Community Health Network

University of Indianapolis

Eighth Annual **Multidisciplinary Scholarly Activity Symposium**

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Eighth Annual
Multidisciplinary Scholarly Activity
Symposium Proceedings
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KEYNOTE SPEAKER

Lakesha Butler, PharmD

Dr. Lakesha Butler is the Associate Vice President for Inclusion, Diversity and Health Equity for the University of Florida's Health Science Center and Chief Diversity Officer of UF Health. She also serves as a Clinical Professor within the Department of Pharmacotherapy and Translational Research.

Dr. Butler's collaborative leadership and impact span broadly at the institutional level, nationally, and in the community. She has published numerous peer-reviewed articles, presented nationally at numerous conferences and keynote address invitations, and has been nationally recognized for her work as the 2022 Becker's Hospital Review top 40 health system diversity and inclusion executives to know. Her professional and research interests include health equity, inclusive practices and policies, cultural humility, bias, health literacy, under-resourced communities, and leadership development. Her personal brand statement is "I use my innovative strategies, courageous influence, compassionate heart, and effective communication to serve, lead, educate, and inspire others to develop, transform, and succeed."

Dr. Butler received her Doctor of Pharmacy degree from Mercer University and completed a pharmacy practice residency at the University of Illinois at Chicago. She has received extensive training in the areas of diversity, equity, and inclusion.

ORAL PRESENTATIONS

O1 **Nursing Student Satisfaction with Clinical Experience during COVID-19.** (Cathy Miller, DNP; Brianna Jenkins, BSN-C)

The presentation synthesizes data on the impact of nursing student satisfaction regarding clinical experiences during and after the coronavirus pandemic. The coronavirus pandemic has affected so many aspects of people's lives and has forever changed the world. Clinical experience for nursing students was no exception and the new generation of nurses are completing clinical experiences in the peak of the coronavirus pandemic.
Methods: An exploratory, single group design with a convenience sample of junior and senior nursing students. Inclusion criteria included students accepted into the nursing program and have completed at least two semesters, with one being clinical experience. All sophomore-nursing students were excluded due to lack of clinical experience during the pandemic.
Variables: Variables included age, level of education, employment, gender, race, and length of clinical placement.
Procedures: The Clinical Learning Environment, Supervision, and Nurse Teach scale (CLES+T) assessed participant's satisfaction with clinical experiences during and after COVID-19 pandemic.
Findings: Final results are pending second data collection January 2023. The survey will look at post-pandemic student satisfaction. Analysis will be completed with Intellectus Statistics software.
Practice Implications: Clinical experience is a foundation for nursing student knowledge and skills practice and is directly related to nursing student satisfaction. The higher the satisfaction rate, the higher the retention of knowledge and skills. Student satisfaction is important in retaining knowledge, feeling satisfied in their career choices, and lowering stress rates. Normal challenges of clinical experiences for nursing students such as stress levels and ineffective communication will be highlighted.

O2 **Impact of Social Determinants of Health on Return-to-Play from Concussion in High School Athletes.** (William Long, DO; Warren Lawless, DO; Andrew Jeon, DO; Jacklyn Kiefer, DO; Eugene Justus, DO)

Purpose: The aim of this study is to determine the role social determinants of health (SDoH) play in starting the 'return-to-play' progression following a sports-related concussion in high school athletes. We hypothesized that high school athletes with 2 or more positive SDoH will take longer to return to play compared to those with 1 or less positive SDoH.
Methods: This is a retrospective study with prospectively collected data. Eligible participants include high-school athletes diagnosed with a sports-related concussion between 8/1/2021 and 1/31/2022 seen at sports medicine clinics in Indianapolis. Athletes with a history of 3 or more concussions, neurological, or mental health disorders, or previous prolonged concussion recovery time (more than 8 weeks) were excluded. Families of eligible athletes were called to complete the SDoH survey.
Results: 221 athletes were initially identified. 117 of these athletes were excluded based on the criteria listed above. Each of the 104 remaining families were called on 3 separate occasions to complete a brief SDoH survey. Responses were received from 53 families with the remaining participants' families either not answering the call or declining participation. Of these 53 responses, 36 athletes were deemed low risk (1 SDoH or less) and 17 were deemed high risk (2 SDoH or more). The median number of days to clearance for both the low-risk and high-risk groups were 16 days. The range of clearance for low-risk

athletes was 4 to 46 days and the range of clearance for high-risk athletes was 3 to 74 days. Comparison was completed using a Mann-Whitney U Test which showed there was not a statistically significant difference between the number of days to starting the return-to-play progression between low-risk and high-risk SDoH athletes ($p = 0.970$).
Discussion: Based on these results, SDoH do not play an important role in determining concussion recovery time in high school athletes who sustained the injury during sport, as the average time to starting the return-to-play progression was 16 days for both groups. One limitation includes selection bias as we were unable to reach 51 of our eligible athletes. Future prospective studies with completion of SDoH surveys at the time of diagnosis could aid in reducing this bias. Another consideration includes further analysis into the role certified athletic trainers (ATC) have in helping bridge any care gaps in these athletes. Overall, this study indicates that SDoH in high school athletes do not play a role in their ability to recover from a concussion. As a result, we likely do not need to alter our current outreach strategies for concussed high school athletes who fall in the high-risk SDoH group.

O3 Putting a Pep in HEP (Home Exercise Program) by Simplifying Use for Musculoskeletal Conditions at the FMC. (Patrick Feeney, DO; Logan Borgelt, MD; Zachary Crowell, DO)

Introduction: Primary care physicians are often the first to evaluate a patient's musculoskeletal complaint. Proficiency in diagnosing and treating these concerns is key to optimal medical practice. One commonly used treatment includes the provision of a home exercise program. Prior research demonstrates the efficacy of home exercise programs, resulting in decreased pain scores and improved function for patients. However, there is a paucity of literature regarding best practices for the distribution of these home exercise programs. This quality improvement aims to improve the ease of use of distributing home exercise programs to patients.
Methods: We aim that provider efficiency and satisfaction will improve with ease of access to a variety of musculoskeletal home exercises for common injuries/complaints seen in the primary care setting. The intervention for this project included developing EPIC "Smart Phrases" that were shared with providers through the electronic medical record and designed to be placed in the After Visit Summary. A pre and post intervention survey was sent to all residents and faculty of the Community East Family Medicine program prior to and after an 8-week study period where residents and faculty had access to the smart phrases. The survey included questions to evaluate the ease of use, comfort, efficiency, and frequency, and were scored on a Likert scale from 0-5
Results: The post intervention survey will result on 1/24/2023.
Discussion: Our interpretation and analysis of the results will soon follow the completion of the post survey on 1/24/2023.

O4 Interprofessional Mass Casualty Simulation Exercise for Undergraduate Nursing Students, School of Engineering, and University Police: Applying the SMART Triage Algorithm to a Campus Mass Casualty Event with Stop the Bleed Training. (Cathy Miller, DNP; Toni Morris, DNP, RN, CNE)

Abstract: The purpose of this quality improvement project is to analyze the process efficacy of the IPE Disaster Simulation for SoTL. Mass casualty events continue to rise at an alarming rate in the United States (Strout et al, 2017). University campuses are not exempt from disasters and need to be prepared to swiftly activate an Emergency Management Plan. An Interprofessional Catastrophic Tank Failure Mass Casualty Simulation was constructed to train undergraduate nursing students and University Police to apply SMART Triage and Stop the Bleed skills. Collaboration with the School of Engineering faculty and students to geographically design the event and enhance the moulage applications and equipment

created a realistic environment. This partnership was instrumental to facilitate student and police learning.
Method/Procedures: Nursing student participants includes all sophomore nursing students as standardized victims and all senior nursing students as triage nurses. Students collaborate with University Police and Cadets who respond to the event first to secure the scene and then partner with the nursing students to complete the triage process. Faculty from the School of Nursing, University Police, and School of Engineering all observe the simulation in an effort to assess the effectiveness of the simulation and provide recommendations for improvements for future simulations. A partnership with the local Emergency Management Team allows moulage training and assistance the day of the event.
Data Analysis Plan: Anonymous Pre/Post questionnaire via Google Forms with sophomore and senior nursing students. Instructor feedback is received verbally during post simulation debriefing. These assessments will be utilized for future simulation improvements.
Implications for Nursing Educational Practice: The Interprofessional Mass Casualty Simulation, created a transformational experience for sophomore and senior nursing students, University Police, and engineering students. The use of current moulage technology and actual trauma equipment allowed students the opportunity to safely practice and prepare to respond to real-life emergent conditions.

O5 **Patellar Tendon Graft Harvest for Anterior Cruciate Ligament Reconstruction Does Not Increase Patellofemoral Arthritis Rates.** (Scot Bauman, PT, DPT; K Donald Shelbourne, MD; Bill Claussen, PT; Rodney Benner, MD)

Introduction: Previous studies after anterior cruciate ligament reconstruction (ACLR) have suggested a link between patella tendon graft (PTG) harvest and increased incidence of patellofemoral osteoarthritis (PFOA).1–5 However, with the graft harvest on the same knee as the ACLR, it is difficult to specifically conclude whether this association is directly from the graft harvest itself as opposed to other factors.4,5 Knowledge of the incidence of PFOA after graft harvest from the contralateral knee may provide insight into this relationship. The purpose of this study was to compare PFOA rates between contralateral versus ipsilateral graft harvest for ACLR.
Methods: One hundred ninety-three patients undergoing ACLR with PTG were enrolled in a long-term study. Exclusion criteria included revision ACLR, bilateral ACL involvement, subsequent graft tear or contralateral ACL tear, PF chondral wear seen at the time of surgery, preoperative or subsequent surgeries to either knee, or the presence of preoperative PFOA. Patients were included if they had x-rays between minimum 15 and maximum 25 years postop. Included patients were separated by knee into four groups based on ipsilateral (95 patients) or contralateral (98 patients) PTG harvest. Standard Merchant's radiographs were graded as none, mild, moderate, or severe PFOA. Grades were based on joint space narrowing with mild up to 50%, moderate 50-99%, and severe being 100%. The rates of PFOA were compared between groups.
Results: In the ipsilateral graft group, PFOA of any grade was present in 20.0% of the involved ACLR knees and 9.5% of the uninvolved normal knee, which was a statistically significant difference (p=.041, OR 2.4). In the contralateral graft group, PFOA was present in 10.2% of the ACLR knees and 13.3% of the contralateral graft donor knees (p=.506). Any grade of PFOA was present in 14.7% of all knees in the ipsilateral group and 11.7% of all knees in the contralateral groups (p=.348). When comparing the uninvolved normal knee from the ipsilateral group to the contralateral graft donor knee of the contralateral group, there was no statistical difference in PFOA rates of any grade (9.5% vs. 13.3% p=.407). The ACLR knee in the ipsilateral group exhibited PFOA in 20.0% and 10.2% in the contralateral group (p=.057). Rates of moderate or severe PFOA in either knee were not statistically significant

between the ipsilateral and contralateral groups. When comparing the ipsilateral group normal knee to the contralateral group donor knee, the rates of moderate or severe PFOA were 1.1% and 2.0% respectively, which was not statistically significantly different.
Discussion: Rates of PFOA in this study are not higher when contralateral PTG is used compared to a normal control knee. However, with ipsilateral ACLR with PTG, PFOA is 2.4 times more likely versus the uninvolved normal knee. Harvesting the ACL graft from the contralateral knee trends toward decreased PFOA rates in the ACLR knee, though this is not statistically significant. Utilizing a PTG itself does not increase PFOA rates and contralateral PTG harvest may provide advantages to ipsilateral graft harvest with regard to PFOA.

O6 **Measuring Knee Extension is Critical When Analyzing Long Term Outcomes After Anterior Cruciate Ligament Reconstruction**. (Scot Bauman, PT, DPT; K Donald Shelbourne, MD; Bill Claussen, PT; Rodney Benner, MD)

Introduction: Structural abnormalities seen at the time of an anterior cruciate ligament reconstruction (ACLR), as well as knee extension stiffness, can lead to unfavorable short term outcomes following surgery.1–8 Lacking full knee extension in the short term has been shown to lead to a lack of full knee extension in the long term.6 The purpose of this study was to determine long term outcomes based on normal or abnormal extension with or without the presence of structural abnormalities following ACLR.
Methods: Between 1982 and 2011, 3382 patients having an ACLR using a patellar tendon graft were enrolled into the study. Exclusion criteria included revisions, bilateral involvement, and osteoarthritis (OA) at the time of surgery. Patients were categorized into four groups based on structural abnormalities, normal (group 1), meniscus tear (group 2), chondral injury (group 3) or both (group 4). Patients followed up at a minimum 10 years to assess range of motion, complete the International Knee Documentation Committee (IKDC) survey and obtain radiographs, which were evaluated based on the medial and lateral compartment. Abnormal knee extension was defined as being more than 2° off compared to the other side. Additionally, short term knee extension at 2 months postoperative was compared to long term knee extension.
Results: Of the 3382 patients, 883 (26%) had subjective, objective, and radiographic data at a mean 17.7 ± 6.2 years. Patients with abnormal knee extension at 2 months postoperative were 6.4 times more likely to have abnormal knee extension at long term follow up ($p<.001$). At long term follow up, 84% of patients had normal knee extension. The rate of moderate to severe knee OA for groups 1-4 was 5%, 12%, 16%, and 25%, respectively ($p<.05$). For each group, those with normal extension had statistically significantly lower rates of OA compared to those with abnormal extension (1, 3% vs 27%; 2, 9% vs 29%; 3, 12% vs 60%; 4, 18% vs 46%). For each group, those with normal extension had statistically significantly higher IKDC scores compared to those with abnormal extension (1, 87 vs 72; 2, 87 vs 73; 3, 88 vs 75; 4, 85 vs 76). Overall, patients with abnormal knee extension were 5 times more likely to have OA compared to those with normal extension. Patients with a meniscus tear were 2.4 times more likely to have OA and those with chondral injuries were 2.7 times more likely when compared to those without a structural abnormality, $p<.05$.
Discussion: Abnormal knee extension early after surgery can negatively affect knee extension long term as those that are lacking motion early rarely have normal extension long term. Abnormal knee extension long term can lead to lower subjective scores and higher rates of OA when compared to those with normal extension. A loss of knee extension long term results in more negative outcomes than meniscus tears or chondral injuries. Objectively measuring extension long term after surgery can help explain positive and negative outcomes for patients after surgery, based on structural abnormalities.

O7 **Relationship Between Patellar Tendon Length and Surgical Treatment for Patellar Tendinosis**. (Scot Bauman, PT, DPT; Nicholas Brown, OMS III; Bill Claussen, PT; K Donald Shelbourne, MD; Rodney Benner, MD; Adam Norris, BS)

Introduction: Patellar tendinitis is a relatively common overuse injury that typically resolves with rehabilitation alone, however if it progresses to recalcitrant patellar tendinosis (RPT), surgical intervention is typically recommended.3,4,6–9 Patella alta, which has commonly been shown to lead to patellar dislocations, has recently shown to be related to patellar tendinitis.1,2,5,10 However, the relationship between patella alta and patellar tendinosis severe enough to warrant surgical intervention is unknown, therefore, the purpose of this study was to determine the association between patellar tendon length and surgical treatment for RPT.
Methods: A cohort of 45 patients who were scheduled for surgery due to RPT, planning to receive a partial patellar tendinectomy, were retrospectively reviewed. A group of patients consented into a different study, planning to have an anterior cruciate ligament reconstruction (ACLR), were used as a control group. Exclusion criteria for the control group included previous patellar tendinosis. For both groups, the patellar tendon was measured preoperatively on a lateral radiograph with the knee in 60° of flexion, from the distal aspect of the inferior pole of the patella to the insertion site on the tibial tubercle. Other variables assessed were primary sport played and preoperative noninvolved quadriceps strength, measured isokinetically and normalized to body weight. The RPT patients were matched to the ACLR patients based on sex, height, and weight, leaving 45 patients in each group.
Results: Mean age for the ACLR group was 26.0 ± 10.6 years and 25.1 ± 10.6 years for the RPT group. The groups had similar mean height (ACLR 70.2”, RPT 70.9”) and weight (ACLR 183.0 lbs, RPT 179.0 lbs), along with identical sex distribution with both having 71% males. Patients in the RPT group had statistically significantly longer patellar tendon lengths at 57.6 ± 7.4 mm compared to the ACLR group at 46.1 ± 7.5 mm, $p<.001$. The most frequent sports played for those in the RPT group were basketball (38%) and volleyball (22%); whereas for the ACLR group, it was basketball (22%) and football (20%). Those in the RPT group were not found to have a statistically significantly higher distribution of any individual sport played, however when the jumping sports of basketball and volleyball were combined, the RPT group showed a statistically significantly higher distribution of patients playing these sports compared to the ACLR group (60% vs 31%, $p=.006$). Isokinetic quadriceps strength failed to show a statistically significant difference between groups, $p=.358$.
Discussion: After taking into account sex, height, and weight, patients scheduled for surgery due to RPT had longer patellar tendons compared to those without a history of patellar tendinosis. Patients with RPT are also more likely to play jumping sports compared to those who sustained an ACL tear. Those with longer than normal patellar tendons who are diagnosed with patellar tendinitis, before it progresses to RPT, should consider rehabilitation and tailor their workload to avoid symptom progression and ultimately surgery.

O8 **Effects of Preoperative Flexion on Postoperative Flexion and Subjective Outcomes after Total Knee Arthroplasty.** (Scot Bauman, PT, DPT; Sarah Eaton, PT, DPT, ATC/L)

Introduction: Flexion range of motion (ROM) is a clinical measure that has been linked to patient reported outcomes after total knee arthroplasty (TKA). However, there is little research evaluating subjective outcomes based on the change from preoperative (preop) to postoperative (postop) ROM. The purpose of our study was to 1) evaluate differences in the Knee Injury and Osteoarthritis Score (KOOS) at 1 year postop based on whether patients had low, average, or high ROM, and 2) evaluate differences in KOOS scores at 1 year postop within each group based on whether patients improved,

stayed the same, or worsened from their preop ROM. Our hypothesis was that KOOS scores would be higher in the average and/or high ROM groups, as well as in patients with improved postop flexion compared to preop flexion.
Methods: From 2012-2021, 588 patients underwent unilateral, primary TKA by a single surgeon and were enrolled in a long-term follow-up study. We excluded patients who underwent bilateral, staged, or revision TKA, leaving 319 subjects for analysis. We recorded flexion ROM and KOOS scores preoperatively (mean, 17 days) and at 1 year postoperatively (mean, 358 days). Patients were divided into 3 groups based on their preop ROM: <120° (low), 120-134° (average), and ≥135° (high). We calculated the mean change in flexion ROM for each group and determined the percentage of patients within each group who achieved same, better, or worse ROM postoperatively. We evaluated 1 year KOOS scores within each group and between groups.
Results: On average, patients improved knee flexion from preop to 1 year postop, going from 122° to 129°, p<.001. Those in the preop flexion groups of low, average, and high were able to increase their 1 year postop flexion to a mean of 120°, 130°, and 137°, respectively. Most patients in the low preop flexion group, 62%, improved to at least the average flexion group after surgery. For those in the average preop flexion group, 63% stayed in this same group postoperatively, while another 29% improved to reach the high flexion group. For those in the high preop flexion group, most stayed within this group postoperatively (76%). Those in the high postop flexion group showed statistically significantly higher 1 year postop KOOS scores compared to those in the low postop flexion group (86 vs 81, p=.037). Within each group, those that improved their flexion from preop to 1 year postop showed higher KOOS scores when compared to those that got worse or stayed the same; however, this difference never reached statistical significance.
Discussion: Patients that achieved higher degrees of flexion ROM postop had statistically significantly higher subjective scores compared with those that had lower degrees of flexion. Patients that improved their ROM from preop to postop had better subjective scores compared with those that stayed the same or got worse, although not statistically significantly different. Patients should be educated on the importance of maximizing ROM prior to TKA in order to increase the likelihood of attaining similar or better ROM postop and achieving better subjective outcomes.

O9 **Evaluating Emergency Department Broad Spectrum Antibiotic Use: An Analysis of Changes Made to Antibiotic Therapy within 24 Hours of Hospital Admission.** (Mary Curley, PharmD; William K Hodges, PharmD, BCPS; Hita Bhagat, PharmD, BCPS, BCIDP; Nicole Willer, PharmD)

Introduction: The Severe Sepsis and Septic Shock Management Bundle (SEP-1) enforces broad spectrum antibiotic administration to septic patients within three hours of presentation due to the high risk of mortality in sepsis. In 2015, SEP-1 was integrated into the Centers for Medicare and Medicaid Services (CMS) measures. SEP-1 compliance rates must now be reported to CMS from any hospital that receives Medicaid or Medicare funding. This has brought forth controversy from organizations such as Infectious Diseases Society of America (IDSA). There is concern providers are pressured to start antibiotics in order to meet metrics for funding purposes. Critics argue if ample time was given for further investigation and observation, then a noninfectious cause of symptoms could be found. The purpose of this study is to evaluate trends in prescribing within the emergency department and changes to antimicrobial therapy in the first 24 hours of hospital admission. The goal is to curate recommendations to reduce the overuse of broad-spectrum antibiotics in the emergency department and associated bacterial resistance and negative patient outcomes.
Methods: A retrospective chart review is being conducted on patients who received intravenous (IV) antibiotics in the emergency department ordered from the “ED Adult Sepsis Treatment” order set between January 1, 2020 and December 31, 2021. Those included in the study are patients 18 years or

older that received at least one dose of IV antibiotics in the emergency department as part of the sepsis order set. Patients that received antibiotics for surgical prophylaxis only are excluded. The primary outcome measure is the percentage of patients whose antimicrobial therapy was de-escalated, escalated, or unchanged within 24 hours of hospital admission. Secondary outcomes being evaluated are 30-day mortality rate, Clostridioides difficile infection rate, length of ICU and hospital stay, source of infection, diagnosis at admission vs discharge, duration of IV antibiotic therapy, QSOFA and SIRS score at time of first antibiotic administration, and CMS status effect on antibiotic selection. Secondary outcomes are comparative to primary outcomes groups (de-escalated, escalated, unchanged).
Results: Data is currently being collected. Results will be presented at the Multidisciplinary Scholarly Activity Symposium in May 2023.
Discussion: Data is currently being collected. Discussion based on results and conclusions of this study will be presented at the Multidisciplinary Scholarly Activity
Symposium in May 2023.

O10 **Implementation of a Targeted Pharmacy Discharge Medication Review Pilot.** (Kaitlyn Kastberg, PharmD; Eileen Rohrbach, PharmD, BCPS; Eric Lis, PharmD, BCPS; Sarah Lackey, PharmD, BCPS)

Introduction: Medication reconciliation is a 2022 Joint Commission patient safety goal underneath the broader goal of improving the safe use of medications. A systematic review by Michaelsen et al found the range of patients experiencing discharge medication discrepancies was between 20-87%, depending on variations in co-morbidities and the number of medications prescribed. This large range highlights a need to create a targeted discharge medication review (DMR) to balance value with pharmacist time. The purpose of this quality improvement project is to identify high-risk patients for targeted DMR, demonstrate the benefit of pharmacist involvement with DMR, and improve transitions of care.
Methods: A DMR pilot was started at Community Howard Regional Hospital in Fall 2020. During this first pilot, interventions were documented within the electronic medical record (EMR). Intervention data from January 2022 – May 2022 was reviewed, and the top 5 medications or diseases requiring intervention were noted. These top 5 areas of intervention were use of anticoagulants, antibiotics, insulin, steroids, and patients with a CrCl < 30 mL/min. The purpose of identifying these interventions was to balance high impact areas with feasibility at a second pilot site. Following the data review, a second DMR pilot was started at Community Hospital East in January 2023. This pilot targets patients discharging from a hospitalist service during clinical pharmacy service hours (Monday – Friday 0800 – 1600) who have one of the high impact medications or disease states. Patients transferring to another facility are excluded from this pilot. The primary aim of this quality improvement project is to review 50% of patients who have a medication that is at high-risk of being error prone at discharge while developing a process that balances this patient care need with pharmacist time.
Results and Discussion: Results and discussion to be presented at the Multidisciplinary Scholarly Activity Symposium.

O11 **Evaluation of Community-Acquired Pneumonia Treatment Transitions of Care in a Community Health System**. (Rachel Thomas, PharmD; Jarrett Amsden, PharmD)

Introduction: The American Thoracic Society (ATS) and Infectious Diseases Society of America (IDSA) recommend five days of therapy with a beta-lactam and macrolide or fluoroquinolone for patients with non-severe community-acquired pneumonia (CAP) and no additional multidrug resistant risk factors. Magill et al. identified unsupported antimicrobial use in hospitalized patients. Unsupported antimicrobial use was defined as "(1) use of antimicrobials to which the pathogen was not susceptible, use in the absence of documented infection signs or symptoms, or use without supporting microbiologic data; (2) use of antimicrobials that deviated from recommended guidelines; or (3) use that exceeded the recommended duration." 1566 patients across 192 hospitals were included within the study; 14% (219 patients) of included patients were diagnosed with CAP. Of these patients diagnosed with CAP, 79.5% of treatment was unsupported (174 of 219). One of the most common reasons for unsupported therapy was excessive duration which occurred in 59.2% (103 of 174) of patients with CAP.
Additionally, Vaughn and colleagues conducted a retrospective cohort study within 43 hospitals that primarily looked at the rate of excess antibiotic treatment duration for patients diagnosed with pneumonia. Excess was calculated as the actual duration minus the shortest expected duration (including clinical stability, pneumonia classification, and potential pathogen). This study found 67.8% of patients received excess antibiotics which stemmed mainly from excess duration at discharge. Discharge excess accounted for 92.3% of excess duration. The aim of this study is to review the duration of antibiotic therapy in patients with a primary diagnosis of CAP. The data collected may identify opportunities for transitions of care related to CAP treatment. With the identification of these possible needs, the healthcare system could take action to develop initiatives related to antimicrobial stewardship programs and transitions of care in patients hospitalized and discharged with a primary diagnosis of CAP.
Methods: The primary objective of this study is to quantify transitions of care stewardship opportunities by examining the percentage of patients with days greater than 7 days total of CAP therapy. Excess duration defined as a total duration greater than 7 days for patients diagnosed with CAP. The secondary objectives are to characterize the mean inpatient and discharge antibiotic use as well as analyze the pattern of antibiotic prescribing based on therapeutic classes prescribed and de-escalation opportunities. Patients will be enrolled in the study if they were hospitalized between July 2021 and June 2022. Inclusion criteria are patients at least 18 years old and less than 90 years old who have an ICD-10 based diagnosis of community-acquired pneumonia. Exclusion criteria are pregnancy or presence of viral infection. All information will be collected via a retrospective chart review. Data points to be collected include age, gender, race, insurance, procalcitonin, positive microbiology results, length of stay, inpatient antibiotic indication, therapeutic class and duration, discharge antibiotic therapeutic class and duration. Additionally, this project will collect antibiotic de-escalation metrics and patterns to better characterize appropriate antibiotic use and direct subsequent antimicrobial stewardship initiatives.
Results and Discussion: Results and discussion to be presented at the Multidisciplinary Scholarly Activity Symposium.

O12 **A Retrospective Study on the Continuation of Buprenorphine in the Perioperative Setting**. (Morgan Dermody, PharmD, MBA; Sandi Lemon, PharmD, BCPS, BCCCP; Lisa Kingdon, PharmD, BCPS, CPE; Laura Ruekert, PharmD, BCPP, BCGP)

Introduction: Despite the 2020 Substance Abuse and Mental Health Services Administration guideline for opioid use disorder recommending continuation of buprenorphine perioperatively, there is still a lack of high-level evidence supporting this recommendation. The primary aim of this study is to provide support for this guideline recommendation by evaluating the total morphine milligram equivalent (MME) requirements in the first 24 hours postoperatively of patients who continued their buprenorphine therapy to those who discontinued their buprenorphine therapy preoperatively.
Methods: This IRB approved retrospective chart review was conducted on surgical buprenorphine candidates and consists of approximately 75 patients hospitalized at participating institution sites from 01/01/2015 through 08/31/2022. Patients included in the study are adults with preexisting buprenorphine use who underwent inpatient surgery while hospitalized. Patients who were pregnant, incarcerated, discharged less than 24 hours postoperatively, underwent a second surgery less than 48 hours postoperatively, or experienced death less than 24 hours postoperatively will be excluded from the study. The primary objective compares the total MME required in the first 24 hours postoperatively in those who continued their buprenorphine throughout the perioperative time to those who discontinued buprenorphine preoperatively. Secondary efficacy outcomes include evaluating the following at 24, 48, and 72 hours postoperatively: total MME administered, average daily pain scores, and use of non-opioid analgesics. Additional secondary outcomes will include whether or not buprenorphine home regimens changed at discharge and the rate of respiratory depression within 72 hours postoperatively, defined as a respiratory rate < 10/minute, oxygen saturation < 90%, or requirement of naloxone.
Results and Discussion: Results and discussion to be presented at the Multidisciplinary Scholarly Activity Symposium.

O13 **Reverse Mentoring Program Pilot.** (Stephanie Case, PsyD; Melisa Martinez, MD)

Introduction: Traditionally, mentoring programs match more experienced mentors with less experienced mentees in similar positions. In contrast, a reverse mentoring program flips the roles of these relationships. This concept, introduced in a few innovative corporations, was based on the acknowledgement of generational divides. The initial goal for a reverse mentoring program was to bridge communication gaps, foster collaboration, and further learning among employees. Unfortunately, despite a variety of evidence-based resources to develop a traditional mentoring program, little has been published regarding guidance for developing a reverse mentoring program. Utilizing evidence based on traditional mentoring resources, in combination with lay articles and media resources based on reverse mentoring, we developed and adapted a program for employees in a healthcare network. The goal of the current reverse mentoring program was to foster supportive multidisciplinary and collaborative relationships to promote a culture of diversity, inclusion, and equity.
Methods: In this six-month structured program, 16 volunteer behavioral care employees were matched into eight mentor-mentee pairs. The mentors were more junior, while the mentees were more senior employees. Matches were based on self-reported personality strengths and workplace goals. During the program, each participant completed an initial group training, 12 paired meetings, and individual program feedback at three different time intervals (pre-program, mid-program, and post-program).
Results: Self-reported survey data suggested that a structured reverse mentoring program increased professional collaborations in multidisciplinary teams, generated novel ideas for patient care, and

enhanced the understanding of diversity and inclusion efforts in behavioral care employees. Discussion: Feedback from a small pilot reverse mentoring program suggested expanding the program components and structure beyond behavioral care will further improve performance in multidisciplinary teams by fostering diversity, equity, and inclusion efforts in a healthcare network.

O14 Implementation of an Advanced Practice Provider (APP) Fellowship at Community Physician Network (Barb Winningham, DNP, CNM. WHNP-BC, FACNM)

Introduction: Advanced Practice Providers (APPs) deliver high-quality, cost-effective care while improving access (Elliott & Walden, 2015). To keep up with the healthcare environment demands, the APP role has evolved tremendously since the 1960s. However, graduate education does not usually offer specialized training in any particular area, resulting in APPs learning via on-the-job training (Harris, 2014). The development of formal fellowship programs have emerged targeted at bridging the gap between graduate education and specialized practice which offers the new grad APP the opportunity to transition successfully into new care settings (Harris, 2014). Therefore, a CPN APP Fellowship Program with a competency-based curriculum specific to Primary Care new graduates/new hires coupled with an APP Mentor Program was the basis for practice transition for novice APPs (Kopf, Watts, Meyer, & Moss, 2018).

Methods: Community Health Network has developed a holistic program to assist newly graduated APP employees. The intentional and systematic training is designed to ease an APP from academia to patient care and to ensure a foundational level of competency of all its new hires. The fellowship runs for 12 months, and is in 3 phases (didactic, clinical rotations, mentoring). The didactic portion lasts 8 weeks. This is a collaboration with Butler University-the Transition to Clinical Practice Program whi entails 4 courses (3 credits each) which commences with a 12 credit post-graduate certificate that equates to 90 CME hours. The specialty clinical rotations follows next and lasts 8 weeks. The mentoring component provides a one-on-one relationship with a Fellow and a mentor for one year to have additional support and to more fully integrate into our CHNw/CPN culture. The goal of the Fellowship is to support the transition of new providers from academia into clinical practice and prepare them for long careers within the Community Health Network.

Results: To track success, outcomes from the Butler Transition to Clinical Practice Course is monitored as well as the Fellow's pre-course self-assessment of confidence in various clinical areas and post-course self-assessment. In addition, key performance indicators (KPIs) are tracked which include time to fill new positions, access to care, attrition, support, ramp up time, engagement, confidence and competence.

Conclusion: The data clearly shows that the goals are being met.

O15 Retrospective Analysis of Opportunities to Convert from Warfarin to a DOAC for Chronic Anticoagulation Therapy. (Claire Corvari, PharmD; Tiffany Vatterrodt, PharmD, BCACP; Kelly Cochran, PharmD, BCPS; Emily Papineau, PharmD)

Introduction: Clinical practice guidelines recommend direct oral anticoagulants (DOACs) over warfarin for anticoagulation therapy in eligible patients due to their efficacy, safety, and ease of use. Despite their advantages, there are still barriers to prescribing DOACs, including cost to the patient, periprocederal management, non-adherence, dosing errors, and drug interactions. In these situations, a clinical pharmacist can be a valuable asset to overcome these barriers. The purpose of this study is to quantify opportunities for conversion from warfarin to a DOAC in order to assist with the development of new pharmacy services for anticoagulation therapy management.

Methods: This study is designed to be a retrospective chart review. The primary objective of this study is to quantify the proportion of chronic anticoagulation patients treated with warfarin who are candidates for conversion to DOAC therapy. Key secondary objectives are to quantify time in therapeutic range (TTR) on warfarin, describe barriers for conversion to DOAC therapy, and quantify adverse events on warfarin, including major and clinically relevant non-major bleeding, critical international normalized ratios (INRs), hospitalizations, and thromboembolic events. Patients will be identified based upon reports of TTR on warfarin therapy between 8/1/2021 and 8/1/2022. Patients will be eligible for inclusion if they are greater than or equal to 18 years of age on chronic warfarin therapy for atrial fibrillation, venous thromboembolism (VTE), or pulmonary embolism (PE) treatment or prevention with a TTR less than or equal to 65%. Key exclusion criteria include patients who do not have an indefinite anticipated duration of anticoagulation therapy, patients with a mechanical heart valve or left ventricular assist device (LVAD), patients with valvular atrial fibrillation or antiphospholipid syndrome, deceased patients, incarcerated individuals, and pregnant patients. The results of this study will be analyzed using descriptive statistics**.**
Results and Discussion: Results and discussion to be presented at the Multidisciplinary Scholarly Activity Symposium.

O16 Levamisole Contaminated Cocaine Use Resulting in Orbital Pseudotumor of Granulomatosis with Polyangiitis and Fatal Epistaxis. (Daniel James Fisher, MD)

Introduction: This is a case report highlighting a unique complication of cocaine use, and the role of primary care interventions for substance use and the opportunity for primary care to make the connection between known medical history and new or emerging patient disease.
Case Description: This 73-year-old woman with a history of cocaine use disorder, presented with unilateral ptosis, and was found to have a mass behind the left eye on MRI. Biopsy of this mass was consistent with granulomatosis with polyangiitis [GPA]. The patient was delayed in starting treatment for her ANCA-associated vasculitis until her incidentally discovered hepatitis C was treated. During this time she experienced a fatal episode of epistaxis, likely from the GPA. On retrospective chart review, her primary care physician recalled that she had previously been dismissed from a chronic opioid contract due to a positive cocaine on urine drug screen. The patient denied cocaine use at the time, and the PCP never re-addressed the issue of cocaine use. Following the patient's death, the physician confirmed with her daughter that the patient continued to use cocaine on a regular basis. Up to 80% of cocaine in the United States is cut with the anti-helminthic compound levimasole. Among levamisole's potential adverse drug effects, it can cause an ANCA vasculitis. The rheumatologist was unaware of the patient's cocaine use, but it was known to the PCP, although the connection between levamisole toxicity and GPA was not made until posthumous chart review.
Discussion: This case highlights both the rare complication of levamisole toxicity, as well as the importance of the primary care physician knowing the patient's history and connecting the dots between historical details and new diagnoses. It also highlights the importance of asking about ongoing substance misuse and providing interventions to assist with substance dependence.

POSTER PRESENTATIONS

Rapid High-Dose Buprenorphine Induction in a Chronic Fentanyl User: A Case Report

Jonathan Evers[1], OMS IV, Patrick McGuire[2], DO, Jacob Mulinix[2], DO

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Community Health Network | ROCKY VISTA UNIVERSITY

INTRODUCTION

- Illicit opioid use remains one of the most prevalent medical issues of the American health landscape in the 21st century
- Medication-Assisted Treatment (MAT) has emerged as an effective clinical tool for treating opioid use disorder (OUD)
- The advent of widespread illicit fentanyl use challenges MAT schedules
- Significantly higher rates of withdrawal precipitation have been reported among fentanyl users during MAT
- Multiple suggested MAT induction schedules for fentanyl users – no consensus, however

CASE PRESENTATION

- 40-year-old male patient presenting to access department
- History of severe OUD with chronic heroin use x 15 years, intermittent methamphetamine, benzodiazepine, alcohol use
- 1-2 grams of daily fentanyl use via snorting/injection, 1-3 bars of alprazolam 4-5 days per week
- Reportedly attempted to treat withdrawal with single dose methadone (last substance use 24 hours ago)
- Initial clinical opiate withdrawal scale (COWS) score of 5
- Admitted with plan to detox from fentanyl
- During initial inpatient interview, patient reported that he had actually been active in methadone clinic for 3 months
- Patient reported that he didn't have time to wean off methadone ("I cannot wait 180 days; I have a life to live")

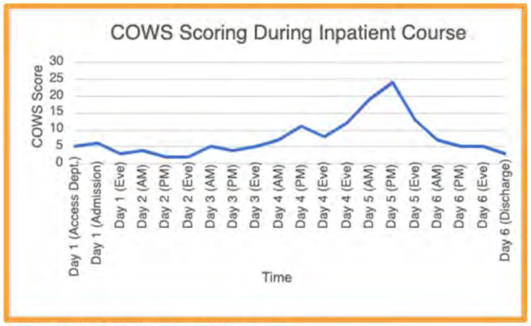

Figure 1. COWS Scoring During Inpatient Course.

Day	Buprenorphine Induction	Supportive Medications Added	Reported Symptomatology	COWS Score
1	-	Clonidine 0.1 mg /24-hour patch Tramadol 100 mg Q6Hrs PRN Diazepam 10 mg Q6Hrs PRN	Mild (restlessness, muscle aches)	5 (Prior to admission) 6 (Admission) 3 (Eve)
2	-	-	Mild (restlessness, muscle aches)	4 (AM) 2 (PM) 2 (Eve)
3	-	Tramadol 100 mg QID Diazepam 10 mg QID	Mild (restlessness, muscle aches)	5 (AM) 4 (PM) 5 (Eve)
4	Subutex 8 mg Q1Hr x 4 hours = 32 mg	Zofran 4 mg PRN Phenergan 12.5 mg Q6Hrs PRN Gabapentin 300 mg PRN Imodium PRN	Moderate (restlessness, muscle aches, diaphoresis, chills, anxiety, rhinorrhea, nausea, loose stool)	7 (AM) 11 (PM) 8 (Eve)
5	Suboxone 8 mg BID	-	Severe (restlessness, muscle aches, diaphoresis, anxiety, rhinorrhea, poor appetite, nausea, diarrhea)	12 (AM) 19 (PM; prior to load initiation) 24 (Eve; during load) 13 (Eve; after load)
6	Suboxone 8 mg BID	-	Mild (fatigue)	7 (AM) 5 (PM) 5 (Eve)

Table 1. Inpatient summary and dosing protocol for rapid high-dose buprenorphine induction.
Abbreviations: Q6Hrs = every six hours. Q1Hr = every hour. PRN = as needed. QID = four times daily. Eve = evening. AM = morning. PM = afternoon.

MANAGEMENT & OUTCOME

- Plan established for symptomatic treatment and rapid buprenorphine induction
- For symptomatic withdrawal - started on clonidine 0.1 mg daily patches, tramadol 100 mg four times daily, and diazepam 10 mg four times daily
- Days 1-2: Good withdrawal control on the first 48 hours with the exception of persistent myalgias and some restlessness (COWS score of 4-5, see Table 1)
- Days 3-4: patient reporting worsening withdrawal symptoms, but stated that they were tolerable on current doses of diazepam and tramadol
- Day 5: patient reports dramatic worsening in symptomatology including significant nausea and diarrhea
- Based on symptom report and COWS score of 19- high-dose Subutex was started at 8 mg every hour for 4 hours, totaling 32 mg on first day of treatment
- Patient reported acute worsening of withdrawal symptoms upon first dose, however these gradually improved through the course of the day with repeated doses (see Figure 1)
- Day 6: Patient appears significantly improved and reports near-resolution of withdrawal symptoms
- Subsequently transitioned to maintenance suboxone (buprenorphine/naloxone) at 8 mg twice daily
- Evening of Day 6: Patient discharged to residential programming
- Patient continued maintenance treatment for a further 3 weeks before discharge from that facility to outpatient treatment

DISCUSSION

- There remain concerns surrounding buprenorphine-precipitated withdrawal in an era of increasing illicit fentanyl use
- Utilizing high-dose buprenorphine previously suggested as an alternative to traditional induction schedules
- However, induction attempts over a prolonged inpatient course have shown mixed results – high withdrawal rates
- Here we present a novel strategy for rapid high-dose buprenorphine induction with close adjunctive withdrawal symptom management over 6-day inpatient course
- Clinical report of symptomatology and COWS scoring was favored over reported time of last illicit opioid use
- In this patient, tight and proportional symptomatic control during induction resulted in good tolerance
- More study is warranted on management options for induction schedules among fentanyl users
- A larger pilot study may lead to a more standardized buprenorphine induction protocol for fentanyl users

References

THE PSYCHIATRIC PRESENTATION OF CREUTZFELDT-JACOB DISEASE [CJD]

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INTRODUCTION

CJD is a rare, rapidly progressing prion disease. It can be sporadic, inherited, variant, or acquired. Sporadic (sCJD) is the most common. In sCJD, the average age of onset is 62 years, and there is no difference in gender. Diffusion-weighted MRI, EEG, and CSF markers (tau, 14-3-3, S100, RT-QuIC, and neuron-specific enolase) are standard methods of diagnosis. CJD is usually fatal within a year and managed symptomatically.

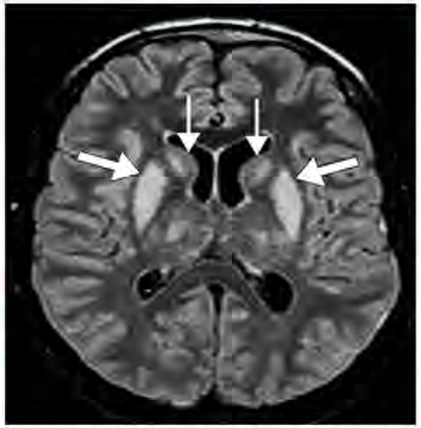
Psychiatric symptoms are common but present early in variant CJD and later in sCJD.[1], A 2005 study found that over 80% of patients with sCJD will have non-sleep psychiatric symptoms in the first 100 days of symptoms, while only 26% will have them at presentation. [2] Of those, depressive symptoms are the most common. Visual hallucinations are the most common psychotic symptom. [3] Antidepressants, benzodiazepines, mood stabilizers, and antipsychotics are common treatments for psychiatric symptoms. All but benzodiazepines are effective <20% of the time.

CASE PRESENTATION

A 60-year-old woman with a history of CHF, Pulmonary Embolism, and Peripheral Vascular Disease reported difficulty seeing and walking for 1.5 months. Visual symptoms occurred first, with abrupt onset while the patient was driving. The patient presented with headaches, neck spasms, hallucinations, psychomotor agitation, and disorientation. An MRI of the brain showed increased restricted diffusion in bilateral occipital and parietal cortices as well as a hyperintense signal in the head of the caudate and the putamen. CT abdomen/pelvis showed a lung mass. Differentials included CJD, Paraneoplastic, and an autoimmune process. Quetiapine, an antipsychotic, was prescribed for hallucinations, disorientation, and agitation without improvement. An EEG showed bursts of moderate to higher voltage generalized polymorphic sharp waves. CSF fluid was negative for NMDA antibodies, viruses, and xanthochromia.

The patient developed myoclonic jerks with worsening hallucinations, frequent outbursts, disoriented and rapid progression. Prion disease was high on the differential. CSF was positive for RT-QuIC T-tau protein >20000 pg/mL (ref 0-1149), and 14-3-3 is 116778 AU/mL (ref <30 - 1999 AU/mL), consistent with CJD. The patient was transitioned to Palliative care and died soon after that.

GRAPHIC



Typical example of MRI showing CJD hypertense section labelled with arrows showing caudate and putamen
Imaging of Creutzfeldt-Jakob Disease: Imaging Patterns and Their Differential Diagnosis | RadioGraphics (rsna.org)

MANAGEMENT AND OUTCOMES

Symptomatic & Supportive Management

- Benzodiazepines for agitation and myoclonus
- Anticonvulsants for myoclonus and seizure
- Antipsychotics for psychosis, agitation, mood
- Antidepressants for mood symptoms
- Literature indicates that symptomatic treatment of psychiatric symptoms in CJD has low effectiveness.
- Benzodiazepines are effective for agitation in about 22% of cases, while antipsychotics and antidepressants are less effective.
- In this case, the patient received Vimpat due to myoclonus and abnormal EEG. Quetiapine for visual hallucinations. The patient's agitation and hallucinations continued to worsen. The patient was put on palliative care and died within 3-months of presentation.

DISCUSSION

- CJD is a rapidly progressing neurodegenerative condition with variable presentation.
- Most patients with CJD will have behavioral issues and psychiatric symptoms. Disordered sleep, agitation, psychosis, and mood symptoms are common.
- Medications used to control these symptoms in psychiatric conditions are used in CJD, including SSRIs for depression and atypical antipsychotics for mood and psychosis.
- While these treatments are standard, they are only marginally successful. In this case, the patient had agitation and progressively worsening visual hallucinations.
- The patient was treated with quetiapine but continued to worsen, which should be expected given a < 20% effectiveness of non-benzodiazepine medications for psychiatric symptoms in CJD.
- Further research into reliable treatments for psychiatric symptoms in the setting of CJD is needed.

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Hereditary Neuropathy and Pressure Palsy, psychosis, and abnormal myelination: A Case Study

Community Health Network

Dr. Michael Shain, DO; Dr. Isaiah Sloss, MD; Dr. Benjamin M. Coplan, DO

Introduction

Psychiatric diseases like schizophrenia and mania associated with bipolar disorder have both been linked to changes in neuroanatomy and the metabolic function of different areas of the brain. Both diseases have been positively associated with alterations in the connective pathways between different areas of the brain (5). These altered pathways are thought to play a role in the debilitating symptoms of these diseases including hallucinations and delusions, and emotional dysregulation by interrupting the precise timing of electrochemical signals required to regulate emotions and modulate the activity of different regions of the brain. Although the genetic relationship is not fully understood, an example of this is HNPP which an autosomal dominant condition cause by the deletion of the PMP22 gene on chromosome 22. This gene helps regulate cell growth and maintain myelin integrity in those without the mutation but when present causes demyelination (4).

Further, multiple brain studies have shown patients with schizophrenia having a disconnection between prefrontal and posterior areas of the brain, demonstrating a dysfunction of neural networks. Davis, Stewart, and Friedman (1) theorize that a neurochemical basis for altered connectivity could derive from abnormalities in synapses and protein expression. Volume reductions in the white matter of the PFC have been repeatedly found in schizophrenia and alterations in metabolism have been identified in similar areas in manic patients (5). Other researchers provide evidence that there is an association between schizophrenia and myelin-related dysfunction, and that abnormal myelination can lead to volume reductions in white matter, which can be associated with the negative symptoms of schizophrenia, along with psychosis (2 and 3).

This case showcases a young adult male with a history of likely demyelination through HNPP, who presented for psychosis related to bipolar disorder and ultimately improved with an antipsychotic with increase agonism of receptors related to mood symptoms.

Case

John is a 20-year-old male with a prior psychiatric diagnosis of major depressive disorder who presented to the psychiatric hospital for new onset paranoid delusions and possible mania.

John took a leave from school as John's text messages to his friends were becoming increasingly bizarre and paranoid. Upon returning home from college, John continued to destabilize and exhibited notable changes in his behavior.

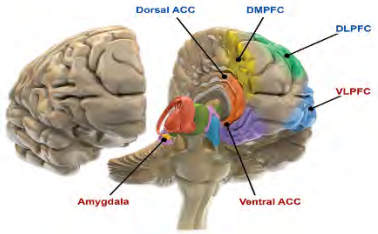
Case Continued

This included staying up all night messaging fraternity members at IU that they are conspiring against him (his friends say that John never met those fraternity members) and murdering others. He also said that those fraternity members were involved in Big Pharma and were a threat to our society.

On admission, John started saying that many of his psychiatric unit peers were old friends and people he knew from before. He sometimes would tell other patients that they had lizard skin. When his parents would visit him, he would become agitated, thinking that his parents were imposters and not his real parents. John later said that most of his family were "actually dead".

During his stay, treatment team discussed John's history with his parents who mentioned that John was diagnosed with HNPP (Hereditary Neuropathy and Pressure Palsy) 5-6 months prior to this hospitalization. On admission, John was initially treated with a titration of quetiapine, which was stopped due to the urinary retention/anti-cholinergic effects. He switched to haloperidol for a couple of days but he reported jaw tingling. Treatment team discontinued haloperidol and switched to asenapine due to the patient having persistent mood symptoms (rated 10/10 depression) along with his treatment resistant delusions.

Over the following few days after starting asenapine, John's delusions dissipated. He no longer believed that his parents were imposters or that a fraternity was conspiring against him/involved in Big Pharma. His mood symptoms, like anxiety and depression, also improved before discharge. John has not been hospitalized since discharge.



DLPFC: Dorsolateral prefrontal cortex **DMPFC**: Dorsomedial prefrontal cortex
VLPFC: Ventrolateral prefrontal cortex **ACC**: Anterior cingulate cortex

Discussion

Asenapine was chosen amongst other antipsychotic options due to its ability to antagonize 5-HT2A receptors in addition to agonizing 5-HT1A receptors, allowing it to effectively target and mitigate depressive and other affective symptoms. We hypothesize that this patient's myelination disorder and caused some altered connectivity in some of the regulatory regions commonly affected in patients with schizophrenia. This mechanism could possibly explain the patient's psychotic symptoms. Asenapine was more effective that other antipsychotics that were trialed (quetiapine and haloperidol) likely due to its ability to antagonize dopamine in addition to it 5-HT2A and 5-HT1A receptor activity resulting modulation of dopamine through additional pathways in other areas of the brain. This gives it the ability to better target negative psychotic symptoms including the persistent delusions.

However, of greater interest to the question of abnormal connectivity in psychosis and mania are regional changes in white matter and how they affect a patient's symptoms and treatment. SSRI's like Fluoxetine have similar receptor serotonin receptor binding as Asenapine and have been associated with remyelination (6). It is possible that the combination of these changes could be present in patients displaying manic and/or psychotic symptoms could explain the patient's lack of response to Halperidol. Zhornitsky has noted that patients being treated with Quetiapine Fumarate have been associated with remyelination, but unfortunately due to side effects that medication was discontinued(1).

Deletions in the PMP22 gene have been associated with reduced mRNA levels of in the hippocampus and amygdala. Alterations in activity in the ventro-medial prefrontal cortex (vmPFC) have been seen in many bipolar patients. The exact mechanism has yet to be clearly illuminated however, further study looking at how alterations in myelination affect patient's symptoms and response to treatment may shed further light on the implied relationship. HNPP, most often caused by loss of one copy (or deletion) of the PMP22 gene, or possibly a genetic change within this gene.

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Case Study on Vasculitis and Management

Community Health Network

Amber Wolverton, DO Sameen Kinza, MD Kyle Gehres MD

Introduction

This case reports aims to describe a patient presenting with acute respiratory failure that was later diagnosed as granulomatosis with polyangitis(GPA) with renal involvement. It will describe the presentation as well as the diagnosis and treatment of GPA.

Case Description

Patient was an 80 y/o F who presented with dyspnea and was initially hospitalized for an AKI and pneumonia. She was treated with fluids and antibiotics on discharge. She returned one week later with worsening symptoms, increased creatinine, and bilateral pulmonary infiltrates on CXR. Renal, ID, and pulmonary were then consulted. She was treated for CHF exacerbation with diuresis and more antibiotics. She did not improve and then developed hemoptysis. She underwent a BAL and eventual renal biopsy as well as a broader workup.

Diagnosis and treatment

- Due to hemoptysis a bronchoscopy was done and showed diffuse alveolar hemorrhage.
- Initial renal workup showed proteinuria and positive for cANCA. Kidney biopsy demonstrated diffuse necrotizing pauci immune glomerulonephritis. She was then diagnosed with pulmonary renal syndrome from ANCA vasculitis.
- Treatment included weekly rituximab x4, pulse dose steroids, and atovaquone for PCP prophylaxis in setting of high dose steroids. In addition, she was treated with Hemodialysis, which resulted in significant clinical improvement.

Conclusion

- Vasculitis should be considered higher in differentials involving multi-organ involvement such as unresolved b/l infiltrates with worsening kidney function.
- Proteinuria should prompt further lab w/u to prevent missing vasculitis
- Vasculitis should be considered sooner in pts with persistent B/L pulmonary infiltrates, given the acute and rapid deterioration that can lead to alveolar hemorrhage
- Rapid initiation of high dose steroids can decrease mortality, delay clinical deterioration, and limit progression towards permanent end organ damage

Discussion

GPA is an immune mediated small vessel vasculitis that primarily affects the respiratory tract and kidneys. Because it is rare and its presentation can mimic a variety of other conditions, it is not always included in differentials. This can lead to a delay in diagnosis and treatment. Respiratory symptoms can include cough, shortness of breath and hemoptysis accompanied by systemic symptoms of fever, fatigue, joint pain, and weakness. Objective findings can include hypoxia, and if the kidneys are involved, acute kidney injury and hematuria. It is diagnosed with blood work and a biopsy. Treatment includes steroids and possibly an immunosuppressing agent. Once diagnosed it is relatively simple to treat, but because it is rare and its presentation is non-specific, it is easy to miss, as is what initially happened in this case.

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Diplopia: An Unusual Presentation of Small Cell Lung Cancer

T. Daggett, DO, C. McNeill, DO, W. Long, DO

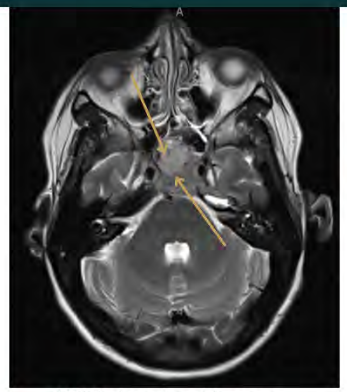
Community South Osteopathic Family Medicine Residency Program

Introduction

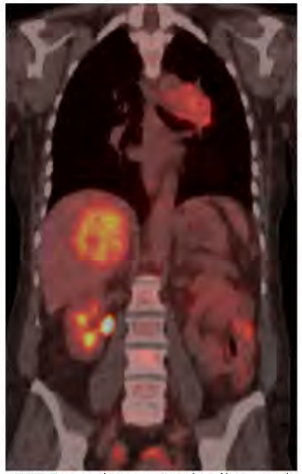
Diplopia, or double vision, is extremely common, resulting in more than 800,000 ambulatory visits per year1. It can originate from multiple different etiologies, including the eye, orbit, extraocular muscles, neuromuscular junction, or even the central nervous system. The case discussed is an example of a patient with new onset, transient diplopia that was found to be a result of a neuroendocrine tumor of the sphenoid sinus. This case study serves to demonstrate a rare, but life-threatening cause, of a common symptom, and the importance of an expanded differential when a patient deteriorates or fails to improve.

Case Study

A 51-year-old female presented to the clinic with the chief complaint of double vision. She described transient, binocular, diplopia that occurred only while driving. Initial physical exam was unremarkable, and symptoms were attributed to recent viral illness. However, she presented one week later with slightly worsening diplopia and new-onset eye fatigue. Repeat exam demonstrated medial deviation of the right eye as well as bilateral eye fatigue with sustained upward gaze. CT head was negative. Symptoms persisted, and the patient then developed intermittent headaches. She was given a short burst of Prednisone and an urgent referral was made to Neurology. Neurology sent the patient to the ED for further evaluation, where MRI of the brain demonstrated soft tissue mass of the left sphenoid sinus. Biopsy revealed a high-grade neuroendocrine carcinoma consistent with small-cell lung cancer. PET scan unfortunately showed widely metastatic disease with a primary left hilar mass as well as bone and liver metastasis. She is now undergoing palliative chemo?immuno-therapy and radiation.



MRI Brain: sphenoid mass as indicated by arrows



PET Scan: demonstrating liver and bone metastasis

Outcome

Patient is currently undergoing palliative chemotherapy with Carboplatin/Etoposide and Atezolizumab as well as palliative radiation to the sphenoid mass.

Discussion

Diplopia is a common chief complaint due to its sudden onset and often unsettling nature. Although disconcerting, for most patients, diagnoses are rarely serious. One study estimates only 16% of patients with diplopia had potentially life-threatening etiologies2. While most often benign, diplopia does have the potential to harbor serious pathology and should always be evaluated thoroughly to uncover any potentially dangerous causes. This case provides an example of a rare, but life-threatening cause of diplopia – a neoplasm. It demonstrates the importance of a detailed history, precise exam, and comprehensive differential in order to make an accurate diagnosis. More importantly, it exemplifies the utility of expanding that differential if symptoms worsen or fail to improve.

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SEVERE DISSEMINATED BLASTOMYCOSIS WITH PULMONARY AND CUTANEOUS INVOLVEMENT: A CASE REPORT

JORDAN PHELPS, DO, HOLLY WHEELER, DO

INTRODUCTION

In the midwestern city of Indianapolis, IN, known historically for a prior blastomycosis outbreak, this case report demonstrates how Blastomyces dermatitidis infection with multi-organ involvement can easily be misdiagnosed and therefore inappropriately managed. Blastomycosis is a systemic pyogranulomatous infection that often mimics other diseases. Most cases are in North America, but epidemiology is unclear due to testing limitations and lack of studies. Treatment with antifungal agents such as amphotericin B or itraconazole is standard. This case reminds the Osteopathic physician to consider all facets of a patient and their illness not in isolation, but as a whole.

CASE REPORT

- A 41-year-old female presented to her primary care physician (PCP) with a chief complaint of fever, fatigue, non-productive cough and painful rash.
  - Scattered erythematous papules and subcutaneous nodules on exam were diagnosed as folliculitis and treated with topical antibiotics.
  - Pulmonary exam was unremarkable. Point of care COVID-19 and influenza A/B testing was negative.
  - Conservative/expectant management was recommended for presumed viral rhinitis.
- Patient later presented to the emergency department with worsening flu-like symptoms and rash.
  - Imaging showed pulmonary consolidation and subcutaneous soft tissue nodules on her chest and abdomen.
  - Patient was admitted for treatment of community acquired pneumonia (CAP) and further workup of the pustular rash.
- Empiric antibiotics were administered for CAP.
- Additional infectious workup was unremarkable.

IMAGING

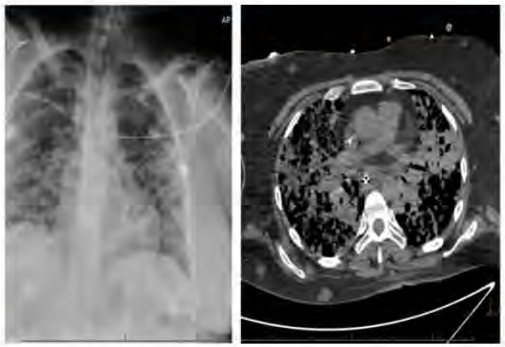

Figure (above): Chest x-ray and CT chest demonstrated pulmonary consolidation and subcutaneous soft tissue nodules in patient's chest and abdomen .

Figure (left): shows developing facial and scalp lesions.

CASE REPORT

- Infectious Disease was unable to discern an identifiable infectious or autoimmune etiology for the worsening pulmonary infiltrates and skin nodules.
- General surgery was consulted for wound biopsy. Preliminary wound cultures were unremarkable, and the patient was discharged on oral steroids.

OUTCOME

- The patient subsequently presented to multiple emergency departments and PCP office only to receive additional antibiotics despite worsening symptoms.
- The patient suffered a seizure and cardiac arrest at home. Patient received advanced cardiac life support by EMS and in the emergency department and was admitted to the intensive care unit.
- Culture data from prior hospitalization grew Blastomyces dermatitidis. Despite empiric amphotericin B and broad-spectrum antibiotics, the patient expired secondary to advanced disease after 43 days in the ICU.

DISCUSSION

This case demonstrates the importance of treating the whole patient as outlined in the tenets of Osteopathic Medicine. Treating parts of this patient's presentation in isolation likely contributed to delayed diagnosis and worse outcomes. Acute blastomycosis pulmonary infection is often misdiagnosed as a bacterial or viral and chronic pulmonary infection for malignancy or tuberculosis. Extrapulmonary involvement and multiorgan involvement occurs through hematogenous spread. Those with advanced disease are often immunosuppressed. Definitive diagnosis is made by culture. Serum and urine antigen detection can also be used. Diagnosis by early biopsy of lesion or presumptive diagnosis by direct visualization on wet preparation could have led to earlier diagnosis and treatment for this patient.

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Community Health Network

COMMUNITY SOUTH OSTEOPATHIC FAMILY MEDICINE RESIDENCY
Greenwood, IN

Community Health Network

Calciphylaxis in Acute Renal Failure

Taylor Bachert, DO; Brittany Simpson, DO

Introduction:

- Calciphylaxis, or calcific uremic arteriolopathy, is a relatively rare disorder with high morbidity and mortality therefore early diagnosis is critical.
- Typically presents in patients with end-stage renal disease.
- Risk factors for Calciphylaxis:
  - Female
  - Obesity
  - liver disease
  - Hyperphosphatemia
  - End stage renal disease
- The case discussed demonstrates a unique presentation of a patient who subsequently developed calciphylaxis after acute renal failure due to bladder outlet obstruction.

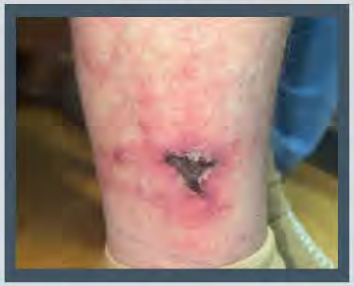
Case History:

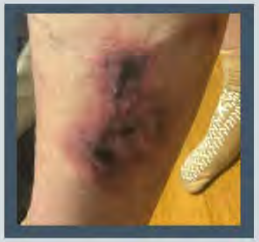
A 61-year-old male with past medical history of alcohol use disorder and untreated hypertension presented to the hospital as advised by his primary care physician after being seen for general malaise and being found to have an elevated creatinine level of 13.66. He was diagnosed with acute renal failure due to bladder outlet obstruction and hydronephrosis. Urinary catheter was placed, and creatinine trended down to 5.67 at discharge. The patient presented 1 week later to his primary care provider with ulcers on bilateral anterior shins. Follow-up appointment 1 week subsequently, the ulcers had turned into eschars. Due to suspicion for calciphylaxis, he was urgently referred to nephrology who confirmed and immediately started patient on sodium thiosulfate and hemodialysis.

Differential Diagnosis:

- Venous stasis Ulcer
- Arterial Insufficiency
- Cellulitis
- Vasculitis
- Calciphylaxis

Physical Exam:





Final Diagnosis:

Calciphylaxis

Discussion:

- This case study serves to bring awareness that calciphylaxis can occur after acute renal failure and early diagnosis and treatment can improve outcomes.
- Calciphylaxis is commonly misdiagnosed especially in those without end stage renal disease.
- Mortality rate is 46% at 1 year. Early recognition and treatment likely contributed to this patient's positive outcome as sodium thiosulfate was started and resolution occurred.

Outcome/Follow Up:

Patient was on sodium thiosulfate for 2 months with complete resolution of the eschars/ulcers by 6 months after diagnosis. Eleven months after diagnosis, patient is still alive on continued hemodialysis.

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COVID-19 and Pre-Eclampsia

Kaleigh Bachus, DNP, RN, AGCNS-BC, RNC-OB
Sydney Brown, DO, Family Medicine Resident
Kristen Swanson, MD, Family Medicine Resident

BACKGROUND

Hypertensive disorders of pregnancy are a leading cause of maternal morbidity and mortality in the United States. Several studies have shown pregnant people who get COVID-19 are at higher risk of poor outcomes, including ICU admissions and deaths (MMWR, 2020). The INTERCOVID study also found that pregnant patients with COVID-19 had almost a two-fold higher risk of pre-eclampsia compared to other pregnant patients (JAMA 2021).
Studies have also found SARS-CoV-2 RNA in the placenta and umbilical cord of patients with COVID-19, as well as invasion of intervillous macrophages in the placenta (Hosier, 2020). As one theory for the cause of pre-E is the inflammation of the placenta, this could be relevant. SARS-CoV-2 also infects cells by binding to the angiotensin-converting enzyme, which is also present in the placenta and umbilical cord. ACE2 has also been implicated in hypertensive disorders of pregnancy (Jing et al, 2020).

RESEARCH AIM

The aim of this study is to evaluate if a statistically significant increased risk for hypertensive disorders of pregnancy exists in obstetric patients with a history of Covid-19 infection and if so, to make preliminary recommendations for increased surveillance.

Inclusion/Exclusion Criteria

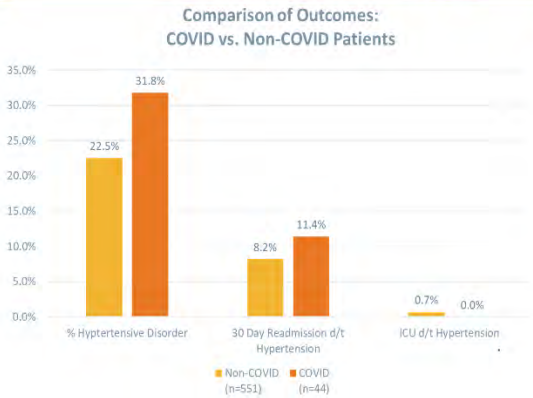
Inclusion:
1) Delivered at CHS, CHN, CHE, CHRH, or CHA
2) CPN prenatal care
3) > 20 weeks gestation
4) delivered between January 1st, 2021, through December 31st, 2021

Exclusion:
1) preterm <20weeks
2) fetal demise
3) non-CPN prenatal care

Methodology

Patients in the study had to have delivered at one of 5 Community hospitals, received their prenatal care through Community Health Network, were greater than 20 weeks gestation, and delivered between January 1, 2021 and December 31, 2021. Patients less than 20 weeks at delivery, patients with fetal demise, and those who received prenatal care outside of Community were excluded. Data was collected from patients meeting the inclusion criteria. This group was then stratified into patients with a positive COVID-19 test during pregnancy and those without. The data that was collected from patient charts included maternal age, race, and BMI, date and mode of delivery, diagnosis of hypertensive disorder of pregnancy, oral antihypertensives prescribed, IV antihypertensives given, magnesium therapy, 30-day readmission due to hypertensive disorder of pregnancy, and NICU admission.

Results



	COVID	Non-COVID
Hypertensive Disorder	14	124
No Hypertensive Disorder	30	427

ODDS RATIO = 1.61

Patients who had COVID are 61% more likely to develop a hypertensive disorder.

	COVID	Non-COVID
Readmitted	5	45
Not Readmitted	39	506

ODDS RATIO = 1.43

Patients who had COVID are 43% more likely to develop a hypertensive disorder.

Conclusion

This study found that pregnant women who are infected with the COVID-19 virus during their pregnancy are 61% more likely than those who do not become infected to develop a hypertensive disorder of pregnancy. They are also more likely to have a 30-day hospital readmission for a hypertensive disorder of pregnancy concern. The primary risk factors for developing pre-eclampsia was found to be age, BMI, and Black or Africa American race.

Discussion

It is recommended for those women who have a covid-19 infection during their pregnancy to receive increased surveillance for the development of a hypertensive disorder of pregnancy during their prenatal and postpartum courses.

References available by request

Community Health Network

Bell's Palsy and Pre-eclampsia Not an Uncommon Connection

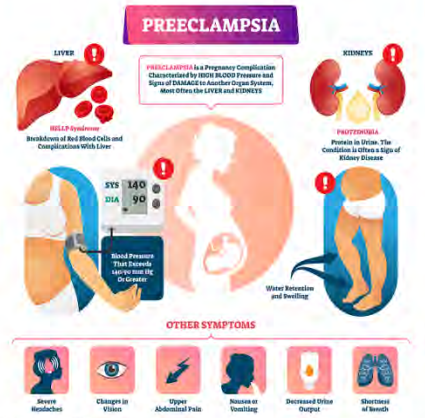
Sagi V. Mathew MD

Introduction

There are consistent case reports associating cranial neuropathies with pregnancy. and Preeclampsia, with Bell's Palsy being very common. However, in discussing with OB and FM OB colleagues many were not aware of a connection. This case highlights the need for the clinician to have a high index of suspicion for patients with Bell's Palsy who may go on to have a hypertensive disorder in pregnancy..

Case Presentation

36 y/o female G2P1001 with a history of obesity and no prior history of high blood pressure presented at 29w4 days for her routine OB visit and initial BP was noted to be 144/70, rechecked after rest: 124/76. She was sent home with close follow up in one week. Her blood pressure a week later was 136/96 and she was asymptomatic. Ultrasound showed appropriate growth of fetus and normal amniotic fluid. Patient presented to ED 5 days after her OB visit with problems moving the right side of her face (smiling, difficulty closing her eyelid, and blowing her nose) that started the day before. She was diagnosed with Bell's Palsy and given valtrex, prednisone, and artificial tears, eye ointment and given instructions for care. On OB follow up 8 days later, BP was elevated initially to 142/60 but recheck was 128/70. Pt was sent home with precautions and follow up in 2 weeks. At the follow up visit pt's BP did not meet goal for gestational hypertension(GHTN->/= to 140/90), however two weeks later at her visit her BP was elevated @130/98 and she was sent to labor and delivery (L&D) for labs and further work up. The work up was neg and BPs were not in GHTN range, and she was discharged home. Pt returned two days later with home BPs in the 150s/90s range. Her work up labs were negative again and she was sent home to continue monitoring BPs and symptoms. Next visit she was sent from the office due to BPs in the 140s/100 to 150s/100 range and pt had a headache. Work up and BP again were negative for hypertensive disorder in pregnancy and her headache had resolved. She saw her PCP for her Bell's Palsy follow up 3 days after her most recent OB triage visit and her blood pressure was elevated again (142/92) and she was sent to L&D this time for induction of labor as she met criteria for gestational hypertension with headaches @37w5d. Her blood pressures stayed in GHTN range 140s/90s and lower with one BP in the sever range (160s systolic). She did have mild elevation of one of her liver enzymes as well, but other labs were not significant. Pt had a vaginal delivery without complications. She did have a further reading in the severe BP range and was started on oral labetalol postpartum and BPs were stable after.



Credit: VectorMine/Shutterstock.com

Discussion

Hypertensive disorders of pregnancy are one of the leading causes of maternal and perinatal mortality worldwide. It has been estimated that Preeclampsia complicates 2-8% of pregnancies worldwide (see figure). Bell's Palsy is a neurologic disorder that usually affects one side of the face resulting from a dysfunction of cranial nerve 7 (see figure).. Bell's Palsy is not uncommon in pregnancy and the postpartum period affecting . The incidence ranges from 38-45.1/100,000 births compared to only 17 per 100,000 per year in nonpregnant women of childbearing age. The observed rate of preeclampsia was 5 times higher in patients with Bell's Palsy. The idea that Bell's Palsy in pregnancy may be associated with impending preeclampsia shouldn't be ignored.

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An "Ulna-ternative" Diagnosis to Throwing Youth Athlete Elbow Pain

Warren G. Lawless, DO; Ashlee Warren, MD
Community Health Network Primary Care Sports Medicine Fellowship

Case History:

A 15-year-old, male, right-handed high school baseball pitcher presented with right medial elbow pain for over three months. Over several months, he had noted a gradual loss of pitch velocity and control during play. During training, he had been practicing multiple pitch-types with curveballs causing him the most pain. Additionally, he endorsed diffuse, intermittent numbness and tingling in the right forearm following throwing activity. He had mild pain with hitting. He did not have a known acute injury or trauma preceding the onset of his pain. He denied feeling a snap or pop. He denied ecchymosis or swelling. The patient endorsed taking two weeks off from pitching activity during his Holiday break with improvement in his symptoms. His pain returned immediately upon resumption of pitching activity.

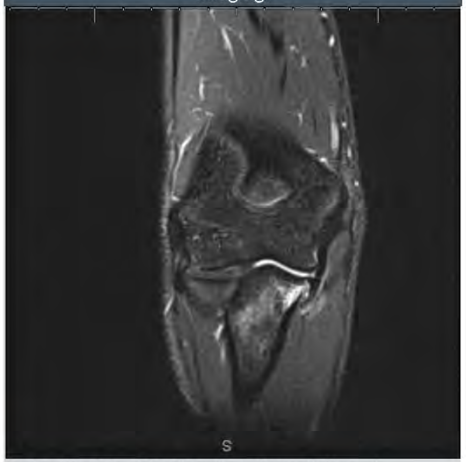
Physical Exam:

Musculoskeletal Right Elbow Exam:
Skin: No skin abnormalities.
Alignment: Normal carrying angle. No gross deformity.
Palpation: Tenderness to palpation over the course of the UCL. No palpable joint effusion. No olecranon bursa swelling. No tenderness to palpation of the medial or lateral epicondyle or distal triceps tendon.
ROM: Full range of motion with flexion, extension, pronation, and supination of the elbow without pain.
Ligaments: Laxity and a pop appreciated with valgus testing. No laxity with varus testing.
Neurologic: Normal strength and sensation of both upper extremities.

Differential Diagnosis:

- Ulnar Collateral Ligament (UCL) Sprain or Tear
- Ulnar Neuritis or Subluxation
- Medial Epicondyle Apophysitis or Avulsion
- Valgus Extension Overload Syndrome
- Stress Fracture

Imaging:



3-view XR of the right elbow (not pictured): Normal.

MRI right elbow (coronal view pictured above): Intense marrow edema/stress reaction at the proximal ulna centered at the sublime tubercle with chronic hypertrophic spurring. No fracture or osteochondral lesion. UCL thickening with subtle edema along the peripheral margin suggesting mild acute on chronic sprain. No fluid-filled tear.

Final Diagnosis:

Stress Fracture of the Sublime Tubercle of the Ulna with Acute on Chronic Ulnar Collateral Ligament (UCL) Sprain

Treatment:

The patient was placed in a hinged elbow brace allowing for 20-140 degrees of elbow extension/flexion for two weeks with a subsequent two weeks of bracing at 10-140 degrees of elbow motion. The brace was then discontinued.

Discussion:

Stress fracture of the ulnar sublime tubercle is a known, but rare cause of medial elbow pain in the throwing athlete. The sublime tubercle is a small protuberance located on the medial side of the coronoid process of the ulna onto which the anterior band of the UCL inserts. Often, chronic overuse injury to the UCL in adolescent throwing athletes will lead to overt ligament rupture or avulsion fracture of the sublime tubercle. On literature review, there are only seven documented cases of MRI evidence of sublime tubercle stress reaction in Little League and high-school aged baseball players without overt recommendations for treatment given the paucity of data.

Return-to-Play/Follow Up:

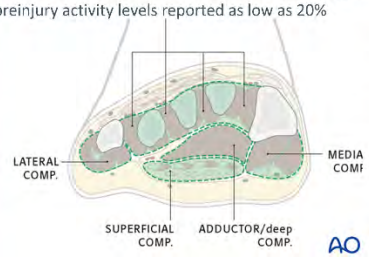
After brace discontinuation, the patient was progressed through physical therapy for four weeks then a subsequent throwing progression for four weeks with the goal of competitive pitching at the end of 12 weeks of total treatment. Upon finishing physical therapy, he demonstrated restored range of motion, improved strength, and increased right upper extremity function. Following the throwing progression, he returned to full competition at 12 weeks without right elbow pain during throwing activity.

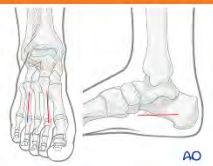
Leg and Foot Compartment Syndrome Sequelae: 1 Year Results

Clinton Heyer; Austin Quebedeaux | CHNw Symposium 2023

Community Health Network

Introduction: Compartment Syndrome (CS) is a rare emergent condition. Surgical intervention is required. The long-term sequelae are still debated. We venture to form a distinction between patients with high and low risks of complications. CS is poorly understood. Due to a dearth of quality research, it also lacks standardized treatment. CS in the foot is even more rare, reportedly less than 5% of limb compartment syndromes. There has been arguments posed that it encompasses 9 separate compartment, or as few as 2. It is typically diagnosed clinically, most often by assessing for the "6 P's". These include pain, pallor, paresthesia, poikilothermia, paralysis, pulseless. Also usually has visibly taught skin secondary to edema. Further diagnostic exam includes pressure measurements. A wick catheter is utilized for each compartment. Any compartment measured with a pressure of 30mmHg or greater or within 30mmHg of diastolic pressure is indicative but not necessarily diagnostic of compartment syndrome. Treatment involves Emergent surgical fasciotomies. Patient will develop permanent tissue necrosis at 6 hours from onset. There is limited benefit to surgical intervention 36 hours post onset, as the damage is irreversible at this point. Technique mostly via a 2 or 3 incision approach. Again, there has not been a gold standard validated in literature. Complications include joint contractures, claw foot deformity, paralysis, sensory neuropathy. Amputations are a rare outcome seen in cases of massive tissue necrosis or chronic pain. Return to preinjury activity levels reported as low as 20%





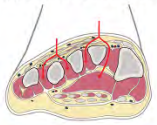
Study goal: Review CHNw EMR to evaluate cases of acute compartment syndrome of the lower extremity. Examine data and patterns of clinical presentation, trauma, treatment and post op complications.

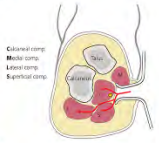
Methods: Retrospective case review of compartment syndrome of the lower extremity including the foot using CHNw EMR. Search period 01/01/2013-01/01/2021. Included patients 18 and over with acute compartment syndrome. Excluded from study if previous trauma or sequela to the lower extremity. SlicerDicer utilized in Epic to identify patients who met our criteria. Charts reviewed for set data points. Follow up care tracked for up to 1 year post injury.

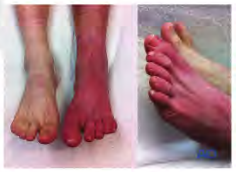
Results: 30 patients included; 27 surgically relevant. Mean age 47.8; 20/30 males. Pulseless 6. Neurological status decreased in 14. Pallor 8. Pain out of proportion 10. Temp reduced 6. Edema 16. Strength reduced 8. Compartment pressures reported in 15. Known trauma 17. 24 with acute fasciotomy performed. 11 ortho; 7 pod; 3 vasc; 2 gen; 1 plastics. 11/24 with noted herniation. 14 with delayed primary closure same admission. Ranging from 3-14 days after initial procedure. 7 wound vacs, 6 with skin grafts. Documented healing time 18-314 days. RTW in 2-7 months. Sequelae noted in 6 patients: pain, paresthesia, swelling, weakness, stiffness, numbness. Only 6 with f/u after a year.

Disclosures: Neither author has any disclosures to make, financial or otherwise.

Analysis: Very few completed an entire year of follow up. These patients tended to be mostly those who did have some postoperative complications.
Patients tended to follow the generally agreed upon findings and course of treatment. The presenting physical exam through postop complications were very similar to what has been previously document in research.







Discussion: Heterogeneity between location, surgeon, technique, etc. limited the amount of concrete conclusions we could draw from analysis of our data.
Complication rates remain highly variable.
Fundamental treatment principles of lower extremity CS have yet to be made; treatment difference between the leg and foot are still poorly understood.
Further review is required to better understand long term complications.

Relationship of Injury, Pain, Fatigue, and Pitching Volume among Adolescent Softball Pitchers

Jones ER, Jochum JE, Brutchen AP, Jacob TJ, San Giacomo NP, Neff JT, Vire BL

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UNIVERSITY OF INDIANAPOLIS

Introduction

- Systematic review of youth baseball pitchers found pitching with arm fatigue as a significant risk factor for shoulder and elbow injuries amongst adolescent baseball pitchers[1]
- Baseball studies have shown that as pitch volume with adolescents increase, levels of fatigue and injury also increase [2,3,5]
- Unrestricted softball pitch counts along with altered pitching biomechanics, decreased rest between outings, and increased fatigue may have a compound effect[4]

Objective

The purpose of this study was to explore pitching volume, fatigue, and pain in a group of adolescent softball pitchers over the course of a year to determine if a relationship exists between these variables as there exists in baseball.

Methods

Participants:

- 29 total high school softball pitchers recruited (14-19 yo)

Data Collection:

- Weekly subjective survey of pain (VAS), pitch estimate, perceived rate of recovery scale (PRS, Figure 1), and the Hecimoviche-Peiffere-Harbough Exercise Exhaustion Scale (HPHEES, Figure 2) completed[6]
- VERT© device to objectively measure fatigue with weekly vertical jump measurements

Statistical Analysis:

- Sharpiro-Wilk used to determine normal distribution
- Spearman Rho's product used to analyze correlations (P<0.005)

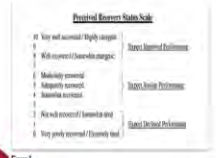

Figure 1

Item content
How recovered do you feel
How energetic do you feel
How refreshed to you feel
How easily can you run
How physically drained to you feel
How easily can you replicate your last game, event, or competition
How easily could you train some more
How weak do your legs and/or arms feel
How much do your muscles ache
How mentally sharp do you feel
How relaxed do you feel
How mentally drained do you feel
How easily can you walk
How mentally cloudy do you feel

Figure 2

Results

- Most common areas of pain reported (see Table 3, Figure 5) as low back, shoulder, and pain classified as "other"

Pain Location	
Shoulder	26.8%
Low back	26.1%
Other	23.4%
Knee	8.7%
Forearm	4.7%
Head	3.3%
Lower Leg	3.3%
Hip	2.3%
Elbow	1.3%

Table 3

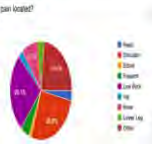

Figure 5

- Percentage of individuals reporting softball-related pain increased over time (Figure 3)
- Mean pain rating increased over time (Figure 4)

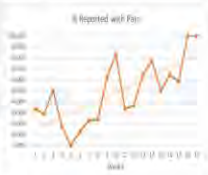

Figure 3

Figure 4

- Significant correlation between pain with the PRS and the HPHEES
- No significant correlation with pitch volume or max vertical jump (see Table 4)

Pain Correlations – Spearman Rho r (sig)

Week (n)	Pitch Volume	HPHEES	Recovery scale	Vert Max
1 (n=3)	-0.500 (.667)	1.00 (<.001)	-0.500(.667)	-0.500(.667)
2 (n=7)	-0.734 (.061)	0.764(.046)	-0.905 (.005)	0.541 (.210)
3 (n=8)	-0.567(.143)	0.596(.119)	-0.676 (.066)	0.739 (.093)
4 (n=6)	-0.462(.356)	0.580 (.228)	-0.678 (.139)	0.319 (.538)
5 (n=3)	-0.866 (.333)	1.00 (<.001)	-0.866 (.333)	NA
6 (n=16)	0.161 (.552)	0.765 (<.001)	-0.597 (.015)	0.054 (.847)
7 (n=22)	-0.268 (.228)	0.715 (<0.001)	-0.680 (<.001)	-0.151 (.505
8 (n=21)	-0.058 (.801)	0.734 (<.001)	-0.804 (<.001)	0.118 (.621)
9 (n=13)	-0.150 (.625)	0.683 (.010)	-0.817 (<.001)	0.031 (.920)
10 (n=6)	-0.358 (.486)	0.812 (.050)	-0.750 (.086)	0.300 (.747)
11 (n=7)	0.275 (.550)	0.487 (.268)	-0.593 (.161)	-0.126 (.788)
12 (n=11)	0.413 (.207)	0.764 (.006)	-0.796 (.003)	-0.158 (.662)
13 (n=14)	0.021 (.994)	0.559 (.038)	-0.494 (.073)	0.201 (.531)
14 (n=13)	0.538 (.058)	0.487 (.092)	-0.688 (.009)	0.023 (.946)
15 (n=10)	0.400 (.252)	0.342 (.334)	-0.592 (.071)	-0.298 (.436)
16 (n=14)	0.194 (.506)	0.795 (<.001)	-0.651 (.012)	-0.014 (.965)
17 (n=12)	0.745 (.005)	0.513 (.088)	-0.438 (.154)	-0.075 (.873)
18 (n=6)	-0.308 (.553)	0.759 (.080)	-0.419 (.408)	NA
19 (n=4)	0.738 (.262)	0.316 (.684)	-0.500 (.500)	NA

Table 4

Discussion

- This study found a strong correlation between pain, fatigue and recovery
- The results suggest that the intensity and frequency of pitching-related pain increases as the softball season progresses
- This study expands on previous research investigating fatigue with no recovery and identifies/confirms common areas of injury in adolescent softball pitchers[2,7]
- First study to longitudinally study pain and fatigue throughout the duration of a season
- Found no correlation between pitching volume with pain intensity/frequency or fatigue on a weekly basis

Conclusion

- As the season progresses, fatigue, pain intensity, and frequency of softball-related pain all increase in softball pitchers
- This is important because softball pitchers often participate in the high school season then transition into travel season without a break which could lead to higher levels of fatigue and pain
- Limitations include small sample size with multiple sites
- Further longitudinal studies need to be conducted in order to determine if a correlation exists between pitch volume and pain/fatigue

Acknowledgements

We would like to thank all of the participants that took part in our study as well as all of the coaches and athletic directors who helped with coordinating schedules

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Community Health Network

Hyper IgE Syndrome Case Study: Considerations in Podiatry and Surgical Candidacy

Molly Young, DPM

Introduction

Hyper IgE Syndrome (HIES) is a rare autoimmune disease. The disorder is caused by defects in the Janus activated kinase-signal transducer and activator of transcription (JAK-STAT) signaling pathway. The downstream players affected by this pathway lead to increased allergies, asthma, infection susceptibility, musculoskeletal problems and more. Presentation of the disorder is dependent on dominant or recessive type.[1,2] An understanding of the many complications of HIES is important for providers in deciding an appropriate treatment plan.

Case

October 2022: **33-year-old male presented to the podiatry clinic for treatment of bilateral ankles. Complaint of ankle pain and difficulty walking. Diagnosed with HIES at one year of age.**

- History: recurrent MRSA infections, abscesses and pneumonia
- HIES treatment: lifelong prophylactic Bactrim and monthly IVIG

Lower extremity exam:

- Dermatologic and neurovascular exams normal, noted scabbed lesions to hands and ears.
- Musculoskeletal: **strength 4/5 bilateral for all muscles crossing ankle joint. STJ and ankle ROM significantly decreased, Left > Right**
- Gait: **generalized as antalgic shuffling**
  - Bilateral knees and ankles flexed throughout gait, no propulsion or heel lift
  - Bilateral heels inverted throughout
  - Bilateral + "too many toes sign"
- Radiographic imaging was obtained prior to the visit (Images A-D)

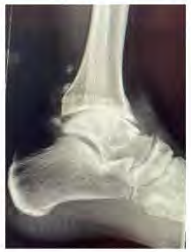
Left ankle	Right ankle
• Flattening of tibial plafond & talar dome • Loss of ankle joint space • Osteophytes posteriorly • Talar tilt • Sclerosis of talar dome	• Flattening of tibial plafond • Decreased joint space • Talar beaking • Talar tilt

Treatment:

- Ordered MRI for possible AVN of left talus, not obtained
- **Custom ankle foot orthoses for severe ankle osteoarthritis**
- Would likely need ankle fusion or replacements but **not a surgical candidate due to HIES**
  - **High infection risk**
  - **Hypermobility with abnormal connective tissues**

- November 2022: left shoulder arthroscopic surgery with biopsy. Biopsies negative.
- December 2022: left shoulder replacement.
- February 2023: admitted for infection at surgical site, I&D procedure and IV antibiotics initiated

A



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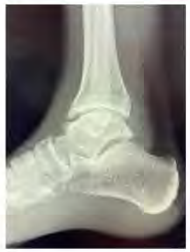
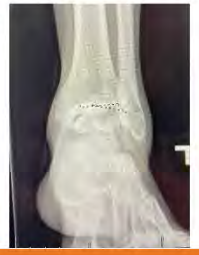


Images:

A-B: Lateral ankle view of left (A) and right (B)

C-D: Anterior ankle view of left (C) and right (D)

C



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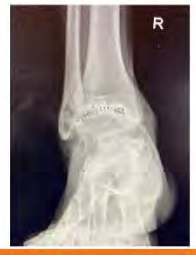

Discussion

While this may be a rare condition, understanding HIES is important in podiatry. Due to the affects of HIES, the patient is likely to present to an orthopedic or podiatric surgeon in search of treatment of their joint pain.

- There were no other podiatric treatment cases of HIES patients able to be found in a literature review.
- Current management guidelines for HIES focus on prophylactic treatment of infections.[3]
- **Providers treating severe osteoarthritis in patients with HIES will need to consider all aspects of the disease prior to any treatment plan.**
- **When possible, providers should give a strong consideration for non-surgical treatment options.**

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Does a 12-week hip and core strengthening program increase strength and reduce injury risk in high school XC athletes?

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University of Indianapolis, Indianapolis, IN

UNIVERSITY of INDIANAPOLIS

Introduction

- Girl's high school XC athletes experience a high rate of lower extremity injury – even higher than their male counterparts.[1]
- While many studies have shown weakness of hip and core muscles is associated with lower extremity injuries, little research have explored a strengthening injury prevention program can reduce the rate of injury incidence for high school female runners.[2,3]
- While a hip and core strengthening program has demonstrated ability to improve HS XC race times, the mechanism is not known nor has injury reduction been quantified[4]

Purpose

- To examine whether a 12-week hip and core strengthening program is effective not only at improving race times but also increasing core and hip strength to reduce injury risk in female high school XC athletes.

Exercise	Weeks 1-4	Weeks 5-8	Weeks 9-12
Plank hip extension	2 sets x 10 reps	2 sets x 15 reps	2 sets x 20 reps
Sidelying abduction	2 sets x 20 reps	2 sets x 20 reps	Not performed
Side plank hip abduction	1 set x 5 reps	1 set x 10 reps	2 sets y 10 reps
Side bridge	1 set x 10 reps	2 sets x 10 reps	2 sets x 15 reps
Supine bridge	2 sets x 10 reps	2 sets x 15 reps for 10 second holds	Not performed
Single leg bridge	Not performed	Not performed	1 set x 10 reps
Knee ups	1 set x 10 reps	2 sets x 10 reps	1 set x 15 reps
Pike	1 set x 5 reps	2 sets x 5 reps	1 set x 10 reps
Roll outs	2 sets x 10 reps	2 sets x 10 reps	2 sets x 10 reps

Table 1: Intervention procotol[4]

Figure 1: Sample of exercise protocol

Methods

- Participants (n=24) underwent preseason and postseason testing for hip flexor, extensor, abductor, and ER and IR strength via handheld dynamometry, and core endurance measures using plank positions.
- The intervention program was implemented within team practices by the coaches 3 days/week for 12 weeks (Table 1).
- The intervention program consisted of 3 phases, each lasting 2-4 weeks, with each phase getting progressively more challenging (Table 1).
- Lost time injuries and race times were tracked during the season by team athletic trainer.

Results

- Participants who completed the intervention program (n=24) had only 1 lost-time injury recorded
- Hip ER ($p<0.001$), IR ($p<0.001$), and Abduction strength ($p<0.03$) were all significantly improved over pre-season measurements (Figure 2)
- Hip flexion and extension strength were essentially unchanged
- Anterior ($p<0.001$), lateral ($p=0.02$), and posterior ($p=0.002$) core endurance measurements were also improved (Figure 3)
- PR times were significantly improved ($p=0.15$) from pre-season to post-season(

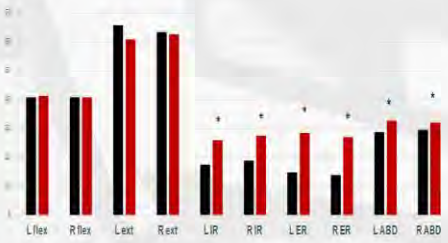

Figure 2: Hip strength pre-post (in lbs)
** signficant*

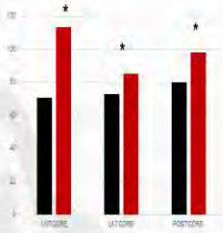

Figure 3: Core Endurance (sec)
**: significant*

Conclusion

- The implementation of this program was not only effective at improving PR times, but may be effective at reducing injury risk
- Improvements in core and hip strength and core endurance were noted which has been shown to reduce incidence of running related injuries with only 1 injury during this study
- Future research needs to further investigate if these trends hold true with a larger sample size

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Community Health Network

Microaggressions: A Big Deal in the Clinical Learning Environment

National Initiative

E. Ann Cunningham DO, Melody Jordahl-Iafrato MD MPH,
Alyssa Cheng DO, Sarah Kate Couch DO, Kim Jones LCSW, Areef Kassam MD, Kylie Ranard DO, Morgan Rhodes MD, Kristen Swanson MD,
Kasey Windnagel PsyD, Kathy Zoppi PhD MPH

NI VIII Meeting #4 Nashville, TN March 2023

Introduction: Background & Context

Microaggressions occur in the clinical learning environment which impacts both patient care and medical learners. Initial training on microaggressions was provided in 2020-2021 to Community Health Network's Graduate Medical Education (GME) community; however, the impact of these materials was not evaluated. This project is seeking to provide and evaluate further training on microaggressions for faculty and learners to support sustainable change efforts in the clinical environment. This project is aligned with the Network's mission to support an inclusive and diverse community with the vision of creating an equitable work, education and patient care environment by mitigating the harmful effects of microaggressions for patients, learners, and employees.

References

Ackerman-Barger K, Jacobs NN, Orozco R, London M. Addressing Microaggressions in Academic Health: A Workshop for Inclusive Excellence. MedEdPORTAL.2021;17:11103. https://doi.org/10.15766/mep_2374-8265.11103

Aim/Purpose/Objectives

- Work with network Director of DEI Education to identify existing training resources/materials on microaggressions by June 2022
- Identify an educational workshop by September 2022
- Deliver educational workshop to all current resident and faculty physician within GME by January 2023

Methods

Subjects: Selection, Recruitment

- Current GME residents, fellows, and faculty
- Workshop material and survey conducted during didactics

Interventions/Changes: Microaggression workshop

- Curriculum adapted from Ackerman-Barger, et al, Addressing Microaggressions in Academic Health.
- Pre-reading given to participants prior to workshop
- 45 minutes given for didactic teaching of the materials, and 75 minutes is facilitated discussion working through case examples in groups

Methods Continued

Measure #1: Reach

- Track reach of educational intervention by determining participation rates of target population (residents/faculty within GME) during each workshop

Measure #2: Survey

- Obtained immediately before and after workshop .
- Measured the participant's knowledge and confidence for identifying and intervening with microaggression

Analysis

- Independent T-tests were conducted to determine whether participation in this workshop resulted in changed confidence in ability to recognize microaggressions, respond to microaggressions, and debrief after microaggressions occur. An independent T-tests also measured change in participant commitment to being an upstander.

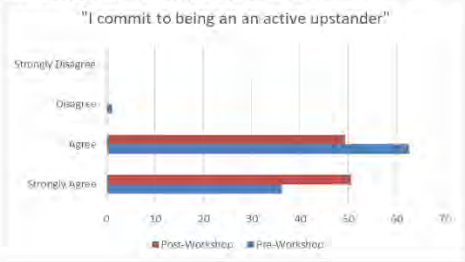
IRB Submission

- IRB has determined that this submission does not constitute Human Subjects Research as defined at [45 CFR 46.102(d)(f) and 21 CFR 56.102 (c)(e)(l)] and therefore does not require IRB approval.

Results

Measure #1: Reach

Participants were broken down into 3 groups: Residents/Fellows, Faculty, and Other. There were 58 Residents/Fellows, 32 Faculty, and 1 Other who submitted the pre-test survey (Total Pre-Test Participants = 91). There were 53 Residents/Fellows, 27 Faculty, and 1 Other who submitted the pre-test survey (Total Post-Test Participants = 81).



Results

Measure #2: Survey

- After participation in the workshop, participants reported a statistically significant difference ($p < .05$) in their confidence to:
  - Identify microaggressions
  - Respond to microaggressions (as an upstander, recipient, & source)
  - Debrief microaggressive situations
- After participation in the workshop, participants reported a statistically significant difference ($p < .05$) in their commitment to being an active upstander

Discussion:

Key Findings

- Participants report an increase in understanding of types of microaggressions and knowledge of strategies to intervene in medical academic settings by attending the required workshop

Limitations

- Data obtained through survey did not specify the which participant completed the pre-survey and post-survey. Therefore, difficult to determine the growth of a single participant
- Workshops were completed during different dates based on groups availability. Therefore, possible differences in how each workshop was presented or run.

Next Steps and Sustainability

- Incorporation of microaggression workshop for all PGY1 residents and new faculty during our annual "Residents as Teachers and Supervisors" Session or orientation

Community Health Network

Implementation of a Diversity, Equity, and Inclusion (DEI) Committee within an Ambulatory Care Pharmacy Department

Chauntae Reynolds, PharmD, BCACP, CDCES and Nora Sharaya, PharmD, BCPS, BCACP, BC-ADM

Background

- Ambulatory care pharmacists play a key role in delivering care, closing healthcare gaps, and improving health outcomes in our diverse community.
- Diversity, equity, and inclusion (DEI) have become important topics within healthcare in recent years.
- In 2021, two ambulatory care pharmacists set out to implement an ambulatory care pharmacist-focused diversity, equity, and inclusion committee within a large hospital network.

Benefits of Diversity

- Talent pools are stronger and more efficient
- Better solutions to social problems
- Increased patient satisfaction with healthcare providers, and
- Decreased health disparities are predicted among racial and ethnic groups

Benefits of Inclusion

- Minimizes discrimination and bias
- Recognizes and addresses systemic inequities that traditionally disadvantage marginalized and oppressed groups
- Decrease employee turnover, increase employee satisfaction and productivity, and
- Employees feel more appreciated for their unique characteristics

Benefits of Equity

- Removes barriers that explicitly and implicitly disadvantage oppressed groups
- Helps rid policies and practices resulting in disparities
- Marginalized individuals can become stakeholders versus just placeholders, and
- Attainment of the highest level of health for all individuals.

Objectives

- Educate and engage caregivers with learning opportunities to promote a culturally responsible climate of inclusion.
- Demonstrate a commitment to fair and equitable healthcare for patients in underrepresented categories
- Strive to decrease health care disparities through continuing education and application

Implementation

- February 2021: Proposed DEI committee to leadership
- March 2021: Promoted new committee to Ambulatory Care Pharmacy Team
- April 2021: First meeting held with 10 members (25% of department)

Design

Department Education	• Quarterly Timely Topic presentations • Two ambulatory care education sessions
Book Clubs	• Medical Apartheid • Blind Spots: Hidden Biases of Good People
Pharmacy Enterprise Education	• Pharmacy Grand Rounds • Preceptor Development
Learner Engagement	• PGY1 Pharmacy Resident Project • Student Topic Discussions
Volunteer Opportunities	Black and Minority Black Men in White Coats Youth Summit Ask A Pharmacist booth at Indiana Black and Minority Health Fair

Future Direction

- Expand to the entire Pharmacy Enterprise
  - Email sent to the full team for introduction and recruitment
  - Pulse survey sent out to gauge current perceptions
- Increase engagement with pharmacy learners and pharmacy residents
  - Resident program directors have expressed interest
  - Student block education
- Explore engagement with Network-wide DEI initiatives
  - Collaborate on topics and events

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Community Health Network

Better Together: Recommendations for a Multidisciplinary Team Approach to Suicide Assessment and Management in Primary Care

Eva Wehrle, BA; Katherine Wood, MS; Sarah Brown, BA; Jordan Berty, LCSW; Kasey Windnagel, PsyD; Kim Jones, LCSW

INTRODUCTION

People are seeking help from their primary care doctors, but a physician's knowledge of suicide prevention and ability to use screening tools is variable. Primary care or family medicine doctors are the front line of suicide prevention. The aim of this project is to outline how to increase suicide prevention through a multidisciplinary approach. This can be done by educating physicians to better recognize the warning signs, using screeners more effectively, and collaborating with the psychology and social work team for longer-term patient support.

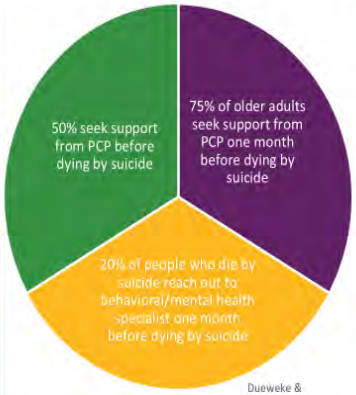
METHODS

A literature review was conducted to establish the foundational platform of this project. Employing direct access and participation of a multidisciplinary care team within a family medicine center, this project aims to target the methodology behind suicide screening and the education regarding its implementation. For eight weeks, there will be systematical educational sessions aimed to increase screenings for suicide prevention within the primary care setting and promote multidisciplinary care team collaboration.

RESULTS

Evidence from the research suggest that a multidisciplinary approach to suicide prevention and screening, positively impacts patients. Project coordinators reported observing clinicians engaging in increased awareness, intervention, and treatment directly impacting patient-centered care regarding suicide intervention.

REFERENCES



Dueweke & Bridges, 2018

DISCUSSION

Ideal Strategies	Established Strategies	Growth Opportunities
Education on Suicide Prevention for PCPs	Protected teaching time for residents	Education for suicide prevention for all clinic staff
Consistent Screening of Patients	Use of Columbia Suicide Severity Rating Scale (C-SSRS)	More consistent use of C-SSRS amongst clinic staff
Conducting Safety Plans	CHN Collaborative Safety Plan	Incorporation of risk formulation into safety plan
Assessing for Lethal Means	Included within the safety plan	Create standardized lethal means screening
Efficient care transitions to psychotherapy and medication management	Referrals to Crisis or coordination of outpatient care by the Social Work Team	Increased access to timely outpatient care

NEXT STEPS

This team of facilitators wishes to further inquire about the percentage of patients who were reported to social workers or behavioral health professionals after meeting with their PCP. And the various barriers that patients experience to access mental health professionals once the information is provided to them.

Community Health Network

Acceptance and Commitment Therapy in the NICU

Beth Buckingham, Ph.D, HSPP; Kimberlie Wells, DO; Julia Kaster, DO; Chad Knoderer, PharmD; Eric Comstock, M.A., LMFT, LCAC; Shaelen Bulger, OMS1

Introduction

Approximately 7-12 percent of delivered infants in the United States are admitted to a newborn intensive care unit (NICU). Parents in the NICU face navigating unexpected medical stressors and caregiving role changes. Research indicates parents in the NICU are at higher risk for experiencing high levels of distress including symptoms of anxiety, depression, trauma, postpartum mood and anxiety disorders (PMADs), and posttraumatic stress disorder (PTSD). Acceptance and Commitment Therapy (ACT) promotes the acceptance of feelings and thoughts to connect with one's values and set and achieve goals while developing psychological flexibility. This research study aimed to evaluate if parents with better psychological flexibility through ACT are likely to have greater emotional well-being, higher quality of life, and increased ability to cope with the difficulties faced in the NICU.

Methods

This study used an experimental design, which was implemented at Community Health Network's Level III Newborn Intensive Care (NICU) unit. Participants were from a sample of convenience recruited from the population of parents with premature infants in the NICU. The goal was to complete one ACT session per week for four weeks performed by ACT trained psychiatry residents at the bedside, though the time from pre-assessment completion to post-assessment completion ranged from two weeks to eight weeks. Psychological assessments included the Acceptance and Action Questionnaire (AAQ-II), Edinburg Postnatal Depression Inventory (EDPS), Modified Perinatal PTSD Questionnaire (PPQ), Conner-Davidson Resilience Scale (CD-RISC), Parental Bonding Questionnaire (PBQ), and a Perceived NICU Parental Competence Question (PPCN).

Table 1. Subject demographics

	n(%)
Mothers	15 (75)
Married	17 (85)
Race	
African-American	3 (15)
Caucasian	15 (75)
Hispanic	2 (10)
Mother's first pregnancy	8 (53.3)
Vaginal delivery	5 (33.3)

Single baby	17 (85)
Depression and/or anxiety diagnosis	10 (50)
Anxiety	6 (60)
Anxiety and depression	2 (20)
Post-traumatic stress disorder	1 (10)
Unspecified	1 (10)
Education level	
Associates	4 (20)
Associates/Technical	2 (10)
College	13 (65)
GED	1 (5)

Table 2. Psychological Assessments

Measurement[a]	Pre[b]	Post[b]	p-value
AAQ-II	13.5 (11 – 18.5)	11 (9.25 – 13.75)	0.021
CD-RISC	80.5 (72.5 – 86)	86.5 (64.5 – 90)	0.117
EDPS	7 (6.25 – 9)	6 (3 – 10)	0.262
PBQ	6.5 (2 – 10)	2.5 (0 – 5)	0.002
PPQ	7 (4 – 16.5)	6 (3 – 14)	0.063
PPCN	8 (7 – 10)	9 (8 – 10)	0.005

References

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Results

Twenty subjects (75% mothers, 25% fathers) with a mean (SD) age of 31.5 (5.4) years were included. Demographic characteristics are described in Table 1. There were two instances of multiple births, both cases being twins. For the single births, the median (IQR) birth weight was 1386 (835 to 1960) grams and the median (IQR) increase, to the end of the study period, was 2205 (1336 – 2900) grams ($p < 0.005$).

Table 2 summarizes findings from the psychological assessments. Significant improvements were observed for the AAQ, PBQ, and PPCN. Changes in the CD-RISC varied with decreases of 70% to increases of 42% noted. In the pre and post study periods, median EPDS scores were 7 and 6 suggesting that cohort had a low likelihood to be experiencing depression. While the PPQ changes did not reach statistical significance, 80% of subjects experienced a decrease or no change in score.

Discussion

In conclusion, this study supports the efficacy a four-session bedside ACT treatment protocol for parents in the Level III NICU. Improved treatment outcomes for psychological flexibility, parental bonding and perceived parental confidence demonstrated significant statistical significance. These treatment outcomes persist beyond both demographic data and possible psychiatric symptoms or diagnoses for parents in the NICU. Morbidity and mortality risks for babies in the NICU are real. Connecting to values and learning ways to better manage these unwanted thoughts and emotions of NICU family stressors likely contributed to improved parental confidence in the NICU and overall bonding behaviors. Future studies may seek to replicate findings with a larger population and which specific ACT dimensions improved parent functioning in the NICU.

Utilizing Longitudinal Teams to Teach Patient Centered Quality Improvement in a Family Medicine Residency Clinic

Taylor Bachert, DO; Rachel Shockley, DO; Anne Packard, Pharm D; Benjamin Rodimel, DO; Kaitlyn Wong, RD; Kyle Sparks, BS; Julie Stenger RN BSN; Carrie Miner MA; Leah Chamberlain MA

Community South Osteopathic Family Medicine Residency Program; Greenwood, IN

INTRODUCTION

The ACGME requires family medicine residents to participate in interprofessional quality improvement activities. Multidisciplinary longitudinal teams were created at our family medicine residency with the goal to improve diabetic quality metrics. Our goal is to have 66% of the clinic's diabetic patients complete a diabetic foot exam in the last year.

METHODS

Using the Electronic Medical Record reporting software, patients between the ages of 18 and 75 were screened for having a diagnosis of diabetes. We noticed in July 2022 that at Community South Osteopathic Family Medicine Residency Clinic, some of the physicians were not meeting the Community Network's goal of 66% for diabetic foot exams in the last year. Due to this deficiency in August 2022, a clinic wide intervention was made where each physician in the practice was given a monthly block of time in their clinic schedule to run a report screening for patients due for a diabetic foot exam. During this block of time, the physician was instructed to send staff messages to schedule office visits for those who needed follow up office visits for diabetic foot exams. Each month the percentage of completed diabetic foot exams for each physician's metrics will be collected between July 1 2022 and December 31 2022. In January 2023, we will compare the percentage of diabetic patients with a diabetic foot exam in the last year prior to our intervention to the percentage of diabetic patients with diabetic foot exam in the last year after our intervention.

Percentage of Completed Diabetic Foot Exams

RESULTS

The metric of percentage of completed diabetic foot exams for each physician's patient panel at Community South Osteopathic Family Medicine Residency Clinic was collected monthly. Our goal was to see the average physician increase in their metric of percentage completed of diabetic foot exams by 5% in their patient panel between July 1 2022 and December 31 2022. We documented a decrease in the percentage of completed diabetic foot exam in patients between the ages of 18 and 75 from 72.3% to 68.3%.

DISCUSSION

A large risk factor for diabetic complications is compliance and proper follow up. We hoped that by setting aside time monthly for physicians to reach out to those who had not had a diabetic foot exam in the last year, we would increase our percentage of patients who have completed this metric and there for have better outcomes and fewer complications in our patients with diabetes.

DISCUSSION CONTINUED

Unfortunately, our intervention did not lead us to reach our goal of increasing the percentage of diabetic foot exams completed in the last year by 5% at the Community South Osteopathic Family Medicine Residency Clinic. One of the factors that contributed to our intervention failing, was that we had providers take leaves of absences during our 6-month intervention and while they were away, we did not assign anyone to run their metrics or contact their patients for follow up visits. Another factor was that while some of our providers were below the network goal of 66% our clinic average overall was above the network goal making it more difficult to improve from there. Our goal is to continue to monitor the diabetic foot exam metrics and work to improve our clinic metrics and resident education on quality-based metrics.

FUTURE PLANS

Going forward we plan to continue utilizing longitudinal teams to teach patient centered quality improvement by building blocks into each physician's clinic schedule to run metric reports and reach out to patients to schedule appropriate follow up. Our team plans to focus on improving our blood pressure monitoring metrics in our clinic patients next.

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Community Health Network

Opioid Use Disorder and Medication Assisted Therapy: The Lived Experiences of Postpartum Women

Caron MacPherson, PhD RN; Brooke Schaefer, MSN, FNP-C, RN; Rainey Martin, MSN, RN, ACGNS-BC, RNC-OB

Problem/Significance

Opioid dependent postpartum women who received opioid medication-assisted therapy often fail to maintain long-tern, recovery.

Purpose

To understand the lived experiences of postpartum women on medication assisted therapy due to Opioid Use Disorder.

Methods

van Manen's qualitative approach was utilized to investigate the lived experience of postpartum women on Medication Assisted Therapy for Opioid Use Disorder. Seven participants were recruited utilizing a purposive sampling method driven by thematic saturation. from an outpatient obstetrical office that specialized in caring for pregnant and postpartum patients on Medication Assisted Therapy for Opioid Use Disorder.

Results:

Thematic synthesis resulted in six themes: (1) troubled origins, (2) used opioids to deal with life issues, (3) needed to be self-reliant, (4) Opioid Use Disorder overtook their life,(5) the baby was a motivator to seek treatment, (6) Medication Assisted Therapy, individual and group therapy, and collaborative care are needed in the quest for a better life. Each theme offers insight into understanding the reality of these women. Together they offer perspective of their lived experiences leading up to using opioids, while in active addiction, deciding to seek help, their current life, and their hopes for the future.

Conclusion:

There findings can inform policy by extending state funded healthcare coverage to a minimum of 12 months postpartum; practice by standardizing care to include Medication Assisted Therapy, individual and group therapy, and collaborative care; education by revising academic and continuing nursing education to incorporate destigmatizing those with Opioid Use Disorder; and research by investigating why baby acts as a motivator for treatment for some but not others, how extended healthcare coverage for 12 months influences longevity of recovery, and what long-term barriers are faced by postpartum women with Opioid Use Disorder.

Community Health Network

The Effect of a Peer Support Program on Follow- up after Emergency Department visit due to Opioid Overdose.

Emily Zarse, MD; Michael Miller, MD

Background:

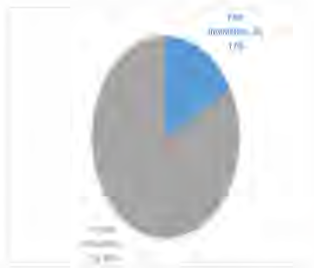
-The number one cause of accidental death in the US is drug overdose(Jones 2018).
-Many social, financial, and logistical barriers prevent 4 out of 5 patients from receiving treatment. (Madras, 2020).
-The number of patients who received outpatient follow up after an ED visit at community east for overdose was 3.3% over April and May of 2021 (Johnson, 2022)
-Peer Support groups have often been implemented in various contexts of addiction medicine, however it is not often separated out as a formalized intervention component when considering opioid use disorder, making it difficult to empirically study (Tracy, 2016)
-In April of 2022 Community East established a Peer Support Program to better reach those with substance use.

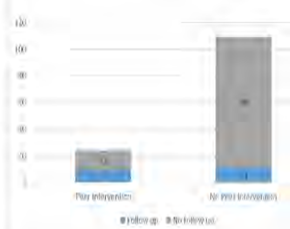
Objectives:

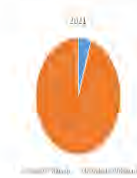
Investigate the following questions:
-Are patients that engage with PEER interventions more likely to have any non-ED follow up treatment than those who do not?
-What percentage of people who had an overdose were seen by PEER support?
-Is there a statistically significant difference in outpatient follow up this year than last year, given the initiation of the PEER program?

Method:

-Retrospective chart review
-Inclusion Criteria: Community health network (CHN) Emergency department (ED) encounter between May 1, 2022 to June 30, 2022, requiring Naloxone administration for opioid overdose.
-Exclusion Criteria: Pregnant, incarcerated in a correctional facility, minor n=140







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Analysis:

-Statistical analysis performed using Chi-Square Test of Independence testing.

Conclusions:

-Statistically significant majority of patients who received CHN ED care for opioid overdose did not engage with PEER program
-Patients who saw PEER support were statistically more likely to engage in non-ED follow up when compared to patients who did not see PEER support ($p<0.05$)
-There was not a statistically significant increase in percentage of outpatient follow up overall when comparing this study to last study which sampled patients from April 1, 2021 to may 31,2021 ($p>0.05$)

Discussion

-Only certain organizations have data available through EMR sources searched. There was full access to records for Community health primary care, Community Health Gallahue behavioral health and Eskenazi. There is inherent uncertainty as to whether patients were engaged in other outpatient treatment programs, such as Fairbanks, CleanSlate, Methadone Clinics, or private counseling organizations.
-Many factors could be effecting the amount of patients that the PEER program sees: at time of data collection it was relatively new, having been started in April 2022, and many ED providers may not have made it habit to involve them. Many patients could have presented during times which PEER support is not available, such as nights. Two patients were offered PEER support, but declined when the ED provider offered it.
-There is a correlation between PEER support visits and follow up, however given that only a minority of the patients were seen by PEER support, this may represent a selection bias, as perhaps only patients that were seen as "potentially receptive" were referred to PEER program. It must also be noted that this study does not encompass alcohol intoxication, which is another significant portion of PEER referrals.
-The overall data sets for outpatient follow up are not statistically different. This may be secondary to the low referral rate discussed above.

Implementing the Braden QD Scale in the Neonatal Intensive Care Unit Population

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Tia Bell, DNP, RN-BC, CNE

Community Health Network

UINDY School of Nursing

INTRODUCTION

The neonatal intensive care unit (NICU) patient population faces many challenges, and acquiring a skin injury could be detrimental to their health. The neonatal population involved in this project has seen a recent increase in skin injuries. A chart review revealed a total of 51 skin injuries documented in 2019. The overall problem identified in the NICU was the need for a skin risk assessment tool to evaluate neonatal skin. Because so much variation exists in assessing skin injury, using a comprehensive skin assessment tool, such as the Braden QD Scale (BQD), may create consistency in clinical practices. Therefore, this quality improvement project (QI) aimed to implement a standardized, evidence-based tool to assess neonatal skin by training the NICU nursing staff on using the BQD.

OBJECTIVES

- Every neonate has a completed BQD in their chart on admission to the unit.

- Every neonate has a BQD completed in their chart every 12 hours during their stay in the NICU.

METHODS

The QI project at Community Hospital North utilized retrospective data to analyze if the neonates had a BQD on admission and every 12 hours while in the unit. Nurses received 45 minutes of training on the use of the BQD.

RESULTS

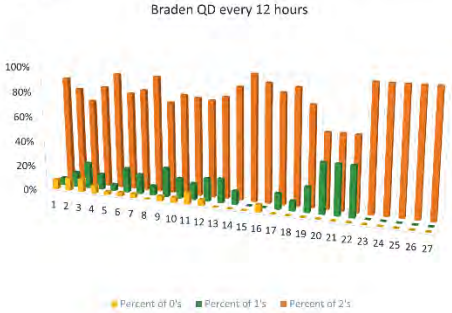
For the first objective, a Chi-Square Goodness of Fit test was used to report the observed frequency of BQD on admission. There were fewer observations than expected for "no" and more observations than expected for "yes" (statistically significant $p < .001$). There were a total of 51 admissions, 41 neonates had a BQD on admission, and 10 neonates did not have the BQD initiated on admission.

Chi-Square Goodness of Fit Test for BQD Admission

Level	Observed Frequency	Expected Frequency
yes	41	25.50
no	10	25.50

Note. $\chi^2(1) = 18.84$, $p < .001$.

For the second objective, descriptive statistics were used to report percentages of using the BQD. There were 90 neonates in the unit during the data collection period, a total number of 12-hour shifts in which the BQD was not documented at all was 26 times or 4.58%. The total number of 12-hour shifts in which the BQD was documented only once was 75, or 13.23%. The total number of 12-hour shifts in which the BQD was documented twice was 466, or 82.19%.



BRADEN QD SCALE

The BQD has 5 subscales: Mobility, Sensory Perception, Friction & Shear, Nutrition, and Tissue Perfusion & Oxygenation. Each of the 5 subscales will be scored with a 0, 1, or 2. To the subscales score is added the Number of Medical Devices and Repositionability/ Skin Protection. A total score of more than 13 or a score of 2 in any subscales indicates the infant is at risk for skin injury and the need to select Skin Integrity Interventions.

Skin Braden QD	
Mobility Sensory Perception Friction & Shear Nutrition Tissue Perfusion & Oxygenation	Calculate the score for each of the **5 subscales** using the **0, 1, 2**, scoring scale
Number of Medical Devices	
Repositionability/ Skin Protection	
Total (=/ > 13 is "At Risk")	
Skin Integrity Interventions	

(Curley et al., 2018)

DISCUSSION

Implementing the BQD incorporated best practices by standardizing skin assessment in the NICU.

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Don't be SCARED to Screen: Increasing Pediatric Anxiety Disorder Screening in the Primary Care Environment

Aimee Heerd, DO, MBE & Laetitia Tchate, MD

Community Health Network

INTRODUCTION

This project assesses the frequency in which Community East Family Medicine Residency physicians screen children and adolescents ages 8 to 18 for anxiety disorders in accordance with a 2022 recommendation from the United States Preventive Services Task Force. In their evidence review, the USPSTF cites data from the 2020 National Survey of Children's Health, which determined that 7.8% of children ages 3 through 17 met criteria for an anxiety disorder. The USPSTF acknowledged that pediatric and adolescent anxiety disorders are associated with an increased likelihood of future anxiety and depressive disorders. However, the USPSTF identified improvement in anxiety symptoms in pediatric patients who received treatment for their anxiety disorders[1]. The American Academy of Pediatrics/Bright Futures Campaign, the American Academy of Child and Adolescent Psychiatry, the American College of Obstetricians and Gynecologists, and the American Academy of Family Physicians likewise encourage mood and behavioral health screening for pediatric patients. Prior to undertaking this project, it was unknown whether the family medicine physicians at Community East Family Medicine Residency routinely screened pediatric patients for anxiety disorders. As such, the knowledge obtained from this project will assist Community East Family Medicine Residency in its efforts to provide evidence-based care according to USPSTF guidelines.

KEY OBJECTIVES & METHODS

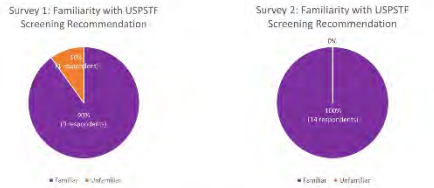
An educational session taught Community East Family Medicine Residency physicians about the updated USPSTF recommendation, anxiety screening tools, and treatment options, targeting well child visits as the optimal time to perform screenings. Participants learned about the GAD-7 and the 5-item Screen for Child Anxiety Related Emotional Disorders (SCARED), which are validated tools that are easy to use, easy to score, and short enough to incorporate into a 20-minute office visit. Voluntary surveys collected four and eight weeks after the educational session provided a longitudinal, descriptive assessment of physicians' familiarity with this recommendation, their frequency of anxiety disorder screening during well child visits, and difficulties with implementation that may be addressed in future quality improvement projects. We anticipated that we would observe an increase in familiarity and screening frequency over time.

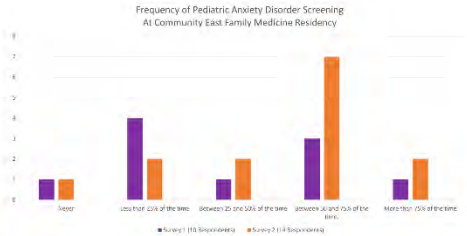
REFERENCES

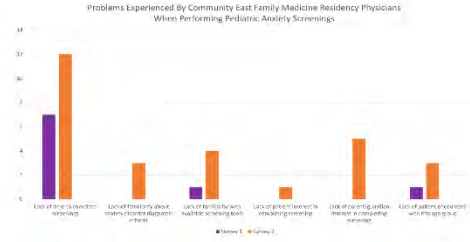
SCAN ME

RESULTS

Ten physicians responded to Survey 1, completed four weeks after the educational session. Fourteen physicians responded to Survey 2, completed eight weeks after the educational session.







SCREENING MEASURES

GAD-7

Over the last 2 weeks, how often have you been bothered by the following problems?	Not at all	Several days	More than half the days	Nearly every day
1. Feeling nervous, anxious or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3

Total Score = ___ = ___ + ___ + ___

5-item Screen for Child Anxiety Related Emotional Disorders (SCARED)[1]

5-item SCARED	
1	I get really frightened for no reason at all.
2	I am afraid to be alone in the house.
3	People tell me that I worry too much.
4	I am scared to go to school.
5	I am shy.

Items scored on a scale from 0 to 2. A cutoff of 3 can be used for discriminating anxiety from nonanxiety.

DISCUSSION

Evidence-based primary care for children and adolescents includes routine screening for anxiety disorders. Our data demonstrate high levels of familiarity with the USPSTF recommendation and a modest increase in the frequency that physicians at Community East Family Medicine Residency have screened for pediatric anxiety disorders. However, we received insufficient survey responses to perform statistical analyses. Lack of time to complete anxiety disorder screenings during well child checks remained the most common problem for survey respondents. This problem presents an opportunity to create a quality improvement project to increase screening efficiency during well child visits, e.g., by offering pre-appointment screening questionnaires in MyChart or by giving patients and parents questionnaires in the office waiting room.

Skincare Bundle for the Very Low Birth Weight and Extremely Low Birthweight Neonate

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Community Health Network
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Community Health Network

Introduction

Infants born very low birth weight (less than 1,500 grams) or extremely low birth weight (less than 1,000 grams) have a thin and immature outer layer of skin, leading to high risk of skin injury and breakdown. A need was identified in the neonatal setting to establish and implement a skincare bundle for premature infants utilizing evidence-based products. The aim of this project was to educate nurses on premature skin and measure the rate of implementation of the skincare bundle. Data was collected over 60-days with retrospective chart reviews.

Methods

Plan
- Purpose of project established.
- 5 evidence-based products selected for use.
- Education developed.
- Project proposal was formulated, submitted, and approved by IRB.
- Skincare bundles added to the EHR.

Do
- Education presented to staff in the mandatory staff meeting.
- Data collected over 60 days through weekly chart reviews.
- All products were placed in the supply room. (Bottom shelf, back of the supply room, with unsimilar items due to lack of space)

Study
- All data was deidentified.
- Chi-Square of Independence test used to compare days 1-30 and days 31-60.
- (This helped to determine if the educations was effective as evidence of implementing and maintaining the skincare bundle over time).

Act
- Sustainability plan established.
- Products were rearranged in the supply room to better facilitate nursing work flow (move to the front, at eye level, with similar products)

Results

- Results showed that 81% of registered nurses completed the education.
- A Chi-square test of independence was conducted to determine whether or not the skincare bundle implementation results were significant over time, which would indicate that nursing knowledge was increased over time as well.
- Days 1-30, there were 81 "no's" and 156 "yes's" recorded, meaning the bundle was implemented 65.8% of the time.
- First 30 days, there was less bundle implementation than had been expected, thus nursing knowledge was not adequate.
- Days 31-60, there were 84 "no's" and 354 "yes's" recorded, indicating that the bundle was implemented 80.8% of the time.
- The results were statistically significant based on the bundle implementation and thus suggested that nursing knowledge increased over time.

	Bundle_Implementation				
Days	No	Yes	χ^2	*df*	*p*
Day 1-30	81[57.93]	156[179.07]	18.73	1	< .001
Day 31-60	84[107.07]	354[330.93]			

Note. Values formatted as Observed[Expected].

Discussion

- A change in the standard of practice was established in the NICU as a result the quality improvement project.
- Products that may aid in reducing skin injuries for all patients in the NICU are now easily accessible.
- All NICUs within the network have now adopted the skincare bundle, allowing all NICU patients in the network to receive high quality evidence-based care.
- An average cost for a hospital acquired skin injury could be estimated at about $10,000 per patient, or $26.5 billion each year.
- By preventing one skin injury, the skincare bundle has proven to be a worthy investment.

P25

Community Health Network

Efficacy of Continuous Glucose Monitoring on Glycemic Control in Adults with Type 2 Diabetes

Amanda Schoettmer, PharmD; Kassandra Mohler, PharmD, BCACP; Allen Antworth, PharmD, MBA, BCACP; Lauren Behrle, PharmD, BCACP, TTS; Nick Sciacca, PharmD, BCACP

Background

Traditionally, blood glucose monitoring (BGM) has been considered the standard of glucose monitoring in diabetes mellitus (DM); however, continuous glucose monitoring (CGM) use is emerging.[1]

Multiple randomized clinical trials have demonstrated reduction of glycated hemoglobin (HbA_{1C}) and hypoglycemia with regular use of a CGM device, specifically in patients with type 1 diabetes mellitus (T1DM).[2,3]

Data evaluating efficacy of CGM systems in patients with type 2 diabetes DM (T2DM) demonstrates inconsistent benefits.[4-8]

Need For Study

Benefits have been established when CGM systems are used in T1DM; however, these benefits are not consistently shown in patients with T2DM

→ **By comparing differences in glycemic control with CGM versus BGM, a more clear benefit among patients with T2DM can be demonstrated**

→ **The results will provide a more standardized process in initiating and monitoring CGM systems within Community Health Network**

Objectives

Primary

- Compare the change in HbA_{1C} in patients with T2DM using a CGM device versus patients receiving standard care of checking blood glucose at least one time per day via BGM

Secondary

- Compare the following outcomes in patients with T2DM using a CGM device versus standard care:
  - Number of diabetes medications
  - Total daily dose of insulin (units/kg)
  - Number and type of pharmacy interventions
  - Emergency department (ED) visits or hospitalizations with a chief complaint relating to diabetes
  - Number of patients achieving an HbA_{1C} less than 8%

Methods and Design

A retrospective cohort study was performed. Baseline data was collected between July 1, 2021 and December 31, 2021. Follow-up data was collected between January 1, 2022 and June 30, 2022. Patients were divided into groups using the following algorithm:

T2DM and receiving care from an ambulatory care pharmacist within Community Health Network between July 1, 2021 and June 30, 2022

Exclusion Criteria
Pregnant or incarcerated
< 18 years old or >89 years old

Standard care
Established care with a pharmacist during baseline data collection period

CGM
Began using personal CGM system during baseline data collection period, regardless of prior establishment of care with a pharmacist

Results

CGM		Standard Care	
Initial HbA_{1C}	Follow Up HbA_{1C}	Initial HbA_{1C}	Follow Up HbA_{1C}
10.31% (95% CI: 9.87 to 10.77)	8.01% (95% CI: 7.61 to 8.40)	10.19% (95% CI: 9.74 to 10.65)	7.56% (95% CI: 7.21 to 7.91)

CGM Mean Difference: **- 2.30%** (95% CI -2.93 to -1.89)

Standard Care Mean Difference: **- 2.63%** (95% CI -3.81 to -2.09)

Between Group Difference: 0.33% (p = 0.55)

Results

	CGM* (n=84)	Standard Care* (n=84)	p-value
Baseline number of unique classes of glucose-lowering medications	2.67 (1.03)	1.89 (1.32)	< 0.01
Follow-up number of unique classes of glucose-lowering medications	2.82 (0.95)	2.35 (1.08)	< 0.01
Mean Difference	0.15	0.46	--

	CGM* (n=84)	Standard Care* (n=84)	p-value
Baseline daily insulin dose (units/kg)	0.55 (0.58)	0.21 (0.41)	< 0.01
Follow-up daily insulin dose (units/kg)	0.55 (0.61)	0.25 (0.43)	< 0.01
Mean percentage change in insulin dose (units/kg) from baseline to follow-up	-1.5% (0.62)	46.6% (2.15)	0.108

*Results reported as mean (SD) unless otherwise stated

Discussion and Conclusion

- No statistically significant difference in HbA_{1C} was observed among patients using a CGM versus standard care
- Patients receiving standard care required increases in overall insulin requirements, while patients utilizing CGM required insulin reductions
- **Diabetes management by ambulatory care pharmacists results in reductions in HbA_{1C}, regardless of method for home glucose monitoring**

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May 9, 2023

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.

Community Health Network

SGLT-2 Inhibitors vs ACEs or ARBs for Slowing Progression of CKD

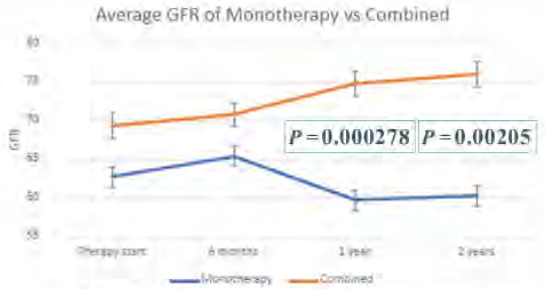
Ryan Kaufman, M.D., Andrew Brougher, M.D.

May 9, 2023

Intro: An ACE or an ARB is the standard of care to slow progression of CKD and few other treatments exist. The DAPA-CKD trial demonstrated that the addition of SGLT-2 inhibitors to this prevented sustained decline of GFR by 50%, progression to dialysis, and renal related mortality at 1 year, regardless of the presence of diabetes. This project aims to replicate these results in a residency patient panel.

Demographics	Average Age	Females	Males	Average A1c
Monotherapy	67 years	64% (87)	36% (50)	7.0%
Combined	63 years	33% (17)	67% (34)	7.7%

T test p value between sexes = 0.101



A similar GFR increase is observed between groups over 6 months. But by 1 year, the combination therapy group has a statistically greater increase that is maintained at the 2-year mark.

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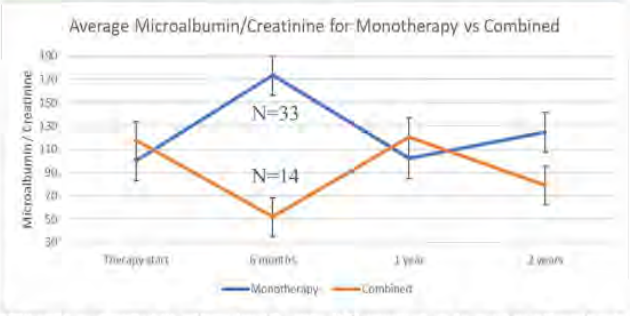
Methods: This retrospective case-control study compared the renal outcomes between ACE/ARB monotherapy and combined ACE/ARB with SGLT-2 inhibitor combination therapy. It analyzed creatinine, GFR, and microalbumin levels between groups at 6 months, 1 year, and 2 years to demonstrate reduction in CKD progression, the need for dialysis, and kidney related mortality with combination therapy.



There is no statistically significant difference in the microalbumin to creatinine ratio between combination and monotherapy groups. The apparent difference is due to low power with a *p* value of 0.173.

Conclusion: For patients with DM and HTN, combination therapy produces a statistically greater GFR compared to monotherapy at 1 and 2 years but not in the first 6 months. There is no statistical difference in microalbumin to creatinine ratio between groups. This data demonstrated that combination therapy provided superior renal protection to monotherapy, reproducing this key finding of the DAPA-CKD trial. There was not enough power to compare non-diabetics due to insurance not paying for SGLT-2 inhibitors without a diagnosis of DM.

Community Health Network

Quality Initiative: Improving Provider Documentation in Patients Diagnosed with Atrial Fibrillation

Dr. Desiree Huebner-Tunny, DNP, RN; Dr. Cynthia Bowers, DNP, RN, CNE; Dr. Jackie Jessie-Roberts, DNP, RN

1 AIM

The aim of this project was to increase provider documentation of the CHA2DS-VASc stroke risk score and increase prescribing of anticoagulants. The utilization of face-to-face education while leveraging the electronic medical record to implementing automated workflows would help decrease patient care gaps.

	Pre-Intervention versus Post Intervention				
Does the care gap exist?	Pre-Group	Post Group	χ^2	*df*	*p*
No	22[25.76]	24[20.24]	1.97	1	.160
Yes	48[44.24]	31[34.76]			

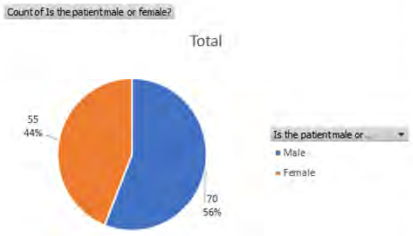
2 Background

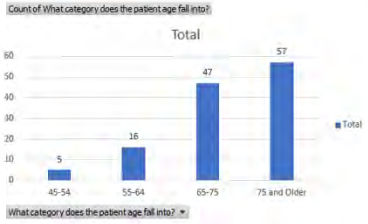
The patient with atrial fibrillation(AF) is defined as being in a care gap if there is a lack of documentation to support: (1) diagnosis of AF, (2) a positive CHA2DS-VASc risk score or (3) the patient does not have a documented reason for not being prescribed an anticoagulant. literature supports the need for prescribing an anticoagulant for patients diagnosed with AF based off provider documentation by using the CHA2DS-VASc risk stratification stroke tool.

Indiana ranks among the top fifteen states with the highest inpatient hospitalization rates for patients diagnosed with AF. Clinical practice guidelines recommend documenting the CHA2DS2-VASc score and documenting reasons for not prescribing an anticoagulant to a patient. The purpose of this project was to improve both over a five-month period.

3 Method

Data was assessed for adherence of the automated workflow and documentation process completed by the provider. Retrospective chart reviews (n=125) were reviewed. The intervention resulted in a 19% increase in care gap closures within the desired population. Chi-square test for independence was completed with an alpha of 0.05, (p =.160). Patients over 75 years old comprised of 46% of the patients, meaning this age group continues to be an opportunity that should have a completed CHAD2S-VASc risk score and/or a prescribed anticoagulant.





4 Implications

Future implications for this project can be applied to other project teams working to implement or improve the American Heart Association Get with the Guidelines. Additional research is needed to assess the collaboration with stroke project teams to explore the stroke population, patients diagnosed with AF, and the use of anticoagulants. The American Heart Association has clinical practice guidelines for both stroke treatment and AF.

5 Outcomes and Findings

The results of this project can be applied to support project teams that are working to implement or improve adherence to the American Heart Association Get with the Guidelines clinical practice guidelines for patients diagnosed with AF. Additional research is required to determine which interventions are most effective in determining why a provider increased their documentation within the electronic health record. Additionally, future implications can include collaborating with stroke project teams to explore the stroke population and compare patients diagnosed with AF. By comparing the stroke population and patients diagnosed with AF, you can evaluate if patients that experience a stroke were prescribed an anticoagulant after their diagnosis of AF. The American Heart Association has clinical practice guidelines for both stroke treatment and AF.

6 Conclusion

This project supported the face-to-face education despite the lack of statistical significance. Currently, automated algorithms are in place to help support provider documentation; however, additional education on other electronic medical record functionalities is needed to encourage providers to increase documentation rates.

CHNw Anticoagulation Service Quality Improvement

Community Health Network

Tiffany Vatterrodt, PharmD, BCACP, TTS; Kelly A. Cochran, PharmD, BCPS

Introduction

- Historically, Community Health Network (CHNw) anticoagulation clinics (ACCs) were solely nurse-run and used various formats of clinical documentation across all four Indianapolis region clinics.
- In 2021, CHNw Indianapolis region anticoagulation clinic nurse (RN) protocols and workflow were revised.
- This included process development to incorporate collaboration with clinical pharmacists (PharmD) as below:

RN checks POC INR in clinic or receives INR result from remote clinic → RN completes interview with patient to assess for changes → Complex cases that fall out of RN protocol are sent to PharmD for dose and plan

- Clinical documentation templates were identified as a tool to operationalize consistency, safety and adherence to protocols. Our goals were to improve patient outcomes and safety, capitalize on interprofessional anticoagulation clinicians to deliver a robust service, assist caregivers with electronic health record (EHR) efficiency and meet the requirements of both the Joint Commission and legal and regulatory standards.

Methods

- Reasons for PharmD consult include, but are not limited to, the following:
  - Diet changes
  - Medication Interactions
  - Assessment for subcutaneous anticoagulation bridge therapy
  - High risk left ventricular assist device (LVAD) patients
  - Multiple INRs > 0.2 below INR goal range
  - Recent changes to regimen
- Workflow and document optimizations

Revision of protocols & policies
- All existing RN warfarin management protocols adapted to include PharmD consult
- New protocols for missed and extra doses
- Creation of new standard operating procedure

Interprofessional collaboration with key stakeholders
- Leadership meetings
- Core pilot team member groups
- Workgroups
- RN & pharmacist team meetings
- Collaboration with VAD Clinic
- Epic informatics
- Billing & Compliance

Implementation
- Training
- Documentation template improvements
- Ipad intake questionnaire
- Standardized appt length
- Schedule adjustment
- Staffing ratios
- Data collection
- Report building

2022

Results

Time in Therapeutic Range

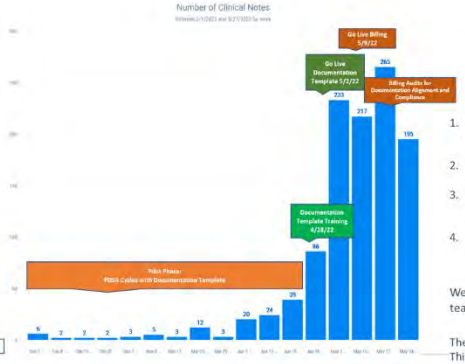
- Time in Therapeutic Range report looks at the percent of time patients INR is at therapeutic goal level

Location	Patient number average from Q1-Q3 (n)	Q1 TTR (1/1-4/30 2022)	Q2 TTR (4/1-6/30 2022)	Q3 TTR (7/1-9/30 2022)	Q4 TTR (10/1-12/31 2022)
CHVH	430	74.1%	75.3%	71.6%	76.6%
CHE	298	75.6%	76.8%	74.0%	76.2%
CHS	343	80.4%	80.4%	77.9%	77.8%
Remote	688	70.6%	72.1%	73.1%	71.2%

Anticoagulation Classifications based on % TTR (per CHEST guidelines)
- <65 % = poor anticoagulation
- 65-70 %= moderate anticoagulation
- 70-80 %= high quality anticoagulation
- >80 %= outstanding anticoagulation

Documentation

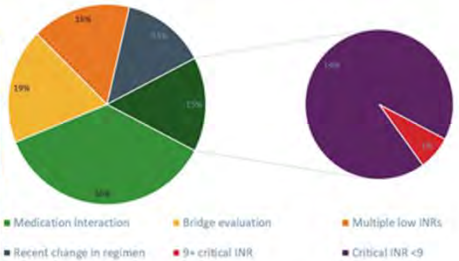
- Note templates were created as a system of consistent and efficient reporting
- Standardized note templates were implemented in May 2022 across all clinics
- Following training, note templates were used consistently by team members for 1000-1200 visits/month through 2023



Results

RN consults to pharmacy in 2022

Top 5 reasons for Pharmacy consult



Discussion

- Interprofessional clinician collaboration has been successful in this improved workflow implementation.
- Documentation via created smartphrases has helped efficiency and safety by improving thoroughness and consistency.
- Team recognized by ICPS for 2022 safety award
- Continuous quality improvement is ongoing in the following areas:
  - Protocol and documentation adherence via quarterly audits
  - Review and revision of protocols and SOP, at a minimum, of yearly
  - Referral optimization
  - Optimization of hold/bridge order
  - Anticoagulation reporting dashboard

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Acknowledgements

We would like to acknowledge the collaboration and improvement spirit among our team members in anticoagulation clinic leadership, nurses, and pharmacists.

Disclosures

The authors have no conflicts of interest to disclosure.
This project was determined by CHNw IRB as non-human subjects research

Implementation of Penicillin Allergy Testing Pilot in a Health System: Phase II

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Community Health Network

Background

Penicillin allergy is the most reported patient allergy. Research suggests that only 1-10% of patients with a listed penicillin allergy have a true allergy.

Problems associated with listed penicillin allergies:

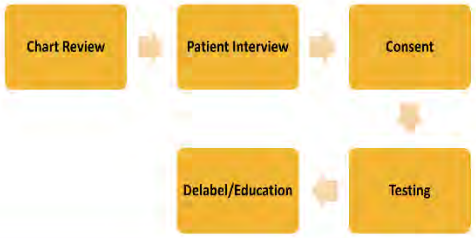
- Inappropriate antibiotic selection
- Increase in MDR infections
- Longer hospital stays
- Higher healthcare cost

Objective

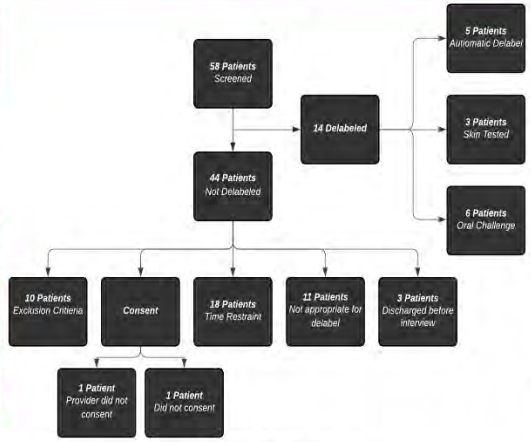
Establish a pharmacist driven penicillin allergy delabeling program utilizing the strategies put into place during Phase I and implement the program within Community Health Network

Methods

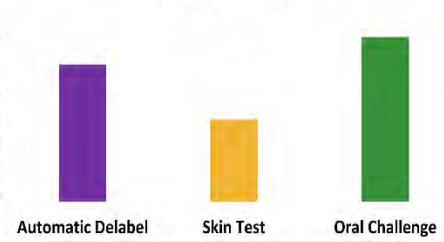
- Continue phase II of a penicillin delabeling pilot conducted from September 2022 through January 2023
- Patients tested through skin test or oral challenge based on CHNw approved risk categorization
- Patients were delabeled if test results were negative and were provided documentation of test



Results



Patients Delabeled



14 Delabeled / 16 Interviewed = 87.5%

Measures

Primary Goal

Delabel 75% of penicillin allergies from interviewed patients

Outcomes Measured

Number of patients delabeled
Number of patients screen/interviewed
Number of patient giving consent
Number of provider authorizations
Number of patients delabeled
Skin/Oral Challenge
Antibiotic change
Time taken per consult

Conclusion

- Project met primary aim of delabeling 87.5% of patients who were interviewed
- Oral challenge and skin test had a 100% success rate
- Project was successful in setting up processes from identify and delabling patients

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Community Health Network, Indianapolis, Indiana

Increasing Osteopathic Manipulative Treatment (OMT) Clinic Volumes

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Community South Osteopathic Family Medicine Residency Clinic

Community Health Network

Introduction

- Osteopathic Manipulative Treatment (OMT) is an effective and valuable alternative to surgical and medication treatments for many common complaints seen in primary care clinics.
- Community South Osteopathic Family Medicine recognizes the importance of OMT and offers a dedicated clinic to provide this treatment to our patients.
- After analyzing our OMT clinic's performance over a 2-month period, only 27% of available clinic spots were filled and we experienced an undesirable number no-shows and cancellations.
- We identified an opportunity to improve our scheduling protocol by streamlining appointment durations based on the level of care provided, with the goal of improving clinic utilization and better patient outcomes.

Purpose

1. Improve patient awareness of OMT and its potential benefits, encouraging them to schedule and keep appointments.
2. Educate physicians and staff to better identify which patients would benefit from OMT and increase referrals to the OMT clinic for these patients.
3. Streamline and provide clear guidance to front office staff regarding OMT clinic scheduling processes.

Goal

The primary objectives of this project were to achieve an increase in the overall volume of the Osteopathic Manipulative Treatment (OMT) clinic by 20% and concurrently achieve a reduction in the rate of no-shows and cancellations by 10%.

Methods

An educational session was conducted via a virtual all-staff meeting to provide formal instruction to clinic staff and physicians on strategies to increase OMT volume. The session focused on reviewing the principles of OMT and when it is indicated, as well as detailing a novel scheduling algorithm aimed at simplifying the scheduling process for the OMT clinic. The new scheduling algorithm for the OMT clinic was distributed to the front office and nursing staff as a reference. To aid in patient education, a document containing frequently asked questions (FAQs) and answers about OMT was made available to physicians and schedulers for distribution to patients prior to their OMT appointments.

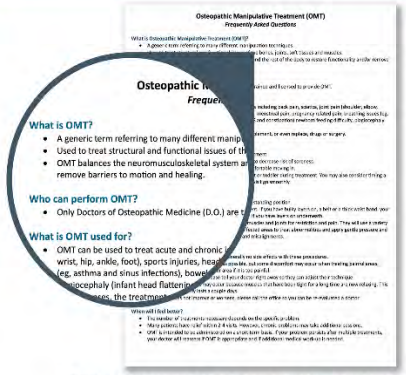

Figure 1: OMT Frequently Asked Questions (FAQ) patient handout

Figure 2: OMT clinic educational presentation given to clinic staff.

Results

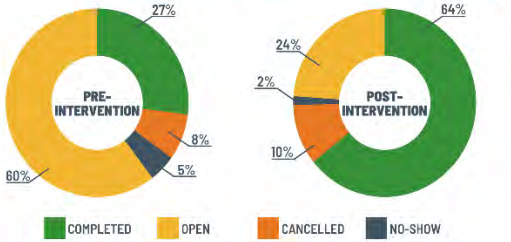

Figure 3: Study results. OMT clinic volume was increased by 37% at the completion of the intervention. We did not achieve our goal of reduction of no-show/cancellations by 10%.

Discussion

We can infer from the increased clinic volume that patient education about OMT prior to their appointment increased the likelihood of scheduling these visits. Though not a direct aim of the study, streamlining the scheduling process was helpful in eliminating scheduling errors, anecdotally improving patient and physician satisfaction and experience. Improved awareness about OMT clinic among staff likely contributed an increase in OMT clinic referrals.

Despite achieving our goal of boosting clinic volume by 20%, we have identified potential confounding factors that may have influenced the outcomes of this study. These include the impact of COVID-19 on pre-intervention OMT clinic volume, the influx of referred patients from a local physician that relocated, and changes in the appointment length protocol.

This study could be expanded to adding additional patient education materials in waiting and exam rooms which may further increase awareness of OMT and services offered. The study's findings can also provide effective strategies for increasing volume of other specialty clinics.

Despite several potential confounding factors, our process improvement project demonstrates that a combination of improved patient education, streamlined scheduling processes, and increased awareness about the OMT clinic can lead to a significant boost in clinic volume.

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UpToDate | MyClevelandClinic.org | American Osteopathic Association

Community Health Network

Medical Device Related Pressure Injuries

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Jessica Gregory, statistician

Background

Hospital-acquired pressure injuries (HAPIs) are most often considered a preventable harm and costs the United States healthcare system over $26 billion dollars annually (HMSA, 2022). In 2016 the National Pressure Injury Advisory Panel (NPIAP) recognized a new type of pressure injury, medical-device related. Medical devices are those that are considered for diagnostic or therapeutic use. A systemic review in 2016 by Jackson et al. found that 12% of all pressure injuries are related to medical devices. Currently there is no evidence-based predictive scale to identify patients at greatest risk for MDRPIs.

Purpose

What risk factors and characteristics were most predictive to the development of Medical-Device Related Pressure Injuries (MDRPI) in hospitalized patients?

Objectives

- Define a Medical Device Related Pressure Injury (MDRPI).
- Identify common risk factors related to MDRPIs.
- Discuss the implications for nursing practice related to identified risk factors.

Methods

- Retrospective descriptive design.
- The setting was a large non-profit healthcare system in Indiana that is staffed for over 900 in-patient beds.
- Chart reviews of the Electronic Medical Record (EMR) and Patient and Caregiver Event Reporting System (PACER) entries were completed by the investigators on patients who were admitted to a Community Health Network inpatient acute care facility and developed a MDRPI during the calendar year of 2021.
- Population ranged from neonate to geriatric.
- Risk factors were collected from chart reviews and data analysis to determine if any causal or predictive factors that the MDRPI patients were noted to have.

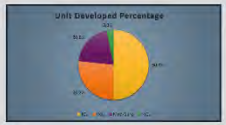
Outcomes and Findings

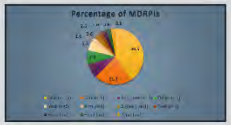
- A total of 38 MDRPIs

30 Unique Patients

22 Patients with 1 MDRPI 73.3%

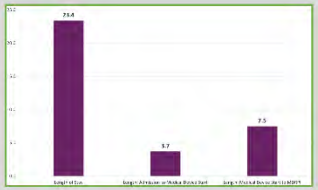
8 Patients With 2 MDRPIs 26.7%





Implications

- Establish frequency of assessments and re-positioning of respiratory devices may be beneficial for patients who: have higher BMIs, are diabetic, have renal failure, Covid positive, and increased hospital length of stay.
- Consider additional assessment for patients who have had a medical device in place for greater than 1 week



Conclusion

Patients who developed MDRPIs were often the most complex patients, with multiple co-morbidities, higher body mass index (BMI), and greater number of medical devices all of which can place them at greater risk to develop medical device related pressure injuries.

Average BMI	31.5
Average Number of Medical Devices	5.4

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Bridging the Gap: Optimizing Handoff from Group Home to Primary Care Providers

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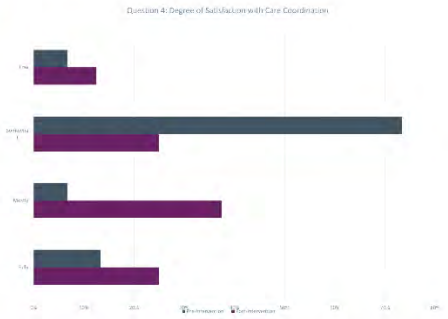
Introduction

Community South Osteopathic Family Medicine Residency (CSOFM) serves a large group home (GH) population. Patients often arrive to their appointment with a chaperone who is unfamiliar with their current health concerns. Our goal was to improve provider satisfaction with care coordination between GH patients and their primary care providers. We planned to achieve this by implementing a history of present illness (HPI) and review of systems (ROS) intake form that was to be completed by a GH health advocate and brought to each appointment.

Methods

- Faculty, residents, medical assistants (MAs) and GH administrators were asked about opportunities to improve care coordination. Through this, it was determined providers experience low satisfaction with care coordination for this patient population.
- An intake form that included the basic elements of an HPI & ROS was distributed to all GHs served by CSOFM.
- Upon arrival, the MA collected the form and scanned it into the patient's chart. The provider was then be able to review the form during the appointment.
- After 4 months of this process being in place, a post-intervention survey was conducted using the initial needs assessment questions.
- "Not at all" and "Somewhat" were considered negative satisfaction. "Mostly" and "Fully" were considered positive responses and therefore positive satisfaction.



Needs Assessment

1. How satisfied are you with the scheduling process for GH patients?
2. Rate how much you agree: The reason for visits and additional patient concerns are fully addressed at the appointment.
3. Rate how much you agree: The treatment plans are clear and complete by the end of the appointment.
4. **How satisfied are you with the quality of care coordination between the doctor's office and the group home?**

Results

Our initial goal was to increase provider satisfaction with care coordination as measured by question 4 by 40 % in 4 months. Prior to our intervention, only 20% of providers were satisfied. After the intervention, 62.5% of providers were satisfied with care coordination. Thus, provider satisfaction by 42.5% over the 4 months.

Discussion

GH residents are a vulnerable population and any opportunity to increase access to quality care should be undertaken. Unfortunately, GH patients often arrive to their appointments with a chaperone who is unfamiliar with their concern and unable to contribute meaningful information to the medical interview. The medical interview plays a critical role in problem detection, diagnostic accuracy, physician and patient satisfaction, and even patient health outcomes. [1] Our intervention aimed to improve this process. While we did see an improvement in provider satisfaction after implementation, the process was resource heavy and easily circumvented. It relied upon human participation and contact with appropriate stakeholders which is where barriers were met. In order to continue this process and make improvements, future plans could include focusing on the *first contact* between our clinic and the GH caregiver who is scheduling the appointment. Our intake form could be used during scheduling to more clearly elicit the needs of the patient in a systematic way. Unfortunately, the current process is easily discarded without purposeful participation and needs further refinement.

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Improving COPD Care in a Multidisciplinary Clinic

Community Health Network

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Introduction

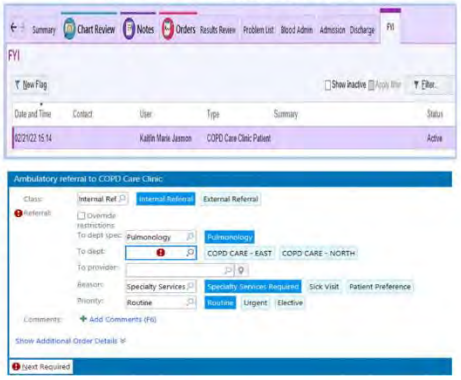
- Data consistently indicates outcomes for Community Health Network patients with a diagnosis of COPD are underperforming when compared to Network targets.
- Community Health Network's Dashboard reveals a Network COPD 30-Day Readmission Rate from 2016 to 2020 of 16.15%, 16.09%, 18.62%, 17.43%, and 16.25%, respectively. The 2020 Network COPD 30-Day Readmission target was less than 15.8%.
- The need to focus initiatives on the care of patients with COPD was recognized, and emphasizing the care received by COPD patients in a transitional phase of care as well as emphasizing standardization of care according to the GOLD Guidelines were identified as key opportunities to improve patient outcomes.
- The clinics were open March 2022 and data is collected for March 21-Dec 31, 2022 to evaluate the first 9 months of service. The purpose of this activity is to measure the quality improvement of the service rate of readmissions for COPD exacerbations.

Methods

- The below Process Map and Patient Visit Flow were developed to streamline evidence-based, guideline-directed care delivered to patients from varying referral sources
- In addition, the process map effectively communicated workflow across the interprofessional COPD Clinic team

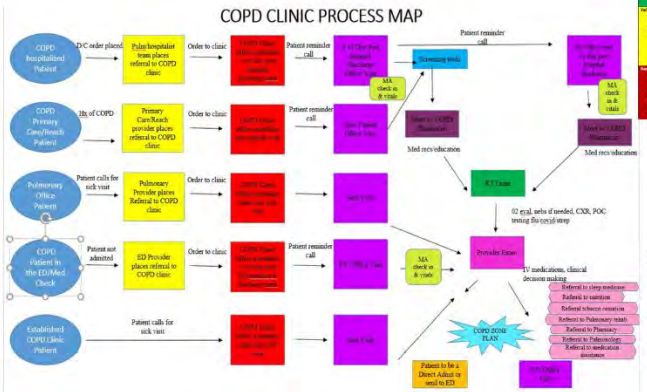
Methods

- Informatics enhancements included: COPD Flag and Referral

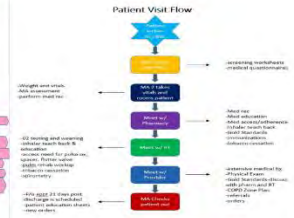


- COPD Zone Education was individualized for each patient

COPD CLINIC PROCESS MAP



Patient Visit Flow



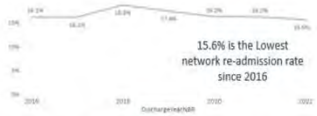
Results

Total Referrals: 400	30 day Re-admission Rate: 9.76%	Satisfaction Score: 100%

Outcome Measures:

- 100% of patients screened for tobacco use
- 100% of patients with updated spirometry results within last year
- 100% of patients screened for barriers to medication adherence
- 100% of patients screened for OSA
- 100% of patients screened for malnutrition
- 100% of patients screened for anxiety and depression

COPD 30-Day Readmissions

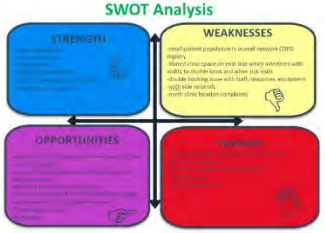


- Community Health Network's HealthCatalyst Dashboard reveals a Network COPD 30-Day Readmission Rate from 2016 to 2021 of 16.15%, 16.09%, 18.62%, 17.43%, 16.2%, and 16.2%, respectively.
- The COPD Care Clinics opened in March 2022 and the Network 2022 COPD 30-day Readmission rate dropped to 15.6% The COPD Care clinics had a 30-day readmission rate of 9.76%.
- COPD Care Clinics had 400 referrals in 2022 resulting in 261 patients. The re-admission rate of the COPD Clinic was ~6.0% lower than the network average. Approximately 16 re-admissions (261 patients x 6.0%) were avoided resulting in ~$256,000 savings (16 x $16,000).

Discussion

- The opening of two COPD Care Clinics with emphasis on standardization of evidence based care and post-acute care had a direct impact on Network metrics of re-admission and mortality rates for COPD patients. These findings were clinically significant and indicated that COPD Care Clinic interventions helped lead to a reduction of Network COPD 30-day readmission rates by approximately 0.65%. The recommendation of this team is to further grow the COPD Care Clinics and impact more of the COPD patients in the Network

SWOT Analysis



Disclosures

The authors have no conflicts of interest to disclosure.
This project was determined by CHNw IRB as non-human subjects research

Community Health Network

Advanced Care Planning (ACP) in Residency Clinic

Cate Shamblen, MD, Danielle Moster, DO

Background

Advanced care planning (ACP) allows patients to discuss and document healthcare treatment preferences in the event they are unable to make decisions. A prior study in a residency clinic showed the 61% of patients were unaware of the term "advance directives" and 84% desired to complete ACP documentation after education by the resident [1]. However, 78% primary care residents report rarely or never discussing ACP with older patients in clinic [2].

In 2022, Community Health Network integrated Vynca into the electronic health record. The Vynca platform allows patients and healthcare team members to digitally create ACP documents. The available documents on Vynca include Indiana physician orders for scope of treatment (POST), do not resuscitate (DNR), living will, and Community Health Network healthcare representative. In this QI project, residents were assessed on confidence and frequency of discussing ACP with patients

Methods

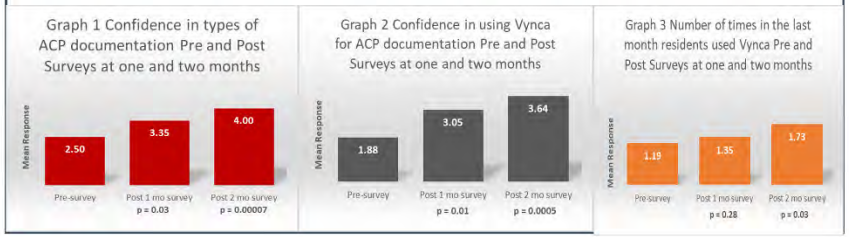
A presentation discussing ACP was given during didactics to 28 residents from PGY1, PGY2, and PGY3 classes from Community East Family Medicine residency. The presentation contained information about ACP documentation, including advance directives, health care representatives, living wills, power of attorney, physician orders for scope of treatment, and Indiana hierarchy for healthcare decision making. Additionally, the presentation provided instructions on how to access Vynca within Epic and how to input various advance care planning documents.

A survey was given prior to the presentation, and post-surveys were given at one and two months to assess confidence regarding ACP documentation and frequency of discussing ACP with patients. Answer options were on a 5-point Likert scale from not at all confident to very confident. All survey were collected anonymously.

A two-sample t-test was used to analyze differences between the pre-survey and the post-surveys at one and two months.

Results

Measure of confidence in ACP documentation, use of Vynca, discussing ACP documentation, and identifying patients who would benefit from ACP documentation significantly increased between the pre-survey and the post-surveys at one and two months. There was no significant increase in number of times residents provided ACP documentation to patients, identified patients that might benefit from ACP , or discussed ACP discussion with a patient. There was a significant increase in number of times residents used Vynca to document ACP at two months



Discussion

Following the presentation given to the residents, there was significant increase in resident confidence about ACP documentation and use of Vynca after one month and retained confidence at 2 months. However, there was only significant change at 2 months with number of times Vynca was used, and additional outcomes of applying ACP knowledge in clinic were not significant.

Residents overall gained confidence in ACP documentation but did not consistently implement this knowledge in clinic. This could be related to limited time with patients in clinic, how the survey questions were presented, and variation in participation in both number of residents and which residents completed the surveys.

Future projects may include increasing specific types of ACP documentation in the chart.

Sources

[1] Alderman JS, Nair B, Fox MD. Residency training in advance care planning: can it be done in the outpatient clinic? Am J Hosp Palliat Care. 2008 Jun-Jul;25(3):190-4.
[2] Tung EE, Wieland ML, Verdoorn BP, Mauck KF, Post JA, Thomas MR, Bundrick JB, Jaeger TM, Cha SS, Thomas KG. Improved resident physician confidence with advance care planning after an ambulatory clinic intervention. Am J Hosp Palliat Care. 2014 May;31(3):275-80.

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