



**Community**  
Health Network

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# **Fifth Annual Multidisciplinary Scholarly Activity Symposium**

**2020**



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# **Fifth Annual Multidisciplinary Scholarly Activity Symposium Proceedings 2020**

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# INTRODUCTION TO THE 2020 PROCEEDINGS

In March of 2020, the Multidisciplinary Scholarly Activity Symposium Planning Committee was finalizing the program for an in-person event to be held in May on the campus of the University of Indianapolis. This was to be the 5<sup>th</sup> Annual Symposium and was promising to be the largest yet. The reviewers were making determinations on a record number of submissions. Many submissions had already been accepted and several had been sent back to the submitters for revision.

On March 12, Community Health Network (CHNw) closed all administrative offices, placed a hold on many activities (including the Symposium), and prepared to face the SARS-CoV2 pandemic by focusing on patient care and safety. As a result, the 2020 Symposium did not take place.

However, we did not want all the work accomplished by Community Health Network caregivers and UIndy faculty and students to go unacknowledged.

We have compiled the abstracts of all projects that had been accepted as of March 12, 2020 to demonstrate the breadth and depth of research conducted at CHNw and UIndy.

We look forward to seeing many of these projects presented at the 2021 Symposium. For now, we proudly present the abstracts of 26 Oral presentations and 46 Poster presentations.

Thank you.

Multidisciplinary Scholarly Activity Symposium Planning Committee

# ORAL PRESENTATIONS

## **O1     Impact of nurse driven mobility program using AM-PAC 6 clicks.** (Amanda McCalment, MSN, APRN, AGCNS-BS; Megan Siebert, MSN, APRN, AGCNS-BC, PCCN)

**Background:** In recent literature, progressive early mobility has been a focus for the Intensive Care Units (ICUs); however minimal literature exists for the medical population. Decreased mobility and prolonged bedrest have been associated with increased length of stay, increase risk for falls and skin breakdown, as well as increased need for extended-care facility admission. Mobility status is not commonly measured by nursing, declines in mobility are often not recognized, and Physical Therapists have been the primary drivers for patient mobility. The AM-PAC 6 Clicks assessment tool measures a patients' functional mobility status, and can assist the nurse in the development of a mobility plan for the patient.

**Objective(s):** In hospitalized medical patients, does a nurse driven mobility program utilizing the AM-PAC 6 Clicks assessment reduce length of stay and decrease skilled nursing facility admissions?

**Method(s):** Using a Quasi-experimental design and convenience sample, a nurse driven Mobility Program will be implemented on two medical-surgical units within an acute care hospital system. The target population will be those patients admitted to the Renal Medical-Surgical unit at Community Hospital East and the Medical unit at Community Hospital South. All staff (unlicensed and licensed) will receive education on the mobility program including mobility equipment and the AM-PAC 6 Clicks assessment. The AM-PAC 6 Clicks assessment is completed upon admission to the unit, daily, and upon discharge. Based on the 6 Clicks score, the patient's mobility program will occur within 4 phases (ranging from Range of Motion to ambulation in halls). Staff will then implement the associated mobility phase. When a patient has met their mobility goal, the next phase will be attempted.

**Results and Discussion:** Will be presented at the 2020 Multidisciplinary Scholarly Activity Symposium.

## **O2     The impact of preoperative rehabilitation on outcomes following total knee arthroplasty.** (Scot Bauman, PT, DPT; Rachel Krupski, PT, DPT)

**Purpose/Hypothesis:** Knee osteoarthritis (OA) continues to increase; thus, total knee arthroplasty (TKA) is becoming more common.<sup>1</sup> Postoperative rehabilitation is a well-accepted treatment plan for improving outcomes after TKA; however, preoperative rehabilitation is not strongly supported.<sup>2-5</sup> The purpose of this study was to determine what impact preoperative gains in function have on outcomes following TKA. We hypothesize that patients who had functional improvements on the Knee Injury and Osteoarthritis Score (KOOS) preoperatively will have higher KOOS scores at 1-year after TKA than patients who did not improve.

**Subjects:** 32

**Material/Methods:** From 2013-2017, 32 subjects were enrolled. Patients with OA were referred to physical therapy (PT) for treatment that focused on improving range of motion and strength, gait training, and swelling management. Due to continued pain and impaired function, some patients elected to pursue a TKA and postoperative rehabilitation was initiated. Function was evaluated with the KOOS at the initial visit when an OA diagnosis was made, the preoperative visit, and at the 1-year postoperative visit. Preoperative functional improvement was defined as an increase of at least 5 points on the KOOS subscale. Data was retrospectively reviewed (p=0.05).

**Results:** Of 32 patients, the number of patients who had improved KOOS subscales from initial to preoperative visit was 13 for pain, 9 for symptoms, 18 for activities of daily living, 11 for sport, and 11

for quality of life. Patients who had preoperative improvement in pain scores had a mean pain score at 1-year after surgery of 94.8 compared with 82.7 for patients who did not improve ( $p=0.016$ ). There was no statistical significance in other KOOS scores between groups.

**Conclusions:** Those who have improved functional scores for pain with rehabilitation, but still choose to have a TKA, have less pain 1-year after TKA compared to those who do not have improved pain preoperatively.

### **O3    The safety and efficacy of combination versus single antibiotic therapy for surgical site infection prophylaxis in cardiovascular surgeries.** (Abbie Lueken, PharmD; Brian Lindvahl, PharmD, BCPS, BCCP; Lisa Kingdon, PharmD, BCPS, CPE)

**Purpose:** Due to inconsistent antibiotic use for surgical site infection (SSI) prophylaxis in patients undergoing isolated coronary artery bypass graft (CABG), valve repair/replacement, or CABG + valve repair/replacement surgeries at Community Heart and Vascular Hospital (CHVH), the objective of this study is to determine the safety and efficacy of a perioperative beta-lactam plus vancomycin regimen versus a beta-lactam alone. We also hope to identify risk factors and/or patients who would benefit from dual antibiotic therapy over monotherapy to help standardize our antibiotic choice perioperatively.

**Methods:** An EPIC and/or Society of Thoracic Surgery (STS) report, will be produced for patients who were admitted to CHVH from 01/01/2012 to 05/31/2019 for cardiovascular surgery. Primary objectives for this study include assessing the safety and efficacy of combination antibiotic therapy (beta-lactam and vancomycin) as surgical prophylaxis for SSIs versus a beta-lactam alone in patient's undergoing an isolated CABG, valve repair/replacement, or CABG + valve repair/replacement surgery. Efficacy of combination antibiotic therapy will be defined as the number (percentage) of surgical site infection within 30 days of surgery. Safety of combination antibiotic therapy will be defined as the incidence of acute kidney injury within 7 days of operation and/or the development of a *Clostridioides difficile* infection within 90 days of the operation. Secondary objectives include determining risk factors that can be protocolized to reduce the risk of SSIs in cardiac surgery patients. Data collection will include baseline characteristics, antibiotic allergies, STS score, mupirocin use prior to surgery, chlorhexidine wash prior to surgery, pre-operative MRSA nasal PCR, history of cardiac surgery, antibiotic used prior to surgery, type of cardiac procedure, surgeon for the procedure, time of first and closing surgical incision, re-dosing of antibiotics during surgery, total duration of surgery, cross-clamp and cardiopulmonary bypass time, presence of a surgical site infection, microbiology results, antibiotic choice after surgery and duration, readmission within 30 days, all-cause mortality within 30 days, if patient experienced acute kidney injury within 7 days of surgery or experienced a *Clostridioides difficile* infection within 90 days of surgery, length of hospital and ICU stay, and post-operative infections within 7 days that were not a surgical site infection.

**Results and Discussion:** Will be presented at the 2020 Multidisciplinary Scholarly Activity Symposium.

### **O4    A case of lower extremity compartment syndrome and lis franc fracture following a mauling by a pitbull.** (Joseph Candela, DPM)

**Introduction:** Both Compartment syndrome and Lis Franc fractures are rare and traumatic injuries that can occur in the lower extremity. The complications from either of these injuries can lead to lifelong disabilities for patients. Here we present a case of lower extremity compartment syndrome and Lis Franc fracture along with the complications experienced during the recovery period.

**Objectives:** To highlight our clinical and surgical management of the complications experienced during the treatment period.

**Methods:** The patient highlighted in this case report was followed from December 2018 to present and was treated at Community Hospital North as well as outside clinics. All information and data presented was obtained through EMR chart review

**Results:** The particular patient is still currently being treated and has required one revision surgery to date. This patient still experiences numbness, pain, and weakness in the affected extremity. The patient developed complex regional pain syndrome during the treatment period and has underwent a series of sympathetic nerve blocks with some improvement in symptoms

**Conclusion:** Both compartment syndrome and lis franc injuries are severe traumatic injuries and if not identified and treated promptly can lead to severe disabling outcomes as presented here. We highlighted our surgical and medical management of a patient sustained both compartment syndrome and a lis franc injury following a mauling by a pitbull. We also highlight the serious complications associated with these injuries and the post-operative outcomes.

## **O5     Coming out in a post marriage equality America- preliminary data.** (Nicole Mary Taylor, PhD)

**Introduction:** The leading model for understanding the coming out process and homosexual identity formation was published as a theoretical model in 1979 as a result of clinical work with a gay and lesbian population (Cass, 1979). This model is currently used in undergraduate and graduate textbooks today, despite significant cultural changes for the gay community, including legalized same sex marriage in 2015. As a result, since the passage of the Marriage Equality Act, many LGBT young adults have "come out" during a period of US history in which marriage equality has always been available to them. Therefore, these young adults experience the evolution of their identity as gay or lesbian during a time of maximum rights and benefits afforded to them. It is likely then, that the coming out experience in a post-Marriage Equality US might look very different from that of the gays and lesbians who have experienced coming out and adulthood without such rights.

**Purpose:** The purpose of this study is to examine the coming out process of young adults age 18-24, to determine if the 1979 Cass model is still relevant in a post-marriage equality America.

**Methods:** English speaking young adults ages 18-24 years of age, who identify as either gay, lesbian, or bisexual are eligible to participate in this study. Approximately fifty participants will be interviewed using a semi-structured interview that asks them to discuss their coming out story and follows up with questions pertaining to their identity formation, including identity acceptance, tolerance, and integration. Data will be transcribed and analyzed using a grounded theory analysis.

**Results and Discussion:** Will be presented at the 2020 Multidisciplinary Scholarly Activity Symposium.

## **O6     Description of pharmacist interventions and related outcomes for targeted accountable care organization patients.** (Nicole Paige Kaminsky, PharmD; Tracy Costello, PharmD, BCPS; Taylor Harlow, PharmD, BCPP)

**Introduction:** As part of a network wide initiative, acute care pharmacy integrated a new procedure for patients enrolled in the Next Generation Medicare Accountable Care Organization (ACO). This initiative's goal is to reduce readmissions and increase cost savings for the health system. The aim of acute care pharmacist's role is to optimize medication regimens, improve patient compliance, and reduce re-admissions. To date, data has not been collected on the types of interventions pharmacists are making for these patients or the impact on clinical outcome measures.

**Methods:** Patients will be included if they were enrolled in the ACO and admitted for a diagnosis related to chronic obstructive pulmonary disease (COPD) (admitted between July 1, 2018 and June 30, 2019),

diabetes (admitted between September 17, 2018 and June 30, 2019), or heart failure (admitted between August 6, 2018 and June 30, 2019). Standard documentation utilized to document interventions will be reviewed. The following data will be collected: demographics, admitting facility, admission diagnosis and corresponding chronic disease state (COPD, diabetes, or heart failure), the documenting pharmacist's role, number of pharmacist interventions documented (including medication changes, medication cost assistance, and patient education), number of medication changes accepted, documented time spent on interventions, how interventions were communicated to the provider, number of days until first outpatient visit, discharge disposition, 30 day readmission rates for a diagnosis corresponding to the original admission, and 90 day readmission rates for a diagnosis corresponding to the original admission. The readmission rates will be compared between groups based on the data collected. Data analysis is currently in progress.

**Results and Discussion:** Will be presented at the 2020 Multidisciplinary Scholarly Activity Symposium.

**07 To bolus or not to bolus: Evaluation of an initial bolus in the treatment of hyperglycemic crises.** (Connor Hummel, PharmD, BCPS; Tracy Costello, PharmD, BCPS; Kristin Buechler, PharmD, BCCCP; Alishia Vanus, PharmD, BCPS, BCCCP; Brittany Copeland, PharmD, BCPS)

**Introduction:** Hyperglycemic crises, including diabetic ketoacidosis (DKA) and hyperosmolar hyperglycemic state (HHS), are serious metabolic complications of diabetes. Intravenous insulin is the mainstay of treatment, and the American Diabetes Association currently recommends two treatment strategies for initial correction of hyperglycemia. The first involves the administration of a bolus (0.1 units/kg) followed by a continuous infusion (0.1 units/kg/hr). The other involves administration of a continuous infusion (0.14 units/kg/hr), omitting an initial bolus. Based on the limited literature available evaluating the efficacy and safety of an initial bolus, there is concern that it may be associated with a higher incidence of hypoglycemia without providing a quicker resolution of the hyperglycemic crises or shortened hospital length of stay.

**Objectives:** The primary objective of this study was to evaluate the time (in hours) to normalization of serum glucose in those with hyperglycemic crisis who received an initial insulin bolus compared to those who did not. The secondary objectives of this study were to evaluate the time (in hours) to anion gap closure (when applicable), incidence of hypoglycemia & severe hypoglycemia, time (in hours) to normalization of serum bicarbonate (when applicable), time (in hours) to normalization of serum osmolality (when applicable), total time (in hours) on insulin infusion, and total hospital length of stay (in hours) in those with hyperglycemic crisis who received an initial insulin bolus compared to those who did not. Time was calculated as hours from the start of the insulin infusion to the defined objective.

**Methods:** A retrospective chart review evaluating patients who were admitted and treated with intravenous insulin for a hyperglycemic crisis. Hyperglycemic crises was defined as either DKA or HHS, and patients were identified using ICD-10 diagnosis codes for DKA or HHS. Excluded patients were those who did not have resolution of hyperglycemic crisis prior to discharge, those who died during hospitalization, and those with end stage renal disease on hemodialysis. Normalization of serum glucose was defined as < 200 mg/dL, anion gap closure was defined as < 12 mEq/L, hypoglycemia was defined as < 70 mg/dL or administration of D50 or glucagon, severe hypoglycemia was defined as < 50 mg/dL, normalization of serum bicarbonate was defined as  $\geq 15$  mEq/L, and normalization of serum osmolality was defined as < 315 mOsm/kg. A total of 144 patients were included in this study, 72 patients in each group.

**Results and Discussion:** Will be presented at the 2020 Multidisciplinary Scholarly Activity Symposium.



## **O8 Subsequent ACL injury and return to sport in school-age patients after ACL reconstruction with contralateral patellar tendon graft. (Sarah Eaton, PT, DPT, ATC, LAT)**

**Introduction:** Subsequent injury after ACL reconstruction is devastating to young athletes. Patients are being advised to wait a minimum of 9 months, but sometimes up to 1 to 2 years before returning to sport to reduce the risk of second injury. We hypothesized that subsequent ACL tear rate to either knee will not be different based on time of return to sport and females would have a higher rate of contralateral ACL injury.

**Methods:** 851 patients who were  $\leq 18$  years old at the time of ACL reconstruction with contralateral patellar tendon graft were enrolled. KT-1000 arthrometer testing recorded postoperative stability. Patients reported pre-operative and post-operative sport participation, and time of return to sport using an activity rating scale. We recorded subsequent ACL injury to either knee within 5 years of surgery. Injury rates were evaluated based on sex and time of return to sport before or after 6 months post-surgery; correlation of time of return to sport to the time of injury was calculated.

**Results:** 88% of patients returned to their pre-surgery level of sport. The subsequent ACL graft tear rate was 9.3% in females and 11.4% in males ( $P=.42$ ). The contralateral ACL tear rate was 10.6% in females and 5.7% in males ( $P=.043$ ). For males and females, the rate of subsequent ACL graft tear or contralateral ACL tear was not different based on time of return before or after 6 months. There was no correlation between time of return to sport to the time of subsequent tear to either knee for males and females.

**Conclusion:** ACL reconstruction with contralateral patellar tendon graft allows patients to return to their pre-surgery level of sport. The rate of subsequent graft tear was not different based on sex, but the contralateral tear rate was higher in females. The rate of graft tear or subsequent contralateral tear was not different based on time of returning to sport. There was no correlation between time of return to time of subsequent injury.

## **O9 Revolutionizing ambulatory/primary care nursing with a unique academic-practice partnership. (Jean Putnam, DNP, MS, RN; Kristina Widmann, BSN, RN)**

**Purpose:** As part of a \$2.6 million HRSA grant, the purpose is to create a top of license primary care nurse role and recruit and train nursing students in ambulatory/primary care nursing over a 4-year period.

**Methods:** In addition to creating an enhanced nurse role in primary care offices, a primary care curriculum for pre-licensure baccalaureate nursing students and post-licensure RN-BSN students was created, in partnership with the University of Indianapolis (UIndy). The current state of curricula in nursing schools does not involve education in ambulatory/primary care nursing. A primary care overview course, and subsequent primary care nursing classes, were also developed and are currently being implemented, resulting in the first Minor in Primary Care Nursing in the country. A preceptor training course was created to provide an interprofessional and patient centered team-based care approach for nursing students.

**Results:** Three enhanced RN's were placed in seven clinical pilot sites to impact patient outcomes, and all were trained as preceptors for nursing students. Nine students were enrolled in the primary care overview course at UIndy. Baseline data was collected in Year 1 utilizing standardized instruments to measure student, preceptor, nurse, patient, and partnership satisfaction. Qualitative and quantitative data will be available in mid-2020.

**Conclusion:** An enhanced RN role in ambulatory/primary care nursing is necessary to improve access to health care, yet it is not currently implemented in ambulatory/primary care settings, where the nurse is

typically in a triage role. A minor in primary care nursing in an undergraduate nursing program, along with an enhanced RN role in seven practice settings were developed to revolutionize the role of ambulatory/primary care nursing, create a pipeline for new nursing graduates to enter primary care nursing, and to improve patient outcomes.

**O10 Effects of de-escalation training on confidence levels of non-behavioral health nurses.** (Nancy Campbell, MS, RN, NPD-BC; Amanda McCalment, MSN, RN, AGCNS-BC; Kimble Richardson, MS, LMHC, LCSW, LMFT, LCAC; Sherri Stinson, MSN, RN; Becky Hill-Skates, BSN, RN; Dave Vandergrift)

**Introduction:** Workplace violence (WPV) is a recognized hazard in healthcare. Almost one third of nurses have experienced physical and/or psychological workplace violence. WPV can lead to burnout, increased levels of stress and an increase in intent to leave the nursing profession. CHNw noted a rise in workplace injury related to WPV and an increase in requests from staff in managing aggressive behaviors of patients/families. In an effort to support staff, a team of multidisciplinary experts, developed a 3-hour continuing education offering. This included de-escalation communication skills, breakaway techniques and simulation exercises to practice patient/family aggression scenarios.

**Objective:** Literature supports education success for increasing the confidence of mental health professionals in dealing with aggression but research is lacking with non-mental health nurses. This research asks 'What effect does de-escalation training have on the non-mental health nurses' confidence in managing the aggressive patient?'

**Methods:** This quantitative, quasi-experimental study used a pre/post-study design using the Clinical Confidence in Coping with Patient Aggression instrument, which is used to measure confidence in managing aggressive patients. Researchers administered the instrument prior to the education and at one and six months after training.

**Results:** Fifty-eight nurses enrolled in the study, twenty-six completed pre and one month and eleven completed pre, one-month and six month surveys. Mean demographics included 40 years of age, 13 years' experience in nursing with 4 years' experience in current position. All item responses were determined to have a statistically significant increase in confidence at one month. All but 2 items were significant at 6 month. Confidence level increased post education and were sustained at one and six months.

**Conclusions:** De-escalation training improved and sustained confidence levels in the non-mental health nurse. With the increase in workplace violence and exposure to aggression by patients/families, de-escalation training is a valuable resource for caregiver safety.

**O11 Team treatment of the arthritic knee from first office visit to last post op visit.** (William Claussen, PT; Scot Bauman, PT, DPT)

**Introduction:** Treatment of knee osteoarthritis (OA) can be an extensive process and involve multiple caregivers and treatments. Many times care is segmented and not well coordinated which can lead to patients not receiving treatments that they may benefit from. The purpose of this presentation is to describe the benefits of a coordinated multidisciplinary approach for patients with knee osteoarthritis.

**Materials/Methods:** In our office, physical therapists (PTs) are involved at the patient's first visit with the Orthopedic Surgeon while also providing physical therapy before surgery. Many times, patients can avoid a total knee arthroplasty (TKA) with proper rehabilitation. If conservative care fails, the PT will coordinate changing the plan of care to a surgery route. The PTs will cover preoperative education as well as postoperative care. We will also discuss how each discipline (MD, outpatient PT, inpatient PT,

research, x-ray, social work, pharmacy) interact with each other during the course of care, and how proper coordination allows for seamless care and predictable outcomes. In conjunction with PTs and surgeons, our internal research department has designed protocols that allow us to collect data so that we may track patients' outcomes.

**Results:** Data following 236 patients who did rehabilitation for knee OA show only 21% went on to TKA surgery. During rehabilitation, extension improves from 2 degrees short of zero at the initial visit to 0 degrees before surgery and improves to 1 degree of hyperextension 1 year postoperatively. Flexion improves from 120 degrees at the initial visit to 123 degrees right before surgery and continues to improve to 127 degrees 1 year after surgery. Of 59 patients having a TKA, average preoperative Knee Injury and Osteoarthritis Outcome Score (KOOS) was 45 and improves to 85 postoperatively.

**Conclusion:** This coordination of care makes this process possible, and provides better patient results and experiences.

**O12 A comparison of oral antibiotic step-down therapy in gram-negative bacteremia based on bioavailability.** (Elizabeth Raye Poole, PharmD; Sarah Cocke, PharmD, BCPS; Debra Oldanie, PharmD, BCPS)

**Purpose:** Although various trials have shown effectiveness of intravenous (IV) to oral antibiotic de-escalation in Gram-negative bacteremia, limited data exists on appropriate oral options. The purpose of this study is to compare efficacy and safety of high and low bioavailability oral antibiotics for the treatment of Gram-negative bacteremia.

**Methods:** A retrospective chart review was performed including patients  $\geq 18$  years of age with a diagnosis of Gram-negative bacteremia receiving initial IV antibiotic therapy and transitioned to oral therapy by discharge. Patients were divided into either receiving a high or low bioavailability oral antibiotic. High bioavailability antibiotics included fluoroquinolones and high dose trimethoprim/sulfamethoxazole. Low bioavailability antibiotics included beta-lactams and low dose trimethoprim/sulfamethoxazole. Efficacy was evaluated by examining 30-day mortality, transition back to IV antibiotics, and 90-day post-treatment readmission for recurrent infection. Safety measures included reported adverse events due to antibiotic therapy, including 90-day post-treatment rates of clostridium difficile infections. Additional endpoints included differences in length of hospital stay between patients receiving high versus low bioavailability antibiotics, efficacy of early IV to oral transition ( $\geq 50\%$  total treatment on oral antibiotic) versus late transition ( $<50\%$  total treatment on oral antibiotic), and efficacy of short course total treatment duration ( $\leq 10$  days) versus long course total treatment duration ( $>10$  days).

**Results and Discussion:** Will be presented at the 2020 Multidisciplinary Scholarly Activity Symposium.

**O13 Return to sport and subsequent ACL injury after ACL reconstruction with contralateral patellar tendon graft.** (William Claussen, PT; K. Donald Shelbourne, MD; Rodney W. Benner, MD; Tinker Gray, MA)

**Purpose/Hypothesis:** Early return to sports is considered a risk factor for ACL graft tear. We hypothesized that subsequent ACL tear rate to either knee will not be different based on time of return to sport with contralateral patellar tendon autografts.

**Number of subjects:** 2130

**Materials and Methods:** Between 1998 and 2013, 2130 patients underwent primary ACL reconstruction using a contralateral patellar tendon graft (PTG). Postoperative stability, level of postoperative activity

and second ACL injury were recorded. Injury rates were evaluated based on time that a patient returned to sport and a correlation of time of return to activity to the time of injury was calculated.

**Results:** 1386 patients had complete activity rating survey data, and 89% of patients were able to return to pre-surgery level of sport. Stability results showed 91% of patients having <3 mm difference. Overall 6.7% suffered subsequent ACL graft tear and 4.9% suffered subsequent contralateral ACL tear in the first 5 years postoperatively. Subsequent graft tear rate was 7.7% in patients who returned to sport at < 6 months and 5.6% in patients who returned at ≥6 months postoperatively, which was not statistically significantly different ( $p=.124$ ). Subsequent contralateral ACL tear rate was 5.3% for patients who returned to sport at < 6 months and 4.5% in patients who returned to sport at ≥6 months after surgery, which was not statistically significant( $p=.482$ ).

**Conclusions:** ACL reconstruction using a contralateral PTG reliably restores stability to the knee, and 89% of patients returned to pre-surgery level of sport.

**Clinical Relevance:** The subsequent ACL graft tear rate or contralateral ACL tear rate was not statistically significantly different based on return to sport at <6 months or ≥ 6 months postoperatively. Furthermore, there was no correlation of time of return to sport and time of subsequent injury.

#### **O14 Self-medication among adolescents who use substances: What the data tell us and future directions.** (Katie Little Kivisto, PhD.)

**Introduction:** Early initiation of substance use, prior to age 15, is associated with the poorest outcomes in terms of long-term recovery. Further, remission rates for adolescents in substance use treatment are exceptionally poor, with only 35-42% achieving remission. Theories about adolescent substance use include self-medication and delinquency models, among others. Extensive research suggests that adolescents who use substances to cope with distressing emotions are among the most likely to need treatment, and have higher risk of relapse. Traumatized youth may also present with greater externalizing behavioral problems. Moreover, traumatized adolescents frequently report substance use as a means of coping with negative affect. However, research linking trauma symptoms to coping motives and substance use, with and without other externalizing symptoms, is limited in adolescents who are at high risk for heavy substance use or in substance use treatment. In this presentation, findings from a study of adolescents in substance use treatment provide support for mechanisms underlying self-medication motives for substance use.

**Methods:** Data were collected through a partnership between the University of Indianapolis and Fairbanks Hospital. N=46 teens enrolled in inpatient or partial hospital addictions treatment were recruited using an intensive in-person consent process, including adolescent assent, parent permission, and adolescent consent (for those aged 18 at time of consent). All procedures were approved by the UIIndy IRB. Participants engaged in computerized surveys and behavioral tasks to assess trauma symptoms, emotion regulation, substance use history, and substance use coping motives. Participants ranged in age from 13-18 ( $M=16.7$ ,  $SD=1.3$ ), were primarily male (70%), and primarily Caucasian (89%) and non-Hispanic/Latinx (94%).

**Results:** Of the sample, 89% reported a significant trauma history, with a current average of 1-2 symptoms per week in each trauma symptom cluster. The average self-reported emotion regulation on the Difficulties in Emotion Regulation Scale (DERS) was above the cutoff for clinical concern ( $M=100.9$ ,  $SD=21.5$ ), with more than half of the sample in the concern range. More frequent PTSD symptoms (UCLA DSM-5 PTSD Scales) were correlated with poorer emotion regulation,  $r=.48$ ,  $p<.01$ , stronger coping motives,  $r=.30-.59$ ,  $p<.05$ , and more frequent substance use in the past 3 months,  $r=.27-.46$ ,  $p<.10$ - $p<.01$ . Poorer emotion regulation was correlated with higher cravings,  $r=.42$ ,  $p<.05$ , stronger coping motives,  $r=.24-.52$ ,  $p<.05$ , and more frequent substance use in the past 3 months,  $r=.34-.44$ ,  $p<.10$ -

$p < .01$ . On the computerized Mirror Tracing Task (MTPT-C), a behavioral measure of frustration tolerance, about  $\frac{1}{4}$  of adolescents spent  $< 30$  seconds on the task before quitting, about  $\frac{1}{2}$  spent 30-120 seconds, and about  $\frac{1}{4}$  spent 2-7 minutes on the task. Notably, a pattern emerged where extremes in MTPT-C task persistence ( $< 30$  seconds or  $> 120$  seconds) were associated with poorer emotion regulation on the DERS, compared to middle range task persistence (30-120 seconds),  $t(38) = -2.42$ ,  $p < .05$ . In other words, teens with unusually low or unusually high persistence demonstrated greater emotion regulation difficulties.

**Discussion:** Rates of trauma and PTSD symptoms in a substance-use treatment sample were high and associated with substance use, coping motives, and emotion regulation difficulties. Importantly, all findings were correlational, and directionality of effects cannot be assumed.

## **O15 Strengthening resiliency amongst caregivers.** (Darami A. Daniels, MS, RN, NPD-BC)

**Introduction:** Resiliency is an essential characteristic to have as a caregiver, but little is done in the hospital setting to foster its growth.

**Objectives:** The primary objective of this study was to determine caregivers' baseline measure of resilience, then measure resilience again three months post intervention.

**Methods:** This was a non-experimental quantitative study of caregivers from a single hospital within a larger network. The primary goal was to increase the resilience of caregivers. Caregivers were invited to attend a 1.5-hour presentation on how to strengthen resilience. Prior to the presentation, attendees were given the CD-RISC, a reliable and valid tool that measures resilience. Caregivers were then sent the CD-RISC electronically three months post presentation for completion. A comparison of the pre and post groups was completed.

**Results:** The pre n consisted of 126 participants spread across two presentation groups (Group A). The post n consisted of 41 participants (Group B). The mean for Group A was 78.73 with a standard deviation of 10.67 and standard error of 0.95. The mean for Group B was 83.95 with a standard deviation of 12.49 and standard error of 1.95. In order to compare the data, a Pooled Method t-test was completed showing a t-value of 2.61 and a p-value of 0.01.

**Conclusion:** A p-value of 0.01 displays statistical significance between Group A and Group B. Meaning caregivers can strengthen their resiliency in a three-month timeframe. One key limitation of the study is the use of a Pooled Method t-test instead of a true t-test. This had to occur because demographic data was not collected for Group A. For future comparison studies, the same information will be collected pre and post. Another limitation of the study is the larger size of Group A, making a true comparison difficult.

## **O16 All together now: Designing a multi-hospital standardized education plan to achieve NIHSS nursing competency.** (Christina Kay Hrubey, BSN, RN, CCRN, SCRNP)

**Introduction:** Every 40 seconds, someone has a stroke in the U.S. - that's  $> 755,000$  Americans annually. Stroke patients require frequent assessment utilizing the National Institutes of Health Stroke Scale (NIHSS), which is designed to be universal, reliable, and most importantly, objective. Teaching nurses how to perform the NIHSS consistently and competently is challenging. Community Health Network has faced that challenge by standardizing nursing education on the NIHSS across all five primary stroke centers in the Network.

The first phase of the education plan began in 2018; the plan has entered its second phase in 2020. Phase-one education deployed in August 2018; methods include in-person didactic and patient

simulations, with three post-education patient observations to ensure nursing competency. Data is collected in pre/post-education surveys and randomized inter-rater reliability sampling.

**Outcomes:** Primary outcomes of this study include 1) decreased clinical variation as evidenced by increased inter-rater reliability from a baseline of 55%; and 2) increased nursing confidence as evidenced by a positive change in nursing awareness, perceptions, and beliefs.

**Results:** Evaluation of the primary outcomes are: 1.) Increased nursing competency and decreased clinical variation, as evidenced by improved inter-rater reliability from a baseline of 55% to a median of 80% or greater, measured by randomized sampling; 2.) Increased nursing confidence as evidenced by a positive change in nursing awareness, perceptions, and beliefs regarding the NIHSS, measured by a pre- and post- education survey. A secondary goal was also achieved: this education program saves CHNW >127,000\$ annually by reducing the number of NIHSS education hours needed while still improving patient care and nursing satisfaction.

### **O17 How can the medical team best support advanced cancer caregivers? Their challenges, rewards, and quality of life. (Melissa Ketner, MSW)**

**Introduction:** While prior studies have addressed many areas of psychosocial needs for oncology patients and their caregivers, gaps remain in understanding the best ways to serve this complex group. Caregivers for advanced cancer patients have been determined to have needs in several life areas, yet interventions fail to effectively address burden. Additionally, residing in a rural community can further complicate caregiving due to isolation, lacking resources, and decreased access to qualified healthcare providers.

**Methods:** This study used qualitative inquiry to explore caregiving experiences, stressors, and opportunities for growth found in the caregiving role. Semi-structured interviews were used with fifteen participants, primarily from rural areas. Interviews were recorded and transcribed. NVivo 12 supported organization of the data. Developed codes built grounded theory founded in the experiences of these participants.

**Results:** Caregivers discussed stressors, coping, and ideal resources. They experienced personal growth, including themes of the importance of caregiving, having awareness to support others, and overall development of appreciation. Caregivers discussed impacts of the rural setting. The themes of the study include: caregiver multi-faceted experience of loss, medicine is a foreign language, significant impact of the caregiving role on quality of life, unexpected strength in community, and balance of forced mindfulness (staying in the moment) versus anticipating grief and loss (being future-oriented). The results concluded with presentation of theory, indicating use of negative social comparisons to cope with their circumstances in the tone of “it could be worse.”

**Conclusion:** Caregiving has significant impacts on quality of life, which mutually impacts the patient’s status. Caregiver perceptions of ideal resources help us better support them, including the importance to network with other caregivers and have navigation services. Stigma surrounding advanced cancer and death continues, causing gaps in addressing and planning for end-of-life supported by the patient/caregiver dyad and the medical team.

### **O18 Effect of propofol sedation on norepinephrine requirements in patients with septic shock.**

(Courtney Newman, PharmD; Natalie Madere, PharmD, BCPS, BCCCP; Katrina Howard, PharmD, BCPS; Kellianne Webb, PharmD, BCPS)

**Introduction:** Sedation is an important component of care for patients in the intensive care unit (ICU). Current guidelines recommend propofol as a first-line sedative agent to improve clinical outcomes.

Hypotension is a well-recognized adverse effect of propofol in critically ill patients; however, effect on vasopressor requirements in septic shock have not specifically been evaluated.

**Objectives:** The purpose of this study is to assess the effect of standard-dose versus high-dose propofol sedation on norepinephrine requirements in patients with septic shock.

**Methods:** Patients were included in the study if they were 18 years of age or older, mechanically ventilated, admitted with a diagnosis of septic shock, and received a continuous infusion of propofol for six consecutive hours or longer. Patients were placed into standard- dose (less than 30 mcg/kg/min) versus high-dose (30 - 50 mcg/kg/min) groups based on their average propofol requirements during the first 24 hours. Patients were excluded for any of the following: concomitant continuous infusion of a neuromuscular blocking agent, use of an alternative sedative continuous infusion in conjunction with propofol, and deep sedation with a goal Richmond Agitation-Sedation Scale (RASS) score of -3 or lower. A multivariate multiple linear regression analysis was used to investigate whether the dose and duration of propofol infusion affects the relationship between the dose and duration of norepinephrine infusion. Secondary outcomes include mortality; duration of vasopressor therapy, mechanical ventilation, and central line access; maximum norepinephrine dose; requirement of multiple vasopressors; and ICU and hospital length of stay.

**Results and Discussion:** Will be presented at the 2020 Multidisciplinary Scholarly Activity Symposium.

**O19 Impact of pharmacists' interventions on 30-day readmission rates during transitions of care management.** (Taylor Hibner, PharmD; Nick Sciacca, PharmD, BCACP; Megan Dorrell, PharmD, BCACP)

**Purpose:** Readmission to the hospital within 30 days of discharge occurs in a substantial portion of patients insured by both commercial and government insurance and costs the United States healthcare system billions of dollars annually. Research has shown that pharmacists can contribute to a reduction in hospital readmission rates when involved in patients' care during the time immediately following discharge from an inpatient hospital stay. However, there is limited data on the specific impact on readmission rates of the different types of actions and interventions that pharmacists are performing while meeting with patients during this critical time after discharge. The purpose of this study is to determine what types of interventions made by pharmacists during their interactions with recently discharged patients contribute to a reduction in 30-day hospital readmissions.

**Methods:** A retrospective chart review was conducted on adults who are members of a value-based care contract with Community Health Network and were discharged from a hospital admission between January 1, 2019 and November 30, 2019. Patients who were not prescribed any medications at discharge from hospital were excluded. The primary endpoint includes a composite of emergency department visits and hospitalizations within 30 days of discharge.

Components of the primary endpoint will be analyzed separately as secondary endpoints. Emergency department visits and hospitalizations will include those within Community Health Network as well as any outside healthcare systems. This data will be used to assess which interventions by the pharmacist have the greatest impact on hospital readmission rates and should be targeted by pharmacists during transition of care management.

**Results and Discussion:** Will be presented at the 2020 Multidisciplinary Scholarly Activity Symposium.

**O20 Experiences of athletic training and emergency medical service students after participating in an interprofessional mass casualty simulation.** (Kirk J. Armstrong, EdD, LAT, ATC; Stacey L. Gaven, PhD)

**Introduction:** Interprofessional education (IPE) is a collaborative approach to learn about, from, and with healthcare providers to improve collaboration, communication, and patient care. The purpose of this study was to understand the experiences of professional athletic training and emergency medical services students after participating in an interprofessional mass casualty simulation.

**Methods:** We employed a phenomenological design utilizing post simulation debriefing. 18 professional athletic training students (8 bachelor's and 10 master's level, 11 females, 7 males) and 21 first year emergency medical services students (17 males, 4 females) engaged in a mass casualty simulation with multiple standardized patients involved in a bicycle accident during a triathlon. The participants completed a primary assessment and triage, provided immediate care, and prioritized patients for referral via ambulance. Following the simulation, participants participated in a group debrief session, following a structured debrief guide. The debrief was audio recorded and transcribed verbatim. Data were initially read independently by the researchers for understanding and then coded into meaning units. These meaning units allowed the data to be organized into emerging themes. Trustworthiness was established through peer and external review, and multiple analyst triangulation.

**Results:** Overall, participants reported developing an understanding of skills and professional expertise of the other discipline. Three themes emerged from participant comments including 1) importance of communication, 2) managing multiple patients, and 3) knowledge of the other healthcare profession. For importance of communication, participants described the need for preparation and pre-brief to understand individual strengths and the equipment available before providing care.

**Discussion:** Facilitated debrief allowed the participants to reflect on their own actions and clinical decisions while collaborating interprofessionally. These encounters allow for further understanding of different healthcare practitioners and the collaborative care that can optimize patient care.

**O21 Caring for suicidal patients in the emergency department.** (Ryan Wilson, MBA, LCSW; Jeremy Malloch, BSN, RN, EMT-P, CFRN)

**Introduction:** Patients with suicidal ideation frequently receive care in Emergency Departments (ED) and emergency caregivers must ensure the safety of these patients. This is a historical review of quality improvement initiatives to improve suicidal patient safety in Community Health Network (CHNw) EDs since 2017 and a review of related BH patient throughput and flow data.

**Objectives:** The objective of the study was to recommend further improvements to prevent instances of suicide attempts by patients in EDs.

**Methods:** The quality improvement projects include the Columbia Suicide Severity Rating Scale (C-SSRS) screener, risk stratification based on the screener, a ligature risk reduction form, one-to-one sitter requirements for high-risk patients, and online education provided to ED caregivers. An analysis was conducted of internal ED suicide prevention processes (obtained via interviews), BH patient throughput data (obtained via Epic reports), and suicide attempts at the EDs (obtained via safety event reports).

**Results:** Suicide attempts increased in the EDs from 2016 to 2019 (13 in 2019 vs. 10 in 2016-2018) despite the improvement initiatives, so patient and throughput factors were explored further and revealed that there were simultaneous increases in patient acuity (avg. C-SSRS score), patient volume (total BH patients), and throughput times (total minutes). These factors place pressure on ED capacity and processes and are correlated with the increase in suicide attempts.



Despite the increased attempts there have been no deaths and a review of individual cases has shown that some of that success is attributable to the improvements made (example: a sitter who immediately intervenes in an attempt). The quality improvements appear to have decreased the potential severity and detectability of suicide attempts, even while frequency increased in 2019. Further, the latest improvement (adding the suicide prevention workflows into Epic) shows preliminary success at preventing attempts (127 days between attempts; average of last 11 intervals was 25 days).

**Conclusion/Discussion:** This work has primarily revealed systemic effects of BH throughput on the care of the suicidal patient in the ED and further work is currently being done to address those issues to ensure a safe environment of care.

**O22 Evaluation of a pharmacist-led, self-management strategy to reduce COPD-related admissions and emergency department visits in high risk patients.** (Jennifer Lynne Niehoff, PharmD; Tyler Madere, PharmD, BCPS; Megan Dorrell, PharmD, BCACP; Jaclyn Myers, PharmD, PhD Candidate; Anjanette Wicker, BSN, MSN)

**Introduction:** Chronic obstructive pulmonary disease (COPD) is a leading cause of morbidity worldwide, imposing a substantial economic and social burden on patients and health systems alike. Approximately 1.5 million emergency department (ED) visits related to COPD occur annually, however studies estimate that many patients experience COPD exacerbations without seeking treatment. These unreported exacerbations can negatively impact health status. In an effort to reduce COPD-related ED visits and hospitalizations, Community Physician Network (CPN) began enrolling patients in a COPD Rescue Pack Protocol - a self-management strategy for high risk patients to treat COPD exacerbations without delay. Appropriate patients are provided with an oral corticosteroid and an oral antibiotic, along with their short-acting rescue inhaler. Patients also receive personalized education and a COPD Action Plan to guide treatment use. There is a need to assess the impact of this service on COPD-related hospitalizations and ED visits, as well as the interventions completed by the Ambulatory Care Pharmacist (ACP).

**Methods:** This retrospective chart review includes patients who were enrolled in the CPN COPD Rescue Pack Protocol beginning in September of 2019 and who are prescribed at least one COPD Rescue Pack. The primary objective is to compare the number of COPD-related ED visits and hospitalizations one year prior to and 90 days after enrollment in the protocol. The secondary objectives will compare the number of COPD-related ED visits, hospitalizations, and exacerbations at 30 days following enrollment in the protocol. The number and type of ACP interventions will be assessed to determine the protocol's impact on patient outcomes. Patients without a diagnosis of COPD, who did not complete the protocol-mandated initial visit, and who meet vulnerability criteria were excluded.

**Results and Discussion:** Will be presented at the 2020 Multidisciplinary Scholarly Activity Symposium.

**O23 Pharmacist-led interventions to prevent postpartum readmission for hypertension and preeclampsia.** (Jennifer Lynne Niehoff, PharmD; Bailee Belcher, PharmD, BCACP; Megan Dorrell, PharmD, BCACP; Nan Oscherwitz, MD)

**Purpose:** Hypertensive disorders of pregnancy are one of the leading causes of maternal mortality and postpartum hospital readmission. Hypertensive disorders of pregnancy have increased in recent years due to multi-factorial causes such as obesity and increasing maternal age. The women's health pharmacist at Community Health Network is uniquely positioned to provide both discharge education on a 60-bed maternity floor and medication management in a women's health clinic. Patients with hypertensive disorders of pregnancy may be referred for outpatient follow-up with the pharmacist to

assess blood pressure control and medication safety, optimize the antihypertensive regimen, and address potential barriers to care.

**Methods:** A retrospective chart review will be conducted on patients with a hypertensive disorder of pregnancy who received both pharmacist-led discharge education and postpartum outpatient follow-up. Data from patient appointments conducted on October 1, 2019 through March 31, 2020 will be collected and included for analysis. Information to be collected includes type of hypertensive disorder, pre and post-discharge medication regimen, post-discharge blood pressure monitoring, time to follow-up post-discharge, postpartum readmission rates, number and type of postpartum outpatient visits, and pharmacist.

Primary outcome is the difference in postpartum readmission rates between patients who received pharmacist-led discharge education in combination with postpartum outpatient follow-up and those who did not. Secondary outcomes include differences in rates of controlled blood pressure and postpartum clinic visits related to a hypertensive disorder. Tertiary outcomes include the number and type of interventions conducted by the pharmacist during the defined study period. This data will be used to evaluate the impact of an integrated women's health pharmacist and identify areas for future service expansion.

**Interventions.** Interventions completed by the pharmacist will be classified into three categories: medication optimization, medication access, and coordination of care.

**Results and Discussion:** Will be presented at the 2020 Multidisciplinary Scholarly Activity Symposium.

#### **O24 Incivility among female social workers.** (Stephanie Ellen Rudd, MSSA, LCSW, LCAC; Melissa Ketner, MSW, LCSW; Lainey Collins, PhD, LCSW)

**Background:** Attention to incivility has increased in various types of workforces. Behaviors included in incivility can include verbal attacks, disrespect, critical and offensive language, refusal to cooperate and collaborate, criticism, racial or ethnic slurs, and inappropriate sexual comments. Workplace incivility affects productivity, stress, health, job satisfaction, and turnover. Additionally, research related to incivility in academia is expanding. While concepts of bullying and incivility have been documented in specific fields, such as nursing, availability of literature related to these experiences across multiple disciplines is also increasing. Incivility occurring within higher education settings may translate to clinical practice settings as students transition to clinical practice roles serving clients or patients. Institutions of higher education, especially those focused in the healthcare disciplines, should be the example of civility regarding workplace culture. Because the discipline of social work utilizes field education to translate classroom learning and integrate practice in serving clients in a supervised setting, social workers may be affected by a similar experience.

The incivility study is examining the experiences of female social workers with lateral violence, or incivility, with other co-workers in the workplace. Initial review of the literature yields little information about incivility in the field of social work and no research on the experiences of lateral violence among female social work practitioners.

**Methods:** This study, based in grounded theory, is utilizing qualitative interviews with female social work professionals to examine the experiences of incivility among experienced female social work practitioners. This study is seeking to answer the question, "What are the experiences of incivility among female social workers in the workplace?"

**Results and Discussion:** Will be presented at the 2020 Multidisciplinary Scholarly Activity Symposium.

**O25 : Evaluation of PTSD symptoms and subjective distress tolerance: Impact on quality of life.**  
(Emily M. Ahles, BA; Lisa Elwood, PhD)

**Background:** Distress tolerance (DT) is a risk factor for many psychopathological outcomes, including posttraumatic stress disorder (PTSD). Among those with PTSD, DT predicts symptom severity. Little research has explored the association between DT and PTSD symptom severity. Furthermore, both DT and PTSD symptom severity have emerged as factors that contribute to one's overall quality of life (QOL), but the particular contributions of these variables have not been examined. This study aimed to explore the relationship between DT components, PTSD symptom severity, and QOL, and understand the contribution of components/PTSD to overall QOL.

**Methods:** Participants (n=57) completed self-report measures as part of a study examining a client-directed version of Cognitive Processing Therapy. QOL was assessed using the World Health Organization Quality of Life-BREF, measuring QOL in four domains: physical psychological, social, and environmental. PTSD symptom severity was assessed with the PTSD Checklist. DT was assessed using the Distress Tolerance Scale, measuring DT through four components: ability to tolerate emotions, appraisal of emotional situations as acceptable, level of attention absorbed by negative emotion, and ability to regulate emotion.

**Results:** Bivariate correlations were run between QOL domains, PTSD, and DT components, with significant correlations between psychological QOL and PTSD ( $r = -0.561$ ), DT absorption ( $r = -0.460$ ), and DT appraisal ( $r = -0.377$ ). A multiple linear regression examined the influence of PTSD and DT components absorption and appraisal on QOL, and the full model was significant ( $F(3, 22) = 5.883$ ,  $p < .004$ ,  $R^2 = .445$ ). PTSD ( $t = -3.383$ ,  $p = .000$ ) and absorption ( $t = -2.227$ ,  $p = .003$ ) emerged as significant predictors of QOL, while appraisal ( $t = 1.447$ ,  $p = .162$ ) failed to contribute to the model.

**Conclusion-**Findings extend research relating DT, PTSD, and QOL by extracting specific components of DT that may be of importance to understanding PTSD symptom severity/QOL. Future interventions that target DT can be specifically tailored to the DT components that may most drive meaningful clinical change.

**O26 Organization-wide Daily Improvement - Developing a Model for Success** (Danielle Bodigon, RN, BSN; Ryan Wilson, LCSW)

**Introduction:** Daily Improvement is a lean process that engages and empowers front-line caregivers to make and lead change in their daily work.

**Objectives:** To ensure alignment, adoption, and sustainment of the Daily Improvement program throughout the Organization.

**Methods:** Daily Improvement was deployed in waves throughout Community Health Network starting in 2016. Region-based steering committees were formed to guide each deployment. Teams were assigned a Daily Improvement coach once deployed and guided through their first huddles and idea cards, with ongoing support provided as needed. A sustainment model was constructed to aid in coaching the team to maturity. The model outlines specific characteristics that align with scoring categories - gold, green, yellow, and red. Additionally, specific interventions were identified to assist Daily Improvement coaches in guiding their teams to a mature state. North, South, East, Howard, and CPN have deployed Daily Improvement. Daily Improvement champions from each region were brought together to identify what each region's process consisted of. This enabled the "silos" around each region to be deconstructed, and a future-state organization-wide process was created.

**Results:** Both high-performing and low-performing departments have been identified. Observations have shown that engaged leadership and/or process owners lead to greater alignment and adoption. Through the Daily Improvement program, almost 1500 ideas for improvement have been generated!

**Discussion:** To ensure success moving forward it will be imperative that leaders be engaged in the process. To do so, we will work towards linking the sustainment documentation into the productivity dashboard - this will also provide an avenue for recognizing spread opportunities. Additionally, Daily Improvement will be an important tool to help grow the organization's Culture of Safety. By having leaders lean-in to their teams and empowering caregivers to speak up, great improvements can be made!

## POSTER PRESENTATIONS

### **P1     Rare metastasis of endometrial cancer primarily diagnosed in the talus.** (Britney Ann Wenig, DPM; Kathryn Alleva, DPM)

**Purpose:** Metastatic disease occurring in the foot or ankle is extremely rare and when initially diagnosed indicates advanced disease and a grim prognosis. It is unusual for a patient to receive an oncologic diagnosis via biopsy of a peripheral lesion by a foot and ankle surgeon when the primary cancer is not native to the lower extremity. It is essential for a foot and ankle specialist to understand and recognize the characteristics of a malignant lesion and when advanced imaging and biopsy is warranted.

**Case Study:** We present a patient with progressive left ankle pain who was initially treated for 2 months by their primary care physician with steroid injections, NSAIDs, and a cast boot without relief. The patient was then referred to a foot and ankle surgeon who obtained further imaging and subsequently biopsied the mass. The pathological specimen revealed malignant epithelial cells supporting a metastatic carcinoma with primary gynecologic origin. She was ultimately treated with localized radiation of the leg and chemotherapy.

**Procedures:** Soft tissue mass excision and biopsy of left foot.

**Results:** Pathological and immunohistochemical diagnosis of metastatic carcinoma with gynecological primary origin.

**Analysis & Discussion:** Symptoms of a malignancy may take anywhere between 2 weeks and 1 year from initial metastasis. The mean survival after diagnosis of a metastatic lesion is about 14.8 months, our patient survived 8 months post diagnosis. Clinicians must have a suspicion of metastatic lesion or malignancy when evaluating atypical lesions in the foot or ankle. Early investigation via advanced imaging and biopsy could lead to improved survival rates.

### **P2     Compartment syndrome of the lower extremity caused by acquired hemophilia A.** (Britney Ann Wenig, DPM; Sakkapol Ongwijitwat, MD; Melody Jordahl-lafrate, MD; Aaron Whiteman, DO; Kimberlie Wells, DO)

**Objectives:** Review a presentation of compartment syndrome that identified a very rare bleeding disorder as the underlying etiology.

**Background:** The incidence of compartment syndrome is less than 20,000 cases per year, making it a rare diagnosis. Complications associated with the rise in interstitial compartment pressures can lead to irreversible damage. When compartment syndrome is a result of an underlying bleeding disorder, the

evaluation of laboratory data is the crucial element in determining short and long term care of the patient.

**Case:** This study will discuss a patient who presented with left lower extremity pain and swelling for 3 days with other symptoms such as anemia, hematuria and epistaxis. Venous duplex ultrasound and CT angiogram of the left lower extremity found a large hematoma in the posterior calf. She underwent testing for compartment syndrome which revealed elevated pressures in the deep and superficial posterior compartments of the leg, and subsequently underwent fasciotomies of the compartments. She continued to have postoperative bleeding, and labs revealed a PTT of 80 and Hbg of 6. Von Willebrand panel revealed an acquired hemophilia disorder with factor VII level at 2% and factor 8 inhibitor 13 Bethesda units. She was ultimately treated with immunosuppression drugs, and skin grafts. Currently, the patient is pain free without any complications.

**Conclusion:** The differential diagnoses for acute lower limb pain are very broad, and during limb threatening conditions, a timely diagnosis is vital. The diagnosis of non-traumatic compartment syndrome requires high index of suspicion along with identifying significant physical and clinical features. Acquired hemophilia A is a rare bleeding disorder caused by the development of autoantibodies against clotting factor VIII and is autoimmune in nature. In conclusion, our literature review would indicate this as only the 3rd case of acquired hemophilia as the cause of compartment syndrome.

### **P3      Workplace violence prevention in the ED. (Lauren Fogt, DNP)**

**Introduction:** Patient violence against healthcare workers has become a problem of epidemic proportions. Lack of understanding related to incidence is not optimal, especially since these incidents are underreported and are normalized in many healthcare facilities. Violence against healthcare workers can be of significant detriment to the individual impacting their physical and psychosocial health, which influences their personal and professional lives. The Emergency Nurses Association (ENA) endorses prevention as the first step in providing a comprehensive approach to tackling workplace violence. Prevention includes accepting intolerance of all violence in the workplace, raising awareness of acceptance and early intervention, and understanding the barriers to an effective workplace violence program. The STAMP tool - Staring and eye contact, Tone and volume of voice, Anxiety, Mumbling and Pacing - referenced in the ENA workplace violence toolkit, is a mnemonic that has been used to identify precursors for violent and aggressive behaviors in an emergency department (ED) setting.

**Methods:** The purpose of this evidence-based project was to evaluate whether the implementation of the STAMP tool would decrease the number of violent incidents in the ED at Community Hospital North. This was a pre-post intervention project utilizing count data. A retrospective analysis was conducted in MIDAS, the site's event reporting system, for 10 weeks prior to the implementation to determine a baseline number of reported violent incidents. Peplau's Interpersonal Relations and Lewin's change theories provided theoretical guides for project development. Organizational approval was obtained, as well as approval from the ENA and STAMP tool authors. Mandatory electronic education through MySuccessCenter was assigned to all ED and Security caregivers. This education yielded an 80% completion rate. In-person live sessions were also provided to both departments during daily department safety huddles and staff meetings.

**Results:** To evaluate the effectiveness of the intervention, an analysis of the MIDAS event reports 10 weeks after implementation was completed. A statistically significant difference was discovered utilizing a rate compare pre-post intervention (pre-intervention rate= 0.000875, post-intervention rate= 0.000206) and Fisher's exact test ( $p=0.0371$ ). This outcome signified that implementation of the STAMP

tool at Community Hospital North was successful in decreasing the number of violent incidents in the ED.

**Discussion:** The project findings suggest that the STAMP tool is an effective intervention for reducing the number of violent incidents in an ED setting. There were no studies included in the literature review on workplace violence prevention that disputed the validity and reliability of this tool. The STAMP tool, which focuses on 5 observable behavior cues, allows the staff member to identify those patients who are at risk for violence or aggression and can triage them as such. Once these patients are identified, security can be notified and additional interventions can be put into place to help keep staff members safe. Although there are many suggestions for how to go about reducing workplace violence, very few have evidence to support their effectiveness. STAMP is a practical mnemonic that allows a staff member in the ED setting to assess for certain potentially violent behaviors quickly without cumbersome scoring, even with very little training. The usability of this tool is great, and its impact cannot be fully understood due to the lack of understanding of prevalence of workplace violence in the ED.

#### **P4      Lessons from dying bones: Avascular necrosis in a 36-year-old male with psoriatic arthritis undergoing PrEP therapy. (Kexia Van, DO)**

**Introduction:** The CDC released guidelines recommending PrEP to prevent HIV transmission. Avascular necrosis (AVN) is a disease involving bone death from insufficient blood supply. Twenty to thirty thousand cases of AVN occur each year and account for 10% of total hip replacements. While AVN occurs in HIV positive patients on anti-retroviral therapy, there are no cases reported in HIV negative patients on PrEP.

**Case Presentation:** A 38-year-old homosexual, HIV negative male with psoriatic arthritis and +HLA-B27 presented with severe left hip pain. He started Truvada 6 weeks earlier. Bilateral hip x-rays were unremarkable. The patient was diagnosed with a psoriatic flare and was told to continue Truvada. One month later, the hip pain became bilateral. Repeat hip x-rays showed new left degenerative changes. Re-examination showed new decreased range of motion, decreased strength, tenderness around the left hip with a positive capsular pattern and atrophy of the quadriceps. A MRI showed bilateral AVN of the femoral heads with left cortical collapse. The patient underwent core decompression and stem cell transplant, both of which failed. An infectious disease consult recommended discontinuation of his Truvada as it may have caused the AVN. The patient underwent bilateral total hip replacements. His recovery was slow but steady using integrative medicine and OMT.

**Discussion:** There is limited literature regarding the relationship between Truvada and avascular necrosis. This patient's AVN may have been related to Truvada, however, other factors could have also contributed, such as his history of psoriatic arthritis, +HLA-B27, prednisone use, and tobacco use. This case illustrates the need to report new potential side effects to build a body of evidence for future patient care.

#### **P5      Analyzing the reporting library to optimize access and utility. (Taylor Peavey, BS; Katie Bickett-Burkhart, MS; Kala Slack, BA; Christopher Shehu, AS)**

**Introduction:** Community Health Network went live with Epic in 2012 and the need for specific reports (e.g. list of patients that meet a certain criteria, frequencies of specific events, etc.) has continuously increased throughout the years. End-users of Epic can access report templates which define the base criteria for specific reports through Epic's Reporting Library; however, the Library has experienced many growing pains and the current state contains many duplicate and unnecessary templates and reports alike, leaving end-users frustrated and confused.

Previous attempts have been made to make the library more efficient including transitioning all report templates to “dynamic”. A dynamic template, as opposed to a non-dynamic template, helped secure data integrity for the growing Network and its affiliates who all use the same Reporting Library but should only be allowed to see data pertinent to their role. While dynamic templates served a necessary purpose, they created a problem: the library became unsustainable.

**Methods:** The aim of this project was to deal with the growing number of templates the Epic Reporting Team manages and thus, the number of templates and reports end-users can access. Each template went under a strategic review to determine its necessity and a report template configuration standard was created. The number of reports available on the template, how often they had been run in the past year, and how many users ran these reports were all evaluated to determine if a template was to be retired or re-configured to meet the newly created standards. All templates that were retained underwent a simplified name change with one designated parameter that would be dynamic for each user based on their access at the organization level. By updating all templates so they were all dynamic by the same level of access, this allows the Reporting team to update all templates at once rather than each template individually, should any changes need to be made. This ensures data integrity in that all reports created are held at the same organizational standard for access.

**Results:** The work done during this project is most accurately represented by comparing the number of custom templates in the library before, at 625, and the number of custom templates after, at 218. This means that of the templates that were able to go under review, sixty-five percent were deemed unnecessary. Of the 218 templates that were approved, all 218 had to be reconfigured according to the new template standards. A notable chain reaction to this sixty-five percent reduction was the decreased number of overall reports in the library. Because reports are created from templates, inactivating templates would in turn, inactivate reports. With no review process in place, the library housed 8,289 reports, but with the review process of templates, it decreased to 4,453 (a forty-six percent reduction).

**Discussion:** As of today, it is thought the more data the better; however, the amount of healthcare data is growing at an exponential rate and the ability to access and analyze it in a meaningful way quickly becomes overwhelming. With a sixty-five percent reduction in templates and a forty-six percent reduction in reports, end-users can find their reporting needs with ease.

Because of this work, Reporting now has a framework for subsequent projects to utilize. As end-users can access reports in other ways besides the Reporting Library, each of these channels are now also undergoing review in a similar fashion to identify ways to optimize accessibility.

The work of this project resulted in a functional and sustainable Reporting Library with the ongoing work to evaluate all report repositories. Data integrity has been engrained in the process of report and template creation so it will continue to help keep our patient’s data secure. This work allows end-users to efficiently navigate the reporting suite to obtain crucial information needed to carry out their duties and ultimately, enhance patient care. This has helped our network caregivers to achieve the network goal of, “Exceptional Care, Simply Delivered.”

**P6     Stop! Hand tremors? Just listen. She's 29 and ALS is her condition.** (Courtney Marie McNeill, DO; Stewart Brown, MD; Kyle Morlan, DO; Louis Winternheimer, DO)

**Introduction:** Amyotrophic lateral sclerosis is the most common motor neuron disease in adults, with an average age of onset at 55 years. It is a progressive neurodegenerative disorder with an average lifespan of 3-4 years from onset. The incidence of ALS ranges between 1.5 and 2.7 per 100,000 person-years and has a male-to-female ratio of 3:1. The reported risk factors for ALS include advanced age, male gender, and family history. The initial clinical manifestation typically occurs as asymmetric limb weakness, most frequently in the upper extremities.

**Case Presentation:** A 29-year-old female with Bipolar I Disorder presented with a worsening tremor in her right 4th-5th digits and loss of right hand coordination. Her initial EMG was negative; therefore, drug-induced Parkinsonism was presumed. After failing Propranolol and Benztropine, the patient's Aripiprazole dosage was reduced. Three months later, the patient's handwriting deteriorated and a positive Hoffman's sign was noted on exam. Subsequent cervical X-rays and brain MRI were negative, and therefore neurology recommended discontinuation of Aripiprazole. The patient transitioned to Quetiapine and Vortioxetine and began PT/OT/Speech. After losing control of bowel and bladder, a spine MRI was negative. Worsening symptoms necessitated a repeat EMG, which then revealed upper motor neuron disease. After excluding other causes via lumbar puncture, she was formally diagnosed with ALS per the revised El Escorial World Federation of Neurology criteria.

**Discussion:** This case illustrates an atypical presentation of ALS in a patient without risk factors, which led to a delay in diagnosis. The patient's psychiatric illness and the more probable diagnosis of drug induced Parkinsonism took nearly 10 months to reach a final diagnosis. Despite initial negative evaluation, this case displays the importance of repeating testing, vigilance in work up, and consideration of less likely diagnosis when your patient fails to improve or deteriorates.

**P7      Modafinil induced mania in a bipolar patient on mood stabilizers.** (Magdoline Daas, MD; Kexia Van, DO; Amna Siddique, DO; Clinton Knapp, DO; Destiny Spence, MD; Sagi Mathew, MD)

**Introduction:** Modafinil is a wakefulness promoting agent that is FDA-approved for use in narcolepsy, excessive daytime sleepiness, and shift work sleep disorder. It also has numerous off label psychiatric uses to help with fatigue, cognitive improvement, and bipolar depression. Its mechanism of action involves stimulation of histamine, norepinephrine, dopamine, and orexin systems in the brain to heighten arousal. Although the most common side effects of modafinil involve the GI system, there are several reports (18 case reports on PubMed) of modafinil inducing mania in patients with a history of psychiatric and neurologic disorders.

**Case Presentation:** The patient is a 25-year-old male with a history of bipolar disorder and anxiety that was controlled on lamotrigine and paliperidone. He was later started on modafinil to improve energy, concentration, and sedation secondary to bipolar disorder and psychotropic medications. This induced a manic episode and crisis event that then improved after cessation of modafinil. It was later thought that the patient may also have been abusing modafinil due to its euphoric effects. Thus, it is unknown if the patient's manic episode was caused by the use or the abuse of modafinil.

**Discussion:** To our knowledge, this case is the first concerning the risk of using modafinil in a previously controlled bipolar patient on mood stabilizers. Although modafinil can be a useful medication in treating fatigue, sleepiness, and cognitive slowing in patients on psychotropic medications, it is important for clinicians to be aware of all the effects of modafinil, including potentially inducing mania in previously stable patients. It is also important to be aware of the abuse potential of this medication and for clinicians to factor this in when prescribing it to their patients.

**P8      Iron deficiency in catatonia: A case study of iron deficiency resolving with treatment of catatonia.** (Ramya S. Yeleti, BA; E. Ann Cunningham, DO; Areef Kassam, MD; Gabriel Martinez, DO)

**Background:** Catatonia is an acute condition defined as an inability to move normally. Often, it is idiopathic or linked to mood disorders, schizophrenia, and other medical disorders. The first line treatments for catatonia are lorazepam and ECT. While most cases are idiopathic in nature, some case



reports have noted a connection with iron deficiency. This case showcases a 23-year-old male presenting with symptoms of catatonia, psychosis, and agitation in addition to iron deficiency.

**Case Presentation:** Patient initially presented to the acute hospital setting with psychosis along with dangerousness to self and others. Additionally, he exhibited symptoms consistent with catatonia, scoring a 13 on the Bush-Francis Catatonia Rating Scale. The patient had a full medical work-up, which was unremarkable save for low iron. He was initially trialed on antipsychotics, which did not result in improvement of symptoms. Subsequently, he was started on lorazepam to address symptoms of catatonia. He was noted to have a robust response to treatment, which continued to improve during hospital course. A repeat iron level was obtained upon symptom resolution, which showed normalization.

**Discussion:** This case highlights a possible connection between catatonia and serum iron levels. This catatonic patient had low iron that normalized after his catatonia was treated with lorazepam. Previous case studies have shown an association of decreased serum iron in the setting of catatonia. This shines a light on a potential area of research for identification, monitoring, and treatment of catatonia in patients with low serum iron.

**Conclusion:** Treatment of catatonia with benzodiazepines appears to have influence over iron stores. Further studies will be needed to understand this relationship.

**P9 Clinic policy for opioid contract compliance.** (Kexia Van, DO; Alex Sporleder, DO; Jacob Holtz, DO; Jacklyn Kiefer, DO; Valerie Melton, DO; Jennifer Buitendrop, MA; Christina Ingels, MA; Layla Ebeyer; Nicole Sickie, RN)

**Introduction:** In response to the rising opioid epidemic in Indiana, the state government instituted new guidelines for opioid prescribing effecting 2014 (844 IAC 5-6) with additional compliance expected in 2018. These regulations addressed the main factors of safe and effective prescribing practices that include the following: patient assessment, non-opioid treatment options, patient information consent, patient follow-ups, INSPECT reports, drug monitoring tests, and daily high dose threshold and treatment agreement. In order to comply with state law, our clinic has an “Opioid Policy for CSOFM” that entails the use of an opioid contract between patient and provider, as well as the use of banners and dot phrases as key identifiers in patient charts.

**Objective:** To achieve a 75% patient compliance rate with the “Opioid Policy for CSOFM” over a 6 month time frame.

**Methods:** Using Epic EHF, patients who received an opioid prescription over the year of July 2018-June 2019 from a provider at Community South Osteopathic Family Medicine Residency were identified. Those patients were then contacted to schedule “pain management” appointments to establish a contract with their PCP.

**Results:** Out of 177 total patients identified, 52 (29.3%) of them were not in compliance with the policy at the start of the project, meaning they were not on an opioid contract and did not have necessary banners/dot phrases within their chart. Over a 6 month period, our clinic was able to reach the goal of 75% compliance. Furthermore, over a total time frame of 12 months, we were able to reach 100% compliance. We have maintained that since the finishing of this project.

**P10 Case study: Review of failed triple arthrodesis due to hardware infection, converted to tibiototalcalcaneal fusion.** (Paige Danner, DPM; Jay Badell, DPM; Daniel Elmes, DPM)

**Introduction:** Surgical site infections account for 38% of all nosocomial infections. Post-operative hardware infection often leads to no other option but to remove the hardware. This can lead to

catastrophic events and require more complicated and invasive surgery for the patient. This case study looks at a 70-year-old male who failed triple arthrodesis due to the removal of infected hardware. The patient had consistent pain following removal of hardware with chronic arthritis of multiple joints of the foot. This case study follows the treatment plan of this specific patient who underwent tibiototalocalcaneal arthrodesis as an attempted salvage procedure.

**Case report – History and Physical examination:** This case study reviews a 70-year-old male with history of diabetes and hypertension that had removal of infected hardware following a triple arthrodesis procedure in August of 2017 to the right foot. He presented to clinic in September of 2019 with an A1C of 6.4% and physical examination showed 10 degrees of valgus at the heel with almost no ROM of the subtalar (STJ) or ankle joint. The patient had an antalgic gait and was walking almost solely on the tibia with abductory twist present. A computed tomography (CT) scan was ordered that showed successful solid fusion of the talonavicular joint (TNJ) with failed fusion of the subtalar and calcaneocuboid (CCJ) joints. CT also showed severe osteoarthritis of the posterior STJ, CCJ, ankle joint and severe hindfoot valgus.

**Case report – Treatment timeline:** August 2017: Patient underwent Triple arthrodesis procedure. December 2017: Removal of hardware due to infection; successful fusion of the TNJ with failed arthrodesis of the STJ and CCJ. 2018-2019: Patient attempted to wear custom bracing to help with pain but ultimately failed conservative therapy. November 2019: Tibiototalocalcaneal (TTC) arthrodesis with intramedullary (IM) nail, CCJ fusion, and first metatarsal-cuneiform (TMT) joint fusion. January 2020: 7 weeks status-post surgery there appears to be fusion of the TTC site, slight bony apposition of first TMT joint and calcaneocuboid joint. The patient has two medial ankle wounds that are progressing well. He will continue to remain non-weight bearing until bony apposition is noted across the first TMT joint fusion site and calcaneocuboid joint fusion sites.

**Discussion:** Tibiototalocalcaneal arthrodesis is an excellent procedure in cases of bone loss from the talus, joint destruction of the hindfoot, and osteoarthritis of the ankle and subtalar joint. However, as with any surgery there are always post-operative complications that can occur and this type of procedure should be reserved for patients with severe deformity of the hindfoot. Important points to consider would first be patient selection, as patient with several comorbidities will most likely require a longer healing period. Also, since there is not a single definitive technique described, careful selection of which technique to use on your patient should be reviewed extensively. Tibiototalocalcaneal arthrodesis is important to the field of podiatry because it is a viable salvage procedure to consider when you feel you have exhausted all other options. Clinically, this specific patient is still undergoing healing but overall is expected to make a full recovery.

## **P11 Quadiceps tendon rupture & repair rehabilitation using blood flow restriction training. (Joel Novak, PT, DPT, CSCS)**

**Introduction:** Utilizing BFR has been shown in numerous studies to promote muscle growth, strength, and minimize atrophy. In spite of a wide range of therapeutic options for the management of quad tendon tear/repair and rehab described in the literature, the efficacy of those available therapies is not well established in regards to not only minimizing muscle loss, but in the actual building of muscle size. It was the hypothesis of the treating clinician to apply BFR training while following the standard surgical protocol precautions in hopes of mitigating atrophy and potentially making gains in muscle size and quadriceps hypertrophy.

**Objectives:** The purpose of this case study was to look at the effects of Blood Flow Restriction (BFR) Training and its impact of quadriceps muscle hypertrophy and strength following a quad tendon rupture and subsequent repair during a course of physical therapy post-operatively.

**Methods:** It is common to restrict knee range of motion, weight bearing, ambulation and load/force in the weeks and months following a quad tendon surgical repair, as a number of precautions exist to ensure the integrity of the repair is not compromised. It is also well established in the literature that disuse atrophy occurs in as little as 48 hours after a surgical procedure. As such, BFR was utilized in a typical and widely accepted program of sets/ reps to fatigue with given exercises. This was completed in a single subject case study design of a 36-year-old male who tore his right quad tendon with heavy squatting in the gym with subsequent surgical repair.

**Results:** At onset of PT, the patient had visible quad atrophy, inability to complete Active Straight Leg Raise (ASLR) without lag, inability to ambulate without brace and crutch due to quad insufficiency and “giving way” moments. After 1 week (3 sessions of BFR), the patient was able to demonstrate visible quad muscle tone improvements, ASLR without lag, and ambulate without device. The patient was able to complete low-level resistive exercises after an additional week of BFR (6 total sessions) and ambulate without the brace – all ahead of known post-operative dysfunctional abilities and traditional persisting quad atrophy.

**Discussion:** While the patient made measurable changes in quad strength, activation and size with utilization of BFR + exercise, numerous limitations still exist. Namely, this individual had additional interventions including range of motion, gait training and manual soft tissue mobilization to address concomitant concerns of any typical post-operative individual in rehab.

**Conclusion:** The patient showed measurable and observable quadriceps muscle size and hypertrophy changes in very short time tables compared to traditional growth with low load exercises without BFR. While this is a case study with retrospective data, it is another example in the depth and breadth of the current BFR evidence showing successful application in muscle growth and strength development in a population who cannot tolerate heavy loading that is typically need for muscle adaptations.

## **P12 Approach to management of pseudocyesis in a severely mentally ill trans-gender female.**

(Jacob P. Mulinix, DO; Jennifer Obrzydowski, MD; Taimur Mian, MD; Kimberly Jones, LCSW; Michael Miller, MD; Alicia Daumeyer, DO)

**Objective:** Pseudocyesis is a somatic syndrome which mimics gestation without objective evidence of pregnancy; one firmly believes they are pregnant when they are in fact not. Most of our understanding of this condition's etiology and management comes from cis-gendered individuals. We present a case of a transgender female with pseudocyesis, which sheds light on differences clinicians have to consider in managing this unique population.

**Background:** Several theories exist regarding the etiology of pseudocyesis, including physiological, psychological, and socio-cultural factors. There have been successful documented management strategies, most notably by confrontation of delusions and treatment of underlying depression. With previous research focusing on cis-gendered individuals, much of what is known about pseudocyesis does not apply to our case of a trans-gendered female, and therefore needs to be further explored.

**Case:** Patient is a 28-year-old trans-gender female with a history of pseudocyesis and schizoaffective disorder bipolar type who presented to Crisis in a manic episode with psychosis due to non-compliance with medications. Patient presented with androgenous features of both male and female gender. She expressed delusions of being pregnant. Thought process was tangential and disorganized with loose associations. Physical exam was unremarkable, apart from abdominal distension. With anti-psychotic treatment, mania and thought process improved. However, pseudocyesis was resistant to interventions, including medications and confrontation of delusion; this subsequently complicated the course of inpatient treatment.

**Discussion:** The etiology of pseudocyesis in cis-woman - discussed in the literature - is thought to be psychosocial and biological in etiology. Psychosocially, it may be that in some pro-natalist cultures women who are infertile may develop pseudocyesis unconsciously to feel accepted and purposeful. Documented biological causes include hyperprolactinemia and abdominal discomfort from gall bladder disease. However, this understanding is limited when treating transgender females with pseudocyesis, and different psycho-social and biological etiologies must be investigated.

**P13 Assessing the safety of atypical antipsychotic medications in pediatric patients diagnosed with ADHD.** (Shannon James, PharmD; Shilpa Puri, MD; Laura Ruekert, PharmD; Benjamin Coplan, DO; Hayley Robertson, PharmD Candidate; Ramya S. Yeleti, BA; Yazan Kadi, PharmD candidate)

**Introduction:** The comparative safety of atypical antipsychotic medications for ADHD-associated irritability is unclear; however, the potential for adverse effects including involuntary movements, cardiovascular changes, and metabolic disturbances is well-established. The incidence of metabolic disturbances is especially concerning in the pediatric population as the development of metabolic syndrome has been associated with an increased risk of future cardiovascular events. Characterizing the incidence of adverse effects of atypical antipsychotics in the pediatric ADHD population can inform current prescribing practices and improve patient safety.

**Objectives:** The objectives of this study are to compare the incidence of metabolic and non-metabolic adverse events in pediatric patients with ADHD before and after initiating atypical antipsychotic therapy as well as identify factors that may predispose an individual to an adverse event.

**Methods:** This study will be a retrospective chart review at a multi-site health system. Individuals will be included if they are less than 18 years of age with a diagnosis of ADHD and are prescribed an atypical antipsychotic medication for at least three consecutive months by a provider in our health system between February 2018 and February 2019. Exclusion criteria included being 18 years of age or older and/or being prescribed an atypical antipsychotic medication for fewer than three consecutive months. Data collected will include demographics, pre-existing conditions, psychiatric diagnoses, atypical antipsychotic treatment, concurrent medications, and metabolic and adverse event monitoring parameters at baseline, three months after initiating antipsychotic treatment, and at antipsychotic discontinuation. Descriptive statistics will be utilized to identify correlations and report trends in adverse events across patient groups. Patients with treatment emergent adverse events from atypical antipsychotics will be identified and compared to patients without adverse events. Patients with and without adverse events will be characterized based on possible contributing and predisposing factors.

**Results and Discussion:** Will be presented at the 2020 Multidisciplinary Scholarly Activity Symposium.

**P14 Subsequent ACL injury and return to sport in school-age patients after ACL reconstruction with contralateral patellar tendon graft.** (Sarah Eaton, PT, DPT, ATC, LAT)

**Introduction:** Subsequent injury after ACL reconstruction is devastating to young athletes. Patients are being advised to wait up to 2 years before returning to sport. We hypothesized that subsequent ACL tear rate to either knee will not be different based on time of return to sport and females would have a higher rate of contralateral ACL injury.

**Methods:** 851 patients who were 18 years old at the time of ACL reconstruction with contralateral patellar tendon graft were enrolled. KT-1000 arthrometer testing recorded postoperative stability. Patients reported pre- and post-operative level of sport participation, and time of return to sport using an activity rating scale. We recorded subsequent ACL injury to either knee within 5 years of surgery.

Injury rates were evaluated based on sex and time to return to sport before or after 6 months after surgery, and correlation of time of return to the time of injury was calculated.

**Results:** 88% of patients returned to their pre-surgery level of sport. The subsequent ACL graft tear rate was 9.3% in females and 11.4% in males ( $P=.42$ ). The contralateral ACL tear rate was 10.6% in females and 5.7% in males ( $P=.043$ ). For males and females, the rate of subsequent ACL graft tear or contralateral ACL tear was not different based on time or return. There was no correlation between time of return and time of subsequent tear to either knee for males and females.

**Conclusion:** ACL reconstruction with contralateral patellar tendon graft allows patients to return to their pre-surgery level of sport. The rate of subsequent graft tear was not different based on sex, but the contralateral tear rate was higher in females. The rate of graft tear or subsequent contralateral tear was not different based on time of returning to sport. There was no correlation of time of return to time of subsequent injury.

**P15 Conceptualizing psychosis with the act matrix.** (Wendy Lynn Forrest, B.S., M.S.; Areef Kassam, MD; E. Ann Cunningham, DO)

**Introduction:** While the efficacy of Acceptance and Commitment Therapy (ACT) in the treatment of mood disorders has been well established in the literature, its utilization in the outpatient treatment of patients suffering from psychosis warrants further attention.

**Objectives and Methods:** The primary objective of this retrospective chart review is to describe the use of the ACT Matrix in an outpatient therapy program in a 22 year-old female patient diagnosed with Major Depressive Disorder with psychotic features; the patient endorsed a grandiose delusion of being "psychic" and of being "the only one who knew when the world would end". The review of the case was done through the EMR. The data collected included progress notes from both her inpatient stay, and outpatient therapy sessions.

**Results:** After acute stabilization, the patient participated in an outpatient program employing ACT methodology. Interestingly, the patient conceptualized her grandiose delusion within the ACT Matrix. Her conceptualization of the delusion as a manifestation of a fear of change, concern for future, and lack of self-acceptance led to a positive therapeutic response with improved insight and acceptance of her mental health.

**Discussion:** Clients suffering from mood or thought disorders often lack the skills to address rigid patterns of thoughts and behaviors. The ACT matrix encourages clients to address their inflexible views of self by utilizing self-acceptance, mindfulness, and committed action towards value-oriented goals. While its effectiveness in the treatment of mood disorders has been established, its therapeutic role in addressing delusions and other symptoms of psychosis warrants further investigation.

**P16 Using education to create a pipeline for BSN students into primary care practice.** (Julie Christine Blazek, MSN; Karen Elsea, MSN; Tia Bell, DNP)

**Purpose:** To develop a primary care nursing minor and concentration for BSN students to create sustainable solutions to address the primary care nursing workforce shortage.

**Background:** Due to growing challenges in healthcare and the complexity of primary care management, a workforce competently trained to address these health care issues is a necessity. In primary care settings, the Registered Nurse's scope of practice is limited such that these nurses are not working to the full capacity of their license. Also, noted is the lack of undergraduate nursing curricula that prepares for primary care practice.

**Description:** Nursing educational programs need an increased focus on care coordination, chronic disease management, transitional care nursing, and disease prevention, as well as, mental health and substance use screening and treatment. A nursing curriculum gap analysis was completed based on the Scope and Standards of Practice for Professional Ambulatory Care Nursing (2017) to identify student learning needs. Results identified learning needs in the areas of roles and professional standards for ambulatory care nursing, information technology and communication, and coordination of care and transition management.

**Methods:** In partnership with a local healthcare system, nursing faculty developed three nursing elective courses including didactic and 50 clinical hours per course. Options for a minor or concentration were developed.

**Evaluation/Outcomes:** Nine students were enrolled in the first primary care overview course. Clinical sites and preceptors were trained and secured for clinical rotations. Standardized tools are being utilized to measure student perceptions of their curriculum and preceptors, including the self-efficacy and performance in self-management support instrument. Course reflections will also be utilized for evaluation. Long-term evaluation will include employment rates for new graduates into primary care nursing positions.

**P17 Type 2 diabetes: It might cost you more than an arm and a leg.** (Lauren Rose, DO; Cody Owens, DO; Gretchen Johnson, DO; Rachel Snell, MD; Michael Miller, MD; Habiba Choudhry, MD; Louis Winternheimer, MD)

**Introduction:** Twelve to 14 percent of the US population has a diagnosis of diabetes mellitus type 2 (DM2) although this has plateaued recently as the rate of obesity has decreased. An elevated fasting glucose greater than 100 increases the 10 year risk of developing DM2 by at least 20 percent. Half of patients in primary care have DM2 or prediabetes (30 million people and 86 million, respectively). It is estimated that one third of the population will have DM2 by 2050. Cost to patients can vary based on insurance status: uninsured, Medicare, Anthem Medicaid, Anthem HIP, Private insurance (Anthem). Information gleaned from this study can be used as an informational tool for both providers and patients, to assist in discussions of preventing DM2 and the associated costs.

**Methods:** Cost of diabetes-related care was analyzed using the following sources: FMC fee schedule, FQHC fee schedule, MACL fee schedule, Medicare representative, Anthem representative, clinical pharmacist. The following variables were assessed for cost to patient with different insurance types: Four level 4 physician visits, ophthalmology visit, medical equipment: glucose monitor, lancets, strips, pen needles, shoes (optional), lab tests: 4 POCT hemoglobin A1C, microalbumin, lipid panel, CMP.

**Results:** The cost of DM2 care over one year can be substantial for any patient, ranging from \$377.86 for privately insured patient, to \$405.86 for Medicare, to \$1625.56 for uninsured patient. The cost varied based on their insurance status.

**Discussion:** This information could be used to assist primary care physicians in their discussions with patients regarding preventing DM2. Educating patients and providers regarding the potential costs could be a useful motivating factor to help initiate effective lifestyle changes. Costs estimated in this project are underestimates due to the lack of including variables such as deductibles, cost to patient of transportation, dietary changes, exercise program, and ancillary consults such as podiatry, dietician, and ophthalmology. This is important given the rise in both pre-diabetes and DM2 in our population.

**P18 Impact of food delivery intervention on diabetic and heart failure readmission rates.**

(Alexandria Sporleder, DO; Kimberly Jones, LCSW; Kasey Windnagel, PsyD, HSPP; Colten Smouse, DO; Skyler Gick, DO; Nicole Schmitt, DO)

**Introduction:** Research has previously demonstrated that medically tailored meal delivery programs can reduce health care utilization (e.g. inpatient admissions; emergency department visits) and reduce medical spending (Berkowitz, et al., 2018), which are important considerations as health care systems transition to accountable care reimbursement. For example, Berkowitz, et al. (2018) found that those patients enrolled in a medically tailored meal program saved an average of \$570 per month in medical spending compared to patients not enrolled in said program. Furthermore, receipt of medically tailored meals was associated with fewer ED visits (adjusted incidence ratio: 0.30) and fewer inpatient admissions (adjusted incidence ratio: 0.48) (Berkowitz, et al., 2018).

**Objectives:** To evaluate the impact of a 30-day medically tailored meal home delivery intervention on health care utilization rates (e.g. inpatient admissions; emergency department visits) and health outcomes (e.g. A1C levels; weight) in patients diagnosed with type 2 diabetes mellitus and congestive heart failure at Community Health Network.

**Methods:** Electronic medical record review was conducted for patients who participated in the meal home delivery program and data related to health care utilization and health outcomes was obtained.

**Results:** Contrary to the results of similar studies, data analysis revealed that providing medically tailored meals to patients with type 2 diabetes mellitus or chronic heart failure did not significantly affect health care utilization or health outcomes.

**Conclusion:** Despite the lack of statistically significant results, the data analysis processes did reveal numerous learning points which could be applied to implementation of similar programs. Based on that which was learned, it is suggested that increasing the duration of meal intervention, improving the process by which patients are enrolled, and coordinating more thorough patient assessments will result in more positive findings for those who seek to implement similar interventions.

**P19 Victim attendance at counseling post sexual-assault.** (Deb Lyons, MSN, RN)

**Introduction:** Victims of sexual assault face many challenges overcoming the trauma of rape. Professional counseling has been shown to be effective at mitigating this yet the majority of victims do not seek help. The lack of effective coping related to the sexual assault has long term negative consequences for the individual and society.

**Methods:** This investigator conducted a quasi-experimental, quantitative analysis of non-comparative groups to examine counseling attendance post sexual assault. The first three months baseline data collection occurred with counseling only recommended, as was current practice. The second three months, Sexual Assault Nurse Examiner's (SANE) scheduled an appointment for counseling prior to discharge from the forensic exam. The project examined if the scheduling of an appointment would increase the likelihood of victim attendance at counseling.

**Results:** Although the number of participants was too low to allow for statistical analysis, participation in counseling post sexual assault was higher than nationally reported averages.

**Conclusion:** Results were supportive of evidence into barriers and facilitators found in the literature. These findings suggest the forensic nurse is in a powerful position to positively influence victim attendance at counseling.

**P20 Leveraging an academic-private partnership to combat the current and predicted perioperative nursing shortage.** (Toni Morris, DNP, MSN, RN; Karen Elsea, MSN, RN; Patsy Poehler, RN, CASC, CAIP; Maribeth Hart, MSN, RN, CNOR; James Collier, RN, CLSS-HC)

**Introduction:** Surgery departments are experiencing an increase in surgical volume and a predicted nursing shortage. This creates a major challenge to hospital administrators and significantly impacts the perioperative nursing specialty. A team was formed with representatives from Community Health Network (CHNw) and the University of Indianapolis (UIndy) to address this critical issue. The team analyzed perioperative nursing content in the current undergraduate curriculum and decided to pilot a summer elective course with resources contributed by both institutions.

**Methods:** Lack of exposure to perioperative nursing in the undergraduate curricula demands innovative solutions to address this crisis and ensure adequate perioperative patient safety. Current nursing students were surveyed to identify and gauge interest in a perioperative summer elective. Students were recruited and UIndy faculty created the course curriculum in conjunction with the AORN Perioperative Fundamentals course and CHNw guidance. The Fundamentals of Perioperative Nursing Practice elective was piloted in the summer of 2019 with CHNw and UIndy educators partnering to jointly teach the course. Student expectations and perceptions were assessed via pre and post surveys.

**Results:** Feedback suggests exposure to the perioperative nursing as part of undergrad curricula is an educational, rewarding, and positive experience. Subjective (student feedback) and objective data (quiz scores, pre/post survey and course evaluations) were analyzed.

**Discussion:** The elective course creates greater undergraduate student exposure to the role of the perioperative registered nurse while developing a workforce pipeline. This can help students broaden their perspective and identify/solidify an interest in the specialty. Utilizing a standardized, evidence-based, on-line curriculum to introduce a student nurse to the perioperative specialty may help facilitate transition to practice upon hire into the perioperative environment for the novice nurse. Clear expectations and insight into the specialty may create a perioperative nurse pipeline for the institution, help identify employee-unit fit (increase new-hire retention), and decrease turn-over.

**P21 Early recognition and treatment of *Citrobacter koseri* meningitis prevented life threatening complication for a newborn: A case report.** (Wenjie Zhang, DO; Kasey Windnagel, PhD; Michael Welling, MD; Shilpa Puri, DO; Michael Lewis, DO; Kelsey Cowden, DO; Eugene Justus, DO)

**Introduction:** Neonatal Bacterial Meningitis is a life-threatening condition associated with a high mortality and morbidity rate. *Citrobacter koseri* is an extremely rare cause of meningitis with <20 cases in last 10 years; however, it has a unique propensity for invading the central nervous system, causing brain abscess in 75% of patients with a 30% mortality rate. Among those who survived, more than 80% had neurological deficits. This case report demonstrated a favorable clinical outcome by recognizing early clinical signs of neonatal bacterial meningitis.

**Case Presentation:** This is a 4-week-old male born at 38 weeks +3 days via uncomplicated SVD. He was admitted due to high fever, irritability, and neutropenia. Initial infectious work up includes an unremarkable lumbar puncture and urine analysis. Despite a favored viral illness etiology, empiric antimicrobial therapy (ampicillin and cefotaxime) was initiated. CSF culture revealed a few *Citrobacter* on the next day, but MRI brain showed no brain abscess. Because of continued fever, antibiotics were changed to cefotaxime and gentamicin. Later, patient's condition improved significantly, and he was discharged home without complication after 21 days.

**Discussion:** Very limited case studies were available for *Citrobacter* meningitis. Thus, the outcome largely varied with the timeline of diagnosis and treatments. One study showed 84.8% of late onset



cases ended with brain abscess; however, none of the vertically transmitted early onset cases developed a brain abscess, as these cases were detected immediately after birth while still in the hospital. Our case presented a significant clinical challenge of diagnosing bacterial meningitis due to a late onset and a negative lumbar puncture. Based on an osteopathic holistic evaluation of the patient, we decided that it was in the patient's best interest to start empiric antibiotics. Later, the culture results supported our suspicions and a devastating outcome was averted.

**P22 When a person with bipolar disorder and adrenal insufficiency misuses steroids.** (Christine Hopp, DO; Kimberlie Wells, DO; Kierra Hayes, DO)

**Introduction:** The prevalence of bipolar disorder and adrenal insufficiency are <5% and <1% respectively. Thus having both is very rare and there is no established relationship between having both bipolar disorder and adrenal insufficiency. It is well known that corticosteroids can cause mania and/or psychosis in those without bipolar disorder—the risk of precipitating mania in those who have already been diagnosed with bipolar disorder is higher.

**Case Presentation:** A 41-year-old female with a history of bipolar disorder and adrenal insufficiency treated with corticosteroids presented to a community hospital after a seizure and with paranoid delusions. She was initially stabilized on a medical unit after her presumed seizure and hypotension, and then transferred to a psychiatric unit where she was inpatient for 15 days without significant improvement in her symptoms. She was diagnosed with bipolar disorder a month prior to this admission, though may have been having psychiatric symptoms since her twenties per family. While in her twenties she was diagnosed with an unclear rheumatological condition and was treated with prolonged corticosteroid treatment. She developed secondary adrenal insufficiency after this prolonged corticosteroid treatment, and despite the initial rheumatological condition for concern being ruled out, she continued taking corticosteroids. During the patient's twenties and thirties, it was documented that she would frequently overuse her steroids and once appeared psychotic due to this. After her initial psychiatric admission she was re-hospitalized on a psychiatric unit two weeks following that for another 17 day stay. During this time she was slowly tapered off of steroids due to concern that they were causing or worsening her manic symptoms. Her treatment was complicated by her request for higher amounts of steroids due to several physical complaints. Additionally, the taper of steroids needed to be lengthy due to her history of being on high dosages for a long duration of time and risks associated with discontinuing steroids rapidly.

**Discussion:** This case required integrative care between psychiatry and endocrinology and the balance between improving psychiatric symptoms while ensuring the patient was medically stable to continue tapering her off of corticosteroids. The taper continued outpatient and the patient's manic symptoms continued to improve. This case is significant because it discusses management of a medical condition that requires medications that inherently can precipitate or worsen symptoms from bipolar disorder. This case emphasizes the conundrum of treatment of adrenal insufficiency in a patient with bipolar disorder and the need for astute medical and psychiatric care in complicated patients.

**P23 Physical therapy management of patellofemoral pain syndrome in a patient with Ehlers-Danlos Syndrome: A case report.** (Devyn Marie Fletcher, DPT)

**Background:** Patients with benign joint hypermobility syndrome, such as Ehlers-Danlos syndrome (EDS), have been shown to have impaired proprioception, particularly in the knee joint. Poor proprioception can lead to pain and functional deficits. It has also been shown that patients with EDS have impaired lower extremity muscle strength, increased fatigue with activities, and higher pain ratings with activities.

While there is evidence that physical therapy helps to improve joint proprioception in the hypermobile population, few studies have been done to guide the physical therapy management of patients with EDS. The APTA recently released a clinical practice guideline (CPG) for the treatment of patellofemoral pain syndrome (PFPS) that encourages a multi-modal treatment approach emphasizing exercises targeting the hip and knee, as well as use of patellar taping and foot orthoses for short term treatment. There is no evidence that this treatment model would be effective for a patient with PFPS with a hypermobility type syndrome. The purpose of this case report is to discuss the effectiveness of this treatment approach to PFPS in a patient with EDS.

**Case Description:** A 32-year-old female presented with bilateral PFPS and a diagnosis of EDS. Functional deficits included difficulty with stairs and required use of a cane for ambulation. The patient was treated for 11 visits over 6 weeks. A multi-modal treatment approach was used that combined taping and open chain exercises in the acute phase with a progression to weight-bearing activities to help the patient return to prior level of function.

**Outcomes:** Outcomes were tracked in accordance to the CPG and included: strength, range of motion (ROM), functional activity tracking, numeric pain rating scale, and self-reported outcomes. At discharge, the patient demonstrated pain-free knee ROM, full hip/knee strength, a Focus on Therapeutic Outcomes (FOTO) score above predicted value, and was ambulating without a cane.

## **P24    Microvascular oxygenation response during paddling graded exercise test in breast cancer survivor dragon boat racers.** (Brooklyn Herbert, BS; Trent Cayot, PhD, CSCS, EP-C; Klika Riggs, PhD, FACSM)

**Introduction:** Cancer treatment is associated with peripheral pathologies including altered blood flow and vascular dysfunction. A pilot study was conducted to measure the microvascular oxygenation response during maximal exercise in a group of cancer survivors.

**Purpose:** Investigate the differences that paddling side (paddling side, PS; non-paddling side, (NPS) and treatment side (treatment side, TREAT; healthy side, HEAL) has on near-infrared spectroscopy (NIRS) responses during a unilateral paddling graded exercise test in breast cancer survivor dragon boat racers.

**Methods:** Thirteen breast cancer survivors/racers ( $56 \pm 9$  years,  $1.65 \pm 0.06$  m,  $76.5 \pm 11.0$  kg) performed a custom unilateral, discontinuous graded exercise test on a stationary rowing ergometer to volitional fatigue. Tissue oxygenation saturation (StO<sub>2</sub>) and total hemoglobin concentration (THC) were measured via NIRS from the posterior deltoid muscles during the test. Paired t-tests were used to examine if treatment side had an effect on StO<sub>2</sub> or THC and if paddling side had an effect on THC responses at maximal intensity. Due to non-normally distributed data, a Wilcoxon Signed Rank Test was used to determine if paddling side had an effect on StO<sub>2</sub> at maximal intensity. Significance was established *a priori* at  $p < 0.05$ .

**Results:** Paddling side did not affect StO<sub>2</sub> (PS=  $-5.2 \pm 15.7\%$ , NPS =  $-13.5 \pm 21.7\%$ ,  $p = 0.094$ ) or THC (PS=  $0.14 \pm 0.19$ , NPS =  $0.15 \pm 0.21$ ,  $p = 0.425$ ). Treatment side had a significant, moderate (ES= 1.12) effect on StO<sub>2</sub> (TREAT=  $-0.0 \pm 16.1\%$ , HEAL=  $-18.7 \pm 17.3\%$ ,  $p = 0.008$ ). Treatment side did not affect THC (TREAT=  $0.13 \pm 0.20$ , HEAL=  $0.16 \pm 0.19$ ,  $p = 0.313$ ).

**Conclusion:** Based upon the pilot results, it would suggest that the exercising muscles on the breast cancer treatment side may have a residual impaired ability to use oxygen for energy production during maximal intensity exercise.

**P25 Status report for CPN Post Discharge Clinic North in 2019.** (Kathryn Pelkey, PharmD; Antoinette Barnes, MD; Heather Sigler, LPN; Judy Mpistolarides, LCSW)

**Introduction:** Reducing readmission rates has been a priority in healthcare systems across the country. It is estimated that nearly 20% of Medicare patients are readmitted within 30 days of discharge and hospital readmissions cost Medicare billions of dollars each year. It is important to provide adequate support and resources during the transition from hospital to home for patients to successfully care for themselves and prevent readmissions. The Community Physician Network (CPN) Post Discharge Clinic North (PDC North) began providing transitional care management (TCM) services in May 2019 to help reduce readmission rates for high-risk patients at Community Health Network (CHNw). PDC North is the first clinic within the Network designed solely for transitional care. This poster will outline our program, describe the role of each team member, provide examples of interventions, and report the readmission rate of clinic patients in 2019.

**Methods:** PDC North is the first clinic in CHNw with the sole purpose of providing TCM services and started seeing patients in May 2019. PDC North utilizes a team-based approach to patient care, with every patient seeing a nurse, LCSW, pharmacist, and physician at their visit to address barriers that may contribute to risk of readmission. Patients discharging from Community Hospital North or Community Heart and Vascular Hospital may be referred by the discharging physician or physician extender. The clinic fulfills TCM billing by contacting patients within 48 hours of discharge, completing a face-to-face appointment within 14 days of discharge, and following patients for 30 days with weekly phone calls.

**Results and Discussion:** Will be presented at the 2020 Multidisciplinary Scholarly Activity Symposium.

**P26 Pharmacist involvement in discharge medication reconciliation pilot.** (Sandi Lemon, PharmD, BCPS, BCCCP; Eileen Rohrbach, PharmD, BCPS)

**Introduction:** Clinically significant discharge medication errors are seen in 50.8% of patients but can be minimized by providing accurate discharge medication lists. Involving pharmacists in discharge medication reconciliation (DMR) provides a triple-check, alongside providers and nurses, to improve patient care by reducing prescribing errors, promoting antibiotic stewardship, and improving transitions of care. Community Health Network made a financial investment in the admission medication reconciliation process by creating Medication History Technician positions across the Network. Pharmacists now have the opportunity to be involved in DMR. A pilot of pharmacist DMR has been conducted but not evaluated for impact and feasibility.

**Methods:** This is a descriptive, observational case series with retrospective chart review of documented pharmacist interventions on discharge medication lists. Patients will be identified through review of documented Medication Reconciliation I-Vents in Epic. Data points include: number of DMRs, number of medication changes, high-risk medications prescribed, and number of interventions. The pilot is 120 days – from October 2019 through January 2020 including patients from select inpatient units. The primary endpoint is number and type of pharmacist interventions. Types of interventions will be divided into subgroups based on the medication class involved, type of intervention required, and outcome. DMR reviews were made in addition to normal patient care activities by two inpatient clinical pharmacists at Community Hospital South. The process of identifying discharging patients; contrasting admission, inpatient, and discharge medication lists; and communicating interventions to providers will be analyzed to minimize the time waste and maximize recommendation impact.

**Results and Discussion:** Will be presented at the 2020 Multidisciplinary Scholarly Activity Symposium.

**P27 Estimation of the ventilatory threshold using wireless near-infrared spectroscopy and distance maximum analysis.** (David Lawson, BS, EP-C; Ericka Pursley, BS; Noah Smith, BS; Kendra Voth, BS; Trent Cayot, PhD, CSCS, EP-C)

**Introduction:** Ventilatory threshold (VT) separates moderate intensity (<VT) and heavy intensity (>VT) domains and can be determined using pulmonary gas exchange data. The exercise intensity at the VT is used to individualize cardiorespiratory training programs. If wireless near-infrared spectroscopy (NIRS) could estimate the VT, more environment specific testing could be obtained.

**Purpose:** Investigate if the VT can be estimated via wireless NIRS from the medial gastrocnemius (G) or vastus lateralis (VL) during a running graded exercise test (GXT).

**Methods:** 17 healthy, recreationally active adults (age=21±4 years, height=1.68±0.11 m, weight=66.3±16.8 kg) completed a GXT on a treadmill. Every three minutes the velocity was increased by +1 km/hr (starting velocity=5 km/hr) while the incline remained at 1%. Pulmonary gas exchange and NIRS (G, VL) data were continuously collected. The pulmonary gas exchange data was visually inspected to identify the velocity at which the VT occurred (vVT). The velocity at each NIRS threshold (vNIRS-G, vNIRS-VL) were determined by the distance maximum (Dmax) analysis. Concurrent validity of the NIRS thresholds (vNIRS-G, vNIRS-VL) were assessed against the VT (vVT) using Pearson correlation coefficients (r) and standard error of estimate (SEE). *A priori*, a sample size of 10 was estimated to achieve statistical power of 0.80 and statistical significance was established at p<0.05.

**Results:** vNIRS-G was not related to vVT (vNIRS-G=8.6±1.2 km/hr, vVT=8.1±1.1 km/hr, r=-0.08, p=0.769) and had a SEE of 1.2 km/hr. vNIRS-VL was not related to vVT (vNIRS-VL=9.1±1.6 km/hr, r=0.313, p=0.221) and had a SEE of 1.1 km/hr.

**Conclusion:** The present results demonstrate poor concurrent validity between both of the NIRS thresholds (vNIRS-G, vNIRS-VL) and the VT (vVT) during running exercise. Based upon the current results, it is not recommended to estimate the VT using the Dmax analysis and NIRS thresholds.

**P28 An unusual presentation of myasthenia gravis.** (Logan Dedmon, DO; Christine Hopp, DO; Cynthia Meneghini, MD; Jay Badell, DPM; Courtney Clawson, DO; Aria Arrizabalaga, MD)

**Objectives:** Recognize dysphagia and sleep apnea as an atypical presentation of myasthenia gravis with bulbar features.

**Background:** Myasthenia gravis (MG) is a neuromuscular disorder that can affect the functionality of ocular, bulbar, proximal limbs, and respiratory muscle groups. Bulbar symptoms are considered rare, occurring in approximately 6% of patients with MG. The peak incidence for new diagnosis of myasthenia gravis in males is age 65. Obstructive sleep apnea is a common feature in about 40% of MG cases, but the role of CPAP in severe crisis remains unclear. This case reports seeks to highlight a complex patient with multiple comorbidities that led to a delay in definitive diagnosis of new onset bulbar MG in crisis.

**Case Description:** Our patient is a 56-year-old male with a complex history of chronic obstructive pulmonary disease, severe obstructive sleep apnea, narcolepsy, and diabetes who presented to the emergency department with a four month history of increased altered mental status and frequent falls. During hospital admission, the patient was noted to have dysphagia with both solids and liquids and was suspected that sleep apnea had been poorly treated. Further discussion yielded concern that patient could have bulbar myasthenia gravis in crisis. Neostigmine challenge test was performed and yielded a

mostly positive result. Patient received five rounds of therapeutic plasmapheresis. Patient's dysphagia and mental status returned to baseline prior to discharge. He was prescribed pyridostigmine and continues to receive bimonthly plasmapheresis exchange with positive results.

**Conclusions:** This case emphasizes that myasthenia gravis with bulbar features, a rare disease, may have atypical presentations and appear to be due to common causes. Approximately 15-20% of patients with myasthenia gravis will have a myasthenic crisis during their life, and in less than 20% of patients this may be their initial presentation. This exemplifies the need for a broad differential for typical presentations in a medical setting.

## **P29 A case of misophonia.** (Jendayi Olabisi, MD; Peter Karalis, MD; Benjamin Coplan, DO)

**Aim:** Increase awareness of the existence of specific sound reactivity known as misophonia by presenting a case from a community-based clinic to reinforce the need for further research to better guide diagnosis and treatment.

**Introduction:** Misophonia, also referred to as selective sound sensitivity syndrome, is a newly described and under-investigated condition that is garnering increased interest within the psychiatric community. Originally thought to be an audiological disorder, further research has led to the belief that this is a psychiatric disorder. Currently, it is not listed as a DSM or ICD diagnosis.

**Case report:** This report describes a patient case of a 15-year-old female who presented for psychiatric assessment due to depression, anxiety, irritability, and disruptive behavior. She also had a chronic history of hypersensitivity to commonplace sounds produced from various family members. The distressing sounds included yawning, coughing, and other typical sounds encountered daily. Compensatory strategies including avoidance and direct confrontation to the person emitting the sounds led to social isolation, depression, and poor interpersonal relationships. The patient's symptoms did not remit with therapeutic doses of fluoxetine and propranolol.

**Discussion:** The pathophysiological understanding of this phenomenon is complex and evolving. However, it is thought that the limbic system, frontal cortex, and insula play major roles. Currently there is no generally accepted diagnostic criteria or evidenced based treatment for this condition. Proposed medication treatment options target the associated comorbidities and include antidepressants and anxiolytics. Proposed psychotherapeutic techniques include habit reversal training, cognitive behavioral therapy, and tinnitus reversal training. In our case, we did attempt medication management with propranolol to target theorized hyperadrenergic state, and referred to CBT for psychotherapy. Co-morbid conditions of major depression, and generalized anxiety were treated with Prozac which was titrated to 40mg. Following propranolol's discontinuation, a trial of topiramate was started to target irritability and dysphoria. However, this was also ineffective which reinforces research that therapy is the only modality to be effective at this point in time.

**Conclusion:** This case report adds to a growing amount of literature on this newly described condition and further assesses pathophysiology, diagnosis, and treatment.

## **P30 Severe foot pain in an IV drug abuser.** (Kathryn Alleva, DPM; Jacklyn Kiefer, DO; Letha Tetrack, DO; Madison Morris, DO; Hailey Artz, DO; Kierra Hayes, DO; Daniel Elmes, DPM)

**Purpose:** Compartment syndrome is a serious, limb threatening surgical emergency through which rising intracompartmental pressure may cause musculoskeletal and neurovascular compromise. Though crush injuries with fracture dislocations of the foot should raise suspicion for developing compartment syndrome of the foot (CSF), the true incidence and predictor of CSF remains controversial. Furthermore, uncertainty remains in surgical approaches as there is not complete agreement regarding the

compartments within the foot. No surgery is without complication, especially in patients with CSF who are at increased risk of persistent neurological deficits, vascular compromise, necessitating amputation; however, if left untreated, permanent damage ranging from contracture deformities to increased need for amputation exists. It is essential to understand and recognize the warning signs of compartment syndrome in the foot and to proceed with treatment in a timely manner to decrease the patient's morbidity and poor outcomes.

**Case Study:** We present a 35-year-old patient with known IV drug abuse who presented to the emergency room with excruciating right foot and leg pain after being hit by a car, walking by foot, two days prior to arrival. Patient admitted to IV drug abuse after the accident occurred to cope with the pain. Patient noticed he was unable to bear weight to the right lower extremity and was with significant tense swelling of the right lower extremity, subjective numbness in the digits of the right foot, and with pallor of the right lower extremity. X-rays and MRI of the right lower extremity were negative for acute fractures/dislocations. Intracompartmental pressure readings were obtained via Wick's catheter revealing acute compartment syndrome of the plantar foot and medial calcaneal compartments necessitating operative fasciotomies. Psychiatry was consulted post operatively for substance abuse and recommendations for short-term post-operative pain relief.

**Discussion:** Acute compartment syndrome of the foot is commonly seen with calcaneal fracture, dislocation of the Chopart's joint or a lisfranc injury; however, this case report suggests clinical suspicion of CSF should remain high in a patient with a high impact crush injury without fracture. The diagnosis of compartment syndrome may be made with intracompartmental pressures, laboratory work-up and clinical presentation. Traditionally, compartment pressures measuring greater than 30mmHg with supporting clinical findings necessitated fasciotomy. Additionally, delta pressures have also been described which involves subtracting the compartment pressure from the diastolic blood pressure and if less than 30mmHg, surgical decompression is necessary. Clinical findings associated with CSF in patients experiencing a traumatic inciting event include pain out of proportion to the injury, pallor, nonpalpable pedal pulses, paresthesias, and paralysis. Due to the patient's heroin abuse at time of injury masking his symptoms, he did not experience pain out of proportion or paresthesias initially, which delayed his presentation to the ED and his treatment course. Identifying acute compartment syndrome greater than four hours after injury increases the probability of irreversible tissue damage. If left untreated, compartment syndrome can lead to disabling deformities of the foot, paralysis and sensory neuropathy. The true incidence and predictors of foot compartment syndrome remain controversial, therefore clinical suspicion should necessitate further investigation with intracompartmental pressure, and if elevated, surgical decompression should not be delayed.

**P31 The comorbidity tragedy: An overlap between eating disorder and alcohol use disorder.** (David Pison, DO; Joseph Candela, DPM; Jesse Clark, DO; Eugene Justus, DO; Tina Burch, RN)

**Introduction:** Many studies have observed a connection between eating disorders, substance use disorders, and other psychiatric comorbidities. While relationships have been found, and significant mortality has been noted, the ability to appropriately treat these comorbidities lies amongst multiple specialties. Ongoing work is needed to break down silos to truly integrate treatment of these disorders.

**Objectives:** To describe a case of comorbid anorexia and alcohol use disorder that led to the untimely death of a 28-year-old in order to demonstrate to future providers the need to break down silos to allow for better interdisciplinary care.

**Case Discussion:** We present a unique case of a 28-year-old Caucasian female with a history of anorexia nervosa and alcohol use disorder, along with psychiatric comorbidities including depression and anxiety who was hospitalized for acute encephalopathy with additional known presenting concerns including

transaminitis and hypokalemia. She underwent five days of intensive care in the ICU, her condition continued to deteriorate, ultimately resulting in her demise. Upon review of her case, we highlight opportunities for improvement in the coordination of care of a patient being treatment by multiple providers. Often, disease states and diagnoses that do not easily fit into one area of expertise can be missed when medical care becomes siloed. We take an interdisciplinary overview of a case where these silos may have occurred. This case examines how we can improve by focusing on patient care through effective and efficient treatment teams.

**Conclusions:** While the outcomes of this tragic case likely may have occurred regardless, this example allows for discussion of the potential outcomes when medical providers work in silos, and outlines the necessity for ongoing communication within the medical team.

**P32 Milestone regression in an 18-month-old male with choroid plexus papilloma.** (Sarah Spurgeon, MD; Gretchen Johnson, DO; Stephanie Williams, DO; Kimberly Garrett, MBA; Nicole Schmitt, DO; Holly Wheeler, DO)

**Background/Purpose:** Choroid plexus papilloma is a rare entity with an incidence of 0.4-1% among intracranial tumors in children. However, among the causes of developmental delay in children presenting to primary care physicians, brain tumors is in the minority of causes of developmental delay, responsible for <13 cases in 9.6 million children with developmental delay. The purpose of this report is to help educate primary care providers who will often be the first point of contact for these patients and their families and seek ways in which multidisciplinary teams within patient centered medical homes can help to increase access to care and prompt management of children with developmental delay caused by brain tumors.

**Case description:** 18 month old male presents to ED with vomiting, fever, clonus of LLE in the setting of significant gross motor developmental delay and increasing head circumference. He was found to have an intracranial mass with bleeding into the ventricles requiring emergent neurosurgical intervention. Pathology confirmed tumor to be choroid plexus papilloma with associated hydrocephalus requiring VP shunt placement. From 7 months to 16 months of age there were several referrals placed for imaging, therapy, and neurosurgery specialty care. None of these referrals resulted in accurate diagnosis and appropriate treatment of the condition.

**Conclusion:** Although rare, brain tumors including choroid plexus papilloma should be included as part of the differential diagnosis in patient presenting with gross motor developmental delay and increasing head circumference in a primary care setting.

**P33 Opioid use disorder in spinal cord injuries.** (Shannon James, PharmD; Gabriel Martinez, DO; Skyler Gick, DO; Lauren Rose, DO; Courtney Conner, DPM; Rachel Ann Shockley, DO; Dan Fisher, MD)

**Objective:** Discuss the management of pain and opioid use disorder (OUD) in a patient with spinal cord injury (SCI) including both pharmacologic and non-pharmacologic interventions.

**Background:** It has been reported that up to 80% of individuals with SCI suffer from chronic pain most commonly treated with non-steroidal anti-inflammatory medications and opioids. A survey of 1619 SCI patients found that over 45% had high potential or definite risk for pain medication misuse (PMM). Given the risk of PMM in this population, frequent opioid prescribing, and the growing body of evidence surrounding mortality risk with opioid misuse, ensuring appropriate management of OUD in individuals with SCI is prudent. OUD is defined as a problematic pattern of opioid use leading to clinically significant impairment or distress. Medication-assisted treatment (MAT) is often part of comprehensive OUD

management; however, potential risks including central nervous system depression and disruption of bladder and bowel patterns may be especially harmful in SCI patients and current literature provides minimal guidance in this population. Additional evidence suggests that osteopathic manipulative treatment in combination with pharmacologic treatment provides better pain control than medications alone.

**Case description:** A 33-year-old white male with a T12 SCI and comorbid OUD presented with poly-substance use for detoxification with concurrent pain complaints. The patient met several criteria for the diagnosis of OUD including strong cravings for opioids, tolerance, and symptoms of withdrawal. The patient received MAT with Suboxone along with an increase in serotonin norepinephrine reuptake inhibitor (SNRI) medication and continuation of gabapentin.

**Conclusion:** This case demonstrates a multi-modal pain control approach in a patient with OUD and SCI. This report adds to current literature by demonstrating the safety and efficacy of MAT for OUD in an at-risk patient population as well as potential adjunct pain management strategies with promising preliminary results for future evaluation.

### **P34 Reliability and validity of a wireless inertia sensor during unloaded countermovement jumps.**

(Chandler Fields, BS, SPT; Chad Odaffer, MS; Richard Robinson, PhD; Nathaniel Eckert, PhD; Trent Cayot, PhD, CSCS, EP-CBS, SPT)

**Introduction:** Technology use in sport to measure athletes' physical status has grown immensely. Wireless inertia sensors (WIS) may be useful in measuring athletes' physical status because of the freedom of movement, transportability and relative cost. However, to our knowledge the reliability and concurrent validity of a WIS has yet to be determined during unloaded countermovement jumps (CMJ).

**Purpose:** The study aims were to assess the reliability and concurrent validity of a WIS for determining average velocity (AV), peak velocity (PV), average power (AP), and peak power (PP) during unloaded CMJ.

**Methods:** 22 participants (age=  $23 \pm 2$  years, height=  $1.75 \pm 0.08$  m, weight=  $77.3 \pm 12.6$  kg) completed two sessions on separate days. Each session participants performed 3 trials of a single CMJ (SINGLE) followed by one trial of 10 continuous CMJ (IOJUMP). The WIS was secured on the center of the lumbar region during testing. During all CMJ trials, AV, PV, AP, and PP were measured simultaneously by the WIS and a force plate. The WIS inter-session reliability was assessed using intraclass correlation coefficients (ICC). Concurrent validity was tested against a force plate using the Pearson's correlation coefficient (r) and typical error estimate (TEE).

**Results:** High to very high inter-session reliability were found for AV (ICCSINGLE=0.92, ICCIOJUMP=0.92), PV (ICCSINGLE=0.96, ICCIOJUMP= 0.97), AP (ICCSINGLE=0.97, ICCIOJUMP=0.92), and PP (ICCSINGLE=0.89, ICCIOJUMP=0.94). Strong correlations were observed between the WIS and force plate for AV (rSINGLE=0.82, rIOJUMP=0.93), PV (rSINGLE=0.92, rIOJUMP=0.93), AP (rSINGLE=0.87, rIOJUMP=0.94), and PP (rSINGLE=0.89, rIOJUMP=0.94). The TEE was calculated for AV (TEESINGLE=0.09 m/s, TEEIOJUMP=0.07 m/s), PV (TEESINGLE=0.12 m/s, TEEIOJUMP=0.12 m/s), AP (TEESINGLE=245 W, TEEIOJUMP=174 W), and PP (TEESINGLE=456 W, TEEIOJUMP=323 W).

**Conclusion:** Based upon the present findings, the WIS is a reliable and valid method in collecting velocity and power measurements during unloaded CMJ.



**P35 Brexpiprazole-induced gynecomastia in a thirteen-year-old male.** (Shilpa Puri, MD; Magdoline Daas, MD; Jennifer Day, NP; Calvin Nguyen, Student)

**Introduction:** This case reports involves a thirteen-year-old male who developed significant weight gain and gynecomastia ten months after starting brexpiprazole. Gynecomastia is defined as glandular proliferation in the male breast. Although there are case reports of atypical antipsychotics causing gynecomastia, to date there are no case reports of brexpiprazole causing gynecomastia. Brexpiprazole, a partial agonist at 5-HT<sub>1A</sub> and dopamine D<sub>2</sub> receptors and an antagonist at 5-HT<sub>2A</sub> receptors, is known to have a reduced risk for causing prolactinemia-induced gynecomastia.

**Case Report:** A thirteen-year-old male was started on brexpiprazole for depressive symptoms while in outpatient treatment. For about 20 months prior to starting brexpiprazole, he had been taking sertraline for depression and anxiety as well as guanfacine for attention deficit hyperactivity disorder. After taking brexpiprazole for about ten months, the patient had gained thirty-five pounds and started developing what appeared to be gynecomastia. Brexpiprazole was afterwards discontinued, and the patient's gynecomastia resolved after several weeks.

**Discussion:** Although the mechanism is not clear, selective serotonin reuptake inhibitors (SSRIs) including sertraline have been associated with gynecomastia. However, there is a drug-drug interaction between sertraline and brexpiprazole that results in increased brexpiprazole levels. Sertraline, a cytochrome P450 2D6 inhibitor, increases brexpiprazole levels due to brexpiprazole being a major substrate for cytochrome P450 2D6. Thus, the patient's use of sertraline may have increased his levels of brexpiprazole which may have contributed to the development of gynecomastia.

**Conclusion:** This case report described a thirteen-year-old male who developed gynecomastia ten months after starting brexpiprazole which is not commonly associated with gynecomastia. It can be hypothesized that drug-drug interactions between sertraline and brexpiprazole contributed to the development of gynecomastia. This case emphasizes the importance of closely monitoring adverse effects of brexpiprazole including less common ones such as gynecomastia as well as potential interactions with other medications.

**P36 The impact of a thrust manipulation to the hip joint; A biomechanical or neurophysiological response, or both? A pilot study.** (Emily Slaven, PT, PhD; Nathaniel Eckert, PhD)

**Introduction:** Thrust manipulation can rapidly reduce pain and increase perceived motion in the hip joint. The exact mechanism by which these changes occur remains unclear.

**Objectives:** To better understand whether an immediate biomechanical, neurophysiological, or a combination occurs as a result of a thrust manipulation to the hip joint.

**Methods:** Ten participants ( $34 \pm 11$  yrs) with self-reported history of hip pain for at least 3 months completed the study. Prior to a thrust manipulation participants underwent instrumented gait analysis to assess kinematic and kinetic variables. Neurophysiological testing including static, i.e., pressure pain (PPTs) and heat thresholds, and dynamic, i.e., conditioned pain modulation (CPM) and pain offset measures of pain perception. All tests were repeated following a thrust manipulation to the hip.

**Results:** No statistically significant differences in hip range or peak hip extension occurred as a result of the thrust manipulation; however the loading response in the vertical ground reaction force did significantly increase following the thrust ( $p=0.027$ ,  $d = 1.75$ ). No statistically significant differences were found in the static or dynamic pain measures. However, the dynamic pain scores of the conditioning stimulus for CPM approached significance ( $p=0.53$ ,  $d = 0.35$ ) pre-post hip thrust.

**Conclusion:** Loading of the painful limb changed following thrust, and neurophysiological mechanisms may have played a role in effecting this change. A large sample size is needed to confirm these

preliminary results. Weight bearing ability after a hip thrust manipulation changes potentially due to neurophysiological mechanisms.

### **P37 Strategic collaboration in healthcare training.** (Scott McNew, MBA; Amanda Ledyard, MS)

**Introduction:** In pursuit of physician workforce development, Community Health Network (CHNw) partners with medical schools. For medical students, credentialing requirements of host institutions can add challenges to training. Student credentialing at CHNw requires certification of training on Epic, CHNw's electronic medical record (EMR) system, which can be duplicative, lengthy, and delay clinical training. This project recognized a standard curriculum for medical students, adopted use of electronic modules (already shared between two institutions), and established a system to accept transferred credit.

**Objectives:** Establish a network-to-network system to validate transcripts and issue credit thus exempting students from duplicate training.

**Methods:** An assessment of the medical student curriculum allowed comparison with other host institutions (Franciscan and Eskenazi) and validated 29 electronic modules as the standard curriculum. Students submit transcripts from their school's data system, which is approved by CHNw staff for class credit. Medical student data was reviewed for 14 months following project implementation. Students were categorized in 1 of 3 groups by their certification method: credit transfer/no class; option to transfer/ class-trained; or no option to transfer/class-trained.

**Results:** 84 medical students were certified over the next 14 months. 31 students transferred credit and were exempted from class. 15 completed in-class training (but had option to transfer), and 38 completed in-class training (no option to transfer). Students spend an average of 5 hours to complete the standard curriculum. In 14 months, students were credited 155 hours training time from submitted transcripts.

**Conclusion:** Strategic collaboration between institutions can create new efficiencies in clinical training. Institutional abilities to validate previous training may offer substantial savings in staff and student time. Opportunities exist for programs that aren't networked onto a shared training platform (no option to transfer). Sometimes students choose to repeat training to refresh EMR skills. By building the network of collaboration, institutions can collectively benefit from a shared curriculum where training is validated between institutions.

### **P38 In a fog: The relationship between income level and frequency of e-cigarette use among "ever" e-cigarette users in the US in 2018.** (Melody Jordahl-Iafrato, MD; Emily Ross, Student)

**Introduction:** Despite the increasingly associated adverse health effects, e-cigarette usage is on the rise. Several studies have examined a possible association between income and those who have ever used e-cigarettes (defined as current or previous use, including one-time use only). Some studies found higher ever e-cigarette use among those with higher income while others found higher use among those with lower income. However, research examining the association between income and frequency of e-cigarette use among those who have ever used e-cigarettes is limited.

**Methods:** Utilizing information collected in the 2018 Behavioral Risk Factor Surveillance System (BRFSS), the relationship between income level and frequency of e-cigarette use among current and past users was assessed. The final analytic sample included 42,053 respondents who answered questions of interest in the 2018 BRFSS dataset. Along with descriptive statistics, a spearman rho analysis was utilized to assess the relationship between income and frequency of e-cigarette use.

**Results:** Findings suggested there was a weak insignificant relationship ( $r(42,051) = -0.005$ ,  $p > 0.05$ ) between income level and frequency of e-cigarette use amongst study respondents.

**Discussion:** Although no relationship was found between income level and frequency of e-cigarette use within this current study, further investigation is warranted. Future studies should examine different income classifications (e.g., poverty level, additional categories) and/or stratification or exploration by other potential variables such as race, gender, age, and geographic location. As the usage of and health concerns about e-cigarette use increase, understanding usage patterns and identifying risk populations is vital to reduce health disparities and improve health outcomes. Ultimately, knowing risk identifiers for frequency of e-cigarette use could help appropriately target interventions to populations that may be at a higher risk of adverse health outcomes.

**P39 Validation of a nutrition knowledge assessment: Results of First Steps.** (Brian P. Reagan, PhD, RDN; Nathaniel Eckert, PhD; Erin Fekete, PhD)

**Background:** Limited nutrition knowledge (NK) paired with high confidence is frequently reported among athletes. Overconfidence in false information increases potential of dissemination of inaccurate nutrition information and poor nutrition decisions. One result of this may be the development of an eating disorder such as anorexia nervosa. Currently, there is no validated nutrition assessment of NK. This NK instrument assesses knowledge of carbohydrates, fats, protein, and weight management as well as self-reported confidence in participant's answer choice using a (1-4) Likert scale: (1) not at all confident, (2) not confident, (3) somewhat confident, or (4) very confident.

**Objective:** The primary objective of this ongoing study is to validate the Macronutrient, Energy, & Metabolism Expertise Survey, (MEMES), a 40 multiple-choice question knowledge assessment developed by Brian P. Reagan.

**Methods:** The validation protocol consists of three phases: (a) item development, (b) scale development, and (c) scale evaluation. Community Health Network Registered Dietitians (RDs) assessed content validity of each domain and individual test question.

**Results:** A total of 10 nutrition experts analyzed the content validity of each domain and each question. The minimum mean score of 7 was achieved for all domains and each question. Additional results include: knowledge scores in general population, athletes, and RDs; confidence in scores in the same populations, and strength/ validation of respective questions and domains.

**Conclusions:** Since the criterion scores for domain and question were achieved, all domains and questions will be included in the current version of MEMES. It will be used in the next steps of the validation protocol: criterion validity; focus groups; and pilot study.

**P40 Promising practices in infection prevention in Indiana.** (Lidia Dubicki, MS; Kayleigh Adrian, MS; Ellen Burton, MPH; Ellen Miller, PhD, PT)

**Background:** Over the past five years, the Indiana State Department of Health provided funding for several initiatives that included advanced education in infection prevention. A major component of these initiatives involved in-person classes for long term care professionals. In addition, a training for paraprofessionals and materials for residents and families were developed.

**Methods:** Nationally recognized subject matter experts were engaged to develop the curriculum for the in-person classes, paraprofessional training and residents' and families' educational materials. Data collection involved pre and post knowledge assessments at each in-person class. Pre and post facility practices self-assessments were also administered at the in-person classes and analysis of trends in the Minimum Data Set (MDS) quality measures was performed.

**Results:** Analysis of pre and post knowledge assessments found statistically significant change in nine knowledge items. In addition, facilities that sent a participant to one of the in-person classes increased average scores for infection prevention best practices on their facility self-assessments. Visual trend analysis of MDS measures showed improvements in three infection prevention related indicators: percentage of long-stay residents assessed and appropriately given the seasonal pneumococcal vaccine; percentage of long-stay residents assessed and appropriately given the seasonal influenza vaccine; and percentage of long-stay residents with a urinary tract infection.

**Conclusion:** The State of Indiana invested in effective infection prevention training that resulted in improvements in infection prevention including gain of knowledge by Indiana long term care professionals, an increase in adoption of facility best practices and changes for the better in MDS quality measures for infection prevention related indicators.

**P41 Chatting up the MCHAT: Improving autism screening in a family medicine residency clinic.**

(Melody Jordahl-Iafrato, MD; Blane Riley, DO; Brian Lauer, DO; Sarah Spurgeon, MD; Kelsey Kennedy, DO; Jessica Uhler, MD)

**Introduction:** The Modified Checklist for Autism in Toddlers (MCHAT) validated screening performed between 16-30 months of age allows for early detection of and intervention for autism and improves long term developmental prognosis.

**Objectives:** The primary objective of this project is to improve performance regarding MCHAT use and increase MCHAT screening rates in a family medicine residency clinic.

**Methods:** Education regarding the importance of the MCHAT, who should receive the MCHAT, and how to enter this information into the electronic health record (EHR) will be provided to staff and providers within a family medicine residency clinic. Additionally, workflow will be modified regarding collecting and inputting results into the EHR. Aggregate data regarding documentation rate from before and after the intervention will be compared.

**Results and Discussion:** Will be presented at the 2020 Multidisciplinary Scholarly Activity Symposium.

**P42 Introduction of longitudinal teams to teach quality improvement in a family medicine**

**residency Patient Centered Medical Home.** (Rachel Ann Shockley, DO; Anne Packard, PharmD; Julie Stenger, RN; Kaitlyn Wong, RD; Wenjie Zhang, DO; Nicole Schmitt, DO; Courtney Clawson, DO; Carrie Leblanc, MA; Kyle Sparks; Lisa Polen)

**Introduction:** Family medicine resident physicians must lead multidisciplinary teams in quality improvement initiatives in their future practices. The Accreditation Council for Graduate Medical Education asks residencies to teach these principles. Multidisciplinary longitudinal teams were created to teach this. The goal is to have 80% of the patients at a hemoglobin A1c less than 8.

**Methods:** A prospective observational study design and Lean Six Sigma methodology guided the intervention. A multidisciplinary team with a pharmacist, dietitian, social worker, nurse, manager and physician obtained a Lean Six Sigma yellow belt. Initially, the percentage of patients with a hemoglobin A1c above 8 was measured. The first intervention identified which patients actually received care in the office. The primary care provider was adjusted to reflect this. A medical assistant contacted any patient if it was unclear where they were receiving care and scheduled an appointment. The second intervention was patients with a hemoglobin A1c level above 8 were scheduled with a pharmacist and dietitian. The hemoglobin A1c levels below 8 was assessed monthly. This project has continued over the course of the last 16 months and continues until we reach and sustain our target goal.

**Results:** The initial goal was increasing compliance from 45% to 65% then to 80% over 6 months with an A1c less than 8. The baseline was 44.6%, month two 45.0%, month three 47.7% and month four after first intervention 51.7%, month 16 42.3%.

**Discussion:** The project is in progress. The first intervention resulted in a 7.1% increase from baseline. We hope for continued improvement and for the interventions to reach the goal. Another goal is teaching quality improvement to residents using a novel approach improving hemoglobin A1c levels. Ideally, residents will use these skills in their future and implement quality improvements, meeting patient and hospital care goals.

**P43 Two unrelated cases of venous thrombosis, one leading to cerebral ischemia in an otherwise healthy young woman.** (Patrick McGuire, DO; Alexandria Sporleder, DO; Rebecca Smock, DO; Jacob Holtz, DO; Maurice Henein, MD; Paige Danner, DPM; Laura Feder, DO)

**Objective:** To bring awareness of the causes of venous thrombosis by presenting a patient who experienced two episodes- one related to thoracic outlet syndrome (TOS) and the other due to oral contraceptives in the setting of a normal hypercoagulable workup.

**Introduction:** Venous thrombosis is a common condition seen in inpatient and outpatient settings but less commonly in younger patients. Causes include TOS and oral contraceptives. In this case, the patient experienced separate thromboses from both.

**Case Presentation:** A 24-year-old female was diagnosed with right-sided TOS with an external jugular vein thrombosis after an episode of neck pain associated with dilated veins on the right side of the neck without other symptoms. Two months later, she was treated by having her cervical rib removed and was taken off anticoagulation. Seven months after surgery she started on a combined oral contraceptive and five months after that had a severe headache after sneezing. She was initially seen in the ER for her "thunderclap" headache, where a CT/CTA was unremarkable and she was treated for a migraine and discharged. After experiencing somnolence and confusion over the next days, MRV then revealed bilateral thalamic infarcts and extensive cerebral vein thromboses. Hypercoagulable workup remained negative throughout her course. After 6 months, anticoagulation was withdrawn and she has done well for the last eighteen months.

**Conclusion:** Clinicians should be aware of the multiple associated risk factors with venous thrombosis. Our case demonstrates that multiple and unrelated provoked events may occur in the same individual. Having a high index of suspicion for venous thrombosis may alter a clinician's imaging selection in best showing venous thrombosis.

**P44 Changes in the training efficiency index are associated with changes in lower body power in NCAA DII male soccer student-athletes: A pilot study.** (Dylan Maschino, BS; Kerigan Ertel, BS; Alyssa Stuczynski, BS; Alec Lohman, BS; Richard Robinson, PhD; Gary Long, PhD; Trent Cayot, PhD, CSCS, EP-C)

**Introduction:** Physical fitness characteristics, such as aerobic capacity (V02PEAK) and lower body power (LBP), change throughout the competitive season in collegiate student-athletes. Weekly performance testing to track these physical fitness changes can be fatiguing for the student-athletes and time consuming for the coaching staff. Recently, the training efficiency index (TEI), an integration of internal loads and external loads, has been used to provide information about changes in physical fitness without the need for weekly performance testing. The primary purpose of this pilot study was to investigate which internal load measures (training impulse, TRIMP; training load, TLOAD) and external load measures (total distance covered, TD; total sprinting distance, SPRINT) should be used when calculating the TEI to help direct future research investigations.

**Methods:** 10 collegiate, male soccer student-athletes ( $19 \pm 1$  years,  $1.81 \pm 0.06$  m,  $74.7 \pm 5.5$  kg) completed a standard countermovement vertical jump assessment and Yo-Yo Intermittent Recovery Test before and after the 2019 fall regular season. The highest jump height from two trials was used as a measure of LBP. The distance covered during the Yo-Yo test was used to estimate  $\dot{V}O_{2PEAK}$ . TRIMP (average heart rate x session duration), TLOAD (proprietary internal load measurement from Polar Electro Inc.), TD, and SPRINT were measured during all practices and games using a standard heart rate/global positioning system. Pearson correlations ( $p < 0.05$ ) were used to assess the relationship between the percent change (%6) of the performance tests and the %6 of four TEI (TRIMP:TD, TRIMP:SPRINT, TLOAD:TD, TLOAD:SPRINT) throughout the season.

**Results:** Strong relationships were detected between changes in jump height and TLOAD:TD ( $r = 0.823$ ,  $p = 0.003$ ) and TLOAD:SPRINT ( $r = 0.806$ ,  $p = 0.005$ ).

**Conclusions:** The present pilot findings suggest that changes in TEI (TLOAD:TD, TLOAD:SPRINT) may be associated with LBP. Additionally, future investigations are recommended to use TLOAD for internal load measures and TD or SPRINT for external load measures.

#### **P45 Subjective wellness ratings are related to objective measures of exercise performance in college soccer players: A pilot study.** (Alec Lohman, BS; Dylan Maschino, BS; Kerigan Ertel, BS; Alyssa Stuczynski, BS; Richard Robinson, PhD; Trent Cayot, PhD, CSCS, EP-C; Gary Long, PhD)

**Introduction:** The use of global positioning systems (GPS) to objectively monitor training loads has allowed sports coaches to more carefully analyze the physical demands placed on athletes. Additionally, the adoption of self-reported wellness surveys has been demonstrated as beneficial in understanding the subjective experience of athletes over the course of the competitive season. However, it is not well known if subjective wellness reporting is associated with objective measures of training performance. Exploration of this phenomenon may help coaches more precisely prescribe exercise and maximize training adaptations without compromising athlete's wellbeing.

**Methods:** In this pilot study, male collegiate soccer athletes ( $n = 18$ ) completed daily wellness surveys across three weeks of the competitive season ( $n = 131$ ). Using one-way ANOVA, GPS data (total distance run, distance at high intensity) was compared across groups of athletes reporting low, moderate or high levels of sleep, stress, mood and soreness on a Likert scale, to determine if subjective wellbeing influences same-day training performance.

**Results:** Athletes reporting low ( $< 4$  hrs) or moderate sleep duration (5-6 hrs) covered significantly less distance ( $4174$ - $4783$  vs.  $6788 \pm 563$  meters,  $p = 0.0019$ ) and ran significantly less distance at high intensity ( $324$ - $356$  vs.  $518 \pm 69$  meters,  $p = 0.046$ ) than those reporting  $> 6$  hrs of sleep. Additionally, those reporting a moderate mood state (4-7/10) tended to cover less total distance ( $4646$  vs.  $5346 \pm 407$  meters,  $p = 0.08$ ) and less distance at high intensity ( $324$  vs.  $412 \pm 48$  meters,  $p = 0.07$ ) in comparison to those reporting a higher ( $> 7/10$ ) mood state.

**Conclusions:** Initial data indicates sleep duration and subjective mood scoring are associated with reduced training performance in collegiate soccer players. Coaches may use this information to introduce strategies to maximize sleep and improve athletes' mood during the season. Additionally, prescribing lower volumes of exercise may be considered when athletes display lower ratings in these categories prior to practice.

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