2019 CCAG Summer Fellowship Projects

2020 Cleveland Clinic Akron General
Research Fellowship Projects

Project 1

Project Title:
Incidence and clinical outcomes for critically ill patients with augmented renal clearance

Specific skills/training/education required/desired:
Request for minimum of M1 year completion. Experience with Electronic chart review, REDCap, SPSS. Detail oriented and accuracy are a must, able to work independently, understanding of basic medical terminology.

Abstract of Research Plan:
Augmented Renal clearance (ARC) is a new concept of increased renal function, which is defined as glomerular hyperfiltration leading to increased solute elimination. Although there are numerous studies on incidence of ARC and comparison of estimated CrCL and measured CrCL, there is no information on the onset and duration of ARC during a hospital admission. Additionally, there is a scarcity of information on clinical outcomes and there are no established guidelines on dosing adjustments of drugs cleared renally in patients suspected to have ARC. The Primary objective of this study is to determine the incidence and severity of ARC in a critically ill ICU population. Secondary objectives are to compare clinical outcomes of patients identified to have ARC (ARC group) to those without (non-ARC group), as well as among ARC severities.

Student responsibilities:
Data Collection using Epic and REDCap. Statistical analysis of preliminary data using SPSS with assistance from study team. Opportunity to contribute to drafting of presentation and publication.

Clinical opportunities for the students:
Didactic and shadowing opportunities in the departments of Internal Medicine and Pharmacy

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2020 Cleveland Clinic Akron General
Research Fellowship Projects

Project 2

Project Title:
End of life care discussion and education in a non-emergent outpatient setting.

Specific skills/training/education required/desired:
Request for minimum of M1 year completion. Microsoft Suite experience, detail oriented and accuracy are a must, able to work independently, understanding of basic medical terminology, experience with REDCap, SPSS, and survey software.

Abstract of Research Plan:
Advance care planning (ACP) is a way to ensure an individual receives end of life care that resonates with his or her preference, goals and values. ACP has demonstrated improved communication between families, patients and physicians. This has led to higher rates of advance directives completion, decreases in hospitalization and decreases in intensive treatment required at the end of life. This is a single center pilot prospective survey study of residents and family in independent living/assisted living with Health Care Power of Attorney /Acute Rehab. This objective of this study is to determine the impact of an educational lecture regarding ACP on participants' attitude, perceptions, and knowledge regarding end of life care and discussions with healthcare providers and family.

Student responsibilities:
Data Entry from paper surveys into REDCap. Statistical analysis of preliminary data using SPSS with assistance from study team. Opportunity to contribute to drafting of presentation and publication

Clinical opportunities for the students:
Didactic and shadowing opportunities in the department of Family Medicine

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2020 Cleveland Clinic Akron General
Research Fellowship Projects

Project 3

Project Title:
Evaluation of pre-hospital marijuana exposure and hospital opioid utilization in a trauma population

Specific skills/training/education required/desired:
No pre-requisite skills are necessary prior to this research experience. The student should have CITI training completed prior to this experience. The student will receive additional training for literature review, REDCap data collection, statistical review, IRB documentation, etc

Abstract of Research Plan:
Background: Marijuana is a widely accessible and consumed substance with increasing availability due to its legalization for both medical and recreational uses. According to the 2015 National Survey on Drug Use and Health, marijuana is the most common illicit drug used. Marijuana intoxication results in psychomotor impairment, diminishing the ability to operate heavy machinery and increasing risk for traumatic accidents. The impairments from marijuana are from the active component tetrahydrocannabinol (THC). Despite the increasing prevalence of THC use and its association with traumatic injury, the effects of THC on acute pain management are not well studied. The research to date is mixed with some data suggesting reduced opioid utilization, while a larger study reported an increased risk of developing an opioid use disorder.
Methods: This is a retrospective, observational cohort study to evaluate the total opioid utilization during the index hospitalization between patients with positive THC (THC group) and negative for THC (non-THC group). Study groups will be based on pre-hospital marijuana usage: the THC group will include patients with a positive THC on the urine drug screen (UDS) and the non-THC group will include those with negative THC on the UDS. Adult trauma patients will be eligible for inclusion if they are admitted to the hospital for at least 24 hours and had a UDS completed within 48 hours. Patients will be excluded for the following reasons: 1) hospital length of stay >14 days, 2) died within initial 24 hours, 3) severe alcohol withdrawal, 4) chronic pain disorder with daily opioid dose >50 morphine equivalents (MME), and 5) presenting from a facility. Based on the power of 80%, alpha of 0.05, 2-sided testing, a sample size of 788 (394 patients per group) is needed to meet power for the primary outcome in order to detect a 20% difference between the group. Descriptive statistics will be performed as appropriate. A propensity score or multivariable logistic regression analysis will be performed on the primary outcome (ie, high vs. low opioid utilization) and to evaluate predictors of high vs. low severity of traumatic injury.
Discussion: There is conflicting data regarding opioid utilization for patients with pre-existing marijuana exposure. Further research is needed to evaluate opioid utilization and clinical outcomes comparing THC users and non-users.
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Student responsibilities:
THC study (Primary project)
- Data collection using REDCap
- Data analysis and statistics (with Dr. Gabra)
- Start preparation of manuscript of study design/methods

MERIT study (Second project, if time allows)
- Data collection using REDCap

Clinical opportunities for the students:
The student would have clinical opportunities to round on the SICU team with the clinical pharmacist or round with the surgical resident. The student would also have the opportunity to shadow for administrative experiences, such as the sepsis committees, ICU committees, etc, if they desire to attend. Educational experiences would be available, including trauma grand rounds, surgical resident didactics and pharmacy resident didactics. These clinical opportunities will be limited up to 0.5 day per week.

2020 Cleveland Clinic Akron General
Research Fellowship Projects

Project 4

Project Title:
Evaluation of post-operative pain control in patients who have received the breast enhanced recovery after surgery protocol

Specific skills/training/education required/desired:
Request for minimum of M1 year completion. Microsoft Suite experience, detail oriented and accuracy are a must, able to work independently, experience with literature search, chart review, data entry, and writing protocols and manuscripts

Abstract of Research Plan:
This is a retrospective chart analysis to determine the efficacy of the breast enhanced recovery after surgery (BERAS) protocol when evaluating for pain control in the post-operative setting. This chart review covers a time span of two years from January 1, 2016 to June 30, 2019. February 2017 was when the BERAS protocol was first implemented at our institution. The required fields are entered into a REDCAP data base.

Student responsibilities:
- Chart review and data entry.
- Literature review for other breast surgery related research projects.
- Opportunity to assist in writing protocols and manuscripts.

Clinical opportunities for the students:
- Shadowing surgeons in the breast center
- Opportunity to shadow general surgeons

2020 Cleveland Clinic Akron General
Research Fellowship Projects

Project 5

Project Title:
Current practices and perspectives on pre participation examinations in Ohio high schools

Specific skills/training/education required/desired:
Request for minimum of M1 year completion. Experience with medical terminology, electronic chart review (Epic), data collection (REDCap), and data analysis (SPSS)

Abstract of Research Plan:

Study 1: Pre-participation examinations (PPEs) are being used as a tool to provide medical information based on which decisions about that athlete's physical activity are made. PPEs are supported by many different professional organizations. There seems to be a polarization about the present format and perceived importance of conducting PPEs. The primary objective of this prospective survey study is to assess current practices and the overall attitude towards PPE among Ohio high school athletic departments.

Study 2: Osteoarthritis (OA) of large joints such as the hips and knees is an extremely common problem in the United States. Significant morbidity can be associated to the incidence and complications arising from OA, particularly of the knee and hip joints. Intra-articular corticosteroid injections (IACS) are commonly used to relieve pain due to OA in the hip and knee. There is no consensus among various medical specialties as to when and under what conditions IACS should be performed. The objective of this study is to determine whether IACS increases the rate of OA progression. A secondary objective is to determine if IACS is associated with increased rates of other complications to include subchondral insufficiency fractures, and osteonecrosis. Our hypothesis is that the use of IACS is associated with an increase in the speed of progression of OA of the knee and hip joints. This will be measured with the standard Kellegren-Lawrence system of classification.

Student responsibilities:
Electronic Chart Review (EPIC) and Data Entry (REDCap). Statistical analysis of preliminary data using SPSS with assistance from study team. Opportunity to contribute to drafting of presentation and publication.

Clinical opportunities for the students:
Didactic and shadowing opportunities in the department of Family Medicine

2020 Cleveland Clinic Akron General
Research Fellowship Projects

Project 6

Project Titles:

1. Expulsion of Post-placental Intrauterine Devices: Does Insertion Method Matter?
2. Implementation and Evaluation of an Elective Induction Protocol at a Regional Tertiary Obstetric Care Center

Specific skills/training/education required/desired:
Request for minimum of M2 year completion. Microsoft Word, Excel, and PowerPoint experience required. Must be able to navigate medical charts and have a basic understanding of medical terminology.

Abstract of Research Plan:
Study 1: One in ten intrauterine devices (IUDs) inserted within about ten minutes of placental delivery are expelled in the first year of use. However, interval placement of IUDs results in only 1.9% expulsion. Expulsion rates vary widely, but studies have failed to show a significant difference in rates based on IUD design or insertion method. The primary objective of this study is to determine whether the method of post-placental IUD insertion has an effect on the rate of expulsion. This will be a non-randomized, prospective, observational cohort study of women who consent to post-placental IUD insertion between June 1, 2019 and May 31, 2020 at Cleveland Clinic Akron General. Subjects will receive follow-up phone or email surveys with questions related to expulsion at approximately three, six, and 12 months after post-placental IUD insertion.
Study 2: Elective induction of labor is an option for managing the timing of delivery at or beyond 39 weeks gestation. Given concerns regarding the high cesarean section rate in the United States and associated morbidity, the Eunice Kennedy Shriver National Institute of Child Health and Human Development, Society for Maternal-Fetal Medicine, and American College of Obstetricians and Gynecologists convened a workshop designed to explore prevention of the first cesarean section. A Randomized Trial of Induction Versus Expectant Management (ARRIVE) found that elective induction led to lower rates of cesarean sections and hypertensive disorders than did expectant management. The goal of this pilot study is to determine the safety, feasibility, and sustainability of the elective induction of uncomplicated pregnancies at or beyond 39 weeks gestation at Cleveland Clinic Akron General. The primary objective is to determine the rate/incidence of maternal and neonatal outcomes before and after implementation of an elective induction protocol. Secondary objectives are to determine lengths of stay, costs of care, reimbursement rates, and patient satisfaction. This will be a non-randomized, quasi-experimental study with a historical comparison group. The study group will be composed of low-risk pregnant women who opt for an elective induction of labor at or beyond 39 weeks gestation between 01 May 2019 and 30 Nov 2019 and between 15 February 2020 and 15 August 2020.

Student responsibilities:
Student will be responsible for reviewing medical records for pertinent information and entering data into databases.

Clinical opportunities for the students:
Student will be able to shadow OBGYN residents on Labor & Delivery and at AxessPointe, the residency-run women's health clinic. Opportunities to shadow sub-specialty physicians will also be available. Some shadowing in the operating room may be possible. The potential exists to continue to work on these projects and author presentations/publications.

2020 Cleveland Clinic Akron General
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Project 7

Project Title:
Transcatheter Aortic Valve Replacement Registry

Specific skills/training/education required/desired:
No pre-requisite skills are necessary. CITI training should be completed prior to this experience. Desired: The student should be able to read/review charts and be independent. Student interested in cardiology

Abstract of Research Plan:
Transcatheter Aortic Valve Replacement (TAVR) in the current era offers patients an alternative method to treat AS that is now safe, reproducible, applicable to most patients, and effective even in low risk Patient. Multiple questions must be answered in the future regarding stroke, valve performance, durability, pacemaker requirement, and other key metrics which we will be the purpose of this Registry to answer

Student responsibilities:
The student will be maintaining the registry study data. In addition, the student may help develop new cardiology research protocols.

Clinical opportunities for the students:
The student may be able to shadow the internal medicine residents as well as cardiology attending physicians.

2020 Cleveland Clinic Akron General
Research Fellowship Projects

Project 8

Project Titles:
Implementation of Sepsis Teams and Mortality Rates at Freestanding and Hospital Based Emergency Departments

Specific skills/training/education required/desired:
All students are encouraged to apply. Must be able to navigate medical charts and have an understanding of medical terminology under the guidance of clinical and research faculty.

Abstract of Research Plan:
Freestanding ED's [FSEDs] are distinct from hospital-based emergency departments (HBEDs) in that they are geographically separate from hospitals.[1] FSEDs differ from clinics or urgent cares in that they are capable of providing a higher level of care. They are open 24 hours a day, 365 days a year, and have the resources and staffing to evaluate and stabilize acute emergencies. Emergency department (ED) volumes have increased throughout the country and there has been an increased demand for alternatives for acute unscheduled care[2,3] A number of factors accounted for this growth. Innovation, potential for profit and market disruption, increased demand from patients for convenience and decreased wait times. There is no prior research evaluating the use of sepsis bundles and mortality rates for patient who initially present to freestanding vs hospital-based emergency department. The surviving sepsis campaign began in 2004 and has had several subsequent editions.[5,6,7] Our healthcare system implemented sepsis teams to increase compliance with best practices and sepsis bundles from the surviving sepsis campaigns and to improve in-hospital rates.
This study is divided into two components. For the first component the primary objective is to identify if there is a difference in in-hospital mortality for patients who present initially to a FED with a diagnosis of sepsis, severe sepsis or septic shock compared to the main Cleveland Clinic Akron General (CCAG) ED The second component of this study, the primary objective is to evaluate in-hospital mortality rates before and after implementation of sepsis teams for patients seen at CCAG

Student responsibilities:
The student will be responsible for completing various components of the research process, including literature review, data abstraction, writing of results, and preparation of presentations/abstracts under the guidance of faculty members.

Clinical opportunities for the students:
The student will be expected to attend didactics and group lectures with resident physicians during their time at Cleveland Clinic Akron General and will be offered shadowing experience as physician schedules permit.

2020 Cleveland Clinic Akron General
Research Fellowship Projects

Project 9

Project Title:
Does Wait Time Bias Exist in the Emergency Department (ED)?

Specific skills/training/education required/desired:
All students are encouraged to apply. Must be able to navigate medical charts and have an understanding of medical terminology under the guidance of clinical and research faculty.

Abstract of Research Plan:
There are many studies that highlight the disparities found in emergency medical care effecting the service a patient may receive based on their race and ethnicity. Although most studies explore the differences in wait times, many do not further examine multiple barriers to effective care. Time to triage, rooming, time to see a provider and admission/discharge times can be individually explored that may reveal multiple opportunities to improve on cultural biases at many different points in the treatment process. Having a better understanding of more refined data may suggest biases in administration, nursing, physicians or ancillary services that can be addressed separately.
"Racial Disparities in ED Triage" found that African Americans were assigned lower triage scores for presenting illnesses resulting in longer wait times to be seen by a provider. "Variation in Emergency Department Wait Times for Children by Race/Ethnicity and Payment Source" found that ED wait times were significantly longer for non-Hispanic black and Hispanic children than for non-Hispanic white children. Additionally, "Association of Race/Ethnicity with Emergency Department Wait Times" revealed data suggesting that children who come to EDs have wait times that vary according to race/ethnicity. Finally, "Emergency Department Wait Times and Treatment of Traumatic Digit Amputation: Do Race and Insurance Matter" highlighted that being minority and having no insurance were associated with longer ED wait times. There were several other studies that corroborated the outcomes of the articles. However, not a single article suggested there was no difference between ethnicity and treatment times. Due to the multiple opportunities to either advance or impede a patient's progress through the emergency department, a more comprehensive exploration into specific checkpoints throughout the department must be examined. Our goal is to provide insight into patient care for those who may have been historically marginalized.

The primary objective of this study is to evaluate wait times based upon race and ethnicity at multiple stages of care while in the emergency department.

The secondary objectives of this study include evaluating wait times based upon age and insurance status at multiple stages of care while in the emergency department.

Student responsibilities:
The student will be responsible for completing various components of the research process, including literature review, data abstraction, writing of results, and preparation of

presentations/abstracts under the guidance of faculty members.

Clinical opportunities for the students:
The student will be expected to attend didactics and group lectures with resident physicians during their time at Cleveland Clinic Akron General and will be offered shadowing experience as physician schedules permit.

2020 Cleveland Clinic Akron General
Research Fellowship Projects

Project 10

Project Titles:

1. Effect of Implementation of a Category 3 Trauma Activation Protocol
2. Evaluation of the Impact of Trauma Simulations on Resuscitation Metrics

Specific skills/training/education required/desired:
All students are encouraged to apply. Must be able to navigate medical charts and have an understanding of medical terminology under the guidance of clinical and research faculty.

Abstract of Research Plan:
Study 1: A large component of the care of critically injured patients at Trauma Centers is the establishment and implementation of Trauma Team Activations. These generally consist of a multi-tiered scheme bringing a multidisciplinary team of caregivers to the bedside to treat critically injured patients. While detailed activation criteria vary between hospitals, the American College of Surgeons does establish minimum criteria for the highest level of activation. This highest level of activation generally includes a general surgeon or trauma surgeon, an emergency medicine physician, general surgery and emergency medicine residents, emergency department nurses, a radiology technician, a respiratory therapist, a chaplain or social worker, and sometimes an anesthesiologist depending on facility. This constitutes a large mobilization of resources to provide appropriate care to the most critically injured patients. For efficiency purposes, most trauma centers utilize a multi-tiered approach with a lower level activation mobilizing fewer resources for patients expected to be less severely injured.
Cleveland Clinic Akron General, a Level 1 trauma center, has historically used a two-tiered activation scheme with the ability to consult trauma surgery for patients evaluated in the emergency department who did not meet activation criteria. Through observation and our trauma QI process, we identified several cohorts of patients who we felt would benefit from creation of a lower level of activation which would allow expedited evaluation while mobilizing a limited group of resources to minimize waste. Based on this, we modified our Trauma Team Activation protocols to include a Category 3 activation. The objective of this study is to evaluate the effects of this change to our activation criteria.

Study 2: The American College of Surgeons Committee on Trauma is responsible for evaluating and designating medical centers as trauma centers in accordance with the injury acuity the center is prepared to manage. As a level one trauma center, Cleveland Clinic Akron General is equipped to manage the most critically injured patients. In these cases communication, efficiency, speed, and teamwork can mean can have critical impacts on patient outcome. Thus, continuing education and experience is critical to allow trauma team members (including physicians, resident physicians, nurses, technicians, respiratory therapists, and pharmacists) to perform at peak capacity as a team. As such, methods to improve trauma team effectiveness have been well studied. In this study, the impact of trauma resuscitation simulations focused on communications on trauma team activation performance will be assessed.

While there are several studies evaluating various metrics of trauma simulation, there is a lack of studies that are randomized, blinded, and controlled with detailed methodology.

Generally, from two systematic reviews, patient outcomes have not directly improved after trauma simulations, as measured by morbidity, mortality, and complications. However, an explanation of this is that these were small studies; larger cohort studies might be able to show a significant difference. In a large cohort study of obstetric simulation, there was a reduction in low 5-minute Apgar scores as well as incidence of neonatal hypoxic-ischemic encephalopathy.

Several studies used pre- and post-test surveys to measure perceived performance, which has self-reporting bias. Others utilized the trauma nontechnical skills (T-NOTECHS) assessment, which is a series of Likert scales that evaluate the trauma team as judged by a third party individual. In a study measuring efficacy in trauma resuscitation after simulation for surgeons, most of the endpoints studied showed improvement; these include whether they established a safe airway within 15 seconds, identified shock state, used the appropriate fluids, and recognizing massive transfusion protocol triggers for example. A retrospective chart review saw a decrease in the time to perform critical operations1/13/2020 (thoracotomy, craniotomy, laparotomy, angiography) after trauma simulations.

An interventional study of trauma simulation saw improvements in the time to perform certain actions, including applying an oxygen mask, stopping bleeding, and leaving the scene. They also utilized the Global Rating Scale (GRS), a Likert measure for paramedic clinical competence, as a holistic review of each trauma simulation situation. These were judged by outside parties. They noted that the more quickly and effectively these procedures are performed, patient outcomes would also improve. However, their intervention was only in the context of the simulation; direct improvement to patient outcomes was only theorized.8

A comparison of the time to perform certain resuscitation metrics before and after a trauma simulation period for real patients has yet to be studied. If those metrics show an improvement in time, then further investigation into patient outcomes after trauma simulations may be warranted. Modern trauma simulations could prove to be an invaluable resource to training trauma teams, improving communication, efficiency, effectiveness, and patient outcomes.

Student responsibilities:

The student will be responsible for completing various components of the research process, including literature review, data abstraction, writing of results, and preparation of presentations/abstracts under the guidance of faculty members.

Clinical opportunities for the students:

The student will be expected to attend didactics and group lectures with resident physicians during their time at Cleveland Clinic Akron General and will be offered shadowing experience as physician schedules permit.
