Community Health Network

Sixth Annual

Multidisciplinary Scholarly Activity Symposium

Indianapolis, Indiana

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Sixth Annual
Multidisciplinary Scholarly Activity
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CONTENTS

Covid-19: Then and Now

Kristina Box, MD, FACOG

Dr. Box was named Indiana State Health Commissioner by Governor Eric J. Holcomb on September 18, 2017. She brings to the role a passion for improving the health of Hoosiers, beginning before birth.

Dr. Box has been a practicing obstetrician and gynecologist in Indianapolis for 30 years. She served on the Indiana Perinatal Quality Improvement Collaborative (IPQIC), an advisory council to the Indiana State Department of Health that is comprised of more than 300 statewide community professionals working to reduce infant mortality. Her work with IPQIC included serving on a state task force to address neonatal abstinence syndrome (NAS), which established standards for the diagnosis of NAS and developed a hospital study to determine the prevalence of drug exposed newborns.

Dr. Box earned her undergraduate degree at Indiana University in Bloomington and her medical doctorate at Indiana University School of Medicine in Indianapolis.

She and her husband of 35 years, David, a retired ophthalmologist, live in Indianapolis. They have four adult children.

Indiana COVID Q &A

Chad Priest, JD, MSN, RN, FAAN

Chad S. Priest is Chief Executive Officer of the American Red Cross – Indiana. He is also Adjunct Assistant Professor of Emergency Medicine at the Indiana University School of Medicine and faculty member and co-founding Director of the Disaster Medicine Fellowship Program; Adjunct Assistant Professor of Nursing at the Indiana University School of Nursing; and affiliated investigator at the IU Center for Bioethics and the IU Crisis Technologies Innovation Lab. He is a fellow of the American Academy of Nursing.

As CEO of the American Red Cross – Indiana Region, Chad leads a team of over 3,500 volunteers and staff from 45 offices throughout Indiana and portions of Ohio, Kentucky and Illinois dedicated to alleviating human suffering and supporting resilient communities. His research and scholarship interests include international disaster risk reduction, healthcare emergency management, crisis leadership and community resilience to disasters and crisis events. He is a frequent international speaker on issues related to healthcare system and community resilience.

Prior to assuming leadership of the Indiana Region of the American Red Cross, Priest served as Assistant Dean for Operations & Community Partnerships at the Indiana University School of Nursing where he also founded and directed the interdisciplinary Social Network Health Research Laboratory. Previously Chad was Chief Executive Officer of The MESH Coalition, an innovative public-private partnership that enables healthcare providers to effectively respond to emergency events and remain viable through recovery. Chad formerly practiced as an attorney at the law firm of Faegre Baker Daniels practicing public health and healthcare law in the Indianapolis and Washington, D.C. offices. Chad served on active duty as an officer in the United States Air Force with the 89th Medical Group, Andrews Air Force Base, Maryland. He received his undergraduate degree in nursing from Indiana University, his Masters of Science degree in Community Health Nursing from Indiana University and his law degree from the George Washington University in Washington, DC. He is married to Caitlin Finnegan-Priest and has three children, Emerson, Nora and Eli.

Ramarao Yeleti, MD, FACC, FACP, FSCAI

Ramarao Yeleti, MD, provides clinical leadership across a continuum of care that includes eight hospitals and more than 200 sites of care through his role as Community Health Network's Chief Physician Executive.

Dr. Yeleti moved into his current role in 2017 after leading Community Physician Network as the entity's president. His past leadership experience also includes a period during which he served as president of Community Heart and Vascular, the integrated cardiovascular group at Community Health Network, which is now part of Community Physician Network.

In his roles as a physician leader and cardiologist, he believes that patient care should be a physician's priority. He combines both strategic vision and drive from personal experience that has allowed him to develop a passion for quality and the patient experience.

In addition to his current roles, Dr. Yeleti serves on the boards of Bio Crossroads, Marian University, Children's Bureau, and the Hindu Temple of Central Indiana

Dr. Yeleti has a Bachelor of Science degree from the University of Akron, Ohio, and a medical degree from Northeastern Ohio Universities College of Medicine. He served his internship and residency in internal medicine at the Mayo Graduate School of Medicine in Rochester, Minnesota, and served his fellowships in cardiovascular disease and interventional cardiology at Indiana University Medical Center and the Indiana Heart Institute.

Dr. Yeleti is board certified in internal medicine, cardiovascular disease, interventional cardiology and nuclear cardiology.

ORAL PRESENTATIONS

O1 **Exploring Possible Racial Disparities with PRN Medication Usage in Inpatient Psychiatric Treatment.** (Chrissy Hopp, DO; Aaron Whiteman, DO; Beth Buckingham, PhD; Peter Karalis, MD; Gabriel Martinez, DO; Magdoline Daas, MD; James Williams, LCSW; Jennie Voelker, LCSW; Vanessa Enos, LMHC)

Introduction: The extent of systemic racism in the healthcare system has not been adequately evaluated at this current time, as it has not been routinely researched. There are many aspects to investigate that can contribute to systemic racism, including examining structural, interpersonal, and institutional processes. There is currently a gap in the knowledge of potential sources of racial disparity in mental healthcare. Recent studies have shown that black and minority ethnic patients have consistently been disproportionately detained under the Mental Health Act of 1983. Several studies done in Europe and Australia have looked at possible racial bias with seclusion and restraint on an inpatient psychiatric unit with mixed results, and with results that are not applicable to the population of the United States. An area that has not been examined is the utilization of as needed medications on an inpatient psychiatric unit and possible racial disparity with receiving these medications.

Purpose: This quality improvement project is looking specifically at a variety of as needed medications that can be utilized for anxiety, agitation, and psychosis. Utilization of these as needed medications is an area of potential safety concern as these medications do have potential medically significant side effects. Our current aim is to look at possible behavioral healthcare racial disparities, specifically with the administration of as needed medication on an inpatient psychiatric unit.

Methods: Data will be collected from patients of all ages admitted to the inpatient psychiatric pavilion at Community Health Network throughout the year of 2019 who were administered as needed medications including Haldol, Geodon, Zyprexa, Thorazine, Ativan, Benadryl, Trazodone, or Hydroxyzine. Data will also be collected on these patients race, admitting diagnosis, and the indication of the as needed medication. With ongoing data examination, we hope to determine if racial discrimination extends to utilization of the quantity or type of as needed medications amongst different races.

Results: To be presented at the 2021 Multidisciplinary Scholarly Activity Symposium.

Discussion: To be presented at the 2021 Multidisciplinary Scholarly Activity Symposium.

O2 **Addressing High Attrition Rates of Integrated Recovery Patients Discharged from Inpatient Services.** (Jacob Mulinix, DO; Jenny Obrzydowski, MD; Patrick McGuire, DO; David Pison, DO; Emily Zarse, MD; Theresa Suozzi, MD; Jill Souders, LCSW; Jackie Maxwell, PhD; Jackie Black, LMHC; Michael Welling, MD; Benjamin Coplan, DO; Claire Roberts, CEC; Melissa Davis)

Introduction: Substance abuse disorder patients have many barriers to following up with outpatient care after discharge from the hospital. These barriers lead to high levels of attrition within this patient population, a phenomenon seen across the United States as well as within Community Health Network. Currently, the attrition rate hovers close to 50 % within patients discharged from our IR and dual diagnosis units who are scheduled for outpatient care at Community associated clinics.

Methods: Our team is implementing a script for nursing staff to read on day of discharge to patients when going over after visit summary. The goal will be to standardize important information concerning follow up structure and help improve insight of transition to outpatient management within Community Health Network. The script will also include the direction to exact location to find specifics regarding outpatient follow up care within the After Visit Summary. Analysis of attrition rates will be achieved by chart auditing individual patients discharged from the IR and Dual Diagnosis units at CHN 6 months before and after implementation of script.

Results: As this project is still in late pre-implementation stage, results are limited at this time. Through data analysis thus far, attrition rates before implementation are close to 50%, though these numbers have not been finalized at this time. Further results will be presented at the presented at the 2021 Multidisciplinary Scholarly Activity Symposium
Discussion: Due to limited data from study at this time, discussion regarding our study is limited to hypothesis. Many variables exist which inhibit follow up with outpatient care after discharge in substance use patients. Though more significant barriers exist than communication, they may be beyond our scope for implementation pavilion-wide. It is our hypothesis that by engaging patients with clearer communication and expectations at time of discharge about their follow up, attrition rates will decrease within our network in this population. Further discussion will be presented at the 2021 Multidisciplinary Scholarly Activity Symposium

O3 **Caring for Suicidal Patients in the Emergency Department**. (Ryan Wilson, LCSW, MBA, PMP; Jeremey Malloch, MBA-HM, BSN, RN, EMT-P, CFRN; Jennie Voelker, LCSW)

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.

O4 **Check-in Group Model of Crisis Support**. (Kimble Richardson, M.S., LMHC, LCSW, LMFT, LCAC; Kasey Windnagel, PsyD, HSPP)

Introduction: The psychological toll of the ongoing COVID-19 pandemic has been particularly impactful on healthcare professionals, particularly those providing clinical care to COVID-19 patients and those managing frontline care workers. Given the unique context of the pandemic, mental health professionals and crisis intervention teams have been challenged to find new and innovative ways to employ crisis intervention models to meet the needs of the current zeitgeist. This research study aimed

to evaluate whether a newly proposed model of crisis intervention, consisting of structured conversation with intentional querying, positively impacted participants' overall wellbeing.
Methods: Utilizing a virtual meeting platform, groups of less than six people met twice a week for 30 minutes over a period of six weeks and were guided through a structured discussion designed to decrease trauma related symptoms and promote resiliency. Groups were co-facilitated by members of CHNw's RISE Team. Demographic information was gathered on participants during the first week of the above described intervention. Additionally, participants were invited to complete the Professional Quality of Life Scale (ProQOL) at various intervals throughout the intervention in an effort to measure changes in wellbeing, specifically Compassion Satisfaction, Burnout, and Secondary Traumatic Stress. The ProQOL survey was administered during the first week of the intervention and immediately after the Check-in groups ended six weeks later. The ProQOL survey will also be administered at six- and twelve-months post intervention (this data has not yet been collected). Additionally, Check-in Group facilitators provided a qualitative perspective on the impact of the intervention by completing a brief facilitator survey at the end of each Check-in Group.
Results: Quantitative data analysis has not yet been completed. Prior to the presentation of this research, analyses will be conducted to evaluate change in caregiver wellbeing over the six-week intervention period (comparing ProQOL surveys completed during the first week to the ProQOL surveys completed at week six). Six- and twelve-month comparisons will not be complete prior to the symposium. Input from the group facilitators suggests that the Check-in intervention positively impacted participants. Facilitators reported observing participants engaging in increased cognitive reframing, acquisition and intentional use of coping skills, expressions of validation and normalization of experiences, among others.
Discussion: Although quantitative data has yet to be analyzed, qualitative data suggests that participants benefited from participation in this novel crisis intervention. During a time of extreme stress, participants evidenced cognitive adaptability and the capacity to engage in self-care and other wellbeing enhancing activities. Researchers are hopeful that these results will be mimicked upon comparison pre- and post-intervention wellbeing surveys. Researchers expect ProQOL data to demonstrate improved Compassion Satisfaction, decreased Burnout, and decreased Secondary Traumatic Stress among participants. Should these results emerge, it would suggest that the novel Check-in crisis intervention impacted participants positively.
Study Limitations: This study cannot determine causation between any manipulated variables and outcomes due to its non-experimental design (e.g. lack of control group). Additionally, confounding variables, such as decreasing numbers of hospitalized COVID-19 patients, will need to be considered in conjunctional with any correlational results that emerge.

O5 Evaluation of PTSD Symptoms and Subjective Distress Tolerance: Impact on Quality of Life.

(Emily Ahles, MA; Lisa Elwood, PhD, HSPP)

Background: Distress tolerance (DT) is a transdiagnostic risk factor for many psychopathological outcomes, including posttraumatic stress disorder (PTSD). Among those with PTSD, DT helps predict symptom severity and explain symptom maintenance. Little research has explored the association between specific components of 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. The present study aimed to 1) explore the relationship between DT components, PTSD symptom severity, and QOL, and 2) understand the contribution of DT components and PTSD to overall QOL.
Methods: A treatment-seeking sample (n=57) completed baseline self-report measures as part of a pilot study examining a client-directed version of Cognitive Processing Therapy. QOL was assessed using the

World Health Organization Quality of Life – BREF, a measure of QOL in four domains: physical, psychological, social relationships, and environmental. PTSD symptom severity was assessed with the PTSD Checklist, a measure of DSM-IV PTSD criteria. DT was assessed using the Distress Tolerance Scale, a measure of perceived capacity to tolerate distress, with four components: 1) ability to tolerate emotions, 2) appraisal of emotional situations as acceptable, 3) level of attention absorbed by negative emotion, and 4) 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, R2=.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 significantly contribute to the model.
Conclusion: Findings extend prior research relating DT, PTSD, and QOL, by extracting specific components of DT that seem to be of particular importance to understanding PTSD symptom severity and QOL. Future cognitive-behavioral interventions that include elements targeting DT can be more specifically tailored to the DT components that may drive the most meaningful clinical change.

O6 **Comparing Pharmacist Managed Diabetes Outcomes for Virtual Care versus Usual Care**.

(Serena Kelley, PharmD: Tyler Madere, PharmD, BCPS; Sarah Lowry, PharmD, BCACP)

Introduction: The way that healthcare is delivered has transformed in recent years, shifting away from traditional office appointments. Further study is needed to assess the impact of virtual care on disease state management. With the onset of the Covid-19 pandemic, virtual care has become particularly important. Due to fear of viral spread, healthcare has vastly shifted its delivery of care to limit social contacts. Following suit, Community Health Network transitioned ambulatory care pharmacy services to virtual care in March 2020. The purpose of this study is to compare the quality of pharmacist management of diabetes via virtual care versus usual care.
Methods: A retrospective chart review will be completed on new patients referred for pharmacist diabetes management from March 13th through July 31st comparing virtual care in 2020 to usual care in 2019. The primary objective of this study will be to compare the impact of virtual care versus usual care. This will be determined by comparison of the mean A1c reduction from baseline at 3 months after initiation of pharmacy management. Secondary objectives will compare: percentage of patients attaining A1c <8% and <7%, number of pharmacist appointments, number of diabetes medication changes, rate of statin use, and number of pharmacist interventions. Inclusion criteria include: age 18-90 years old, type 2 diabetes mellitus, baseline A1c >9%, initial appointment for diabetes management by an ambulatory care pharmacist under a collaborative drug therapy management (CDTM) protocol at Community Health Network during the study time frame, and at least one additional A1c. Results will be compared with descriptive statistics and a multivariate analysis to assess the impact of care delivery on whether a patient reaches goal A1c. This information will help to guide future practice and delivery of services by assessing the impact of care delivery on patient outcomes.
Results: To be presented at the 2021 Multidisciplinary Scholarly Activity Symposium.
Discussion: To be presented at the 2021 Multidisciplinary Scholarly Activity Symposium.

O7 **Low vs. High Dose Basal Insulin: An Evaluation of the Initial Basal Insulin Dose in the Inpatient Setting.**

(Brad Hinton, PharmD, BCPS; Tracy Costello, PharmD, BCPS; Matthew Mishler, PharmD, BCPS)

Introduction: In the hospital, proper blood sugar control is a critical component in the care of every patient, especially those with diabetes. Improper control is associated with multiple negative patient

outcomes including extended hospital stay, increased risk of infection, and increased morbidity and mortality. Insulin treatment with a basal and bolus regimen is preferred for blood sugar control while in the hospital. Although starting insulin doses are well established in the outpatient setting, initial dosing in the inpatient setting is not as well defined. Patients in an acute illness will commonly have different insulin requirements compared to their outpatient dosing. Also converting patients from alternative anti-hyperglycemic agents to insulin can be a challenge for providers to address.
Objectives: The primary objective of this study is to evaluate the percentage of patients who experience hypoglycemia within the first 48 hours of admission on low versus high dose basal insulin. High dose insulin is defined as ≥ 0.5 units/kg/day. Secondary objectives include comparing the following outcomes between patients that received low versus high dose basal insulin: rates of severe hypoglycemia in the first 48 hours, median blood glucose within goal range in the first 48 hours, and length of stay.
Methods: A retrospective chart review is being performed to evaluate clinical outcomes of patients admitted to an Indianapolis-based multi-hospital health care system. Eligible patients will be adult patients with type 2 diabetes that received a dose of basal insulin within the first 48 hours of admission. The patients included were admitted from January 1st, 2019 to December 31st, 2019. Patients are excluded if they are < 18 or > 89 years old or pregnant. Any patients that received an insulin drip or IV dose during the first 48 hours of admission are also excluded. The primary objective of this study is to determine the different percentage of patients that experienced hypoglycemia (defined as blood glucose < 70 mg/dL), during the first 48 hours of admission on low versus high dose basal insulin (high dose defined as ≥ 0.5 units/kg/day). Secondary objectives to be assessed include percentage of severe hypoglycemia (defined as blood glucose < 50 mg/dL), median time within goal blood glucose (defined as blood glucose 140-180 mg/dL), and difference in length of stay between low versus high dose basal insulin.
Results: Preliminary data from 2943 patient encounters, show 641 hypoglycemia events and 125 severe hypoglycemia events occurred in the study population. There were 318/2943 (10.8%) patient encounters with at least one hypoglycemia event and 81/2943 (2.8%) encounters with at least one severe hypoglycemia event. Median blood sugar was within goal range for 720/2943 (24.5%) patient encounters. Median blood sugars ranged from 80 to 478 mg/dL. Further results to be presented at the 2021 Multidisciplinary Scholarly Activity Symposium.
Discussion: To be presented at the 2021 Multidisciplinary Scholarly Activity Symposium.

O8 **Impact of Pharmacist-Led Home Blood Pressure Monitoring Program on In-Office Blood Pressure Control**. (Sydney Rapp, PharmD; Allen Antworth, PharmD, MBA, BCACP; Tiffany Vogeler, PharmD, BCACP, TTS)

Introduction: Several benefits of home blood pressure monitoring have been reported throughout the medical literature including increased participation of patients in their medical care, improved medication adherence, and enhanced ability to identify masked hypertension or white-coat syndrome. Two large randomized-controlled trials have demonstrated that a significantly larger number of patients reach their blood pressure goal when pharmacists are involved in follow-up of their home blood pressure readings.
Objectives: The objective of this study is to determine the impact of a pharmacist-led home blood pressure monitoring program on reducing in-office BP readings in patients with uncontrolled hypertension.
Methods: This a retrospective cohort analysis of a random sample of 200 patients enrolled in the pharmacist-led home blood pressure (HBPM) monitoring program from December 1, 2018 to August 31, 2019. Patients are included in the study if they have a diagnosis of hypertension, enrolled in the pharmacy HBPM program, 18 years of age or older, have access to telephone or electronic medical

record communication system, have at least one visit with the pharmacist and be willing to work with the pharmacist for follow up. Pregnant patients and prisoners will be excluded. The primary outcomes of our study include the change in systolic blood pressure (SBP) and diastolic blood pressure (DBP) from baseline clinic reading to 6 months (± 4 weeks) with pharmacist management. Selected secondary outcomes include change in clinic SBP and DBP from baseline to 3 months (± 4 weeks) with pharmacist management and achievement of goal clinic BP of <140/90 mmHg. Data collection points will include patient demographics such as age, gender, baseline antihypertensives prescribed and co-morbidities. Baseline and final SBP and DBP readings and duration of time spent working with the pharmacist will be collected to assess the primary and secondary outcomes. Medication interventions made by pharmacists including initiation of antihypertensives and dose adjustments will also be collected.
Results: To be presented at the 2021 Multidisciplinary Scholarly Activity Symposium.
Discussion: To be presented at the 2021 Multidisciplinary Scholarly Activity Symposium.

O9 **A Comparison of Oral Antibiotic Step-Down Therapy in Gram-Negative Bacteremia Based on Bioavailability**. (Elizabeth Poole, PharmD, BCPS; 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 ≥ 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 (≥ 50% total treatment on oral antibiotic) versus late transition (<50% total treatment on oral antibiotic), and efficacy of short course total treatment duration (≤ 10 days) versus long course total treatment duration (>10 days).
Results: To be presented at the 2021 Multidisciplinary Scholarly Activity Symposium.
Discussion: To be presented at the 2021 Multidisciplinary Scholarly Activity Symposium.

O10 **Tobacco Treatment Health Systems Change: Process Improvement Project**. (Annette McDaniel, NP-C, NCTTP; Cassie Richardson, PharmD, BCACP, TTS; Jill Sullivan, PhD, HSPP, TTS)

Introduction: Tobacco use is directly associated with a dramatic increase in morbidity and mortality and is the leading cause of preventable death. Cigarette smoking is responsible for more than 480,000 deaths per year in the United States. Nicotine dependence caused by tobacco use is an addiction and a chronic disease that requires evidence-based strategies to treat. Unfortunately, many healthcare providers are not aware of current clinical practice guidelines and are not equipped to treat nicotine dependence. Moreover, implementing health systems change to treat nicotine dependence is complex and challenging. Community Health Network (CHNw) recognized the need to implement evidence-based nicotine dependence treatment and standardize tobacco treatment throughout the organization in an effort to improve the health and outcomes of patients. Knowing the importance of treating nicotine

dependence, CHNw invested resources to improve tobacco treatment throughout the organization. Initial workflow assessments performed on current state practices showed a lack of adherence to clinical practice guidelines and a wide degree of clinical variation treating patients. In addition, there were no systems in place for data collection around tobacco use and treatment.
Methods: In March 2018, CHNw was awarded a grant from the Indiana State Department of Health, Tobacco Prevention Cessation Commission to create a health system change to improve nicotine dependence. A Nicotine Dependence Program (NDP) Director position was created to mobilize a network-wide strategy to combat tobacco use disorder. With the support of executive level leadership, the NDP director collaborated with a multidisciplinary group and began a process improvement project to implement evidence-based nicotine dependence treatment and decrease clinical variation. The multidisciplinary group included pharmacists, wellness coordinators, physicians, nurse practitioners, data analysts, a psychologist, tobacco treatment specialist, and an outcome and performance manager to guide the work. Current-state workflow mapping identified standardization opportunities, which led to creating an ideal-state workflow supported by clinical practice guidelines. The multidisciplinary workgroup focused their efforts to implement:

1. Standard clinical counseling protocol in adherence with the clinical practice guidelines
2. Standard evidence-based based tobacco treatment pharmacotherapy protocol
3. Standard Tobacco Treatment Training for clinicians
4. Standard clinical tobacco treatment documentation
5. Data management and outcome reporting system

Results: To date, the workgroup has created standardized NDP clinical protocols, a Tobacco Treatment Specialist (TTS) clinical manual, information technology infrastructure for data collection, and a NDP dashboard for data management and outcome reporting. In addition, the organization provided TTS training to sixty healthcare professionals. The TTS training was provided by a nationally accredited program and offered an intensive, weeklong training to equip professionals with the knowledge to provide evidence-based tobacco treatment. The multidisciplinary workgroup completed the work in 18 months. In 2020, 537 unique patients were served in the NDP with a total of 2,114 tobacco treatment visits, and a tobacco quit rate of 30%.
Discussion: The CHNw NDP process improvement project will provide a foundation to expand tobacco treatment throughout a large health system.

O11 A Novel Radiograph System for Classifying Patellofemoral Instability Based on Symmetry and Predisposing Anatomy

. (Rodney W. Benner, MD; K. Donald Shelbourne, MD; Jacob Bailey, Student)

Introduction: Optimal surgical management for patellofemoral instability remains poorly defined. Traumatic injuries in otherwise normal knees may require different management than instability in patients with anatomic predisposition. The purpose of this study was to describe a novel classification system for patellofemoral instability/dislocation based on plain radiographs that may assist the surgeon with treatment decision making.
Methods: This system classified patellofemoral instability according to two criteria: symmetry between the knees and evidence of predisposing anatomy. These determinations were made exclusively from plain knee radiographs, specifically the bilateral Merchants' view and 60-degree lateral view. Between February 2003 and May 2019, 290 patients who were treated operatively for patellofemoral instability/dislocation were classified based on their pre-operative radiographs. We evaluated the Merchants' view radiograph for symmetry between the knees for placement of the patella in the trochlear groove. Evidence of linear displacement, lateral tilt, and patella-alta were considered in determining predisposing anatomy. Patients with symmetrical radiographs and no predisposing

anatomy were classified as Type I. Patients exhibiting an asymmetrical lateral tilt/displacement on the involved knee compared to the uninvolved, with no predisposing anatomy, were classified as Type II. Patents with symmetric radiographs, but had evidence of predisposing anatomy were classified as Type III. Patients with combined asymmetry and evidence of predisposing anatomy were classified as Type IV. Preoperative radiographs were then compared to postoperative radiographs to determine if surgery successfully corrected for the identified asymmetry and/or predisposing anatomy. Interrater reliability was measured between the operating surgeon and a research associate with a blinded sample group of 51 subjects. Intrarater reliability was measured with a blinded sample group of 50 patients treated for patellofemoral instability who were age/sex matched to patients without patellofemoral instability.
Results: Intrarater reliability was established at 96% (n=100) in a test group of patellofemoral patients age/sex matched with patients without patellofemoral instability. Interrater reliability was established at 98% (n=51) in a test group of all Patellofemoral patients. 12% (n=35) of the patients were classified as Type I. 33% (n=95) of the patients were classified as Type II. 8% (n=22) of the patients were classified as Type III.48% (n=138) of the patients were classified as Type IV. Comparing preoperative and postoperative radiographs 99% of patients' surgery corrected for the intended asymmetry and/or predisposing anatomy.
Discussion: This classification system is highly replicable with excellent inter- and intrarater reliability. This novel classification may help facilitate communication between providers, help guide further research into surgical options, and could assist surgeons in treatment decision making.

O12 Postoperative Hemoglobin Measurement May Not be Necessary Following Primary Total Knee Arthroplasty. (Rodney W. Benner, MD; Steve Shively, DO)

Introduction: Despite improved blood management strategies and overall decreased transfusion rates after primary total knee arthroplasty, it is still commonplace for surgeons to routinely monitor postoperative hemoglobin values postoperatively. This study aimed to eliminate the need for routine complete blood counts postoperatively in primary total knee arthroplasty patients while identifying risk factors that would warrant post-operative hemoglobin monitoring in select patients.
Methods: Patients who underwent primary total knee arthroplasty by the senior author at a single institution between December 2016 and June 2020 were included in this study, a total of. Tranexamic acid was used in a standardized fashion in all patients. Beginning in March 2018 the senior author transitioned to performing primary total knee arthroplasty without tourniquet assistance, leaving 134 procedures with tourniquet and 217 procedures without. Mean age of patients at the time of surgery was 64.9. Total blood volume was calculated for all patients using Nadler's formula. Patients were separated into 4 groups based on total blood volume, those less that 4000ml, those between 4000 and 5000 ml, those between 5000 and 6000 ml and those above 6000ml. Transfusions and hemoglobin at risk patients were compared between the two groups. Hemoglobin values were obtained preoperatively and on post-operative days 1 and 2 and were used for evaluation. Patients with a preoperative hemoglobin value less than or equal to 12.0 g/dl were compared to those with preoperative values greater than or equal to 12.1 g/dl. Patients with post-operative day 1 hemoglobin values of less than 9.0g/dl were identified as a hemoglobin at risk group. Transfusion rates were compared amongst these groups.
Results: Of the 351 patients included in the study, 8 patients received allogeneic blood transfusion postoperatively yielding an overall transfusion rate of 2.3%. The mean preoperative hemoglobin was 14.1 g/dl, post-operative day 1 was 11.3 g/dl and postoperative day 2 was 10.3 g/dl. Transfusion threshold was 7.0 g/dl in asymptomatic patients and 8.0 g/dl in those demonstrating symptoms of anemia including but not limited to tachycardia and dizziness. Transfusion rates were significantly greater in patients with a preoperative hemoglobin less than or equal to 12.0 g/dl. Those patients who

had a preoperative hemoglobin less than or equal to 12.0 g/dl had a transfusion rate of 13.0% while those with a preoperative hemoglobin greater than 12.0 g/dl had a transfusion rate of 1.5% (P=0.004.) Of those with a preoperative hemoglobin less than or equal to 12.0 g/dl, 42.1% of those patients went on to hemoglobin at risk values (<9.0g/dl) on post-operative day one, of those with hemoglobin values greater than 12.0g/dl , only 3.0% of patients dropped to a hemoglobin less than 9.0 g/dl on post-operative day 1 (P<0.001.) This hemoglobin at risk group had a significantly higher transfusion rate at 50%, while those with a post-operative day 1 hemoglobin greater than 9.0g/dl had a transfusion rate of only 0.6% (P<0.05). Those patients with a preoperative hemoglobin less or equal to 12.0 g/dl had a mean length of stay of 2.1 days while those with higher preoperative values had a lower mean length of stay of 1.5 days (P= <0.0001.) The transfusion rate with tourniquet use was 2.9%, without tourniquet use the transfusion rate was 1.8% which did not demonstrate statistical significance (P=0.7.)
Discussion and conclusion: Current blood management protocols including routine tranexamic acid usage in primary total knee arthroplasty mitigates the need for ordering routine complete blood counts in patients with a preoperative hemoglobin greater than 12.0 g/dl. Our transfusion rate in this population was 1.5% which included only 5 transfusions out of 328 patients. Three of these 5 patient demonstrated clear signs and symptoms that would have provoked ordering complete blood count postoperatively. A total of 869 complete blood counts were ordered over the course of this study and 801 of these were ordered in patients whose preoperative hemoglobin was greater than 12.0 g/dl. Using an institutional cost of $132 for running an individual complete blood count, this accounts for potential savings of $105,732 over the course of the study or roughly $42,292 per year of savings for a single surgeon performing a high volume of total knee arthroplasties.

O13 The Impact of Preoperative Rehabilitation on Outcomes Following Total Knee Arthroplasty.

(Rachel Slaven, PT, DPT; Scot Bauman, PT, DPT)

Purpose/Hypothesis: Knee osteoarthritis (OA) continues to increase; thus, total knee arthroplasty (TKA) is becoming more common.1 Postoperative rehabilitation is a well-accepted treatment plan for improving outcomes after TKA; however, preoperative rehabilitation is not strongly supported.2-5 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: Between 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.

O14 **Team Treatment of the Arthritic Knee from First Office Visit to Last Post Op Visit.** (William Claussen, PT; Scot Bauman, DPT, PT)

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.

O15 **Return to Sport and Subsequent ACL Injury After ACL Reconstruction with Contralateral Patellar Tendon Graft**. (William Claussen, PT; Sarah Eaton, PT, DPT, ATC; K. Donald Shelbourne, MD, Rodney W. Benner, MD, and Tinker Gray, MA)

Hypothesis: Early return to sports is considered to be 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 (KT1000 Arthrometer), level of post-operative activity, and second ACL injury were recorded within 5 years of surgery. Injury rates were evaluated based on time of return to sport before and after 6 months; 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 those patients were able to return to pre-operative levels of sport. Stabilityresults showed 91% of patients had <3 mm difference between knees. 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 tear rate was 5.3% in patients who returned to sport at <6 months and 4.5% in patients who returned at ≥6 months postoperatively, which was not statistically significantly different (p=.482). There was no correlation between time of return and time of subsequent tear to either knee.

In the <18 year old subset, the overall ACL graft tear rate was 10% and the contralateral ACL tear rate was 8.9%. Subsequent graft tear rate was 10.5% in patients who returned to sport at <6 months and 9.3% in patients who returned at >6 months postoperatively, which was not statistically significantly different (p=.622). Subsequent contralateral tear rate was 8.4% in patients who returned to sport at <6 months and 9.7% in patients who returned at >6 months postoperatively, which was not statistically significantly different (p=.598).
Conclusions: ACL reconstruction using a contralateral PTG reliably restores stability to the knee, and 89% of patients returned to pre-surgery level of sport. Subsequent tear rate to either knee was highest in the <18 year old subgroup: however, the time of return to sport was not a factor.
Clinical Relevance: The subsequent ACL graft tear rate orcontralateral ACL tear rate was not statistically significantly different based on return to sport at <6 months or ≥ 6 months postoperatively, even in the <18 year old population. Furthermore, there was no correlation of time of return to sport and time of subsequent injury.

O16 **Transitioning to a New Event Reporting System: A Network Approach**. (Martha Dillon, MHL, BSN, RN, CCRN-K; Catrina Adkinson; Andee Bateman, MSN Ed. RN; Ginger Breeck, MSN MBA RN CPHRM; Julia Clement-Voigt, BSN RN CPHRM; Clint Cloys; Toyce Cord, BSN RN CHEP; Nikki Dawson; Melissa Evanson, BSN, RN; Kinsey Forston, BSN, RN; Rachel Jaques, ASN, RN; Erica Kibler, MHL, BSN, RN; Alberta Lathan, MHA, RN, CPHQ, CPHRM; Steve Linerode, MS RN RRT CPHRM FACHE CHSP CHEC II CHEP HSEEP-CX; Erin Norris, BSN, RN; Sarah Rankin, MBA, PMP, CLSSBB; Carol Terheide, MSN, RN, CPHRM)

Introduction: Community Health Network, as with many other healthcare organizations, has historically had a safety event reporting mechanism in place since the organization's inception. These event reporting mechanisms have served to identify events that could or have reached patients and had potential to or did cause harm to patients or caregivers. In 2018, the Network had the opportunity to assess options to expand upon a basic event reporting system that had been in place for many years, the program Midas. Midas had significant limitations in data extraction and in customization of event reporting content, though had benefits such as ease of use for end users. Midas no longer would be available for use in 2021 or 2022, so the Network tasked administrators of Midas to assess other event reporting options.
Methods: Network administrators and experts in utilizing the established Event Reporting System proceeded to rank available vendor options and determine which vendor would best suit the Network's event reporting needs currently and accommodate future needs. Vigilanz was chosen for its cost effective nature, customization of entries, and ability to pull more robust data on a regular basis. Administrators of the system in Risk Management, Patient Experience, Claims, Peer Review, and IT collaborated to assess best practices within the existing system, create solutions for opportunities in the prior system, and build practices within the new system to fill gaps in prior practice, operationalizing best practices in event reporting, data collection, and collaboration of multidisciplinary teams. The acronym PACER was implemented in conjunction with Vigilanz to describe the event reporting system: Patient And Caregiver Event Reporting system. PACER spans the breadth of event reporting needs, including Employee Injuries, Security Events, Patient Complaints and Grievances, Safety Events and Harm Events.
Results: PACER's implementation has led to stable reporting year over year 2019 through 2020 when a new system would typically see decreases in reporting, and 2021 has shown a 4% year over year increase in January and February's event report entries. Implementation has also led to enhanced ease of use in reporting with customized forms, and ability to pull data specific to end users' needs for review of events and process improvement opportunity identification.

Discussion: PACER's role in the Network will expand to include Causal Analysis provision and use of proactive reporting mechanisms to address safety concerns proactively rather than in a retrospective manner.

O17 **The Safety Showdown: An Educational Escape Room's Impact on Inpatient Caregivers' Perceptions of and Practice Change in Patient Safety**. (Darami Daniels, MSN, RN, NPD-BC; Briyana Laurine Monique Morrell, PhD, RN, CCRN-K,CNE; Heidi Eukel, PharmD, RPh)

Background: Preventing falls in the hospital requires caregiver competency in assessing patients' fall risk and other risks for harm. Caregivers require education on new safety strategies to prevent falls. Educational escape rooms engage learners in active learning and teamwork. It is unclear if they result in nursing practice change related to safety and fall prevention.

Method: A team at a mid-sized Midwest hospital developed and implemented an escape room, involving patient safety and fall prevention concepts. Escape rooms are live-action games that use puzzles and tasks to complete a goal within a given period of time. Three hundred ninety-eight nursing and ancillary staff from critical-care and medical-surgical units participated in the escape room. The escape room included tasks that required thinking about safety and mobility techniques for a patient with diverse needs.

Results: Participants in a post-survey had favorable perceptions of the escape room. The average overall gaming perception score was 4.3 (SD=0.64) out of 5, showing a highly favorable perceived impact of the gaming activity on their own learning. Results were also compared based on demographic variables and previous training. A post hoc analysis indicated that participants with less than one year in the current role had a mean perception score (4.50) that was statistically significantly higher than the mean perception score (4.06) of the participant with 20 years or more in the current role. This difference is in line with our prediction that younger participants would more positively favor educational gaming. Participants who had taken Hester Davis training in the past had a slightly higher mean composite perception score (4.33) compared to those who hadn't (4.26) but this finding was nonsignificant ($p = 0.37$). Participants who had a patient fall while they were caring for them had a slightly lower mean composite perception (4.25) compared to those who hadn't (4.37) but this was also not significant ($p = 0.145$). This result suggests that effectiveness of the gaming activity was perceived as being a positive learning activity independent of previous levels of expertise on the subject matter. Participants indicated a high desire to change their practice. For the question, "On a scale of 0 to 100, (0 = no desire, 100 = strong desire), what level of change will you make to your daily practices based on what you've learned today," the average desire rating was 74 (n = 361). In a delayed post-survey, participants discussed resultant patient safety practice changes. They also mentioned themes related to teamwork, critical thinking/learning, and largely positive perceptions of the learning activity.

Conclusion: Nursing and ancillary staff positively perceived the educational escape room on safety and fall prevention. The use of puzzles encouraged participants to critically think and work together as a team in an engaging setting compared to traditional, passive teaching methods. They both desired to improve their practice and recalled actual practice change in the months after the event.

O18 **New Nurse Driven Mobility Utilizing AM-PAC 6 Clicks.** (Amanda McCalment, MSN, RN, AGCNS-BC; Megan Siebert, MSN, AGCNS-BC, PCCN)

Introduction: 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.
Aims: 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: Using a Quasi-experimental design and convenience sample, a nurse driven Mobility Program was implemented on two medical units within an acute care hospital system. The target population were 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) received education on the mobility program including mobility equipment and the AM-PAC 6 Clicks assessment. The AM-PAC 6 Clicks assessment was completed upon admission to the unit, daily, and upon discharge. Based on the 6 Clicks score, the patient's mobility program was developed within 4 phases (ranging from Range of Motion to ambulation in halls). Staff then implemented the associated mobility phase. When a patient met their mobility goal, the next phase of mobility was attempted.
Result: There was a statistically significant reduction in length of stay for patients who had increased frequency of mobility (n=200; rho= 0.3, p=0.0005). Nurses were able to accurately score AM-PAC 6 Clicks when compared to the score conducted by a physical therapist (n=65; Pearson correlation coefficient is 0.85, P-value < 0.05).
Conclusion: Nurses can accurately utilize the AM-PAC 6 Clicks mobility assessment tool for medical patients within the hospital, as well as effectively implement a mobility program utilizing this score. Using the 4 phase mobility model, nursing can progress a patient's mobility across the continuum and allow for more appropriate physical therapy intervention. Providing an accurate tool to assess a patient's mobility and model of progression can impact length of stay, quality indicators, and provide a communication tool with Physical Therapy fostering a more multidisciplinary approach to mobility.
Limitations: We compared the length of stay for the month before the study began, compared with the duration of the intervention. The intervention occurred during peak flu season, which may be a reason that we did not see the length of stay outcomes we had been anticipating. We were also limited in the data collection nearing the end of the study, as the COVID-19 pandemic was spreading across the country. This limited the number of patients whose data we could collect in our implementation group.

O19 Revolutionizing Ambulatory/Primary Care Nursing with a Unique Academic-Practice Partnership.

(Jean Putnam, DNP, MS, RN, CPHQ, NEA-BC; Kris Widmann, MSN, RN, AMB-BC)

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 primary care nursing over a 4-year period.
Methods: A primary care curriculum for pre-licensure baccalaureate nursing students and post-licensure RN-BSN students was created in addition to creating a new top of license role for the registered nurse. The current state of curricula did not involve education in primary care nursing. In partnership with University of Indianapolis (UIndy) School of Nursing, a primary care overview course and subsequent primary care nursing classes were developed. They were implemented with 19 credit hours and 150 clinical hours, resulting in the first Minor in Primary Care Nursing in the country. With these implementations, new grads will be eligible for entry into primary care, increasing patient access, and improving patient outcomes.
Results: Nine students completed the first primary care overview course at UIndy, three students completed the second informatics course, and 24 students are enrolled in the Spring informatics course. Nine total students are on track to complete the Minor by the end of Fall 2021. Three enhanced RN's in seven clinical sites were secured in clinical rotations, and twelve total preceptors have been trained. Standardized instruments are utilized to measure student perceptions of their curriculum and

preceptors, preceptor perceptions of their training, and patient perception of their care rendered in the primary care sites.
Conclusion: An enhanced RN role in ambulatory/primary care nursing is necessary to improve access to health care. 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 primary care nursing, create a pipeline for new nursing graduates to enter primary care nursing, and to improve outcomes.

O20 **Effectiveness of Awake Prone Positioning in Adult COVID-19 Patients.** (Amanda Nell McCalment, MSN, RN, AGCNS-BC; Angie Foley, MSN, RN; Brittany Myers, MSN, RN, ACCNS-AG, PCCN; Kelly Woker, MSN, RN, AGCNS-BC; Megan Siebert, MSN, AGCNS-BC, PCCN; Jessica Gregory, MS)

Introduction: With the recent Coronavirus Disease 2019 (COVID-19) pandemic, the advancements in knowledge related to the virus has been exploding in a quest to improve patient's outcomes. Some patients presenting with respiratory type symptoms have been found to develop Acute Respiratory Distress Syndrome (ARDS) due to pneumonia. One intervention that has shown to provide significant benefits of patients displaying moderate to severe ARDS is prone positioning with mechanical ventilation. While some patients may require immediate intubation, other patients have presented with mild respiratory effects requiring minimal to moderate supplemental oxygen. Prior to COVID-19, the prone position was exclusively studied on mechanically ventilated patients. While two systematic reviews describe awake prone positioning to appear safe to perform to decrease respiratory deterioration, it is still unknown about the effectiveness with ARDS in COVID-19 patients due to do the lack of high-quality studies. Early application of awake prone positioning did show a delay or avoidance in intubation in small sample sizes. While expert consensus recommends further trials of awake prone positioning to be performed to fully determine the effectiveness.
Objectives: In Covid 19 positive awake adult patients, does regular use of the prone position reduce mortality? In Covid 19 positive awake adult patients, does regular use of the prone position reduce Intensive Care transfer? In Covid 19 positive awake adult patients, does regular use of the prone position reduce intubation?
Methods: A retrospective, quasi-experimental design will be used to collect data on COVID-19 positive patients requiring prone positioning (PP). The target population are those patients admitted to CHNw acute care hospital who tested positive for COVID-19 and participated in awake prone positioning. A control group will be those patients who did not participate in awake prone positioning and did not meet exclusion criteria. Nursing staff were educated on awake prone positioning via roaming in-services and email during April 2020.
Results: 196 patients have been proned since April. Of those, 107 were never transferred to the ICU. 89 patients required an ICU transfer; 64 were intubated.

O21 **A Case of Lower Extremity Compartment Syndrome and Lis Franc Fracture Following a Mauling by a Pit Bull**. (Joe 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 undergone 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 pit bull. We also highlight the serious complications associated with these injuries and the post-operative outcomes.

O22 **Attendance at Counseling Post Sexual Assault.** (Deb Lyons, DNP)

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.

O23 **Coming Out in a Post Marriage Equality America- Preliminary Data.** (Nicole 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. 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 ages 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 50 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: To be presented at the 2021 Multidisciplinary Scholarly Activity Symposium.
Conclusion: To be presented at the 2021 Multidisciplinary Scholarly Activity Symposium.

POSTER PRESENTATIONS

P1

Community Health Network

Providing a Framework to Address Health Care Disparities

A Kassam, MD, K Windnagel PsyD, K Jones, LCSW, H Wheeler, DO,
P Karalis, MD, L Ruekert, PharmD, K Zoppi, PhD, MPH

BACKGROUND

In 2020, the American Medical Association reported, racial, ethnic, and other under-represented people experience a lower quality of care and suffer higher morbidity and mortality. Recent national events have charged healthcare organizations to face factors which discriminate against marginalized groups of patients.

This important call to action has galvanized organizations, however, there is a significant lack of resources to help guide them. The mission of this initiative is to provide a framework to better understand systemic factors which create disparities. This framework will provide the structural support for programs to enact meaningful change within their team in addressing diversity, equity, and inclusivity.

References
1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]

METHODS

Subjects:

The subjects for this intervention were the Graduate Medical Education community at Community Health Network. This consists of an interdisciplinary team of faculty, residents, and staff of two family medicine residency programs, psychiatry residency program, podiatry residency program, as well as a hospitalist fellowship program.

The core planning team consisted of representatives from multiple programs and professional specialties in order to plan content for nearly one hundred participants.

METHODS: CONTINUED

Intervention/Changes

The team looked to create a curriculum which would begin to address concepts that are integral for a team and system to incorporate for meaningful change. The 75-90 minute virtual workshops consisted of the following:

1. Diversity, Equity, and Inclusion & Health Care Disparities
2. Implicit Bias & Influence on Healthcare Systems
3. Microaggressions & Communication
4. Using Cultural Humility to Provide Patient Centered-Care & Address Disparities

The team utilized various methods to administer our material including didactics, self-assessments, workbook materials, in-session surveys, as well as group facilitated activities.

Measure: Change on the Accreditation Council for Graduate Medical Education (ACGME) Diversity Sub-Section Survey.

Every spring ACGME conducts surveys to assess the learning environment at institutions. The Diversity Sub-Section will be an important marker to assess if the curriculum has enhanced the clinical learning environment.

RESULTS

Measure: The results for the initiative are still pending. The ACGME survey results will be distributed in late Spring.

In-Session Feedback: The team was able to assess attitudes via in-session polls and surveys. The audience showed good engagement, and the core team found the audience to be in different stages of learning and incorporating these concepts into their practice. The majority of feedback felt the workshop to be informative and helpful with creating dialogue surrounding these concepts. Other feedback, while minimal, noted the workshops to not be the best use of time and would rather do clinical work.

DISCUSSION

Key Findings

This framework helped the core team realize baseline understanding and level of change for the institution. This will allow for continued initiatives to affect change. It was found that a mix of different learning tools provided good levels of engagement and fostered a psychologically safe environment.

Limitations

Virtual workshops may limit the ability to take individuals outside of their comfort zone. While a possible limitation, it also allowed for easier access to the entire department. There were some difficult situations the facilitators encountered with resistance towards these concepts. Further training and support are needed in order to best advocate for application of this work.

Next Steps and Sustainability

This foundational framework is a stepping stone to continue to foster engagement across our institution. A common language and expectations must be the linchpin in instituting change.

P2

Clinic Policy for Opioid Contract Compliance

A. Sporleder, PGY3, DO, J. Holtz, PGY2, DO, J. Kiefer, DO, K. Van, DO, L. Ebeyer, PSR, N. Sickle, RN, J. Buitendorp, CMA, C. Boner, CMA, L. Polen

Community South Osteopathic Family Medicine Residency Program

Greenwood, IN

Background

- 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 informed consent
  - Patient follow-up
  - INSPECT reports
  - Drug monitoring tests
  - Daily high dose threshold and treatment agreement
- To comply with state law, our clinic has an "Opioid Policy for CSOFM" that entails the following:
  - Use of opioid contract between patient and provider
  - Use of banners and dot phrases as key identifiers within the patient charts

Project Objective

- To achieve a 75% patient compliance rate with the "Opioid Policy for CSOFM" over a 6 month time frame

Method

- Using EPIC EHR, patients who received an opioid prescription from July 2018 through June 2019 from a provider at Community South Osteopathic Family Medicine Residency were identified
- Patients were then contacted to schedule "pain management" appointments to establish a contract with their PCP
- Residents and faculty were educated on the following:
  - Dot phrases available to be used by CMAs for refill requests (a)
  - Dot phrase available to be used in patient banners as identifiers (b)

(a)

Pt currently on contract? Yes
Last refill request: 3/11/2021
Last UDS: 8/10/2020
Last office visit: 1/27/2021
Next office visit if scheduled: 4/14/2021

Documentation

(b)

Patient Care Coordination Note

Alexandria Nicolle Sporleder, DO Thu May 06, 2021 7:43 PM

Pt is currently under Pain Mgmt Agreement with Community South Osteopathic Family Medicine Residency

Red flags / provider concerns / pain mgmt notes (e.g. poor/good compliance, frequent lost scripts, hx substance abuse): *
Associated dx for pain meds: *
Other specialists involved in patient's care: *

INSPECT last reviewed: *insert date* and was consistent/inconsistent with expectations
UDS Last Completed: *
Lab Results

Component	Value	Date
PRESCBDDRUG1	Oxycodone	04/30/2021

CPN Pain Management Treatment Agreement Signed: yes / no
Last Pain Assessment Completed (PADT): *
Baseline Risk Assessment Tool Completed (COMM/SOAPP-R): yes / no
Baseline Mental Health Screening Completed (PHQ9 and GAD7): yes / no

Important pain management notes: *

Results

- 177 patients receiving an opioid prescription identified:
  - 52 (29.3%) were not in compliance
- Through staff/resident/faculty education, patient education, and office visits, we were able to reach our goal of 75% compliance in 6 months
- Furthermore, over a total 12 month period, we were able to achieve 100% compliance
- 100% compliance was maintained through March 2020 – due to pandemic status, processes were shifted but we are in the process of reintegrating this policy

References

- CDC Guidelines for Prescribing Opioids for Chronic Pain cdc.gov/drugoverdose/prescribing/guideline.html
- Chronic Pain Management and Opioid Misuse: A Public Health Concern (Position Paper) www.aafp.org/about/policies/all/pain-management-opioid.html
- Opioid Prescribing Guidelines in.gov/isdh/28027.html

P3

Impact of Food Delivery Intervention on Diabetic and Heart Failure Readmission Rates

K. Jones, LCSW, K. Windnagel, PsyD, HSSP, A. Sporleder, DO, PGY3, S. Gick, DO, PGY3, N. Clark, DO, PGY3, C. Smouse, DO, PGY3

Community South Osteopathic Family Medicine Residency Program

Greenwood, IN

INTRODUCTION

Research has demonstrated that medically tailored meal delivery programs can reduce hospital admissions along with medical spending, both of which are important considerations as health care systems transition to accountable care reimbursement models (Berkowitz, et al., 2018). For example, Berkowitz, et al. (2018) found that patients enrolled in a medically tailored meal program saved an average of $570 per month in medical spending compared to patients not enrolled in the program. Furthermore, receipt of medically tailored meals was associated with fewer emergency department (ED) visits (adjusted incidence ratio: 0.30) and fewer inpatient admissions for medical conditions (adjusted incidence ratio: 0.48) (Berkowitz, et al., 2018). In 2018-2019, Community Health Network's South Hospital partnered with Meals On Wheels (MOW), a local community-based meal delivery agency, to conduct a one-year pilot program which supplied medically tailored meals for patients with medical conditions that put them at an increased risk of hospital admissions. The program provided patients with 30 days of medically tailored meals delivered to their home at no cost to the patient.

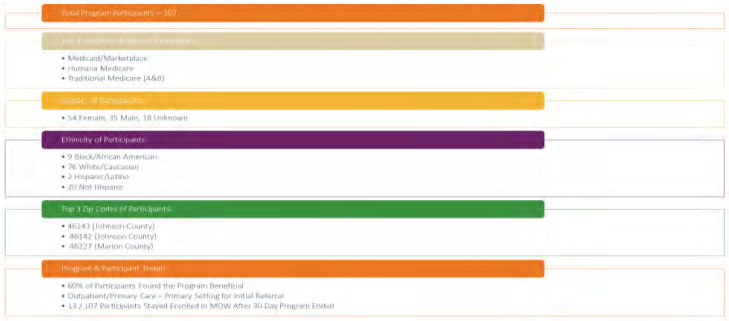
OBJECTIVES

- This team was invited to retroactively evaluate the impact of a medically tailored meal intervention on readmission rates in patients diagnosed with type 2 diabetes mellitus and congestive heart failure within Community Health Network
- The primary goal of this project was to explore whether the intervention of the medically tailored meals positively impacted clinical outcomes and health care utilization rates (e.g. inpatient admissions; emergency department visits) and/or improvement in health outcomes (e.g. A1C levels; weight).
- In addition to evaluating readmission rates and clinical outcomes, the team explored supplementary patient factors (e.g. social determinants of health) to explore impact on overall health

METHODS

Data was collected through review of electronical medical records within Community Health Network and the intake/discharge documentation that was obtained by MOW. Data related to health care utilization and health outcomes was identified in patient charts by this team of reviewers, as well as general patient demographics such as gender, home zip code, and primary insurance payor. Subjective data of the patients' perspective of the meal program and whether they continued with the service after the 30-day program ended was also collected.

RESULTS: DEMOGRAPHICS & TRENDS



RESULTS: STATISTICAL OUTCOMES

Paired-sample t-tests were conducted to compare total hospital/ED admission rates for patients with type 2 diabetes mellitus or chronic heart failure in the year prior to receiving medically tailored meals to the total hospital/ED admission rates in the year after receiving medically tailored meals. Results were statistically insignificant, which was contrary to this study's hypothesis and findings of similar interventions. Specifically, there was not a significant difference in the number of hospital admission rates one year before program referral (M= 1.31, SD= 2.46) and hospital admission rates one year after program referral (M=0.63, SD=2.37); t(90)=3.42, p=1.9. Similarly, there was not a significant difference in the number of ED admission rates one year before program referral (M=2.87, SD=75.72) and ED admission rates one year post referral (M=2.21, SD=53.167); t(76)=2.62, p =1.99. There was a statistically insignificant but notable trend demonstrating that patients lost weight while receiving the medically tailored meals but gained the weight back after program was discontinued.

	Average # admissions in year prior to program referral	Average # admissions 30 days post program referral	Average # admissions 60 days post program referral	Average # admissions 6 months post program referral	Average # admissions 1 year post program referral
Hospital	1.38679 (N=107)	0.17757 (N=107)	0.34906 (N=106)	.75 (N=99)	0.61957 (N=93)
ED	2.404 (N=104)	0.212 (N=104)	0.608 (N=103)	1.616 (N=86)	2.275 (N=51)

DISCUSSION

The results of this study were contrary to what was expected based on previous research which demonstrates the effectiveness of medically tailored meal programs in reducing hospital readmission rates and improving health outcomes. There are a number of study limitations that may account for these findings. First, the study was underpowered such that the sample size limited the team's ability to detect statistical significance. Second, there were inconsistencies in the documentation of health outcome data available for review (e.g. weight, A1Cs, etc.) which could have confounded the coding process for these metrics. Third, the duration of the intervention (30 days) may have been too short to affect the hypothesized results. For example, it could be that the data gathered better reflected the patient in their "home environment/state" rather than reflecting the effects of the program.

Despite the lack of statistically significant results, the data analysis process revealed numerous learning points which could be applied to implementation of similar programs in the future.

- The goal of this study was to track hospital readmission rates, however, the majority of enrollment referrals for the program came from the outpatient setting (family medicine/Primary Care Providers) instead of providers within the inpatient setting. Given that the intention of this study was to evaluate readmission rates and the majority of the patients were not admitted to the hospital at the time they were provided with the intervention, the data is likely skewed.
- In the future, the duration of the medically tailored intervention should be evaluated carefully. In this study, we considered whether 30 days of meals is enough to have lasting effects in healthcare utilization and chronic health outcomes. When reviewing the subjective data, many patients reported benefit of the service, however, most did not continue with the medically tailored meals after completing the program.
- Implementing a standardized process for enrolling and monitoring desired quality metrics of those enrolled into this program could improve the data analysis and potential outcomes. Suggestions for process improvement would include a protocol for healthcare providers to collect baseline and ongoing health factors that are being targeted. Also, we would recommend to the agency providing the meals to collect consistent subjective information.
- Further analysis of patient specific factors and demographics should be reviewed for potential influence of social determinants of health influencing the outcomes of this program.

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P4

"You can't find work arounds for people that just aren't nice:" Exploring workplace incivility among female, licensed social workers

Lainey Collins, PhD, LCSW, Melissa Ketner, DHSc, LCSW, & Stephanie Rudd, ABD, MSSW, LCSW, LCAC
MSW Program, University of Indianapolis

Background

Over the last two decades, workplace incivility has received growing attention in the literature, with studies focusing on a variety of work environments, primarily in nursing and academia. Given that social work is a female-dominated helping profession, similar to nursing, the lack of literature that discusses experiences of incivility among female social workers is confounding. This study seeks to understand the experiences of incivility among social workers in social work agencies.

Incivility in this study is defined as behavior among co-workers that contributes to feelings of emotional and physical distress

Research Questions

How do women in social work agencies experience incivility from other female colleagues?
What types of incivility are experienced by female social workers in the field?
What types of incivility are witnessed by female social workers in the field?

Design

Participants:

Participants were recruited using a purposive sample of female social work practitioners in a large Midwestern metropolitan area. The 14 participants were 21 years or older, licensed social workers (LSW) or licensed clinical social workers (LCSW), and had at least five years of professional experience. White (13) African American (1)

Measures:

Semi-structured interviews following Charmaz's Grounded Theory approach.

Example questions:

1. How do you feel women in social work experience incivility from other female colleagues?

2. How do you feel gender and other demographic characteristics contribute to workplace incivility?

3. Have you ever been aware of being a part of or engaging in actions or behaviors that could be described as workplace incivility?

Results

Demographic information

Table 1

Sociodemographic Characteristics of Study Participants

	n	%
Age		
18-30	2	14.3
31-45	7	50
46-55	4	28.6
Missing	1	7.1
Years of experience		
1-15	8	57.1
16-24	3	21.4
25-30	2	14.3
40+	1	7.1
Agencies employed		
1-3	9	64.3
4-7	4	28.6
8+	1	7.1
Current supervisory role		
Yes	8	57.1
No	6	42.9
Length of current employment		
0-10	13	92.9
11-20	0	0
21-30	1	7.1
Incivility training		
Yes	2	14.3
No	12	85.7

Theoretical considerations

[illegible]

Discussion

[illegible]

Qualitative study themes of interviews with response examples

- **Impacts of Physical, Emotional, and Mental wellbeing**
- **Impacts on Agency**
- **Communication in the Workplace**
- **Incivility Among Marginalized Populations**

Presented at the Multidisciplinary Scholarly Activity Symposium
May 20, 2021

Limitations and Implications

[illegible]

References

[illegible]

P5

Medicine or Mortgage: Which Will You Choose?

Catherine Miller, DNP, RN, CNE; Toni Morris, DNP, RN & Shannon Moore DNP, RN

UNIVERSITY of INDIANAPOLIS

Introduction

The purpose of this interactive simulation was to enhance cultural understanding and appreciation of vulnerable populations to the traditional BSN nursing student.

The interactive simulation consisted of Sophomore and Senior nursing students participating in the Missouri Action Coalition Poverty Simulation (CAPS).

This simulation took place during the October 2019 Interprofessional Education (IPE) Week.

Participants were to role-play the lives of low-income families; ranging from single parent homes to senior citizens living off of Social Security funds

Materials Needed

- Approximately 15 volunteers to run the individual stations
- Folders of information for each role
- Large space to allow student movement

Objectives

1.Describe how poverty affects individuals, families and systems of care in the United States.

2.Contribute as a team member in their defined role as part of the simulation.

3.Identify through critical reflection the influence of personal biases and values of working with diverse individuals and constituencies, especially those living in poverty.

4. Discuss the importance of engaging in practices that advance social and economic justice.

Student Experience

A live-action interactive simulation to role-play lives of low income families. Understand poverty through an experiential setting, empower students to interact with leaders from the campus and community, and to view poverty as a reality.

Student Outcomes

Students verbalized positive understanding of the communication techniques presented.

Themes from reflective journaling include:

- Increased knowledge of community poverty prevalence and stereotypes
- Empathy for detrimental effects of poverty on self-esteem
- Economic challenges with supporting a household
- The need for increased federal and local support to reduce community poverty and reduce health disparities

Implications for Nurse Educators

This is an interactive, hands-on teaching strategy for foundational concepts for cultural understanding.

The activity allows educators to engage students in the activity, having them experience the hardships of a variety of economic situations rather than being a receptive spectator to traditional lecture material.

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P6

Community Health Network

Who Cares About Follow-up?

C. Smouse, DO, J. Griffith, PSR, M. Morris, DO, T. Daggett, DO, J. Heichelbech, LSW, H. Sims, CMA, S. Hamilton, PSR, H. Wheeler, DO, K. Jones, LSCW

Purpose & Aim:

Follow-up with a primary care physician is often recommended for patients discharged from an Emergency Department (ED)[2, 3]. Close follow up with primary care has been shown to reduce unnecessary readmissions to the ED and/or hospital improving a financial burden on both health systems and patients, as well as ensuring adequate care for unresolved or new concerns[1]. In an effort to provide high quality osteopathic patient care and reduce unnecessary ED readmissions our clinic's inter-disciplinary team, including physicians, patient service representatives (PSR), social workers, and medical assistants, used process improvement methods to improve clinical outreach for ED follow-up.

Project Goals

#1: To contact at least 40% of our department's assigned patients discharged from the ED within 1 week of discharge

#2: To have a follow up appointment completed within 30 days of discharge of at least 50% of those patients who are contacted for outreach

Methods:

An electronic medical record report was established for our inter-disciplinary quality improvement team to identify our clinic's patients who were discharged from a Community Health Network ED within the previous week. Patients on this list were contacted by a PSR from our primary care office to offer a follow-up appointment. The PSR would record data metrics on the outreach services including retroactively reviewing the lists of targeted patients to track whether patients completed follow-up appointments at our office.

- Identifies patients discharged from ED from previous week
- Offers to schedule an office visit for ED follow-up
- Asks if patient wants to speak with a clinical staff member regarding medical concerns
- Outreach service metrics include details of outreach outcomes, scheduling outcomes, and transitions of care coordination
- At the end of each month, PSR would review all patients outreached to record if appointments were completed, cancelled, or patients returned outreach attempts

Results:

During the pre-intervention period, there were 31 patients that met the criteria for this project serving as a baseline data. Of those 31 patients, 7 (22%) were contacted for follow up and all 7 (100%) patients had completed a follow up appointment within the next 30 days. During the post-intervention period, there were 181 patients targeted and the outreach intervention was completed with 129 (71%) of these patients. Of the 129 patients that received the project intervention, 73 (56%) were scheduled for a follow up appointment and 61 patients (47%) successfully completed a follow up appointment within 30 days of discharge.

	Total Patients Discharged From ED	# Patients Contacted Through Outreach	# Patients Completed ED Follow-up Appointment
Pre-Intervention (September 2019)	31 pts	7 pts (22.6%)	7 (22.6%)
Post-Intervention (July 2020 – December 2020)	181 pts	129 (71.2%)	61 (33.7%)

Conclusion:

- Utilization of an ED outreach protocol within the clinic increased the percentage of patients contacted by their primary care team following an ED discharge from 22% to 71% which exceeds project goal #1 to successfully outreach to 40% of targeted patients. We believe the intervention of outreach calls correlates with the 11% increase in successfully completed follow-up appointments within 30 days of ED discharge.
- Additional evaluation of this outreach process is needed to assess if further improvements of clinical outreach could better support project goal # 2 which was to have at least 50% of patients outreached completing an ED follow-up appointment.
- When comparing data between pre- and post- intervention periods, there appears to be a decrease in rate of completed appointments compared to the increase in patient completed outreach calls. We believe this decrease reflects having a larger pool (N) of patients in the postintervention phase which increases data confounds such such as patients cancelling or no-showing the scheduled appointment.
- Data analysis was completed retroactively as the metrics for outreach evolved throughout the project.
- Data only represents patients admitted to CHN ED and excludes EDs from external health systems.
- The team is considering adding a new step within the outreach process to include clinical triage and identify which patients need a follow-up appointment versus those who do not which could improve the data results of appointments completed as patients who are not needing an appointment will not be scheduled.

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P7

Revolutionizing Ambulatory Nursing with a Unique Academic-Practice Partnership

Jean L. Putnam, DNP, MS, RN, CPHQ, NEA-BC
Kristina Widmann, MSN, RN, AMB-BC

Purpose/Significance

Create an enhanced primary care registered nurse (EPCRN) role, practicing at the full scope of license in community-based primary care, resulting in sustainable solutions to address the ambulatory nursing workforce shortage in Indiana, enhance the health and well-being of our patients, address social determinant factors, and recruit and train nursing students in community-based primary care.

Expand a strong academic-practice partnership to both train nursing students and support current RNs in non-hospital settings, specifically in primary care settings.

Objectives

- Develop partnerships and infrastructure to create sustainable ambulatory nurse training for a well-qualified workforce pipeline and improve population health outcomes.
- Increase the number of trained RN's working in community-based primary care settings.
- Improve access to care, emphasizing chronic disease management and preventative services.

ENHANCED PRIMARY CARE RN'S: 3 Total

FROM: March 2020- May 2021

2235 DISTINCT PATIENTS

3639 DISTINCT ENCOUNTERS

This project is supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) as part of an award totaling 2.6 million over four years. For more information, please visit HRSA.gov.

The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by HRSA or the U.S. Government.

Methods

- Create a new top of license role for the ambulatory (primary care) registered nurse.
- Create a primary care curriculum for pre-licensure baccalaureate nursing students
- Create, in partnership with the University of Indianapolis School of Nursing, a primary care overview course and subsequent primary care nursing classes.
- Create the first of its kind MINOR in ambulatory nursing in the country.
- Create a pipeline for entry into primary care nursing as a new graduate.
- Create a primary care nurse preceptor training course, promoting patient-centered, team-based care.

Results

STUDENTS:

Semester 1: Nine students completed course #1. **Semester 2:** Three students completed course #2, **Semester 3:** Twenty-four students (currently completing) course #2. **Semester 4:** Twenty-five students are enrolled in course #1. Nine students are enrolled in course #3- These students **WILL COMPLETE THE MINOR!!**

EPCRN's and PRECEPTORS:

•Three Enhanced Primary Care RN's started the program in seven clinical rotations- Now have two RN's and have utilized a total of ten clinical sites. A total of 10 preceptors have been trained.

- Standardized instruments utilized to measure outcomes in:
  - Student's perception of curriculum and preceptor;
  - Preceptor perception of training;
  - Patient perception of care by the enhanced RN.
- Tools include:
  - The Self-Efficacy and Performance in Self-Management Support tool (SEPPS)[1]
  - Nursing Preceptors' Attitudes and Perceptions Questionnaire[2]
  - The Preceptor's Perception of Benefits Rewards Scale (PPBR)[3]
  - The Clinical Learning Environment, Supervision and Nurse Teacher Scale (CLES+T)[4]

Conclusion

An enhanced RN role in primary care nursing is necessary to improve access to healthcare, yet it is not implemented in primary care settings, where nurses are typically used in triage roles. The challenge remains that while this is needed in practice, it has not been a part of curriculums in nursing. A minor in primary care nursing in an undergraduate nursing program, along with an enhanced RN role were developed to revolutionize the role of primary care nursing, create a pipeline for new nursing graduates, and improve patient outcomes.

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Dr. Norma Hall, DNP, RN-BC, CNE; Dean, UIndy School of Nursing

Dr. Tia Bell, DNP; Assistant Dean, UIndy School of Nursing

Karen Elsea, MSN, RN; Undergraduate Program Director, Assistant Professor; UIndy School of Nursing

Julie Blazek, MSN, RN; Nursing Instructor; UIndy School of Nursing

P8

Using Education to Create a Pipeline for BSN students into Primary Care Practice

Tia Bell, DNP, RN-BC, CNE, Julie Blazek, MSN, RN, Karen Elsea MSN, RN

UNIVERSITY of INDIANAPOLIS
School of Nursing

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 in Indiana.

Objective

Growing challenges exist in healthcare related to the increasing needs of the American aging population requiring greater complexity of medical care. The changing healthcare environment dictates a workforce competently trained to address these health care issues. 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 (Macy Foundation, 2016). Also, noted is the lack of undergraduate nursing curricula that prepares for primary care practice (Wojnar & Whelan, 2017).

Description

To prepare nurses for a career in primary healthcare, our 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. Gap analysis 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. In partnership with a local healthcare system, nursing faculty developed three nursing elective courses including didactic and 50 clinical hours per course. Students in the traditional BSN track that complete all three nursing electives along with select supporting social science courses are eligible for a minor in primary care nursing. Students in the RN-BSN track that complete all three nursing electives are eligible for a concentration in primary care nursing.

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Evaluation/Outcomes

Twelve students have completed at least one of the fi two primary care courses and eleven more students completed the fall semester, 2020. The Self-efficacy and Performance in Self-management Support tool was used to measure student confidence in providing support to patients as they self-manage various disease processes in the primary care setting (Duprez et al., 2016). Results from the SEPSS-36 survey showed that students are confident in their ability to provide patient care. Long-term evaluation will include employment rates for new graduates into primary care nursing positions.

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P9

UNIVERSITY OF INDIANAPOLIS

School of Nursing
College of Health Sciences
College of Applied Behavior Sciences

Perceptions of Interprofessional Education & Addictive Behaviors Before and After Interprofessional Education Week

Toni Morris, DNP, RN; Cathy Miller, DNP, RN, CNE; Jessica Emlich Jochum, PhD, LAT, ATC; Melissa Ketner, DHSc, MSW, LCSW; Kara Cecil, DrPH, MPH; Alison Nichols, OTR, OTD; Briyana Morrell, PhD, RN, CCRN-K, CNE; Jennifer Carmack, DNP, RN; Jane Toon, DNP, RN; Elizabeth S. Moore, PhD

Purpose

Substance use disorders are on the rise globally and Indiana is not immune to the increasing numbers with approximately 1 in 12 residents meeting criteria for the diagnosis of substance use disorder (Indiana University, 2021). Many health professionals are not prepared to care for this population.

Research has found that these professionals have negative attitudes toward patients with a substance use disorder (Van Boekel et al., 2013) and this can lead to less than standard care or even rejection of individuals who are seeking treatment (Volkow, 2020).

Given that health professionals will treat these patients, it is important to educate health professionals on how to reduce stigma associated with substance use. It has been found that interprofessional education (IPE) can instill IPE practice values and competencies in students prior to graduation. It is unclear what impact interprofessional learning events can have on students' perceptions of individuals with substance use disorder.

The purpose of this study was to understand the impact of interprofessional learning events on participants' perception of:

1. Stigmatizing beliefs about substance abuse, and
2. The quality of the IPE Week learning activities.

Implementation

An IPE Week was held September 30-October 4, 2019, and consisted of 20 didactic and experiential learning events, focused primarily on the concept of addictive behaviors.

Assessment

A non-experimental study was conducted to determine:

- If participating in an IPE learning activity changed participants' perceptions of stigma associated with substance use:
  - Measured using the Perceived Stigma of Substance Abuse Scale (PSAS; Luoma et al., 2010) before and after participating in an IPE Week learning event
    - 8 four-point Likert-like questions
    - Higher score indicates perceptions of more frequent negative attitudes toward addiction.
- Participants' opinions on the quality of the learning events they attended were:
  - Measured with the W(e)Learn Interprofessional Program Assessment (MacDonald et al., 2010) after participating in an IPE Week learning event
    - 7-point scale ranging from 1=strongly disagree to 7=strongly agree
    - Higher score indicates a positive learning experience
    - 30-item questionnaire representing 4 subscales:
      - **Structure**: facilitation/teaching quality
      - **Content**: responsiveness to student needs
      - **Service**: provided by the facilitator
      - **Outcomes**: learner satisfaction, gains in knowledge and skill, and attitude change

Results

- Undergraduate and graduate professions represented:
  - Athletic training (AT): 4.5%,
  - Kinesiology: 1.9%,
  - Nursing: 54.3%,
  - Occupational therapy (OT): 14.8%,
  - Physical therapy (PT): 1.2%,
  - Psychology: 6.7%,
  - Public health (PH): 5.7%, and
  - Social work (SW): 6.7%.
- Most participants were female (87.6%).
- 162 students completed the PSAS pre- and post-event:
  - Table 1 shows the change in scores by profession for those programs who had at least 10 students complete pre- and post-PSAS surveys.
- 380 students completed the W(e)Learn Assessment for learning activities they attended.
  - Table 2 shows mean Likert-like W(e)Learn scores for the top 10 attended IPE Week learning events.

Outcomes

Table 1
PSAS: Mean Likert-Like Pre-Event and Post-Event Scores for Total Sample and By Student Profession

	Pre-Event	Post-Event	*p*
	M (SD)	*M* (SD)	
Total Sample (*n*= 162)	2.90 (0.34)	2.76 (0.03)	< .001
Nursing (*n* = 60)	2.88 (0.36)	2.76 (0.43)	.020
OT (*n* = 50)	2.93 (0.35)	2.81 (0.41)	.009
AT (*n* = 20)	2.96 (0.29)	2.74 (0.44)	.007
PT (*n* = 15)	2.73 (0.34)	2.64 (0.39)	.422
PH (*n* = 12)	2.92 (0.34)	2.71 (0.37)	.035

Table 2
W(e)Learn Assessment: Mean Likert-Like Scores for Top 10 IPE Week Learning Events

	Structure	Content	Service	Outcomes
	M (SD)	*M* (SD)	*M* (SD)	*M* (SD)
Phillips Keynote	5.66 (1.29)	5.81 (1.21)	6.23 (0.99)	6.36 (0.96)
Poverty Simulation	6.42 (0.63)	6.41 (0.72)	6.42 (0.82)	6.54 (0.69)
AT-Nursing Simulation	6.89 (0.18)	6.80 (0.26)	6.83 (0.29)	6.87 (0.23)
Narcan	5.88 (1.16)	6.04 (1.15)	6.14 (1.08)	6.19 (1.06)
Committed to Healing	6.74 (0.40)	6.64 (0.61)	6.80 (0.39)	6.86 (0.27)
Pregnancy & Opioids	6.73 (0.40)	6.53 (0.73)	6.68 (0.49)	6.76 (0.38)
SBIRT*	6.22 (0.70)	6.15 (0.72)	6.37 (0.80)	6.12 (0.84)
Tobacco	6.66 (0.63)	6.39 (1.00)	6.39 (1.04)	6.42 (1.14)
Mindfulness	6.01 (0.01)	5.83 (1.38)	6.23 (1.30)	6.09 (1.13)
Escape Room	6.13 (1.13)	6.15(0.94)	6.21 (0.88)	6.34 (0.82)

* Screening, Brief Intervention, and Referral to Treatment

Events

Implications

- IPE Week provided opportunities for students in multiple professions to engage in interprofessional learning events.
- It was noted that the PSAS scores supported a decrease in student perceptions of stigma in regards to individuals with substance abuse. PSAS scores before IPE Week were ~ 3, indicating stigma toward substance abuse. Scores decreased by 0.09 to 0.22, indicating improvement but still the presence of stigma.
- Responses to the W(e) Learn indicated positive perceptions regarding event structure, content, service, and outcomes.
- As a result, faculty are now working to embed interprofessional activities and concepts into course curricula across campus.
- Campus initiatives will continue to educate and support students to instill an awareness of this stigma.

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P10

Community Health Network

Strategic Partnership in Healthcare Training: Shared E-Learning Modules

Scott McNew, MBA
Amanda Ledyard, BS

Introduction

In pursuit of workforce development, Community Health Network (CHN) has affiliated with local education and healthcare institutions. For medical students on rotation, meeting certification requirements of host institutions can be duplicative, lengthy, and in some cases delay clinical training. This project standardized the network's required curriculum for medical student Epic training, adopted use of e-learning modules already shared between two external institutions, and established a system to validate, issue and accept transferred credit for Epic (electronic medical record system) training.

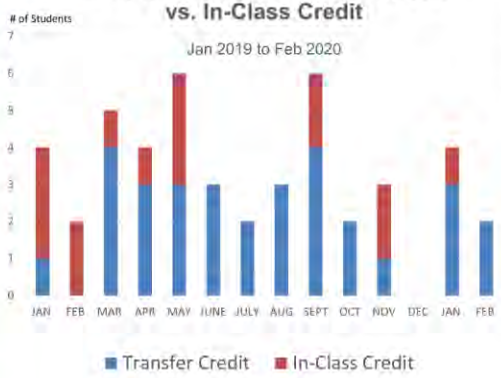
Objective

The objective of this project is to provide a network-to-network system to issue credit for previously completed Epic training. All medical students must be Epic certified prior to beginning clinical rotations at CHN. An assessment of the required e-learning curriculum allowed comparison with other host institutions (Franciscan Health and Eskenazi Health) and validated 29 electronic modules as the standard curriculum. Students submitted Epic transcripts for credit during the onboarding process, which allowed reduced in-class time during orientation.

Conclusion

Conclusion: Strategic collaboration between institutions can create new efficiencies in clinical training and partnership. A host Institution's ability to validate and issue credit for previously completed training may offer substantial time savings for students and training staff. Opportunities exist for school programs that aren't networked onto a shared training platform (group 3: N/A transfer). Occasionally, medical students voluntarily choose to repeat electronic medical records training to refresh skills in Epic. By expanding the network of collaborating programs, institutions and students can collectively benefit when previous training can be validated and credited to clinical students.

EPIC Certification: Transfer Credit vs. In-Class Credit



Methods

Investigation of this business problem included analysis of Epic certification and class data for medical students from January 2019 to February 2020. During this 14-month period, students were given the opportunity to submit Epic transcripts and receive training credit. Transcripts were submitted to CHN staff, for validation of the standard 29 modules. Students were categorized into 1 of 3 groups by their certification method: (1) transfer of credit/ no class, (2) option to transfer/ class-trained, (3) no option to transfer/ class-trained.

Results

Results: 84 medical students were certified during the 14-month project implementation period. 31 students (37%) submitted transcripts for credit and were exempted from in-class training. 15 students (18%) completed in-class training, who had the option to transfer credit, and 38 students (45%) were required to complete in-class training, because no shared platform existed to transfer credit. The standard e-learning curriculum of 29 modules requires an average of 4 hours to complete. In 14 months, 124 hours of in-class training time was credited to medical students who submitted transcripts.

Opportunities to Transfer Credit

P11

Community Health Network

Early mobility in a COVID-19 ICU: An investigation of activity tolerance and patient outcomes

Lauren Cain, MHA, MOT, OTR

Introduction

Coronavirus disease 2019 (COVID-19) is a respiratory tract infection caused by a new coronavirus (SARS-CoV-2) that was first detected in December 2019 in Wuhan, China [1]. While most people infected with COVID-19 develop mild or no symptoms at all, approximately 14% require hospitalization and oxygen support and 5% require intensive care unit (ICU) admission [1]. The benefits of early mobility in mechanically ventilated ICU patients are well documented, including improved functional outcomes, reduced ICU days, and reduced hospital length of stay [2]. There is limited research available regarding the efficacy of early mobility specifically with a COVID-19 patient in the ICU. This study addressed the following research questions:

- What are the outcomes of a COVID-19 ICU patient who receives PT/OT intervention during their hospital admission?
- What is the average length of time before PT/OT is initiated in a COVID-19 ICU?
- What are the current recommendations for mobility progression of patients with COVID-19 requiring an ICU admission?

Results

n=21		n(patients)	%
Average lengths of stay	28.4 days		
Average ventilator days	15 days		
Average days from order until evaluation	12.2 days *with one outlier (38 days) removed, average is 5.75		
O2 needs on evaluation	Room air	2	9.52%
	Ventilator	8	38.10%
	Optiflow/trach collar	3	14.29%
	<6 L NC	5	23.81%
	>6 L NC	3	14.29%
Discharge disposition	Home	7	33.33%
	Acute rehab	6	28.57%
	SNF/SAR	6	28.57%
	RHC	2	9.52%
Notable observations	Adverse events (respiratory distress, cardiac arrest)	3	14.29%
	Tachycardia	3	14.29%
	Increase in O2 demands within 24 hours	5	23.81%

Discussion

Using a standard evidence-based approach of early mobility in a COVID-19 ICU resulted in over 50% of patients experiencing an adverse event, tachycardia, or an increase in oxygen demands within 24 hours of evaluation. These findings help support a model for gradual progression of activity and close monitoring of clinical presentation specifically for patients diagnosed with COVID-19. Current recommendations supported by literature include:

- Initiate postural management by gradually increasing the anti-gravity position of the patient until they can maintain an upright position,
- Undergo these postural variation treatments several times a day [3]
- Keep patients in a sitting position with the head of bed elevated between 45 and 60 degrees [3]

Majority of patients were discharged to a post-acute site of care, and a third of patients were even able to discharge home. This helps to support that therapy involvement is important once indicated in order to assist patients with transitioning to the next level of care, and increasing their independence to support a discharge to home.

Methods

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P12

Community Health Network

Tibiotalocalcaneal arthrodesis following failed triple arthrodesis secondary to infected hardware: A case report

Jay Badell, DPM, MS, Paige Danner, DPM, Daniel Elmes, DPM, MPH

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 tibiotalocalcaneal 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: Tibiotalocalcaneal (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:

Tibiotalocalcaneal 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.

Tibiotalocalcaneal 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.

Conclusion:

While TTC fusion is an excellent procedure, the procedure can be complicated and requires lengthy operating room time under general anesthesia. A thorough conversation with the patient is necessary peri-operatively regarding the long recovery period and appropriate expectations. Therefore, this procedure should be reserved for patients with severe deformity and with limited comorbidities.

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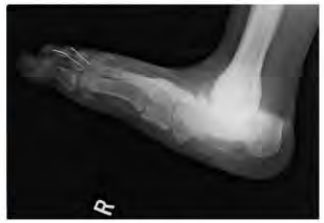
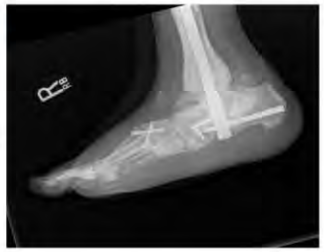




P13

Community Health Network

Sever's Disease: Osteochondrosis of the Calcaneus

Clinton Heyer, DPM;
Austin Quebedeaux , DPM

Statement of Purpose

Heel pain is a cause of significant discomfort and frustration for innumerable patients. Though it most commonly presents to the plantar aspect of the heel, there are several differential diagnoses for posterior heel pain as well. Regarding the posterior calcaneus, the achilles tendon is often the subject of most worry. However, this case demonstrates the efficacy of conservative, yet aggressive, care for posterior heel pain caused by Sever's disease.

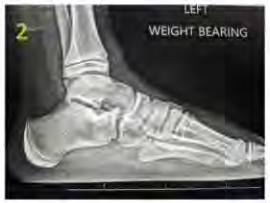
Review

Sever's disease is frequently described as being one of the several osteochondroses that are possible in the lower extremity. An osteochondrosis is defined as a group of conditions wherein the primary or secondary ossification centers of an individual's bone undergo aseptic, avascular necrosis. In general, an ostechondrosis has some element of interruption of blood to growth plates. This is often due to biomechanics, trauma, or an increase in or repetitive activity. They are more common in the lower limbs, males are affected more than females, and in 15% of cases they become bilateral issues. However, these diagnoses can be entirely asymptomatic as well. There are four phases of osteochondrosis that patients move through: avascularity, revascularization, bone healing, and residual deformity. It begins with early degeneration and avascularity to the area in question. Epiphyseal growth may stop at this time. The bone moves through the phases along a spectrum of resorption and deposition until finally the site is healed and there may or may not be a deformity present. Specifically, osteochondrosis of the calcaneus is called Sever's disease. Patients with Sever's disease often complain of a longstanding pain to the posterior aspect of their heel that increases, or is at least more noticeable, during activity. This is mostly due to the insertion of the achilles onto the calcaneal epiphysis. The main symptom this degeneration causes is pain, and thus is often misdiagnosed as another musculoskeletal disorder. Imaging isn't always necessary due to the focal area of pain, as well as the HPI the patient usually describes in these cases. If there is imaging, sclerosis of the calcaneal epiphysis is frequently observed on x-ray, and a change in growth pattern can be seen on MRI.

Case Study

An 11 year old male presented to the clinic with complaints of reported 4 years of chronic pain to his heels bilaterally. At the first visit, he rated the pain at 5/10, and described it as throbbing, pulling, and fatigue type of discomfort. Also related lesser pains to legs. He has been unable to participate in sports, and the pain was worst after playing. Stated that the worse heel alternates days, but more often the right. The patient tried new shoes, custom orthotics, NSAIDS, resting, has gotten opinions from multiple doctors, and nothing has seemed to have helped.

On physical exam, the patient was overweight; his heel was in valgus b/l; there was edema present, R > L foot; notable gastrocnemius-soleus equinus R > L; and pain on palpation of the posterior heel b/l. The PE was otherwise WNL and non-contributory.

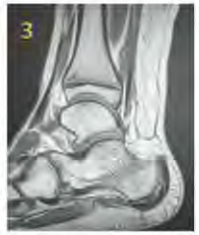


Figures 1 and 2 were taken during the initial encounter. The images were read as demonstrating sclerosis of posterior calcaneus, with a possible incomplete fracture of the Right growth plate, with no acute dislocation or displacement noted.

Results

Imaging demonstrated the extent of the ailment to the right calcaneus. This patient required immobilization due to the chronicity and magnitude of the bony changes. There were serial short leg cast applications to Right side every 3 weeks. The patient remained NWB with crutches, and elevated his right limb when at rest. Required 3 cast applications for complete reduction of pain.

After following through with three applications of short leg casts to the right leg, the patient was reassessed for objective improvement and discussion of further treatment plan.



Figures 3 and 4 are single sagittal images of the MRI of the Right heel. The MRI demonstrated marrow edema to calcaneus, talus, cuboid, navicular, as well as a specific diagnosis of sever's disease of the calcaneus.

After serial casting for several weeks, the patient reported complete diminution of pain. Patient was able to walk without pain, and returned to ambulation without the use of an assistive device. Pain to the left lower extremity had also returned to zero.

Analysis and Discussion

Sever's Disease is a rare condition of the growth plate of the calcaneus. This patient was managed with a more aggressive treatment plan, while still remaining non-surgical in nature. He entirely improved with serial casting. Upon improvement back to his baseline, there were no remaining symptoms bilaterally. At this point, there was no requirement for follow up imaging. Gao et al completed a radiographic study of the calcaneus just last year. They demonstrated that there is a statistically significant increase in the appearance of both an increased density of the calcaneal epiphysis and the radiolucent line of the epiphysis (2). There is a wide spectrum of conservative treatment options for Sever's disease. James et al showed in 2013 that there is not much statistical difference in conservative treatments, though there was limited evidence to assess (3). Uvelli et al explained that MRI can help to determine differences from normal anatomic growth patterns and variation, though is typically unnecessary (6). Etiology for posterior calcaneal degeneration ranges from biomechanical, to trauma, to an overuse syndrome. Sever's disease is often referred to as calcaneal apophysitis as well. Achar et al mentioned in 2019 that there remains disagreement and controversy as to if Sever's is a true osteochondrosis, and if there needs to be a differentiation between osteochondrosis and apophysitis (7). Also, the degeneration may simply be a further step along the same path if no treatment is initiated. This is a potential area of future research, though would be an admittedly difficult task due to the rarity of these cases and that both physician and patient are highly unlikely to let the diagnosis worsen. In conclusion, degeneration of the ossification center of the posterior calcaneus is successfully treated with conservative measures.

Financial Disclosures

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P14

Community Health Network

Significant Extrapyramidal Side Effects on Low-Dose Aripiprazole

Sarah Heming, DO; Kiersten Olsen, MD; Taimur Mian, MD
Community Health Network, Department of Psychiatry, Indianapolis, IN

Aim

The aim of this case presentation is to bring attention to the possibility of extrapyramidal side effects at low doses of a second-generation antipsychotic, aripiprazole.

Introduction

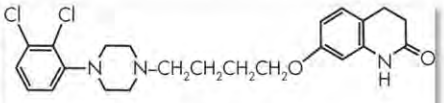
Extrapyramidal symptoms (EPS) are a series of physical manifestations related to dopamine blockade in the nigrostriatal pathway of the brain. First- and second-generation antipsychotics both block dopamine in the brain but have differing characteristics resulting in differing side effect profiles.

First-generation antipsychotics treat psychotic symptoms by blocking dopamine D2 receptors in the brain. This mechanism of action leads to both the therapeutic effects and the side effects seen with these medications based on where in the brain dopamine blockade is occurring. Dopamine blockade in the mesolimbic pathway is postulated to decrease psychotic symptoms. Blockade in the mesocortical, tuberoinfundibular, and nigrostriatal pathways lead to potential worsening of negative symptoms, hyperprolactinemia, and EPS, respectively.

Second-generation antipsychotics similarly block dopamine D2 receptors. However, this class of medications additionally blocks serotonin 5-HT2A receptors. The addition of serotonin 5-HT2A antagonism increases dopamine release in the striatum which reduces the overall amount of dopamine blockade, thus decreasing the risk of EPS.

Case Presentation

"Ms. X" is a 56-year-old African American female with past psychiatric history of treatment-resistant bipolar I disorder who had been started on aripiprazole 5 milligrams (mg) daily by her outpatient provider. Patient was later admitted to a community hospital inpatient psychiatric unit that same day due to acute mania. Aripiprazole was gradually increased from 5 mg to 15 mg daily throughout that admission. Patient presented to her outpatient provider's office 1 week after starting aripiprazole and complained of side effects. Patient left the office prior to speaking with a prescriber but presented to a community hospital emergency room later that same day with complaints of "slurred speech" and "slobbering." Patient was evaluated by the hospital's psychiatric crisis department, aripiprazole was decreased to 7.5 mg daily, and glycopyrrolate 1 mg twice daily was started. Three days later, patient was evaluated a total of three times during a 24-hour period by both the hospital's crisis and emergency departments for similar complaints and was ultimately admitted. By this point, patient had self-tapered aripiprazole to 5 mg daily. Upon admission, aripiprazole was stopped entirely and patient was started on benztropine 1 mg twice daily. No antipsychotics were restarted until EPS resolved. Patient was stabilized on asenapine and benztropine prior to discharge.



Aripiprazole

Discussion

The described case emphasizes the importance of monitoring patients closely for EPS regardless of antipsychotic dose as some patients show increased sensitivity to these medications. Second-generation antipsychotics are generally better tolerated by patients but still can induce EPS.

Historically, aripiprazole rarely causes EPS at doses as low as 5 mg. However, this patient suffered from significant EPS and was evaluated numerous times with minimal intervention. This led to extensive utilization of time and resources as well as patient suffering.

Though further research is required to assess the possible dose-related side effects of aripiprazole, this case highlights the necessity of improving screening processes so EPS can be discovered and treated sooner.

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P15

Proparacaine unit dose preparation for neonatal retinopathy of prematurity examinations

Sarah Nierman PharmD, BCPS[1,2]; David Hertz MD[1]; Kent Carmer RPh[1]
Community Health Network[1], Butler University College of Pharmacy and Health Sciences[2], Indianapolis, Indiana

Background

Proparacaine 0.5% is an ophthalmic local anesthetic used during retinopathy of prematurity (ROP) examinations to decrease pain from examination equipment.. [1,2,3]

Infants with a birth weight of ≤ 1500 grams or gestational age of ≤ 30 weeks at birth undergo ROP screening examinations involving pupillary dilation.[3]

Proparacaine 0.5% ophthalmic solution is available in a 15 mL bottle, the equivalent of 300 drops, at an acquisition cost of $26.36.

Historically, patients at Community Hospital North received 2 drops from patient specific 15mL bottle as preparation for examination then bottle is discarded.

Objectives

Primary

- Develop a process to provide unit dose proparacaine 0.5% eye drops to NICU.

Secondary

- Compare use of proparacaine 0.5% bottles per month before and after changing dispensing process.
- Evaluate pharmacy acquisition cost difference after changing to unit dose process.

Design

-Prepare in laminar flow hood in clean room
-20mL IV syringe + 19g 1 1/2inch filter needle
-Draw proparacaine 0.5% contents into syringe

-Remove filter needle
-Attach leur to leur connector to 20mL proparacaine 0.5% syringe and empty 3mL syringe
-Transfer 1mL proparacaine 0.5% into 3mL syringes

-Label each syringe with Proparacaine Ophthalmic 0.5% 1mL stock syringe
-Attach "For the EYE" auxiliary label
-Beyond Use Date 24 hours
-Prepare syringes Monday evening for Tuesday exams
-Remove unused doses Tuesday evening from Pyxis

Retrospective Pyxis dispense report & chart review
- Baseline data: June 4, 2018- September 3, 2018
- New process data: December 4, 2018- March 3, 2019

Results

Historical Process	New Process	Cost Savings
102 ROP examinations	120 ROP examinations	86% decrease in medication cost per examination
102 proparacaine 0.5% bottles	16 proparacaine 0.5% bottles split into unit dose syringes	Decrease in pharmacy acquisition cost: $738 per month
$26.36 medication cost per examination	$3.51 medication cost per examination	Estimated yearly savings: $8856
Average $896/month pharmacy acquisition cost	Average $158/month pharmacy acquisition cost	

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April 12, 2019

Disclosures: Authors of this study have nothing to disclose regarding possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject of this presentation.

P16

Analyzing the Impact of Medication Non-adherence and Outpatient Follow up on Heart Failure Readmissions

Elizabeth Mitchell, PharmD; Eileen Rohrbach, PharmD, BCPS; Alexa Clark, PharmD

Community Health Network

Background

- Thirty-day hospital readmission rates following heart failure (HF) hospitalizations are projected to increase to 46% in the next ten years with the highest rate of readmission occurring during the first 12 days.[1]
- Patients with comorbidities and poor outpatient follow up are less like to be on optimal therapy and more likely to be readmitted to the hospital for treatment. [2]
- Certain comorbidities may hinder a patient from being on optimal HF treatment, resulting in an increased risk of hospitalization.[3]

Need for Study

- Although multifaceted and complex, identifying patterns associated with HF readmissions is pivotal to improving 30-day readmission rates, a key indicator in quality of care and reimbursement.

Study Objectives

Primary Endpoint

- Analyzing the number of readmitted patients that do not have a dispensing event within thirty days of the index admission

Secondary Endpoints

- Describe the prevalence of each comorbidity and rate of outpatient follow up.

Study Design and Inclusion Criteria

- **Design**: retrospective, cohort study (chart review study)
- **Duration:** November 2019 to February 2020
- **Data Analysis**: Descriptive statistics

Inclusion Criteria

- Patients readmitted within 30 days of the index HF admission.

Exclusion Criteria

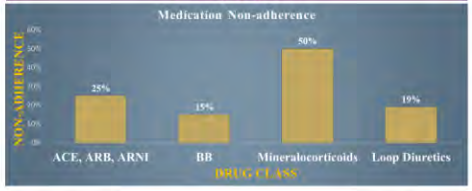
- Patients with an index admission within the last month of the study period to allow a thirty-day window for readmission

Results

Basic Demographics

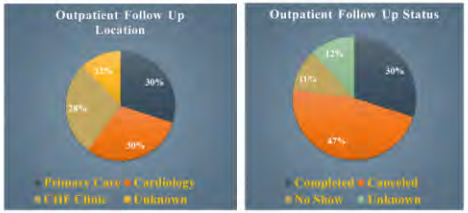
Category	Subcategory	n=104
Ejection Fraction	>50%	56 (54%)
	21-40%	18 (17%)
	41-49%	16 (15%)
	<20%	11(11%)
	Unknown	3 (3%)
Admission Hospital	East*	47 (45%)
	South	21 (20%)
	Howard	17 (16%)
	Heart and Vascular	10 (10%)
	North	9 (9%)
Insurance	Medicare IP	67 (64%)
	Medicare Managed Care	27 (26%)
	Anthem PPO	4 (4%)
	HP	3 (3%)
	Self-Pay	1 (1%)
	United Healthcare	1 (1%)
	Tricare	1 (1%)
Discharge Location	Home or Self-care	56 (58%)
	Skilled Nursing Facility	24 (23%)
	Home Health Care	19 (18%)
	Short Term Hospital	2 (2%)
	Rehab	2 (2%)
	Expired	1 (1%)

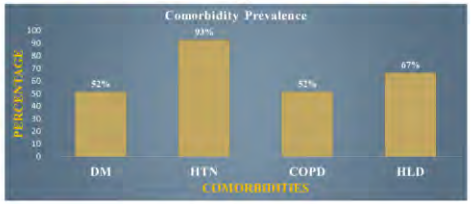
Primary Objective



Medication Status	Number of patients prescribed medication	Number of non-adherent patients
ACE, ARB, ARNI	39	9 (25%)
BB	85	13 (15%)
Mineralocorticoids	14	7 (50%)
Loop Diuretics	74	14 (19%)

Secondary Objective





Conclusion

Most readmitted HF patients had high medication adherence rate and low outpatient follow up rate.

Discussion / Next Steps

- Continue HF medication and compliance education
- Emphasize outpatient follow up during each HF patient education
- Consider having social work or follow up clinic call patients to remind them of follow up appointment

Disclosure

Authors of this study have nothing to disclose regarding possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject of this presentation.

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P17

Community Health Network

Safety and Efficacy of Oral Metolazone versus Intravenous Chlorothiazide in Acute Decompensated Heart Failure

Hayley Robertson, PharmD; Lisa Kingdon, PharmD, BCPS, CPE; Brian Lindvahl, PharmD, BCPS, BCCP; Laura Ruekert, PharmD, BCPP, BCGP

Background

- The American College of Cardiology Foundation and American Heart Association practice guideline for the management of heart failure recommends loop diuretics as the treatment of choice for fluid overload in heart failure; however, loop diuretic resistance may occur.[1]
- If optimal diuresis is not achieved through the use of loop diuretics alone, it is suggested to add a thiazide-type diuretic to attain sequential nephron blockade.[1]
- Although the pharmacokinetic profiles of intravenous (IV) chlorothiazide and oral metolazone are well-known, literature comparing the efficacy of the two drugs in loop diuretic resistance in the setting of acute decompensated heart failure is limited.

Michaud et al.[2] found chlorothiazide had a greater change in median urine output and more rapid onset of diuresis at 24 hours

Moranville et al.[3] found no difference in net urine output at 72 hours

Cox et al.[4] found no significant difference in median urine output at 48 hours

Bohn et al.[5] found no significant difference in 24-hour urine output

Need For Study

Despite data to suggest similar benefit with IV chlorothiazide and oral metolazone when added to loop diuretics for enhanced diuresis in acute decompensated heart failure, IV chlorothiazide is often used in patients that could be candidates for oral metolazone.

Oral Metolazone

Advantages:
- Up to 24 hour duration
- No renal adjustments
- Acquisition cost ~$1-5/dose

Disadvantages:
- Decreased absorption with gut edema
- Onset of action ~1 hour

Intravenous Chlorothiazide

Advantages:
- Intravenous administration
- Onset of action ~15 minutes

Disadvantages:
- Up to 12 hour duration
- Decreased efficacy if CrCl < 30 mL/min
- Acquisition cost ~$300-600/dose

Objectives

Primary Efficacy:

Difference in net urine output at 48 hours after initiation of thiazide-type diuretic

Primary Safety:

Incidence of acute kidney injury and hypotension requiring intervention in 72 hours

Need for any form of renal replacement therapy in 72 hours

Rates of hypokalemia and hypomagnesemia that require supplementation in 72 hours

Secondary Objectives:

Change in net urine output at 12 and 24 hours after first dose of study drug administration

Change in standing weight from baseline to 48 hours after study drug administration

30-day readmission rate

Methods and Design

- A retrospective, observational chart review was performed on patients admitted to a Community Health Network hospital between December 1, 2018 and February 28, 2020 using the network's EPIC electronic medical record system.
- 75 patients were enrolled in each group based on an estimated non-inferiority margin of 750 mL of net urine output at 48 hours.

Inclusion Criteria

Patients 18-89 years old

Admission diagnosis of heart failure, left ventricular failure, or fluid overload

Received either intravenous chlorothiazide or oral metolazone (not both) with concomitant loop diuretic administration

Exclusion Criteria

Pregnant or incarcerated patients

History of ESRD requiring dialysis or renal transplantation

Use of any form of renal replacement therapy or anuria prior to receiving study drug

Results

	IV Chlorothiazide (n=75)	Oral Metolazone (n=75)	p-value
Net UOP 48 hours after study drug initiation (mL), mean (SD)	-5855.6 (4996.6)	-5501.7 (4307.9)	0.643
K < 3.5 mmol/L requiring supplementation, n (%)	22 (29.3)	34 (45.3)	**0.043***
Mg < 1.6 mmol/L requiring supplementation, n (%)	1 (1.3)	6 (8)	0.116
Systolic blood pressure < 100 mmHg requiring intervention, n (%)	2 (2.7)	2 (2.7)	1.000
Incidence of AKI, n (%)	30 (40)	23 (30.7)	0.232
Net UOP after study drug initiation (mL), mean (SD)			
12 hours	-2953.2 (2702)	-2158.9 (2284)	0.054
24 hours	-4314.1 (3754.8)	-3568.1 (2879.6)	0.174
Change in weight from baseline (kg), mean (SD)	-3.5 (5.5)	-3.4 (5.3)	0.931
Readmission within 30 days, n (%)	19 (25.3)	14 (18.7)	0.324
Progression to hemodialysis, n (%)	6 (8)	3 (4)	0.494

* = statistically significant

Conclusion

- Oral metolazone had a significantly greater incidence of K < 3.5 requiring potassium supplementation than IV chlorothiazide.
- No significant difference in need for magnesium supplementation, rate of hypotension, or incidence of AKI between groups.
- No significant difference in net urine output between groups at 12, 24, and 48 hours, indicating either oral metolazone or IV chlorothiazide can be utilized for loop diuretic resistance in the setting of acute decompensated heart failure.

Full Disclosure

- Authors of this study have nothing to disclose regarding possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject of this presentation.

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P18

Evaluation of pharmacists' interventions on emergency department (ED) culture review process

Brian Wenger, PharmD; Alishia Vanus, PharmD, BCPS, BCCCP; Eric Lis, PharmD, BCPS; Courtney Cox, PharmD, BCCCP; Jake Lemon, PharmD, BCPS

Community Health Network

Background

- Increasingly more common for clinical pharmacists to review cultures in ED
- 16% of participating hospitals in American Journal of Health Systems Pharmacists 2014 survey reported clinical pharmacy services in ED
- Culture review process was historically nursing or provider-driven but recent years have seen increased use of pharmacists in this role
- Pharmacist-led culture review process can benefit both patients and providers

Patients
- Less missed interventions compared to nursing or physician-driven protocols
- Decreased 96-hour readmission rate

Providers
- Reduced aggregate monthly workload by 50 hours
- High rates of satisfaction with existing CPAs

Pharmacists
- Average time spent on interventions per shift in studies ranges from 2-3 hours
- Most common intervention type made in past studies was new therapy

Methods and Design

- Retrospective, dual-site descriptive study from 11/16/20-2/16/21
- Culture types assessed: sputum, blood, urine, stool, sexually transmitted infection (STI), throat, wound

Primary objective:

Evaluate and categorize the clinical interventions pharmacists in the ED make while reviewing ED culture data

Secondary objectives:

Assess total amount of time pharmacists spend reviewing ED culture results on a daily basis

Evaluate total number of cultures reviewed per day (as well as type, number of negatives, number of positives)

Calculate percentage of cultures that require pharmacist intervention, in various categories

Methods and Design (continued)

All pharmacy in-basket messages (n=5758)

- Excluded negatives (n=4697)
- Positive culture results (n=1061)

Pharmacist review of positive culture

- Further action required (n=718)
- No further action required (n=343)

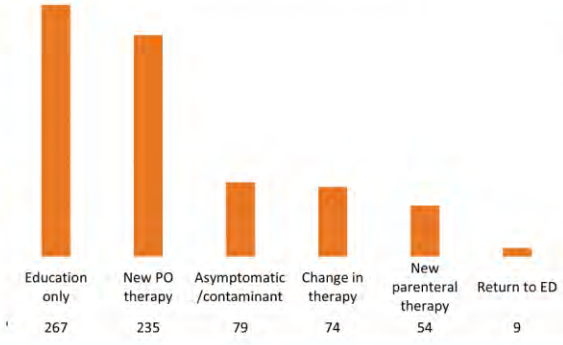
Further action required

- New therapy or change in therapy
- Patient education

Results

- Majority of cultures reviewed were urine (59%) or STI (34%) cultures
- 70% female
- Mean age: 36 years
- 1061 interventions made from 5758 total culture results reviewed (18.4%)
- Of these 1061 interventions, 718 required further RPH action (67.7%)

Cultures Requiring Further Pharmacist Action



Results (continued)

Education Breakdown

Successful educations: 312/445
- 80.1% required only one attempt
- 19.9% required more than one attempt

Unsuccessful educations: 89/445
- Three attempts made via phone before letter sent
- 92% were from CHE

Time Spent

	Time spent per pharmacist intervention (mean [± SD]) (minutes)	Average number of interventions per shift	Average amount of time spent on interventions per shift (minutes)
CHE	8.5 (± 4.1)	11.2	95.2
CHS	8.9 (± 4.5)	6.2	55.2

Discussion and Conclusion

- Limitations: lack of comparator group, missing/subjective documentation
- Strengths: multi-site, many data points, standardized workflow
- Education success rate of 70% and RPH intervention rate of 18%
- Primary interventions: education and new PO therapy
- Approximately 14-28 hours/week spent by RPHs reviewing cultures
- 714 of 718 recommendations accepted by providers

Future Plans

- Collaborative practice agreement
- Increased MyChart enrollment for CHE population
- Advancement of ED RPH services to other sites

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CHNw Multidisciplinary Symposium
May 20, 2021

P19

Evaluation of Factors Associated with Nonadherence in Medicare Patients after Receiving Adherence Calls

Jaclyn Harris, PharmD; Megan Dorrell, PharmD, BCACP; Julianne Kowalski, PharmD, BCACP; Lauren Behrle, PharmD, BCACP; Jaclyn Myers, PharmD, PhD

Community Health Network

Background

- It is estimated that medication nonadherence prevalence is as high as 50% and associated with significant effects on morbidity, mortality and higher costs of care.[1] It has been suggested that the solution is not a one-size-fits-all approach, but tailored solutions are needed that target specific factors for nonadherence.[2]
- The Medicare Star Ratings Program was created by the Center for Medicare and Medicaid Services (CMS) as a way to evaluate the quality of healthcare services. Adherence to medications for diabetes, hypertension and hyperlipidemia are three separate measures that are triple-weighted in the calculation of the overall score.[3]
- In 2018, the ambulatory pharmacy team at Community Health Network (CHNw) began an initiative aimed at improving medication adherence for Medicare beneficiaries. Pharmacy team members called nonadherent patients every week and attempted to resolve issues preventing the patient from filling their medications. The program resulted in an increase of patients with >80% proportion of days covered in seven out of nine adherence measures compared to the previous year and continues today with much success.

Objectives

Primary

Identify factors over previous 12 months associated with year-end nonadherence to select medications for diabetes, hypertension and hyperlipidemia.

Secondary

Evaluate the effect of 30-day supply versus 90-day supply on year-end adherence.

Study Design

- A retrospective, observational chart review was performed on select patients who received care at CHNw during 2019

Patients identified as meeting inclusion criteria (N = 200)

- Adherent to the CMS metric for 2019 (N = 100)
- Nonadherent to the CMS metric for 2019 (N = 100)

- Adherence as defined by CMS: prescription has been filled often enough to cover at least 80% of the time they were supposed to be taking the medication

Criteria

Inclusion Criteria

- Medicare beneficiaries ≥18 years old
- Received >1 adherence call during 2019
- Prescribed one of the following for diabetes, hypertension, or hyperlipidemia:
  - diabetic oral or injectable medications excluding insulin
  - renin-angiotensin-system antagonists
  - HMG-CoA reductase inhibitors

Exclusion Criteria

- Medication discontinued prior to adherence rating on December 31st 2019
- Stopped receiving care at CHNw during 2019
- Received samples of the medication included in the adherence measure
- Patients <18 years old, ≥90 years old, pregnant, or incarcerated

Results

Patient-Related Factors

	Nonadherent (N = 100)	Adherent (N = 100)	Total (N = 200)	P-Value
Mean age (years)	70.6 ± 8.4	70.6 ± 9.4	70.6 ± 8.9	0.729
Gender (% males)	45%	49%	47%	0.495
Race, n(%)				
White	69 (69)	81 (81)	150 (75)	0.05
Nonwhite	31 (31)	19 (19)	50 (25)	
Refusal of pharmacy involvement, n(%)	1 (1)	-	1 (0.5)	0.316

Medication & Condition-Related Factors, n(%)

Medication Category				
Hypertension	33 (33)	27 (27)	60 (30)	0.574
Hyperlipidemia	47 (47)	54 (54)	101 (50.5)	
Diabetes	20 (20)	19 (19)	39 (19.5)	
Days' Supply				
90	79 (79)	85 (85)	164 (82)	0.269
30	21 (21)	15 (15)	36 (18)	
Medication Profile				
> 5	92 (92)	85 (85)	177 (88.5)	0.121
> 10	56 (56)	47 (47)	103 (51.5)	0.203
Behavioral Health Diagnosis	44 (44)	42 (42)	86 (43)	0.775
Depression	30 (30)	24 (24)	54 (27)	0.339

Results

Healthcare-Related Factors, n(%)

	Nonadherent (N = 100)	Adherent (N = 200)	Total (N = 200)	P-Value
Provider-denied refill request	2 (2)	2 (2)	4 (2)	-
Team member				
Pharmacist	61 (61)	64 (64)	125 (63)	0.661
Student	52 (52)	51 (51)	103 (51)	0.887
Technician	32 (32)	21 (21)	53 (27)	0.078
No appointments				
Cardiology	80 (80)	82 (82)	162 (81)	0.608
Endocrinology	92 (92)	92 (92)	184 (92)	

Healthcare-Related: Interventions & Outreaches, n(%)

General Adherence Techniques	6 (6)	5 (5)	11 (5.5)	0.79
Coordination of Care				
Pharmacy	26 (26)	23 (23)	49 (24.5)	0.7
PCP	3 (3)	4 (4)	7 (3.5)	0.7
Days' Supply	1 (1)	1 (1)	2 (1)	-
Cost	1 (1)	1 (1)	2 (1)	-
Safety	1 (1)	1 (1)	2 (1)	-
Education	34 (34)	29 (29)	63 (31.5)	0.49
Refill Request	14 (15)	9 (9)	23 (11.5)	0.27
Other	2 (2)	-	2 (1)	0.156
Outreach without Intervention	38 (38)	55 (55)	93 (46.5)	0.016
Receiving 1 versus >1 outreach				0.202
Receiving 0 versus ≥1 successful outreach				0.345

Conclusions

- Nonwhite race was a significant predictor of nonadherence following an adherence call intervention. The effect of race should be evaluated in future studies.
- Utilizing a 90-day supply of medications may be an effective adherence intervention. This should be evaluated in larger studies to adequately power a comparison.
- Technicians and students may be utilized in adherence-focused interventions, which could maximize pharmacy impact while minimizing cost to the network.

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P20

Community Health Network

Misophonia, a case report

Caitlin Carter, DO, Peter Karalis, MD, Benjamin Coplan, DO, and Jendayi Olabisi, MD

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, evidenced based research has led to the belief that this is a neuro-psychiatric disorder. Currently, Misophonia is not listed as a DSM or ICD diagnosis and remains theoretical, but the evidence supporting its existence is increasing.

The word Misophonia comes from the Greek words, "miso" meaning hate and "phonia" meaning voice—roughly meaning "hatred of sound". This term was coined in the year 2000, distinguishing it from hyperacusis (sensitivity to specific volumes/frequencies), and phonophobia (fear of sounds).

Case Presentation

HPI A 15 yo female presented for psychiatric evaluation due to depression, anxiety, disruptive behavior, and irritability precipitated by hypersensitivity to specific sounds. Since early childhood, she has been hypersensitive to specific innocuous sounds made by her first-degree relatives such as breathing, chewing, and laughing. The volume of the noises is subtle and not overly bothersome to other individuals. She has not been hypersensitive to other sound in general and denied any specific event or trauma precipitating this hypersensitivity. She denied evidence of hypervigilance or excessive startle response in other context. When younger, these sounds would precipitate anxiety and irritability leading to frequent melt downs consisting of hitting, kicking, and screaming and led to neurological evaluation. Now a teenager, these sounds induce dysphoria, disgust, and irritability and lead to avoidance of interpersonal interaction with her family.

Comorbid psychiatric symptoms depression, self-injurious behavior, passive suicidal thoughts, generalized and social anxiety with intermittent panic attacks. She denied other psychiatric symptoms including no symptoms of mania, psychosis, PTSD, OCD, ADHD, Substance use/abuse, or other psychiatric issues.

Developmental history: Mother's pregnancy was complicated by gestational diabetes and high stress. There was intra-uterine exposure to Lamotrigine, Citalopram, Topiramate and Alprazolam. Born full term and generally healthy. Developmental milestones were largely within normal limits. Temperament was described as difficult to sooth with frequent tantrums that persisted and continued to negatively impact relationship with family members. By 8 years old, patient was referred to see a pediatric Neurologist due to persisting irritability and outbursts. Neurologist made a provisional diagnosis of Misophonia.

Treatment Course:

Primary:

1) Combination treatment: CBT and Fluoxetine for depression and anxiety

Augmentation (off label):

1) Beta blocker - based on evidence of hyperadrenergic state in Misophonia
- trial of low dose Propranolol 5-10mg PRN BID was ineffective

2) Mood stabilizer - based on evidence for reducing irritability in mood disorders
- trial of low dose Topiramate 25mg HS was ineffective

3) Atypical Antipsychotic - prescribed for mood lability and anger/agitation
- trial of Lurasidone titrated up to 60mg has not improved Misophonia symptoms.

Neurophysiology

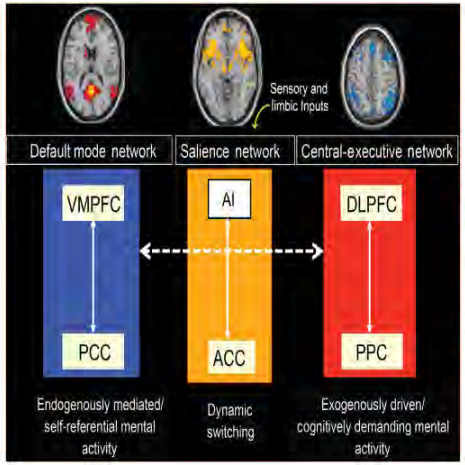
Salience Network (SN)
Consisting of cortical (Insula & Cingulate) and subcortical structures (amygdala, ventral striatum, thalamus, hypothalamus, Substantia Nigra, and VTA).

Functions: theorized to synthesize and segregate important interoceptive and environmental information in order to ensure proper emotional response to stimuli. Theorized to be integral in switching between the Default Mode Network during interoceptive processing and the Central-executive network for active responses to stimuli, especially when processing emotions and behaviors.

Evidence base: functional MRI studies show patients with Misophonia demonstrate hyperactivation of the Insula and Cingulate during exposure to misophonic cues

1. Anterior Insular Cortex (AIC) *Kumar et al. 2017* – increased activation in the anterior insular cortex (AIC) and abnormal functional connectivity between the AIC and ventralmedial & posteriomedial PFC, hippocampus, and amygdala in patients with Misophonia vs controls when presented with misophonic cues
2. Right Insular Cortex, R. Cingulate Cortex, & R. Superior Temporal Cortex *Schroder et al. 2019* - increased activation of R. insular cortex, R. anterior cingulate cortex, and R. Superior temporal cortex during misophonic cues but not during neutral and generally aversive cues in Misophonia vs controls.

Autonomic Nervous System
Galvonic skin conductance measurements during fMRI have demonstrated evidence of hyper-adrenergic state in Misophonia, as evidenced by increased HR and adrenergic tone compared to controls while hearing misophonic cues



Discussion

The pathophysiological understanding of this phenomenon is complex and evolving. Current functional MRI research indicates that the limbic system, frontal cortex, and insula play major roles. There is no generally accepted diagnostic criteria or evidenced based treatment for this condition at this time, and it is not yet incorporated into the DSM. 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, the patient had multiple co-morbid psychiatric disorders, which were the target of initial pharmacotherapy. Although off-label trials of Propranolol and Topiramate were attempted, neither were found effective, and there remains a significant lack of robust evidence to guide pharmacologic treatment. Of additional note, neither Fluoxetine nor Lurasidone, prescribed for depression, anxiety, and associated mood lability/irritability, were found to impact symptoms of Misophonia.

In terms of treatment modalities, CBT and TRT (Tinnitus Retraining Therapy) have been shown to provide benefit although large studies are still lacking in the literature. CBT focuses more on the automatic thoughts and interrupting feedback loops in order to lessen the negative thoughts and behaviors associated with the misophonic sounds. Whereas, TBT takes more of a habituation approach where various sounds are heard repetitively to attempt to reduce the reaction to the specific sounds over time. These two modalities have not yet been compared in terms of their efficacy, and they have significantly different approaches to symptoms which they attempt to target.

Proposed DSM Criteria for Misophonia:

A. The presence or anticipation of a specific sound, produced by a human being (e.g. eating sounds, breathing sounds) provokes an impulsive aversive physical reaction which starts with irritation or disgust that instantaneously becomes anger.
B. This anger initiates a profound sense of loss of self-control with rare but potentially aggressive outbursts.
C. The person recognizes that the anger or disgust is excessive, unreasonable, or out of proportion to the circumstance or the provoking stressor.
D. The individual tends to avoid the misophonic situation or endures encounters with the misophonic sound situation with intense discomfort, anger, or disgust.
E. The individual's anger, disgust or avoidance causes significant distress or significant interference in the person's day-to-day life.
F. The person's anger, disgust or avoidance are not better explained by another disorder.

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P21

Brothers on Big Brother: A Case of Folie A Deux in Monozygotic Twin Males

Calvin Nguyen, DO Nikita Patel, MD Laura Ruekert PharmD, BCPP, BCGP Elizabeth Cunningham, DO

Community Health Network, Department of Psychiatry, Indianapolis, IN

Introduction

Folie a deux (shared delusional disorder) is a rare mental disorder that was described in 1877 by Lasegue and Falret. It is characterized by one individual developing a delusion with a second individual subsequently developing this same delusion (1). The context of these individuals both sharing the same delusion usually arises in the context of a close relationship such as siblings. The incidence of shared delusional disorder is reported to be low, 1.7 to 2.6% of psychiatric hospital admissions (1).

Folie a deux appears to be more common among genetically related individuals and those with a prolonged dependent relationship. Prior research has indicated an increased likelihood of folie a deux to occur in monozygotic twin females (2). Our case report aims to highlight this unusual presentation of folie a deux with monozygotic twin males as well as their differing course of treatment.

Case Presentation

Two 37-year-old male monozygotic twins were involuntarily admitted to an inpatient psychiatric facility with shared persecutory and paranoid delusions after making threats of violence towards a local police department. Twin A described his delusions occurring over the course of the last 20 years; whereas, Twin B discussed the onset of his similar persecutory and paranoid delusions occurring approximately two years prior to hospitalization. Upon admission, Twin A and Twin B were placed in separate units. Routine labs (CBC, CMP, TSH, fasting lipid panel, and urine drug screen) and physical exams of both patients were essentially unremarkable.

Case Presentation Cont.

Mental status exams revealed perseveration on paranoid, persecutory delusions with poor insight for both Twin A and Twin B. Twin A demonstrated defensive and resistive behavior with an angry affect; however, Twin B demonstrated cooperative behavior with a tense affect. The remainder of the mental status exam was unremarkable.

Management and Outcomes

Both twins were prescribed an antipsychotic medication, risperidone. Twin A refused to take medication due to poor insight; whereas, Twin B was adherent with medication during hospitalization. Like Twin A, Twin B had poor insightl however, Twin B was willing to take medications to hasten discharge. Both twins had unchanged, fixed delusions after five days of an inpatient stay; however, they were no longer having thoughts of wanting to harm law enforcement agencies at the time of discharge.

Figure 1:

Risk Factors for Shared Psychotic Disorder

- Old age
- Female gender
- Family members and relatives (particularly twins)
- Low intelligence
- Genetic predisposition to psychoses
- Demoralization or hopelessness
- Social isolation
- Sensory impairment
- Cerebrovascular disease
- Alcohol or substance abuse
- Living together
- Lack of self-esteem

Discussion

Folie a deux is not a separate diagnosis in the DSM 5; rather, it is best classified as "Other Specified Schizophrenia Spectrum and Other Psychotic Disorder" (1). It was previously referred to as "Shared Psychotic Disorder in DSM IV (1).

This case highlights the presentation and hospital course of a rare condition of shared delusional disorder in male twins, with the interplay of genetic heritability and environmental factors. The onset of the manifestation of delusions between the twins highlights an element of reactivity in their development in the secondarily impacted twin. When separated, even for a short hospitalization period, the secondarily impacted twin was amenable to taking medication, in contrast to Twin A, who refused medication.

Folie a deux cases are typically seen among individuals with a long-standing relationship, most commonly among married couples and sisters. This case is unique in presenting in two male brothers. Furthermore, social isolation tends to be a predisposing factor; however, Twin B inherited the delusions despite having other social interactions like attending college.

This case presentation serves to expand further knowledge on folie a deux and reinforce the importance of prompt separation and treatment of the disorder.

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Authors would like to thank Drs. Peter Karalis and Kimberlie Wells for the documentation and further insight of their patient encounters.

P22

Community Health Network

Turf Wars and Inter-Specialty Conflict: Navigating Ethical Conundrums on a Psychiatric Consult Service

Hadley Cameron-Carter and Areef Kassam, MD, MPA
Community Health Network and Kansas City University of Medicine and Biosciences

Abstract

Medical decision making for unrepresented patients can be emotionally challenging and creates a unique set of ethical dilemmas. This poster discusses the impact of emotions, conflict of ethical principles, and inter-specialty disagreement in the process of deciding to move forward with bilateral lower extremity amputations for an unrepresented patient with necrotizing fasciitis.

Background

A patient is considered unrepresented when an important medical decision must be made and:

- The patient lacks decision making capacity (DMC) during the time that the medical decision should be made.[1]
- There is no advance directive.[1]
- There is no suitable surrogate decision maker.[1]
- There is no historical evidence for patient preference.[1]

Case Presentation

Mr. M is a 38-year-old, homeless African American male with a past medical history of schizoaffective disorder, bipolar type, who presented with sepsis secondary to necrotizing fasciitis and extensive osteomyelitis. Despite consultations agreeing on necessary life-saving surgery, the patient was reactive with decision-making. On examination, psychiatry opined the patient lacked sufficient DMC, and the patient was placed on legal guardianship. Given the marked level of patient agitation, providers on the team were split on whether to move forward with the necessary life-saving surgery. A bioethics consult was placed, and several bioethics meetings were called to represent the patient's best interest.

Inter-Specialty Conflicts

- Lack of understanding about DMC which led to a difference in values of patient autonomy between specialties
- Disagreement on whether the bilateral amputations constituted a life-saving surgery and should be carried out while the patient lacked DMC
- Providers were imparted differently by the emotionality of the case. Emotions can complicate decision making in highly emotional cases.[2]

Discussion

Mr. M's healthcare team worked with his surrogate decision maker to determine if the surgery was in his best interest, which should reflect potential pain and suffering, impact on quality of life, risks, and benefits of the treatment.[3]

However, in Mr. M's case, continued inter-specialty disagreement prevented a decision to be made, for which the AMA code of ethics recommends consulting an ethics committee.[3] Mr. M's ethics committee recommended to move forward with surgery for Mr. M. This decision was based on the best interest standard, which considers the benefits and burdens of different treatment options and what a reasonable person would choose in a similar situation.[4] Members of the team who did not wish to proceed with surgery recused themselves from the case. Mr M. received surgery and was discharged in stable condition to a long-term care facility.

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P23

ED High-Utilizers: A Mission to Address Substance-Related Disorders

Rohn Nahmias DO, Amna Siddique DO, Kierra Hayes DO, Kimberlie Wells DO, Raminder Brar MD

Community Health Network

INTRODUCTION

Emergency departments (EDs) are the gateway to the inpatient healthcare world. When rooms are not available for patients, the chain is broken and patients cannot receive treatment. One of the largest, avoidable, culprits of this issue is related to substance use, with alcohol-related issues being the most common and most expensive of all ED interventions (Karaca, 2020). In 2010, visits to the ED in the United States for alcohol related diagnosis cost nearly $24.5 billion (Mullins, 2014). By analyzing data from the Community Hospital North (CHN) ED, and taking a closer look at patients who have substance use concerns, processes can be improved to streamline visits. By decreasing the number of visits from those with substance use related problems, rooms in the ED will be available on a more regular basis, and wait times in the department could significantly drop. With lower wait times in the ED, more patients can be served, and better quality care can be provided.

METHODS

CHN ED
Ages >/ 18
July-Oct 2020

120 ED visit charts

58 charts (multi visit)

Primary Alcohol Use Charts

1 Social Work Referral

RESULTS

- Out of 96 visits, only once had seen a case manager/social worker
- On review, no documentation of resources provided, only given bus tickets
- Three visits ended with patients being sent directly to an addiction treatment clinic
- 16 others were provided the name, address, and phone number of the clinic on after visit summary.

DISCUSSION

Nearly half of ED visits in the United States are related to substance use disorders (The DAWN Report, 2010). However, there is a gap in linking patients with substance use disorders to appropriate outpatient resources. The data collected was in line with prior research, and alcohol continued to be the most frequently involved substance related visit to ED visits. It is the team's hope that by providing education and developing a process to close the treatment gap between the ED and outpatient providers, patient care will improve and the burden placed on the ED system will lighten.

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P24

Community Health Network

Behavioral Health: Virtually Redefined

J. Berty, LCSW & K. Windnagel, PsyD, HSSP
Community East Family Medicine Residency Program

INTRODUCTION

In 2019, COVID-19 ushered in a new era of healthcare provision as providers and hospital systems were called upon to adapt to virtual services (Wosik et al, 2020). The East Family Medicine Residency at Community Health Network promptly responded by transitioning outpatient services to the virtual world, including behavioral health and social work services. Amidst this transition, the demand for mental and behavioral health services arouse nationwide. A CDC study revealed over 40.9% of participants reported mental/behavioral health conditions in June 2020 (Czeisler et al., 2020). Additionally, social needs (e.g. food, financial support) increased as individuals' employment was interrupted (Sharma et al., 2020). Combined with the shift to virtual care, the increased demand for mental/behavioral health services and social needs required adaptation and expansion of service provision.

METHODS

To meet the increasing service demands, changes were implemented within the behavioral/social work department. The primary change was the transition of the team to work from home status. The following changes were incorporated:

WORKFLOW CHANGES

- Implemented Regular team meetings
- Implemented cross coverage between two family medicine residency programs
- Standardized note templates
- Created joint resource library
- Implemented consult tracking

COMMUNICATION CHANGES

- Updated online communication platforms (e.g. Jabber, Epic Secure Chat)
- Created a Behavioral Team joint phone line
- Adapted communication of schedules to clinic staff

PATIENT CARE CHANGES

- Transitioned to virtual counseling
- Provision of "support calls"
- Implemented conference calls with providers/patients
- Adapted patient communications platforms

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RESULTS

By engaging in regular and frequent process improvement, the implemented changes were effective and yielded positive results for our team, clinic staff, and patients based on subjective feedback provided by these groups.

Teams: Team meetings fostered unity and cohesiveness by providing a platform to problem solve together. Prior to COVID-19, the team had one quarterly meeting lasting 2.5 hours. We transitioned to weekly 30-minute check-ins. We also instituted an optional virtual lunch huddle every other week. These changes resulted increased team collaboration time from 2.5 hours a quarter to 12 hours a quarter (4 of which were optional lunch meetings). During virtual lunches, team members discussed non-work related topics, much like the team would eating lunch together in-office. Team members reported that regular meetings resulted in increased time to staff difficult patients, increased time to discuss workflow changes, and a decrease in subjective burnout.

Clinic Staff: Subjectively, clinic staff reported an increase in our team's accessibility and availability despite working remotely. The increased accessibility and availability has been subjectively attributed to the team's enhanced communication platforms. During COVID-19, the team expanded our communication platforms to include Jabber instant messaging, Epic Secure Chat, a new joint phone line for the entire team, WebEx meetings, and personal cell phone use all while retaining use of our direct phone lines. Additionally, our team members schedules were synced with schedules of other clinic staff and disseminated on daily huddle sheets. Having our names/schedules on the Huddle Sheets increased ease of communication between team members. Additionally, clinic staff shared their subjective experiences that these changes increased our team's response rate to patient care.

Patients: Patients reported appreciating receiving mental health services virtually (e.g., phone/video counseling/support calls) and receiving social resources virtually (e.g. emailed list of food pantries). Additional benefits shared by patients include: easier access to appointment times (e.g. patients able to schedule appointments during work breaks), reduction in transportation concerns, and increased engagement in healthy coping behaviors during sessions (e.g. walking during their session).

Patients also reported subjective benefits of virtual case management services, namely, the transition to electronic resources provision (e.g. email and MyChart) allowed patients to access the needed social work resources more quickly and made it easier for patients to reference those resources due to the virtual platform.

DISCUSSION

LESSONS LEARNED

- A lesson learned was our team's delineation between being available versus being accessible for patient and clinic needs. In office, inaccessibility was assumed to be the result of engagement in patient care. Virtually, however, inaccessibility seemed to delay patient care and leave clinic staff feeling unsupported. Therefore, we molded our virtual presence by offering prompt responses to all efforts of outreach, which we accomplished by re-prioritizing and re-organizing our workflow.

CHANGES TO KEEP

- Some changes will be retained upon return to in-person services:
  - Recurring team meetings to foster team building and process improvement
  - Utilization of virtual communication services between team members (e.g. Jabber, Epic Secure Chat, joint phone line)

MOVING FORWARD

- Despite virtual successes, face-to-face patient interactions should be re-implemented, as sometimes these encounters foster better rapport with patients, particularly new patients and patients unable to utilize video. It is worth considering the structure of team roles to maintain our improved accessibility and response time to clinic needs.

P25

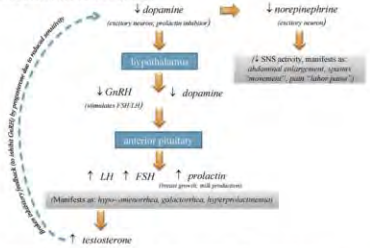
Management of Pseudocyesis in a Severely Mentally Ill Transgender Female

Authors Jake Mulinix DO, Jennifer Obrzydowski MD, Taimur Mian MD, Caitlin Carter MS4
Community Health Network, Indianapolis, IN

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.

Figure. Suspected pseudocyesis pathophysiology



FSH = follicle-stimulating hormone; GnRH = gonadotropin-releasing hormone; LH = luteinizing hormone.

Background

Pseudocyesis originates from the Greek word pseudes which means "false" and kyesis which means "pregnancy." Pseudocyesis diffierentiates from delusion of pregnancy from the physical signs and symptoms of pregnancy exhbited in pseudocyesis. Symptoms include amenorrhea, galactorrhea, breast enlargement, weight gain, abdominal distention (most common), sensations of fetal movement and contractions, nausea and vomiting, changes in uterus and cervix, and frequent urination. A large majority of cases are represented by married women of reproductive age. 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 transgendered female, and therefore needs to be further explored.

Case

Patient is a 28 year old transgender 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. Prior to admission, patient had pursued extensive workup regarding her pregnancy such as abdominal ultrasound and abdominal CT in addition to numerous ER visits and multiple negative pregnancy tests. Patient appeared stated age and 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.

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Discussion

The etiology of pseudocyesis in cis-woman – as discussed in the literature – is thought to be both psychosocial and biological in etiology. Psychologically, for example, women in pro-natalist cultures who are infertile may develop pseudocyesis unconsciously to feel accepted and purposeful. Biological causes reported in the literature are hyperprolactinemia, and abdominal discomfort from gall bladder disease.

Pseudocyesis has been thought to be developed as a psychological defensive mechanism to serve an individual who has experienced extreme insecurities. Literature has highlighted this condition to be primarily associated with cis-females in cultures that strongly value the role of the female as a child-bearing member of society. This case displays the possible implication of this condition to symbolize the deep- rooted gender identity and psychological factors for the female transgender population.

From a biological perspective, delusions and psychosis arise from overactivity of the mesolimbic dopaminergic pathway, and therefore respond to anti-psychotic medications. Because of resistant delusional thinking, patients can be placed on high doses of antipsychotic medication. As D2 blockade occurs in tuberoinfundibular pathway, side effects of hyperprolactinemia and breast tenderness can result, which reinforce delusional thought. Many delusions, however, are persistent despite treatment – as in this case.

From a psychodynamic perspective, delusions arise to protect the patient's ego and are protective in this way. Though psychiatrists are trained not to confront delusions due to negative affects relating to therapeutic alliance, pseudocyesis may offer some exceptions. In a review of case studies on pseudocyesis, some authors mention that certain individuals – perhaps those with a higher education level – can be convinced that they are not in fact pregnant by being shown objective evidence. Other cases, such as ours, do not respond to confrontation. We recommend a CBT approach which can help patients gain insight into their delusion. CBT has been highly effective according to literature, but often underutilized. A CBT approach involves developing an understanding of the patient's perspective and life events which may have triggered delusional framework of thinking. If utilized in inpatient setting, patients with medication-resistant pseudocyesis are likely to have improved outcomes, which could ultimately lead to decreased re-admission rates in these patients.

Overall, the understanding of pseudocyesis in transgender females is limited. Extrapolations can be made from literature in cis-females, as in this case, but ultimately more biological and psychosocial etiologies must be investigated transgender individuals to effectively treat.

P26

A Case of Pica in the Setting of Severe OCD During Adolescence

Kelly Schaepkens, OMS-IV, Patrick R. McGuire, D.O., Michael Welling, M.D., Maegan McConnell, APRN
Community Health Network, Indianapolis, IN

Aim

The primary objective of this case study is to enhance the knowledge and understanding of potential comorbidities associated with pica in order to implement proper therapeutic and pharmacologic therapy to improve patient care.

Introduction

Pica, a condition characterized by persistent ingestion of non-nutritive substances, is commonly associated with pregnancy, psychosis, and intellectual disability. Seldomly investigated is the theorized connection between pica and related obsessive-compulsive spectrum disorders (OCD). More recently, a handful of case studies have presented patients suffering from comorbid anxiety who exhibit pica behaviors as their compulsion during high-stress situations. Conditions in the OCD spectrum have been found to respond to combination SSRIs and psychotherapy, posing a potential effective treatment regimen for pica.

Case Presentation

An 18-year-old African American female, initially presented to therapy services following more than six years of untreated anxiety and depression. She had a history of suicidal ideation with a plan to overdose, noting that it was "always a backup plan." With the impending changes in school and social life due to the COVID-19 pandemic, she became suicidal and was admitted for an inpatient stay where she was started on Lexapro 20mg QD and Hydroxyzine 25mg TID prn. Following discharge, she was recommended to participate in a Youth Day Program (YDP).

Throughout YDP and subsequent therapy sessions, the details of her mental health history were revealed. Suffering from years of anxiety, she often has panic attacks with feelings that "something bad is going to happen" if she does not follow her normal routine. She described feelings of contamination, along with excessive counting and sorting rituals dating back to sorting goldfish repeatedly in 6th grade. Being overly busy or arguing with family members often triggers these periods of anxiety and obsessive-compulsive like symptoms and have become difficult to control, leading to the initiation of Seroquel 25mg QAM and 50mg QPM.

Further into therapy sessions, the presence of a history of pica behaviors was disclosed. She described the ingestion of toilet paper dating back to the start of her anxiety symptoms, with the ingestion of talc powder starting a couple years later. She states she limits her ingestion to 1 day per week, amounting to a half-roll of toilet paper and multiple "pieces" of talc powder, often anxiously anticipated during the week.

Figure 1: Timeline of Events

Figure 2.

Discussion

Pica has frequently been described as occurring in the presence of iron deficiency anemia, throughout pregnancy or in the setting of psychosis. Recently, a handful of case studies have suggested a connection between obsessive-compulsive disorder and pica. This case is noteworthy as all labs were found to be within normal limits and there was no personal or family history of psychosis. This suggests the underlying anxiety, obsessive-compulsive tendencies and ritualized pica behavior were interconnected. This is relevant to clinical practice as it illuminates the importance of screening for comorbidities, specifically in the adolescent population, in order to improve patient care. Throughout therapy, this patient was able to disclose her entire psychiatric history allowing for proper therapeutic and pharmacologic management to be put in place. The initiation of combined cognitive behavioral therapy, a youth-day program, along with Lexapro and Seroquel medication management ultimately led to cessation of the pica behavior and improvement in the patient's anxiety and depression symptoms. Further research in this area will elucidate a clear connection between the symptomatology of pica and OCD.

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P27

Opioid Use Disorder in Spinal Cord Injuries

Shannon James, PharmD; Gabriel M. Martinez, DO; Skyler Gick, DO; Lauren Rose, DO; Courtney Conner, DPM; Rachel Shockley, DO; Daniel Fisher, MD

Community Health Network

Objective

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

Background

Up to 80% of individuals with SCI suffer from chronic pain[1]

- Commonly treated with opioid medications

It is estimated that over 45% of individuals with SCI have a high potential or definite risk for pain medication misuse[2]

- May result in development of opioid use disorder (OUD)

Medication-assisted treatment (MAT) is often part of comprehensive OUD management

- Risks of using MAT in SCI patients may include central nervous system (CNS) depression and disruption of bladder and bowel patterns

Current literature provides minimal guidance for management of OUD in SCI patients

Case Presentation

- A 33-year-old white male with a T12 spinal cord injury resulting in paraplegia and comorbid opioid use disorder was admitted with a principle diagnosis of opioid use disorder, severe
- The patient's past medical history included depression, anxiety, PTSD, tobacco use disorder, suspected methamphetamine use, paraplegia with residual neurogenic bladder and bowel problems, recurrent decubitus ulcers, history of traumatic brain injury, and chronic pain
- Following detoxification, MAT with buprenorphine/naloxone was initiated along with increase in duloxetine and continuation of gabapentin
- There were no reported adverse effects associated with the use of buprenorphine/naloxone during the admission
- The patient was successfully treated and discharged on a regimen of buprenorphine/naloxone 8-2 mg with the instructions take 1 film sublingual 2 times daily

Discussion

Multimodal — The use of multiple agents for chronic pain management in SCI patients can have opioid-sparing benefits

Buprenorphrine — The use of buprenorphine for MAT may have additional benefits in managing neuropathic pain in patients with SCI[3]

Osetopathy — Osteopathic manipulative techniques have been found to be additionally beneficial for pain management in SCI patients[4]

Literature — This case represents an important contribution to available literature on the management of OUD in SCI patients

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P28

Modafinil Induced Mania in a Bipolar Patient on Mood Stabilizers

Magdoline Daas MD, Amna Siddique DO, Ramya Yeleti OMS4, Sagi Matthew MD, Kexia Van DO, Daniel Ortiz DO, Clinton Knapp DO, Destiny Etheridge MD
Community Health Network, Indianapolis, IN

Aim

The aim of this case study is to increase awareness of the potential mania-inducing side effect of Modafinil along with its abuse potential.

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.

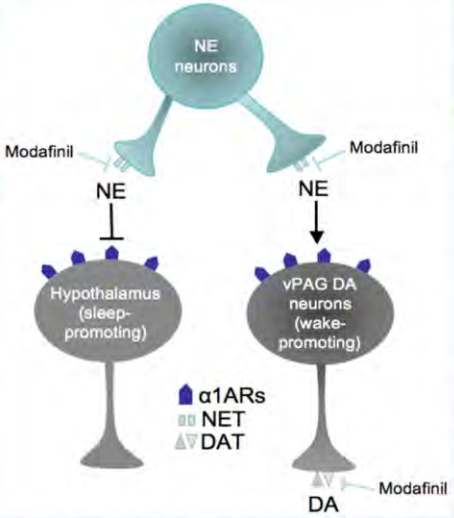

Image 1: Modafinil's proposed effects on norepinephrine and dopamine
Credit: Mitchell, H. A., Bogenpohl, J. W., Liles, L. C., Epstein, M. P., Bozyczko-Coyne, D., Williams, M., & Weinshenker, D. (2008). Behavioral responses of dopamine beta-hydroxylase knockout mice to modafinil suggest a dual noradrenergic-dopaminergic mechanism of action. *Pharmacology, biochemistry, and behavior*, *91*(2), 217–222. https://doi.org/10.1016/j.pbb.2008.07.014

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

This includes 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.

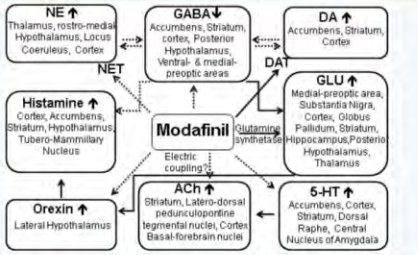

Image 2: Modafinil's proposed effects throughout brain
Credit: Mereu, M., Bonci, A., Newman, A. H., & Tanda, G. (2013). The neurobiology of modafinil as an enhancer of cognitive performance and a potential treatment for substance use disorders. *Psychopharmacology*, *229*(3), 415–434. https://doi.org/10.1007/s00213-013-3232-4

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P29

Attitudes and perceptions about the use of long-acting injectable antipsychotics (LAI-As) among behavioral health providers

Taimur Mian, MD[1]; Elizabeth Poole, PharmD, BCPS[1]; Laura Ruekert, PharmD, BCPP, BCGP[1]; Shaina Schwartz, PharmD, BCPP[2,3]; Sun Lee, PharmD[2,3], Christina Carilli[2,3]; Archana Kumar, MD[2,3]
(1) Community Hospital North Behavioral Health, Indianapolis, IN; (2) High Point University Fred Wilson School of Pharmacy, High Point, NC; (3)Cone Health Behavioral Health Hospital, Greensboro, NC

Background

- Long acting injectable antipsychotic (LAI-A) medications are effective for the treatment of multiple behavioral health (BH) diagnoses[1]
- The use of LAI-As can improve adherence and reduce hospitalizations compared to oral formulations[2]
- LAI-As may be underutilized in current practice due to a variety of barriers[3]

Objectives

- Develop and distribute an electronic survey assessing behavioral health providers' perceptions of LAI-A utilization rates, patient acceptance, and barriers to use
- Analyze responses for differences based on individual factors

Methods

- An electronic survey was developed and distributed to BH stakeholders, including prescribers (MD, DO, PA, NP) and non-prescribers (PharmD, RN, LCSW) at the study sites and via a national psychiatric pharmacist organization
  - Responses were recorded anonymously and participants were required to provide electronic consent before participating
- Surveys asked targeted questions regarding attitudes and perceptions about current use of and barriers to utilization of LAI-As
  - Individual factors (age, gender, geographic location, practice type, practice experience, practice setting) were also collected

Results

- 146 survey attempts between 9/3/20 and 3/17/21 originating from 26 different states in the U.S. and 2 outside the U.S.
- 61.3% female, mean 12.7 years in practice

Figure 1: Age distribution of survey respondents.

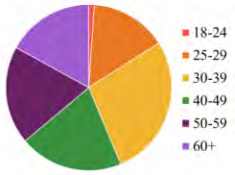

Figure 2: Role of survey respondents on the behavioral health team.

Figure 3: Perceived rate of LAI-A utilization.

Figure 4: Perceived barriers to LAI-A utilization.

Likert Scale: (2) Never; (3) Rarely; (4) Sometimes; (5) Often; (6) Always

Pertinent Findings

- Providers estimated a mean 38.6% of their patients were willing to use LAI-As
  - Significantly greater at sites with a BH clinical pharmacy specialist (42.3% vs. 27.1%, p = 0.018)
- Having a BH clinical pharmacy specialist at the practice site significantly reduced the perceived impact of the following barriers:
  - Fear of needles (3.9 vs. 4.3, p = 0.040)
  - Lack of patient education (3.8 vs. 4.3, p= 0.011)
- Age category (<40 vs. >=40) significantly impact the following perceived barriers:
  - Negative attitudes by prescriber (2.8 vs. 3.3, p= 0.004)
  - Negative attitudes by public (2.8 vs. 3.3, p= 0.041)
  - Lack of patient education (3.6 vs. 4.1, p = 0.009)

Conclusions

- Providers generally perceived LAI-As to be underutilized in current practice
- Overall rate of perceived patient acceptance of LAI-As was low among providers
- A clinical pharmacy specialist in behavioral health may increase patient acceptance of and reduce barriers to LAI-A use

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Disclosure

Authors of this study have nothing to disclose regarding possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject of this presentation.

P30

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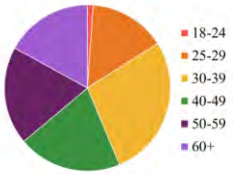

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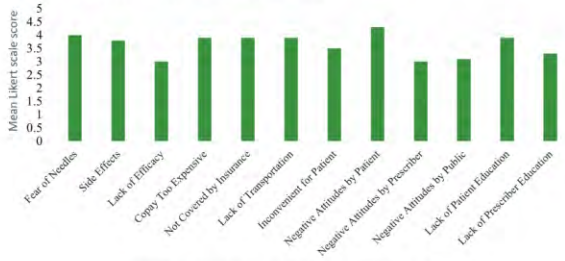

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Disclosure

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P31

Reflections on Clozapine Use in the Realm of COVID-19: A Case Report

Swetha Uppalapati, OMS-IV, Peter Karalis, MD, E. Ann Cunningham, DO

Community Health Network

Aim

We present this case to highlight potential concerns related to starting or continuing clozapine in psychiatric patients hospitalized with COVID-19 complications.

Introduction

Clozapine is an effective treatment option for patients with schizophrenia or schizoaffective disorders who are resistant to other antipsychotics. Side effects include excess salivation, sedation, and agranulocytosis. Studies show that infection and systemic inflammation in the body can alter serum clozapine levels, which begs unique consideration for COVID-19 positive patients. COVID-19 presents with a range of symptoms often involving the respiratory system. Acute respiratory distress syndrome is a major complication and can present soon after onset of dyspnea. Patients with severe COVID-19 infection display a strong inflammatory response, which may manifest as fever with elevated inflammatory markers. Abnormal findings on chest radiographs can consist of bilateral ground-glass opacities in the lungs.

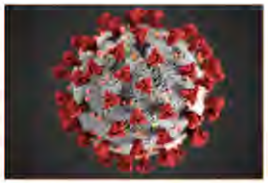
Case Presentation

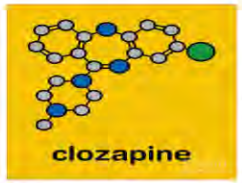
Our patient is a 68-year-old Caucasian male with a history of schizoaffective disorder, bipolar type, DMII, COPD who was admitted to the medical ward for treatment of acute cystitis. He developed shortness of breath on day two of admission and was found to be COVID-19 positive. He was started on dexamethasone and did not require supplemental oxygen. On day four, he became increasingly agitated, expressing grandiose and paranoid delusions with pressured speech. It was then discovered that the patient was taking clozapine 400mg nightly before admission, and the psychiatry team was consulted regarding re-titration of clozapine.

Case Presentation, cont.

He was restarted on clozapine at 25mg nightly and increased by 25mg until reaching a dose of 50mg BID. The patient remained verbally agitated and pressured. Re-titration was continued more aggressively to better control his symptoms and was increased by 100mg daily until reaching his home dose of 400mg. The patient's shortness of breath worsened, requiring supplemental oxygen. After reaching 400mg of clozapine, his manic symptoms markedly improved, but COVID-19 symptoms progressed.

Labs were notable for a Ferritin 3200, CRP 14.9, WBC 11.6 with ANC 10.53, Hemoglobin 10.9, D-dimer 0.55, and CPK 457. As his COVID-19 symptoms worsened, his CRP and ferritin levels increased. He progressed from needing 2L oxygen via nasal cannula to requiring a non-rebreather at 100% oxygen. Bedside swallow was evident for aspiration. After several days of respiratory failure, he was placed on comfort care and passed away within 24 hours.





Discussion

It is important to closely monitor antipsychotic levels in psychiatric patients with COVID-19. We think it may be prudent to track clozapine levels throughout the course of illness. In our case, the illness progressed to a high severity, and we can only speculate about the impact re-titration of clozapine may have had on the clinical outcome. Studies show that severe inflammation in the body can release cytokines that inhibit CYP1A2 activity.

Discussion, cont.

The CYP1A2 enzyme metabolizes clozapine and thus can lead to higher clozapine concentrations in the presence of infection and inflammation.

Clozapine also has increased risk for aspiration, related to hypersalivation and sedation. Therefore, clozapine could have a stronger association with aspiration pneumonia than other antipsychotics. The risk/benefit analysis of clozapine use should incorporate the risk for aspiration pneumonia when continuing clozapine treatment in COVID-19 patients. Given the respiratory distress commonly present in COVID-19 patients, it is important to adjust clozapine dosages to prevent worsening respiratory symptoms.

Key Points

- Caution and consideration should be taken for COVID-19 positive patients who are on clozapine
- Clozapine can increase the risk for aspiration, more so than other antipsychotics, in an already respiratory-vulnerable population in the setting of COVID-19 infection
- Consider monitoring serial plasma levels of clozapine in the setting of COVID-19 as inflammatory processes can impact clozapine pharmacokinetics

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P32

Misuse of Corticosteroids in a Patient with Adrenal Insufficiency and Bipolar Disorder

Hadley Cameron-Carter, Christine Hopp, DO, Kierra Hayes, DO, Kimberlie Wells, DO, Taimur Mian, MD

Community Health Network and Kansas City University of Medicine and Biosciences

Abstract

The prevalence of bipolar I disorder and secondary adrenal insufficiency (SAI) are <2%[1] and <1%[2] respectively. Thus, having both conditions is rare. We describe a unique case of a patient with bipolar I disorder and comorbid SAI whose long-term corticosteroid misuse presented major challenges in psychiatric management.

Background

The treatment of adrenal insufficiency typically requires steroids[2] and if left untreated SAI can cause hypoglycemia, weight loss, weakness, fatigue, nausea, vomiting, diarrhea.[2] It is well known that corticosteroids can cause mania and/or psychosis in individuals without a psychiatric history[3], and the risk of precipitating mania in those with a history of mental illness may be higher [4,5].

Case Presentation

A 41-year-old African American female with a past history of bipolar I disorder and SAI presented for psychosis with paranoid and grandiose delusions. She had been brought in by police after she jumped out of a moving vehicle.

At the time of initial admission, she was taking corticosteroids for SAI, which she would frequently overuse for somatic complaints and enjoyment of hypomanic/manic symptoms that she reported with higher doses. She was stabilized on an inpatient psychiatric unit over a period of 15 days.

The patient was re-admitted to a psychiatric unit for an additional 17 days. During this time she was stabilized on an antipsychotic and her corticosteroids were tapered from 20-30 mg a day to 12.5 mg a day. The patient had improvement of her psychiatric symptoms, while remaining medically stable. She was ultimately discharged and followed up with outpatient psychiatry and endocrinology.

Discussion

Having a psychiatric history[4] or specifically, a history of bipolar disorder[5] may increase the risk of developing psychiatric side effects with high dose steroid use. Furthermore, it has been shown that higher and chronic dosing of corticosteroids increases the risk of precipitating psychiatric symptoms[6]. Steroid induced psychosis is traditionally treated by discontinuing or tapering the steroid dosage and treating with neuroleptics or mood stabilizers [3,7]. However, treatment of SAI may require steroid replacement therapy [2]. We would like to advocate for a closely integrated care approach between psychiatry and endocrinology specialists in caring for patients with both bipolar disorder and adrenal insufficiency.

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P33

High School XC Athletes with Lower Preseason FPT Scores Show Increased Likelihood of LE Injury

Ed Jones, PT, DHSc, OCS, Jessica E. Jochum, PhD, LAT, ATC, Caitlin A. Casey, SPT,
Benjamin Hodges, SPT, Alyssa M. Quinlan, SPT, CSCS, Cheyenne Koki, ATS, Addison Smith, ATS University of Indianapolis

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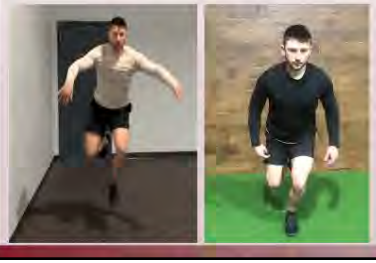
Introduction

Cross country often involves lower extremity injuries[1] The complexity of LE injury makes injury prediction difficult. Identifying screening tools to effectively predict individuals at risk of injury may be clinically useful.[7] Common functional performance tests (FPT) utilized to predict LE injury include single leg hop tests and the T-Test for agility. The majority of previous research has been on collegiate, professional, or military populations. The conflicting evidence for predicting the risk of injury in this population validates the need to determine if these functional tests are worthwhile.

Objective

Purpose of the study was to examine whether scores on a pre-season battery of FPTs are associated with a lower extremity injury in high school cross country athletes.



Methods

- Baseline testing administered prior to the start of the athletic season.
- FPTs included the Single Leg Hop, the Single Leg Triple Hop, the Single Leg Triple Crossover hop, and T-Test for agility.
- Injury surveillance was completed by athletic training staff at the high school.
- Injured and non-injured group scores were compared using Mann-Whitney U test.
- Chi square analysis was used for dichotomous data including traditionally used cut scores.

Results

- Nine out of 42 cross country athletes sustained a LE injury; All were female and 67% were underclassmen.
- The injured athletes performed lower on all of the preseason FPTs.
- Significant differences noted for each single leg hop test, triple hop test left, and crossover hop test left and right (Table 1).
- T-test agility measures were slower for the injured; left and right. (Table 1)
- Traditional cut scores for limb symmetry index (LSI) <90% for hop testing did not reliably predict injury (Table 2).
- No differences noted between groups for those with LE injury history and without participation in other sports (Table 2).

Table 1: Hop Tests And T-Test for Agility - Mann Whitney U

Test	Injured Med(+/-IQ range) (cm) n=9	Not Injured Median (+/-IQ range) (cm) n=33	Sig
Single Leg Hop Left	133.0 (+/- 20.75)	159.5 (+/- 34)	**0.011**
Single Leg Hop Right	133.0 (+/-20.75)	155.0 (+/- 32.8)	**0.011**
Triple Hop Left	398.0 (+/- 39)	460.0(+/- 122)	**0.047**
Triple Hop Right	406.0 (+/- 57)	474.75 (+/- 149)	0.064
Crossover Hop Left	307.0 (+/- 65)	413.5 (+/- 111)	**0.007**
Crossover Hop Right	343. 0 (+/- 67)	413.0 (+/- 117)	**0.023**
T-Test Cutting Left First (best)	12.58 (+/- 0.85)	11.14 (+/- 1.59)	**0.003**
T-Test Cutting Right First (best)	12.44 (+/- 0.85)	10.96 (+/- 1.71)	**0.004**

Table 2: Chi Square Analysis

Attribute	Injured n (%)	Not Injured n (%)	Sig
+ Single Sport Athlete	2 (22.2%)	18 (54.5%)	0.085
+ Injury History	5 (55.6%)	15 (45.5%)	0.591
Single Hop LSI <90	1 (11.1%)	5 (15.2%)	0.699
Triple Hop LSI <90	0 (0.0%)	9 (27.3%)	0.101
Crossover Hop LSI <90	3 (33.3%)	10 (30.3%)	0.457

Discussion

- Preseason performance on these FPTs for athletes who sustained a LE injury are lower than their counterparts which may help identify those with greater risk.
- Traditional risk factors of injury history, sport specialization, and limb symmetry (LSI <90%) did not identify high school XC athletes more likely to sustain a LE injury.

Clinical Relevance

FPTs may be used to identify high school XC athletes who are at greater risk for sustaining a lower extremity injury. Initiation of prevention strategies may be helpful for those at increased risk. Traditional Hop LSI cutoff scores of <90% may not be valid in this population.

Acknowledgments

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P34

Are functional tests following LE injury better compared to baseline or contralateral limb in adolescent athletes?

Authors: Ed Jones, PT, DHSc, OCS[1]; Jessica Jochum, PhD, LAT, ATC[2] Hannah Jones,SPT[1]; Michaela O'Brien, SPT[1]; Melissa Parks, SPT[1]; Amanda Annee, ATS[2]; Jamal Armoush, ATS[2]
[1] Krannert School of Physical Therapy · University of Indianapolis
[2] Master of Science Athletic Training Program · University of Indianapolis

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Purpose:

To determine if measures of limb symmetry using functional performance tests for determining return to play readiness following lower extremity injury in high school athletes were more sensitive when compared to baseline or contralateral limb.

Methods:

The high school athletes in this study completed standardized baseline testing of functional performance tests (FPT) prior to the start of each season; these include:

- Y-Balance test
- T-test for agility
- Single leg hop
- Single leg triple hop
- Single leg crossover hop

Injury surveillance was completed by the high school's athletic training staff throughout the season. Injured athletes were re-tested for all FTPs at the time that the athlete was cleared for return to play and compared the injured limb to baseline and contralateral limb measures for all tests. Paired t-tests were used to determine if significant differences were detected in these measurements ($p<0.05$).

Data/Results:

- 19 injured athletes available for statistical analysis:
  - 11 females and 8 males
    - 3 hip, 4 knee, 9 ankle and/or lower legs and 3 foot
    - 7 football, 2 soccer, 4 basketball, 5 cross-country and 1 volleyball

Y Balance Test:

- Significant difference in anterior direction (p=0.021) comparing affected limb at preseason to time of return to play (Fig. 1)

Fig. 1: YBT Scores – Affected Preseason to Affected at Return to Play

Measure	Affected Pre Mean (+/- SD)	Affected RTP Mean (+/- SD)	Sig
YBT - Ant	62.84 (+/- 6.12)	58.79 (+/- 7.07)	**0.021**
YBT - PM	100.03 (+/- 8.91)	98.66 (+/- 7.96)	0.413
YBT - PL	93.26 (+/- 8.98)	95.55 (+/- 8.50)	0.303
YBT - Composite	93.72 (+/- 8.64)	92.49 (+/- 7.76)	0.422

T-Test for agility:

- Significant difference in means comparing preseason to time of return to play in unaffected limb (p=0.019) and affected limb (p=0.014). (Fig. 2)

Fig. 2: T-test for agility – All Comparisons

Measure	Pre Mean (+/- SD)	RTP Mean (+/- SD)	Sig
Affected	11.47 (+/- 1.47)	12.80 (+/-2.16)	**0.019**
Unaffected	11.43 (+/- 1.41)	12.89 (+/- 2.26)	**0.014**

Hop Tests:

- Significant difference in single hop test (p=0.001) comparing affected limb at preseason to time of return to play (Fig.3)
- Significant difference in single hop test (p=0.001) and triple hop test (p=0.018) comparing affected limb at return to play to unaffected limb at return to play (Fig. 4)

Fig. 3: Hop Tests – Affected Preseason to Affected at Return to Play

Measure	Affected Pre Mean (+/- SD)	Affected RTP Mean (+/- SD)	Sig
Single	152.18 (+/- 36.45)	134.22 (+/- 33.50)	**0.001**
Triple	451.89 (+/- 115.11)	423.04 (+/- 100.62)	0.061
Crossover	405.46 (+/- 136.21)	393.41 (+/- 116.41)	0.344

Fig. 4: Hop Tests – Affected at Return to Play to Unaffected at Return to Play

Measure	Affected RTP Mean (+/- SD)	Unaffected RTP Mean (+/- SD)	Sig
Single	134.22 (+/- 33.50)	147.48 (+/- 36.15)	**0.001**
Triple	425.64 (+/- 98.44)	461.41 (+/- 106.84)	**0.018**
Crossover	393.41 (+/- 116.41)	426.98 (+/- 120.20)	0.061

Conclusions:

The Y-balance test is more sensitive at detecting changes in an injured limb when compared to preseason baseline scores only in the anterior direction than compared to the contralateral limb.

The T-test for agility is sensitive at detecting changes in preseason and at the time of return to play and can serve as an additional measure of return to play readiness.

The single and triple hop tests are more sensitive at detecting changes when comparing the injured limb to the contralateral limb at return to play than compared to baseline score.

Clinical Relevance:

Clinicians should consider the Y-balance test measurement in the anterior reach direction during preseason to establish a baseline for objective return to play decisions. Hop testing (single and triple) can be compared to the contralateral limb at the time of return to play and does not need to be completed during pre-season. The T-test for agility should be performed preseason and at the time of return to play and can be performed in either direction regardless of injured limb to detect differences in agility and return to play readiness.

References:

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P35

Interrater Reliability of the FMS Among Novice Raters and Certified Clinicians Testing Adolescent Athletes

Jochum JE, Jones ER, Gausman NP, Krempel TJ, Fidanze RM, Raines AK: University of Indianapolis, Indianapolis, IN

UNIVERSITY of INDIANAPOLIS.

Introduction

- Over 1.6 million adolescent athletes are injured every year while participating in athletics.[1]
- Tools assessing multiple domains of function (eg. balance, strength, and range of motion) simultaneously may improve the accuracy of identifying athletes at risk for injury[2] by identifying the presence or absence of risk factors[3] within these domains of function.
- The FMS has become a prevalent pre-participation screening tool.
  - Identifies potential risk factors through visual assessment of seven active movement tasks.[4-6]
  - Capable of identifying asymmetry and limitations even in high performing individuals.[3,7-9]
- A composite FMS score of 14 or less indicates an increased risk of injury for a variety of populations,[4,10,11] but there is conflicting evidence that FMS is capable of predicting injuries in younger athletes.[12]

Context

The purpose of this study was to determine the interrater reliability among examiners of varying experience when scoring adolescent athletes using the Functional Movement Screen (FMS). The reliability of scoring on functional tests between providers can lead to efficiency of screening in the clinical setting and allow for collaborative healthcare.

Methods

- Three pairs of examiners were recruited for participation in this study:
  - 1 pair of 1st year athletic training (AT) students
  - 1 pair of 2nd year physical therapy (PT) students
  - 1 pair of FMS-certified clinicians.
- The novice examiners (PT and AT pairs) completed a 1-hour training session.
- Each pair then rated 40 adolescent (13-18 yo) athletes performing all FMS components.
  - Each pair rated their own separate group of athletes.
    - 120 athletes were rated in total during mass testing sessions at multiple athletic facilities
  - Variety of athletes from different sports rated
  - Occurred over a span of 8 months
- Agreement scores within each pair were calculated for each FMS component and composite score.
  - Calculated intraclass correlation coefficients (ICC) to determine interrater reliability.
  - Weighted Kappa statistic used to determine each pairs' agreement when scoring an athlete at or below the cut-off composite value of 14.
  - Statistical analyses compared the raters within each pair (PT vs PT) and not between pairs (AT vs. PT).

Results

- **FMS Component Scores:**
  - Both novice raters and clinicians demonstrated good interrater reliability (ICC >0.75) when scoring most FMS component tests (*Table 1*).
- **Composite FMS Scores:**
  - AT students demonstrated moderate interrater reliability (ICC = 0.5 - 0.74) while PT students and clinicians demonstrated poor interrater reliability (ICC <0.5) (*Table 2*).
  - The mean difference in composite score between raters was ~1 point (*Table 4*).
- **Cut-off Score ≤14:**
  - All 3 pairs of examiners had excellent agreement (Kappa > 0.81) (*Table 3*).

ICC Interpretation		
Poor Reliability	Moderate Reliability	Good Reliability
< 0.50	0.50 - 0.74	> 0.75

Table 1

FMS Component ICC's	Clinician	AT Student	PT Student
Squat	0.75	0.75	0.725
Hurdle Final	0.675	0.975	0.675
Lunge Final	0.75	0.8	0.8
Shoulder Final	0.875	0.9	0.875
SLR Final	0.85	0.7	0.925
Push-up	0.6	0.95	0.8
Rotary Final	0.875	0.825	0.9

Table 2

FMS Composite Score ICC's	
Clinicians	0.3
AT Students	0.5
PT Students	0.425

Table 3

Average Difference in Composite Score	
Clinicians	1.1
AT Students	0.85
PT Students	0.925

Table 4

FMS Composite Score >14 Agreement Cohen's Kappa	
Clinicians	0.816
AT Students	0.844
PT Students	0.897

Conclusion

- Novice and FMS-certified examiners have moderate to excellent interrater reliability between component scores of the FMS when scoring adolescent athletes.
- Composite scores alone showed poor interrater reliability between examiners of similar experience
- Good to excellent interrater reliability with determining whether the composite scores were at or below a cut-off score of 14.
- FMS is a reliable screening tool for use with adolescent athletes when scored by both FMS-certified and novice examiners who have undergone at least a one-hour training session.

References

P36

Return to Sports and Subsequent ACL Injury after ACL Reconstruction with Contralateral Patellar Tendon Autograft

William Claussen, PT, K. Donald Shelbourne, MD, Rodney Benner, MD, Tinker Gray, MA.
Shelbourne Knee Center at Community Hospital East, Indianapolis, IN

Introduction

- Return to sport rates following anterior cruciate ligament (ACL) reconstruction varies greatly.
- Early return to sports has been considered by some to be a risk factor for ACL graft tear.
- As a result, patients are sometimes being told to wait longer to return to sports.

Purpose

- The purpose of this study was to determine if the rate of subsequent ACL injury to either knee after ACL reconstruction was statistically significantly different between patients who returned to sports at <6 months vs. those who returned at ≥6 months post-op.

Hypothesis

- We hypothesized that subsequent ACL tear rate to either knee will not be different based on time of return to sports with contralateral patellar tendon autograft (PTG).

(Contralateral Patellar Tendon Graft)

Methods

Between 1998 and 2013, 2130 patients underwent primary ACL reconstruction using a PTG from the contralateral knee and were enrolled in the study.

- Patients followed post-op rehabilitation to restore full and equal knee range of motion and strength before returning to sports.
- Post-op stability was tested using KT1000 arthrometer, and the manual maximum difference between knees was recorded.

Age Groups for Study Patients With Complete Data (N=1386)

- Patients reported pre/post-op level of sport participation, as well as timing of return to sports based on self-reported activity survey.
- Subsequent ACL injury to either knee within 5 years of surgery was recorded.
- Injury rates were evaluated based on time of return to sports before or after 6 months post-op.
- Correlation of time to return to activity to time of injury was calculated.

Results

- The number of patients with complete data was 1386 (65%).
- 89% of patients were able to return to pre-surgery level of sport.
- The mean time to return to sports was 5.6 ± 2.3 months post-op.
- KT1000 arthrometer testing showed a mean manual maximum difference between knees of 1.9mm ± 1.3mm with 91% of patients having less than 3mm difference.
- Overall, 93 (6.7%) suffered subsequent ACL graft tear, and 68 (4.9%) suffered subsequent contralateral ACL tear in the first 5 years post-op.
- Mean time of ACL graft tear was 1.2 ± 1.0 years post-op while the mean time of contralateral ACL tear was 2.3 ± 1.0 years post-op.
- There was no statistically significant difference in ACL graft or contralateral ACL tear rates based on return to sports before or after 6 months.

Subsequent Tear Rates Based on Time of Return to Sports

- There was no correlation between time of return to sport and subsequent ACL graft tear (R = .042; *P* = .691) or subsequent contralateral ACL tear (R = -.034; *P* = .785)
- Subsequent graft tear and contralateral ACL tear rates within the age groups were not statistically significantly different.

Subsequent tear rates by age groups

Age Groups (N)	Graft Tear % Return <6 mon	Graft Tear % Return ≥ 6 mon	*P*-value	Contralateral Tear % Return <6 mon	Contralateral Tear % Return ≥6 mon	*P*-value
<18 yrs. (618)	10.5	9.3	.622	8.4	9.7	.598
18-25 yrs. (394)	5.2	6.2	.670	2.6	1.9	.631
>25 yrs. (374)	3.7	1.7	.218	0.7	1.3	.642

Conclusions

- ACL reconstruction using a contralateral patellar tendon graft reliably restores stability to the knee.
- Subsequent ACL graft tear rate or contralateral ACL tear rate was not statistically significantly different based on time of return to sports at before or after 6 months post-op.
- There was no correlation between time of return to sports and time of subsequent injury.
- With using a contralateral PTG and following a knee symmetry rehab model, patients can return to sports at an early time frame without increased risk of second ACL injury to either knee.

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P37

Return to Sport and Subsequent ACL Injury in School-Age Patients after ACL Reconstruction with Contralateral Patellar Tendon Graft

Sarah Eaton, PT, DPT, ATC, LAT, K. Donald Shelbourne, MD, Rodney W. Benner, MD and Tinker Gray MA
Shelbourne Knee Center at Community East Hospital, Indianapolis, IN

Introduction

- Subsequent injury to the ipsilateral graft or contralateral ACL after primary ACL reconstruction is devastating to young athletes attempting to return to sport.
- Return to sport rates after ACL reconstruction vary greatly, with age, gender, and level of activity predicting the risk of second injury.
- Some are suggesting that patients wait up to 2 years after surgery to return to sport, as a way to reduce the risk of second ACL injury.
- For some patients, waiting 2 years can effectively end their career.

Hypothesis

- We hypothesized that subsequent ACL tear rate to either knee will not be different based on time of return to sport and that females would have a higher rate of contralateral ACL injury than men but no difference in ipsilateral tear rate.

Methods

- Between 1998 and 2013, 851 patients who were ≤18 years old at the time of primary ACL reconstruction with contralateral patellar tendon graft and had no bilateral ACL injury at the time of surgery were enrolled into a long-term outcome study.
- Patients reported their pre- and post-operative level of sport participation, as well as the timing of return to sport, using a self-reported activity rating scale.
- KT-1000 arthrometer testing of manual maximum difference between knees was recorded to determine post-operative stability.

(KT-1000 Arthrometer Testing)

- We recorded subsequent ACL injury to either knee within 5 years of their primary ACL reconstruction.
- Injury rates were evaluated based on sex and time to return to sport before or after 6 months after surgery.
- Correlation between time of return to activity to the time of injury was calculated.

Results

- Of patients meeting criteria for the study, 618 (407 female; 211 male) had complete data (73%).
- The mean KT-1000 arthrometer manual maximum difference between knees was 1.9mm ± 1.3mm, with 91.6% of patients having ≤3mm difference between knees.
- The rate at which patients returned to their pre-surgery level of sport was 88%, with no difference in rates between males and females.
- 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).
- The number of patients who returned to activity <6 months after surgery was 253 (62%) for females (62%) and 138 for males (65%).
- The rates of subsequent graft tear or contralateral ACL tear were not statistically significantly different based on return to sport before or after 6 months post-op.

Sex	ACL Graft Tear %		*P*-value	Contralateral ACL Tear %		*P*-value
	Return < 6 mon	Return ≥ 6 mon		Return < 6 mon	Return ≥ 6 mon	
Female	9.1	9.7	.974	10.7	10.4	.885
Male	13.0	8.2	.226	4.3	8.2	.253

- There was no correlation between the time of return to sport and the time of subsequent tear to either knee for both males and females.

Sex	Graft Tear		Contralateral Tear	
	R-value	*P*-value	R-value	*P*-value
Female	-0.134	.412	-0.104	.504
Male	0.071	.746	-0.099	.760

Conclusions

- ACL reconstruction with a contralateral patellar tendon graft reliably allows young patients to return to their pre-surgery level of sport.
- The rate of subsequent graft tear was not statistically significantly different based on sex, but the contralateral ACL tear rate was statistically significantly higher in females.
- The rates for subsequent ACL graft tear or contralateral ACL tear were not statistically significantly different based on time of return to sport.
- Furthermore, there was no correlation between the time patients returned to sport and the time of subsequent injury.

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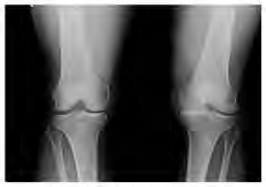
P38

The Impact of Preoperative Rehabilitation on Outcomes Following Total Knee Arthroplasty

Scot Bauman, PT, DPT; Rachel Slaven, PT, DPT
Shelbourne Knee Center at Community Hospital East, Indianapolis, IN

Introduction and Purpose

- Preoperative TKA rehab is less common than postoperative rehab and not overwhelmingly supported by existing literature.



X-ray of knee osteoarthritis

- Patient reported outcome measures (PROM) are used to measure preoperative status and this has been linked to postoperative improvement; however, specific preoperative improvements have not been previously defined.
- The purpose of this study was to determine what impact preoperative gains in function, as measured by the Knee Injury and Osteoarthritis Outcome Score (KOOS), have on outcomes following TKA.

Methods

- 32 subjects (17 female, 15 male) with an average age of 64.5 years were enrolled into an OA study and eventually transitioned into a postoperative study after choosing to have a TKA.
- Preoperative treatment focused on improving range of motion and strength, gait training, and swelling management.

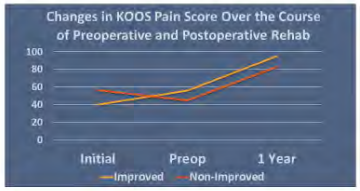
heel slide

ideal stretch

single leg press

- Function was evaluated with the five subscales of the KOOS at the initial visit when the diagnosis was made, at the preoperative visit, and at the 1 year postoperative visit.
- Preoperative functional improvement was defined as an increase of at least 5 points in the KOOS sub-scale

Results



- Of 32 patients who underwent preoperative rehabilitation before TKA, the number of patients with improved KOOS sub scales preoperatively are as follows Pain (13), Symptoms (9),
  - Pain: 13
  - Symptoms: 9
  - Activities of Daily Living: 18
  - Sport: 11
  - Quality of Life: 11
- 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 that did not have preoperative improvement (*P*=0.016).
- There was no statistically significant difference in other KOOS subscale 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.

Clinical Relevance

- Improving pain in those with knee OA through preoperative rehabilitation can lead to long-term improvements in pain after TKA.

X-ray of postoperative TKA

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P39

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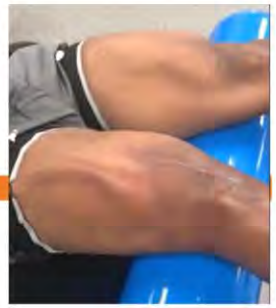
Quad Tendon Rupture & Repair Rehab Using Blood Flow Restriction Training



Presenter: Joel N Novak, DPT | Project Category: Case Study
Affiliation: Community Health Network: Physical Therapy & Rehab

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.

Methods: It is common to restrict knee range of motion, weight bearing, ambulation, load/force in the weeks/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 quad tendon with heavy squatting in the gym with subsequent surgical repair.

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.

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 another week of BFR (6 total sessions) and ambulate without 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 + 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.

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P40

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Furuncle from the Field?

Skyler R. Gick, DO; William Long, DO; Jacklyn D. Kiefer, DO

INTRODUCTION:

Morel-Lavallée lesions are rare. Up to 33% of lesions are missed at the time of evaluation and are misdiagnosed as hematomas or bursitis. Identifying these lesions quickly is important due to risk of infection. Morel-Lavallée lesions are an internal de-gloving between the subcutaneous tissue and deep fascia from high impact shearing injuries disrupting the lymphatics and vasculature, which leads to a potential space that is filled with blood, lymphatic fluid and necrotic fat. This case illustrates an uncommon presentation of an uncommon clinical case and demonstrates the lack of defined standard of care.

CASE SUMMARY:

This case involves a 14-year old high school athlete who presented ten days after diagnosis of hematoma above the right knee after landing on his knee during a football game. MRI discovered Morel-Lavallée lesion with small pseudocapsule, for which he was treated with compression. Though compliant with treatment, he presented with the formation of a "large pimple" on his knee, which appeared as a golf ball sized erythematous, hot, fluctuant bump superolateral to his right patella. Treatment included compression and cleaning the skin over the lesion. The patient proceeded to squeeze the lesion on his own, eliciting a significant amount of bloody and pink discharge.

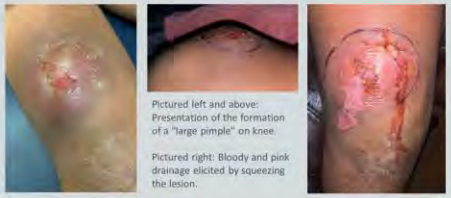
DIFFERENTIAL DIAGNOSIS:

Subcutaneous Hematoma
Bursitis
Soft Tissue Sarcoma

IMAGES:

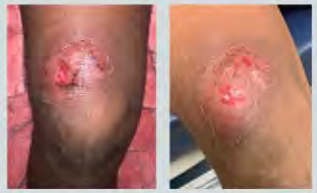
Pictured above: Initial presentation of right knee.

Pictured right: MRI of right knee with small pseudocapsule and surrounding edema.



Pictured left and above: Presentation of the formation of a "large pimple" on knee.

Pictured right: Bloody and pink drainage elicited by squeezing the lesion.



Pictured left: Progression of healing lesion.

FINAL DIAGNOSIS:

Morel-Lavallée Lesion

TREATMENT:

The treatment guidelines used for this case considered this lesion to be small because it was <50cm^3 and there were no underlying fractures. Large lesions were considered >50cm^3 or with underlying fractures. Treatment of this lesion involved compression, persistent cleaning and progression back to sport as the lesion healed.

DISCUSSION:

Most information available for Morel-Lavallée lesions is found in retrospective case studies that involve injuries to the proximal thigh and trochanteric region after post-traumatic injuries involving pelvic fractures. Fewer reports are available involving the knee, lumbar, trunk, and extremities. The body works to heal itself by absorbing these lesions over time, but minimal vascular supply frequently leads to pseudocapsule formation. Treatment options are variable, as there are no explicit guidelines illustrating standardization of care. Nonoperative compression is typical for small lesions. Large and chronic lesions require I&D or open debridement often with pseudocapsule resection and are at high risk for skin necrosis without debridement. In rare instances, the body attempts to rid the fluid through the skin, which is what makes this case especially unusual. An I&D was likely indicated for this small lesion, contrary to most available guidelines. Learning about this case will reduce misdiagnosis, raise awareness to advance management guidelines and improve patient care.

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P41

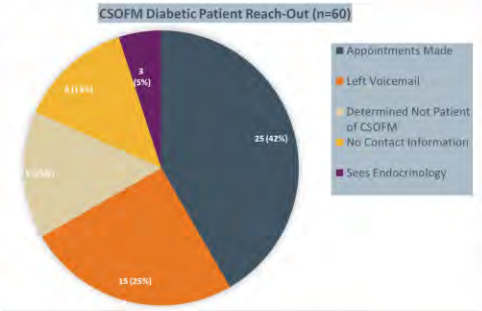
Introduction of longitudinal teams to teach quality improvement in a family medicine residency patient centered medical home

Rachel Shockley, DO, Program Director; Anne Packard, PharmD; Kaitlyn Wong, RD; Courtney Clawson, DO; Taylor Bachert, DO; Nicole Schmitt, DO; Julie Stenger, RN, BSN; Carrie Leblanc, MA Leah Chamberlain, MA; Kyle Sparks, BA; Lisa Polen

Community South Osteopathic Family Medicine Residency Program; Greenwood, IN

INTRODUCTION

The Accreditation Council for Graduate Medical Education requires family medicine residents to participate in inter-professional quality improvement activities.[1] Multidisciplinary longitudinal teams were created at a family medicine residency. The goal was to improve diabetic quality metrics, to have 80% of the clinic's diabetic patients achieve a hemoglobin A1C less than 8%.



DISCUSSION

The first intervention resulted in a 7.1% improvement from baseline. We hope for continued improvement and to achieve the goal. Another goal is teaching quality improvement to residents utilizing a novel approach to improving hemoglobin A1C levels. Ideally, residents will use these skills moving forward and implement quality improvements later in their careers.

METHODS

A prospective observational study design and Lean Six Sigma methodology guided the interventions. A multidisciplinary team with a pharmacist, dietitian, social worker, nurse, manager and physician obtained a Lean Six Sigma yellow belt. The percentage of patients with a hemoglobin A1C above 8% was measured. If any patient no longer received primary care from one of our clinic's physicians, they were removed from the clinic list. A medical assistant contacted any patients who were overdue for follow-up and schedules an appointment with their provider and with the pharmacist and dietitian for medication adjustments and lifestyle changes if their A1C was above 8%. The percentage of patients with hemoglobin A1C levels below 8% was assessed monthly. This project will continue over the academic year or until we reach and sustain our goal.

Percentage of Patients with A1c < 8%

RESULTS

The initial goal was improving percentage of patients with a hemoglobin A1C less than 8% from 45% to 80% over a 6-month time period. The percentage of patients meeting this goal was 44.6% at baseline, followed by 45.0% at month two when the first intervention was implemented, 47.7% at month three, and peaking at 51.8% at month five and 42.3% at month 16.

FUTURE PLANS

Continue the final intervention for multidisciplinary referrals, as the results of this intervention have not yet been measured

Determine how to automate the process for every diabetic with an A1c > 8% to be seen by multidisciplinary services

Determine plan for sustainability for project given staff turnover

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P42

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Stop! Hand Tremors? Just listen. She's 29 and ALS is her condition.

C. McNeill, DO, S. Brown, MD, L. Winternheimer, MD, K. Morlan, DO, N. Roach, MD, K. Wong, RD
Community South Osteopathic Family Medicine Residency Program
Greenwood, IN

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.

DISCUSSION POINTS

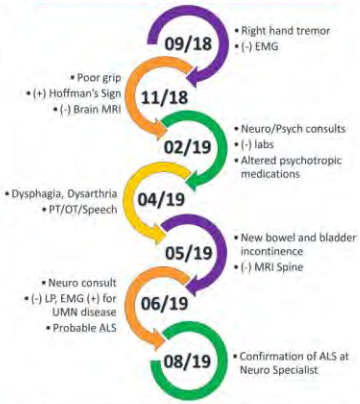
- Importance of an expanded differential and consideration of uncommon diagnoses
- Persistence of a work up in a diagnosis of exclusion with a primary physician advocate and patient collaboration
- Appropriate use of specialists as consultants and understanding when repeat testing is warranted
- Awareness of the presentation and differentials to consider in ALS

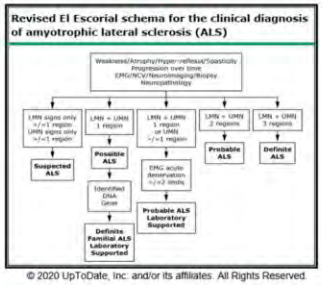
CASE PRESENTATION

- 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.

INJURY TYPE	MUSCLE TONE	MUSCLE STRETCH REFLEXES	PATHOLOGIC REFLEXES
UMN	Spastic	Hyperactive	Present
	Stiffness and slowness of movement		
LMN	Flaccid	Hypoactive	Absent
	Atrophy, fasciculations, and cramps		

TIMELINE TO DIAGNOSIS

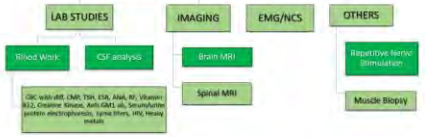


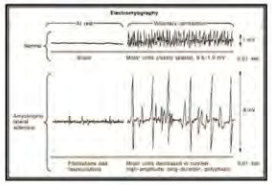


DIFFERENTIAL DIAGNOSIS

Multifocal motor neuropathy	Hereditary spastic paraplegia
Spinobulbar muscular atrophy	Primary lateral sclerosis
Post-Polio syndrome	Cervical radiculomyelopathy
Monomelic amyotrophy	Myasthenia gravis
Inflammatory myopathy	Chronic inflammatory demyelinating polyneuropathy
Benign fasciculations	Intraspinal lesions

WORK UP





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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.

P43

Community Health Network

Two Unrelated Cases of Venous Thrombosis, One Leading to Cerebral Ischemia, in an Otherwise Healthy Young Woman

Authors: Paige Danner, DPM; Laura Feder, DO; Maurice Henein, MD; Jacob Holtz, DO; Patrick McGuire, DO; Rebecca Smock, DO; Alexandria Sporleder, DO

Aim

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

Introduction

Venous thrombosis is condition in which blood clots forms in the veins and have the potential to embolize in smaller vessels which can lead to circulatory obstruction and subsequent organ damage. An embolism that is transported to the lungs and brain are the most dangerous and of highest concern due to high fatality rates. Venous thrombosis is a common condition seen in inpatient and outpatient settings but less commonly in younger patients. Two of the more common causes in younger individuals include thoracic outlet syndrome and oral contraceptives. Thrombi are usually caused by a combination of venous stasis and hypercoagulability. Thoracic outlet syndrome is a compression of blood vessels that leads to stasis while oral contraceptives can create a state of hypercoagulation. Literature to now describes cases of thrombosis in young patients but less commonly involving a patient who experienced separate thromboses from both of these causes.

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.

Discussion

This case is interesting as it involves a healthy and young patient with a normal hypercoagulability workup that experienced two separate provoked thrombi. One was provoked by TOS and the other was provoked by oral contraceptives. Determining the management plan for thrombi depends on whether it was provoked or unprovoked. Provoked thrombi are caused by pro-thrombotic conditions including the examples in this case in addition to pregnancy-induced, post-op, or prolonged travel. Unprovoked thrombi occur without an identifiable cause for a hypercoagulable state. Provoked thrombi are usually treated for at least three months, whereas, unprovoked thrombi require longer treatment and possibly life-long treatment.

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.

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P44

Disseminated Fungal Pneumonia in the Setting of Undiagnosed HIV

A. Sporleder, DO, PGY3, J. Kiefer, DO
Community South Osteopathic Family Medicine Residency Program
Greenwood, IN

Community Health Network

INTRODUCTION

Blastomycosis is a systemic pyogranulomatous infection that primarily involves the lungs, though can hematogenously spread to any organ with skin, bone, and the genitourinary system being the most common. It begins with the inhalation of the conidia of B. dermatitidis and can manifest without symptoms or as an acute or chronic pneumonia. Though most cases have been reported in North America, the epidemiology remains incomplete due to lack of antigens for skin testing. This case illustrates the presentation of chronic disseminated fungal pneumonia in the setting of undiagnosed human immunodeficiency virus and further guidelines for work-up and prevention of other opportunistic infections.

OBJECTIVES

Inclusion of broad work-up of what appeared to be chronic pneumonia in the setting of a national pandemic in an otherwise healthy individual.

Differential diagnosis of pneumonia in an immunocompromised patient.

Further guidelines for work-up for and prevention of opportunistic infections within those with human immunodeficiency virus.

CASE PRESENTATION

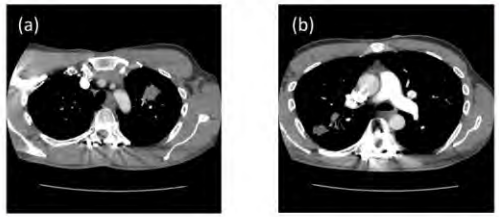
This is a case of a 37 year old male patient without any other significant past medical history who presented to the hospital with complaints of persistent cough over the last month and a half with associated shortness of breath, fatigue, fever, and night sweats. On further review, he had recently undergone and failed four rounds of three different antibiotics, as well as a course of Prednisone, outpatient. He is also a half pack per day smoker and had recently traveled to Tennessee for a dirt biking trip.

Physical exam showed an ill-appearing male who was in no acute distress. Respiratory exam showed lungs that were clear to auscultation bilaterally. Heart, abdomen, and neurologic exams were all unremarkable. Patient was afebrile on arrival and was breathing comfortably on room air.

CTA chest was remarkable for bilateral nodular mass-like areas of consolidation with non-specific mild hilar and mediastinal lymphadenopathy. IV antibiotics were initiated for a possible bacterial pneumonia, though further viral and fungal work-ups were ordered. Patient also underwent bronchoscopy that showed inflamed mucosa of the left upper lobe bronchus. BAL was performed. With positive fungal cultures, patient was tested for HIV which was also positive.

DIFFERENTIAL DIAGNOSIS

Bacterial pneumonia, viral pneumonia, fungal pneumonia, COVID-19, lung malignancy, tuberculousis, lymphoma, hypersensitivity pneumonia



CTA chest with mass-like consolidation in the (a) left lung and (b) right lung.

Test:	Result:
Histoplasma galactomannan AG, urine	Positive
Legionella AG, urine	Negative
Stretococcus pneumoniae AG, urine	Negative
Respiratory culture	Negative
BAL studies*	Candida+, Blastomyces+
Blastomyces AG, urine	Positive
Histoplasma antibody	Negative
HIV AG/AB	Positive
HIV confirmatory	HIV 1+
CD4	53
HIV RNA	213,785
Hepatitis panel**	Negative
Toxoplasma IgG/IgM	IgG+
HLA B5701	Negative
G6PD	Within normal limits

CD4 Count	Opportunistic infection	PPx
Any	Tuberculosis Streptococcus pneumonia	Screening, LTBI therapy Vaccination
<500	Zoster	Vaccination
<200	Pneumocystis pneumonia Esophageal candidiasis Histoplasmosis (disseminated) Coccidiodomycosis (disseminated) Kaposi Sarcoma	TMP/SMX, Dapsone
<100	Toxoplasmosis Crypto/microsporidiosis Cryptococcal meningitis Penicillosis	TMP/SMA
<50	Disseminated MAC Bacillary angiomatosis PML CMV colitis/retinitis Primary CNS lymphoma	Azithromycin

Serology results on left side. *This included pathology (blastomyces+), viral culture, eosinophil smear, cell count, respiratory culture, pneumocystis, legionella, fungal culture (candida+), and AFB culture. **This included Hepatitis A, B, and C.

Opportunistic infections and their CD4 associations with prophylaxis recommendations on the right side.

TREATMENT

Patient was initially placed on IV Zosyn for possible bacterial pneumonia. High dose IV Fluconazole was added while fungal cultures were pending. With the positive Histoplasmosis urine antigen, both of those were discontinued and IV Amphotericin B 300mg daily (5mg/kg) was started. This was continued for an inpatient 14 day course. On discharge, he was transitioned to a prolonged course of PO Itraconazole 200mg BID.

With patient's +HIV status, CD4 count and +Toxo IgG status, double strength TMP/SMX was started daily. Infectious disease also initiated anti-retroviral therapy while patient was inpatient with Biktarvy (Bictegravir-Emtricitabine-Tenofovir 50mg-200mg-25mg) daily.

Patient continues to follow-up with Infectious Disease outpatient.

DISCUSSION

While up to fifty percent of blastomycosis infections are asymptomatic, common symptoms reported include cough, fever, shortness of breath, weight loss, and night sweats. The incubation period ranges from three to six weeks and is highly variable. This disease is commonly misdiagnosed as viral/bacterial pneumonia, tuberculosis, and bronchogenic carcinoma. Chest radiography most commonly shows alveolar infiltrates or a mass lesion, while CT chest may show nodules, consolidation with or without cavitation and/or tree-in-bud opacities. Rarely, patients can progress ARDS.

Blastomyces can behave as an opportunistic pathogen in the setting of advanced AIDS, though it is not considered an AIDs-defining illness. Pulmonary disease in these patients is more severe and aggressive, with a mortality rate of up to forty percent. Frequent relapses are commonly seen in those with AIDs, as well as those who are on chronic immunosuppressive therapy.

Extrapulmonary disease has been reported in over fifty percent of patients with chronic blastomycosis and skin disease is the second most common finding behind pneumonia. Verrucous lesions with irregular borders, often mimicking squamous cell carcinoma, are characteristic.

Other extrapulmonary findings may include osteomyelitis, arthritis, prostatitis, epididymoorchitis, and rarely, endometritis. CNS involvement is rare in immunocompetent hosts but has been seen as meningitis, epidural abscesses, and intracranial abscesses in those who are immunocompromised.

Treatment in immunocompromised patients involves a one to two week course of Amphotericin B. Declining kidney function is the most common complication of therapy and, because of this, liposomal preparations are preferred. Patients should transition to itraconazole for at least a year, as long as CD4 cell count remains above 150 for at least six months.

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P45

Promising Practices in Infection Prevention in Indiana

Lidia Dubicki, MS, Kayleigh Adrian, MS, Ellen Burton, MPH, Ellen Miller PhD PT
University of Indianapolis Center for Aging & Community

Introduction

From 2014 - 2021, the Indiana Department of Health (IDOH) provided funding to the University of Indianapolis Center for Aging & Community (CAC) for several initiatives that included advanced education in infection prevention. A major component of these initiatives involved in-person courses for long term care professionals. In 2020 and 2021, those in-person offerings were converted to virtual offerings due to the COVID-19 pandemic. In addition, trainings for paraprofessionals and residents and families were developed.

Methods

Nationally recognized subject matter experts (SMEs) were engaged to develop the curriculum for the professionals course, paraprofessional training and residents and families educational materials. For all three trainings, development of the curriculum separately followed the same steps.

First, the project team, led by the SMEs, determined the learning objectives, The learning objectives were submitted to IDOH for approval. The next step was to categorize the learning objectives into learning modules. Once modules were decided upon, the SMEs divided them to develop the content.

Recruitment of participants for the in-person and virtual professionals courses was accomplished by advertising three ways: in the IDOH Long Term Care Newsletter, to CAC's list of long term care contacts and through cooperation with the trade organizations including LeadingAge Indiana, the Indiana Health Care Association and Hoosier Owners and Providers for the Elderly.

Attendees of the professionals course were asked to pilot the paraprofessionals training and residents and families trainings in their buildings.

Methods, continued

Data collection involved pre and post knowledge assessments at each professionals course. Pre facility practices self assessments were also administered at the professionals courses and post facility practices self assessments were obtained through electronic survey approximately six months post course. Post facility self assessments were not collected during 2020 due to the COVID-19 pandemic. Data presented are from before 2020. In addition, analysis of trends in the Minimum Data Set (MDS) quality measures was performed.

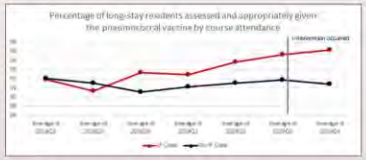
Table: Facility Practices

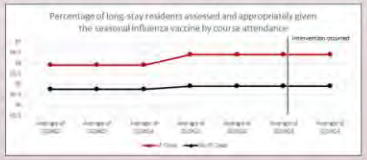
	Avg. Score Pre	Avg. Score Post	Gain
Hand hygiene is performed before AND after direct contact with patients or residents.	3.9	4.0	.1
Compliance with hand hygiene is monitored on a regular basis (at least monthly).	3.6	3.8	.2
Ongoing training for staff includes infection control on at least an annual basis.	4.8	4.9	.1
Patients/residents with suspected Clostridium difficile infection are placed on contact precautions.	4.3	4.9	.6
Facility personnel act within two (2) hours of confirmed Clostridium difficile infection.	4.5	4.8	.3
Indwelling urinary catheter use is re-examined on a daily basis.	3.0	3.6	.6
Antibiotic use is re-examined on a daily basis.	3.2	3.7	.5
Facility educates patient/resident and their family about specific things they can do to prevent infections.	3.2	3.8	.6

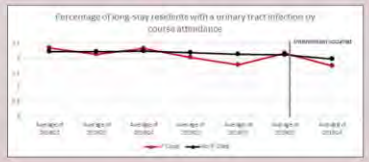
Results

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 courses increased average scores for infection prevention best practices on their facility self-assessments. As shown in the table, each item had an improved average score, meaning the impact of the course is a positive one and is affecting best practice in policy and procedure for infection prevention among participating facilities. Significant gains (.5 point or more) were made on four items. What is encouraging about this is that three of those items had the lowest scores in the pre-assessment. As an example, indwelling catheter use being re- examined on a daily basis went from an average score of 3 to 3.6 - an improvement of 50% of the time to 65% of the time.







Results, continued

As shown in the three graphs, 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.

The overall trend for each of the three quality indicators, grouped by buildings that had at least one staff member attend the Infection Prevention course (IP Class) and buildings that did not send a staff member to the course (No IP Class). Visual analysis shows that for all three quality indicators, the IP Class group trended toward improved outcomes post-intervention as compared to the No IP Class group. For both pneumonia and influenza vaccine indicators, those in the IP Class group show higher (better) percentage of residents appropriately assessed and given the vaccine than those in the No IP Class group. Similarly, the IP Class group shows lower (better) percentages of long-stay residents with a urinary tract infection (UTI).

Discussion

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.

P46

Department of Kinesiology, Health, and Sport Sciences

Subjective Wellness Ratings Are Related To Objective Measures Of Exercise Performance In College Soccer Players: A Pilot Study

Alec Lohman, A., Maschino, D., Robinson, R., Cayot, T., Long, GM.

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 adaptions without compromising athlete's wellbeing.

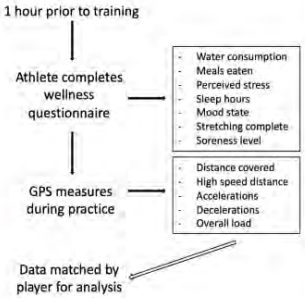
Purpose

We sought to determine if collegiate soccer players perceptions of wellness were related to performance parameters as measured by GPS during practice and games.

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.

Assessments



Results

Athletes reporting low (<4hrs, n=21) or moderate sleep duration (4-6hrs, n=89) covered significantly less distance (4174-4783 vs. 6788 ± 563 meters, p=0.0019) and ran significantly less distance at high intensity (324-356 vs. 518 ± 69 meters, p=0.046) than those reporting >6hrs (n=18) of sleep (Fig. 1). Additionally, those reporting a moderate mood state (4-7/10, n=55) tended to cover less total distance (4646 vs. 5346 ± 407 meters, p=0.08) and less distance at high intensity (324 vs. 412 ± 48 meters, p=0.07) in comparison to those reporting a higher (>7/10, n=72) mood state (Fig. 2).

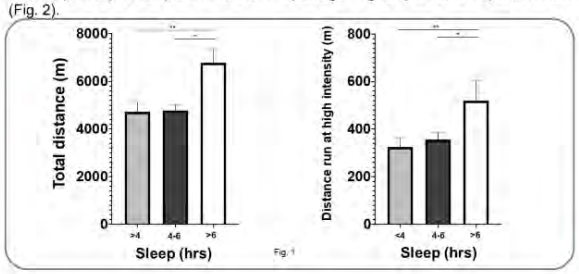


Fig. 1

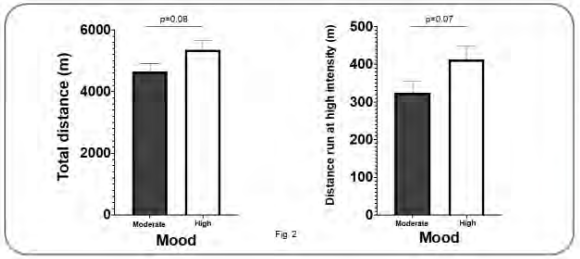


Fig. 2

Discussion

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.

Limitations: Data were collected during the competitive period, therefore, it is unclear how much the "phase" of the season (pre-season/off-season) may affect wellness ratings. Additionally, this pilot data contained a limited sample size (all males, one team cohort), and as such, limited generalizability can be reached.

Future Research

Future studies should consider the phases of the season, and if wellness parameters vary with more intensive training demands (such as in the pre-season) vs. other time periods.

Additionally, future work should consider comparing both the GPS and wellness data in collegiate and professional teams.

Contact Information

Dr. Gary Long longgm@uindy.edu

ORGANIZING COMMITTEE

Brown, Valerie, CPS
Burch, Tina, BSN
Burget, Kaylee
Campbell, Nancy, RN,MS,BC
Carter, Jeff, MS
Compton, Kathy, PT
Cunningham, E. Ann DO
Gupta, Sandeep, MD
Gushrowski, Barb, MLS
Heinzman, Sue, DNP, RN,ACNS-BC
Jones, Ed, PT, DHS, OCS
Kivisto, Katie PhD, HSPP
Lackey, Sarah, PharmD, BCPS
Lisby, Mark MD
Lyons, Deb, MSN, RN
Miller, Catherine DNP, RN, CNE
Morris, Toni, DNP, MSN, RN
Myers, Jaclyn, PharmD
Robinson, Kate, JD, CIP
Ruekert, Laura, PharmD, BCPP, BCGP
Wakeford, Yvonne, PhD
Wright, Elizabeth, MLS
Zoppi, Kathy, PhD, MPH, DIO

REVIEWERS

Agarwala, Anuj, MD
Breeck, Ginger, MSN-MBA, CPHRM, RN
Brougher, Andrew, MD
Burch, Tina, BSN
Cayot, Trent, PhD, EP-C
Compton, Kathy, PT
Furr, Amanda, MD
Gupta, Sandeep, MD
Gushrowski, Barb, MLS
Jochum, Jessica, PhD, LAT, ATC
Jones, Ed, PT, DHS, OCS
Kassam, Areef, MD
Lackey, Sarah, PharmD, BCPS
Laskowski, Joe, CCRP
Lee, Randy, MD
Lisby, Mark, MD
Mian, Taimur, MD
Miller, Catherine, DNP, RN, CNE
Milligan, Patrick, MD
Morris, Toni, DNP, MSN, RN
Robinson, Kate, JD, CIP
Ruekert, Laura, PharmD, BCPP, BCGP
Simpson, Brittany, DO
Wakeford, Yvonne, PhD
Wright, Amanda, DO
Wright, Elizabeth, MLS

EVENT DAY TIMEKEEPERS

Brown, Valerie, CPS
Gushrowski, Barb, MLS
Carter, Jeff, MS
Woody, Allison
Wathen, Susan
Lyons, Deb, MSN, RN
Hallam, Ashleigh
Goudreau, Lora

EVENT DAY TECHNICAL SUPPORT

Giere, Kris, MA
Hinz, Kory, BA
Parker, Rebecca, MHA
Plough, Jeff, MS Ed, RRT
Settle, Beth, CMA, Sr. Credentialed Trainer
Vuskalns, Christine, BA, Sr. Credentialed Trainer

INDEX TO PRESENTERS/CONTRIBUTORS

Oral Presentations = O **Poster Presentations = P**