee mechanics. Computational models representing knees with patellar instability have already been constructed within a multibody dynamics simulation platform. These models will be utilized to simulate dynamic knee extension from a flexed position due to quadriceps activation. MPFL reconstruction will be simulated by representing the graft with springs representing the approximate material properties and undeformed length of the graft. The graft will be attached to the femur based on current clinical protocols, and varied from the anatomical attachment point based on commonly observed positioning errors. Similarly, the TTO positioning on the tibia will be varied from the anatomical attachment point. After simulation, the data will be run through algorithms to quantify the influence of graft attachment position on patellar kinematics and pressure applied to cartilage.

Student responsibilities:
The student will work with the computational models to perform the planned simulations. The student will run the models to simulate dynamic knee extension, and run the output data through the algorithms for quantifying knee kinematics and pressure applied to cartilage. The student will record all output data in a spreadsheet, and perform statistical analyses.

Clinical opportunities for the students:
The student will be able to shadow Orthopedic residents and staff member leading the project

2018 Cleveland Clinic Akron General
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Project 8

Project Title:
Effects of Morbid Obesity on Dialysis Access

Specific skills/training/education required/desired:
Request for minimum of M1 year completion. Microsoft Word, Excel, PowerPoint, and ability to read and comprehend medical records

Abstract of Research Plan:
Obesity continues to be a growing epidemic throughout the United States, including ESRD patients. Along with its associated comorbidities, obesity itself presents challenges to obtaining and maintaining vascular access in dialysis patients. Our objective is to examine the affects of BMI on the overall success and failure rate of vascular dialysis access in patients with BMI >/= 30 versus a control group (BMI < 30) and compare our findings to prior studies. Through our retrospective chart review, we hope to potentially establish a preferred method of vascular access for patients of a certain BMI cohort, with the overall goal of improving patency rates and minimizing complications and the need for re-intervention and/or re-operation.

Student responsibilities:
The medical student will primarily assist with data collection but may also assist with other research aspects.

Clinical opportunities for the students:
Students will be working with a general surgery resident and a vascular surgeon with chances to shadow them.

2018 Cleveland Clinic Akron General
Research Fellowship Projects

Project 9

Project Titles:

1. The Benefits of Utilizing Trauma Team Activation in Evaluating Geriatric Patients Following a Fall
2. Development of a Prognostic Risk Stratification Screening Tool for Sepsis in the Emergency Department

Specific skills/training/education required/desired:
Request for minimum of M4 year completion (Graduate Students will be considered with prior research experience). Interested in a career in Emergency Medicine and/ or Critical Care. Experience with Microsoft Word, Excel, PowerPoint, and ability to read and comprehend medical records

Abstract of Research Plan 1:
Falls and motor vehicle crashes are the most common mechanisms of injury among the elderly. In patients over 65, falls are the most common cause of injury accounting for nearly three-quarters of all trauma in this population. The probability of falling at least once in any given year for individuals 65 years and older is approximately 27 percent. Despite the seemingly benign mechanism in many cases, falls can lead to dire medical and economic consequences for elder patients, including the need for tracheal intubation or blood transfusion, cervical spine or thoracic injury, and death. Geriatric trauma patients are chronically under-triaged, increasing their risk for morbidity and death. Current management in geriatric patient after a fall varies amongst institution in the Emergency Department. Current guidelines recommend trauma activation in patient involved in falls > 20 ft for adults and elder on blood thinners. Some ED physicians may evaluate a geriatric patient who has a fall utilizing a trauma team while others may not.

Primary Objective: We plan to investigate whether geriatric fall patients has as a lower 30-day mortality rate, decreased LOS, decreased readmission rate with utilization of a trauma team activation.
Secondary Objective: We also plan to identify factors that may encourage the use of trauma team when evaluating a geriatric trauma fall patient.

Abstract of Research Plan 2:
Sepsis is defined as life-threatening organ dysfunction caused by a dysregulated host response to infection. It is the body's overwhelming and life-threatening response to an infection and requires rapid intervention. The Center for Disease Control and Prevention (CDC) recently declared sepsis a medical emergency because many physicians and nurses miss the early signs of the condition. It has created a major impact on healthcare resources and expenditure. Recent estimates have suggested that the incidence of sepsis is approximately 1.8 million cases annually worldwide and in 2011, incurred more than $20 billion (5.2%) in total US hospital costs. Sepsis is the leading cause of mortality and critical illness worldwide and is more deadly than myocardial infarction and stroke. A patient admitted for severe sepsis has a 6–10-fold greater chance of dying than if they were admitted with an acute myocardial infarction and 4–5 times greater than if they had suffered an acute stroke. The mortality rate from severe sepsis has been

estimated in a number of studies as between 28% and 50%. Data from the Surviving Sepsis Campaign concluded that severe sepsis has a mortality of rate of 34.8%.

The primary objective of this study is to develop a diagnostic and prognostic screening tool or strategy to risk stratify patients with sepsis in the emergency department to allow timely diagnosis of sepsis, provide early goal-directed therapy, and to provide more accurate triage to the appropriate level of the care (Intensive Care Unit vs. Medical Floor). We will investigate clinical and physiological markers involved in patients with sepsis or potential sepsis to help us develop this tool.

The secondary objective will be to determine the common variables of subjects with an overall decrease in lactic acid level specifically in the ED compared to subjects with an overall increase in lactic acid despite EGDT in patients with sepsis. We also plan to investigate and validate variables involved in existing prognostic tools such as qSOFA, Shock Index, and Mortality in Emergency Department Sepsis Score.

Student responsibilities:
The medical student will assist with data collection, manuscript writing, and helping to complete a poster for presentation. The student may also assist with other research aspects.

Clinical opportunities for the students:
Students will have the opportunity to shadow ED and Trauma physicians, attend ED conferences, attend Trauma grand rounds, and attend research meetings.
